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DIVISION OF FISHERIES
MICHIGAN DEPARTMENT OF CONSERVATION
COOPERATING WITH THE
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REPORT NO. 866

SUMMARY OF ACTIVITIES FOR MARCH 15 TO DECEMBER 31, 1942

FISHERIES BIOLOGIST, DISTRICT 2

by

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I. Lakes Examined for Trout Possibilities

Island and Dodge Lakes, Schoolcraft County:

These lakes are joined by a narrow channel, negotiable by boat. Neither lake has an inlet or an outlet. They were examined in August and were found to contain waters suitable for trout. An experimental planting of 400 legal rainbow trout was recommended for each lake, and these plantings were made on September 25, 1942. Of the 800 fish, 200 were jaw-tagged and measured individually, and 100 were put in each lake.

Plans are to get as many creel census records as possible, to determine the growth of the fish as well as the number removed by anglers.

Swan Lake, Delta County:

This lake was thought by several individuals to have trout possibilities. An examination made on August 14, 1942 revealed that the lake, although 35 feet deep, does not stratify thermally and that water temperatures rise above the toleration limit of trout.

Dukes Lake, Chippewa County:

This lake was examined because it was believed by Mr. F. P. Furlong to have trout possibilities. The investigation showed that the deeper waters were cold enough for trout, but the oxygen supply in the cold water is definitely inadequate. See Institute Report No. 827 for further details.

II. Study of Bass Tapeworm Distribution

As in the past several years, adult smallmouth bass were transferred from Lake Michigan to inland waters of the district in 1942. An examination of the adult bass showed that they were quite heavily infested with bass tapeworm (Proteocephalus ambloplites).

In keeping with the policy of the state (no adult bass containing the bass tapeworm should be placed in an inland lake unless the tapeworm is already known to be present in the lake) lakes to be planted were first examined, as time and circumstances permitted, to ascertain whether or not the tapeworm was present.

During the past summer, only lakes which had no previous plantings of adult bass were examined, and it is interesting to note that no lakes were examined in which the fish are free from this parasite. Some lakes which have been stocked in the past were stocked again this year without first being examined because time which could be spent in these investigations was limited and it was considered more important to examine those lakes which were to receive their first stocking.

Transferring operations were curtailed during the summer due to the inability of the commercial fishermen to make large enough catches to make operations profitable. Only 2,192 fish were transferred in 1942 as compared with 6,077 in 1941.

For a list of lakes in the district in which the bass tapeworm has been reported, see Institute Report No. 758a.

III. Study of Walleye Spawning in Indian, Gulliver, and Manistique Lakes

The Institute has recommended that walleye stocking be discontinued in four of the larger lakes of the district for a period of two years in an attempt to ascertain whether or not walleyes are reproducing naturally in these lakes.

Indian Lake, Schoolcraft County:

Indian Lake was found to have suitable spawning facilities for walleyes. Observations in the spring of 1942 showed that walleyes spawned along approximately $1\frac{1}{2}$ miles of shoreline in the northeastern part of the lake. Localized and limited spawning also occurred in the southwestern part of the lake. While a considerable number of walleyes are known to have spawned and a large number of eyed eggs were found, extensive seining operations during the summer, when the young are thought to inhabit the shallow areas with young perch, bass, and other species, failed to yield any young walleyes.

The study will be continued in 1943. If it is again impossible to find the young, evidence of successful natural propagation may still be found in the next few years by age determinations on legal-sized fish. If the age

studies show that a fish was produced in 1942 or 1943, years when no artificial plantings were made, there will be concrete evidence of successful natural propagation. The amount of the natural propagation, of course, can only be roughly estimated on the basis of the relative number of fish obtained from those year-groups.

Gulliver Lake, Schoolcraft County:

This lake is scheduled for no artificial stocking in 1942 and 1943. The lake was not examined at night for walleye spawning, but on April 21 eggs were found along much of the shoreline in the southeastern portion of the lake. Another visit on May 5 revealed a much smaller number of eggs, but it is interesting to note that all of the eggs observed on this date were uniformly eyed. No infertile (opaque) eggs were found. (A sample of 24 eggs was placed in water in a 2-quart jar and within a period of two hours, all the eggs had hatched.) This suggests that infertile eggs may be dislodged from among the rocks by water movements, perhaps because they do not adhere to the rocks as firmly as do fertile eggs, and by reason of their greater buoyancy are carried away with currents. This may also have some bearing on studies involving the relationship between suckers and walleyes. While it is improbable that suckers, or any other species, obtain eggs from among the rocks, it is quite possible for them to feed on the eggs carried in the water. The finding of walleye eggs in the sucker stomach would therefore not necessarily imply that the natural propagation of walleyes was being impaired—unless it could be determined that the eggs found in the stomachs of other fish were fertile when taken.

Seining during the summer failed to yield any young-of-the-year walleyes. The study on this lake will also be continued in 1943.

Manistique and South Manistique Lakes, Mackinac and Luce Counties:

These lakes were also examined for evidences of walleye spawning. Eggs were found in Manistique Lake but not in South Manistique Lake. No attempt was made to locate the young by seining. It is hoped that more work can be done on these two lakes in 1943.

IV. Northern Pike Spawning in Frenchman and Twin Lakes,
Chippewa County

A study was made of the northern pike spawning activities and the migration of the young pike into Frenchman and Twin Lakes to determine the advisability of issuing a permit to install screening devices in the inlets. The request for such devices was based on the reported loss of adult pike through receding water and poaching, and the loss of young pike through failure to reach the lake because of low water levels.

Adult pike began leaving the lakes on April 4. Early melting of the snow caused an early drop in the water level so that the area available to spawning adults was not as large as in normal years. After the melting of the snow, abnormal rains maintained water in the marshes long after the snow had all disappeared.

A fish trap was installed in Frenchman Lake Inlet on April 24. The last adult pike to return to the lake was taken on May 2. The first young pike to reach the lake from the marshes did so on May 12, and the last ones to reach the lake were taken during the last week in June. A total of approximately 7,000 young pike reached Frenchman Lake. Weekly samples were taken to study the growth of the young pike.

It was noted that young pike did not move downstream during rainy periods or immediately afterward, but started to move down about three or four days after the rains stopped. As the water in the marshes became lower, larger numbers migrated downstream. This indicates that as long as there is sufficient water in the marshes there is no incentive for the young to move toward the lake, but as soon as the water level lowers and the current diminishes the young pike lose no time in heading down with the current. It is interesting to note that in the several visits to the area and throughout careful investigations of the marshes, no young pike were seen that were trapped by receding waters. One adult was found, however.

Some spawning of northern pike is known to have occurred in Frenchman Lake itself. Young pike were observed in the lake before the young produced in the marshes had reached the lake. The relative amount of young produced in the lake is not known, but it is thought to be small since definite evidence of spawning was obtained in only one part of the lake. Other seemingly favorable spawning conditions were observed early in the season, but a drop of the lake level destroyed the eggs which may have been deposited.

The young pike in the marshes were more advanced than those in the lake, undoubtedly due to earlier spawning in the marshes as a result of higher water temperatures.

Since the spring of 1942 was abnormal in its rainfall—thus perhaps allowing more young to reach the lake than in normal years—it has been suggested that the study be continued after the war and that in the meantime the permit to install screens, which was issued in 1942, be revoked until such time as it may be considered essential to the wise management of these lakes to install these devices.

Other details of the study, including a sketch of the area, pictures of spawning habitats and the fish trap, daily records of the fish trap operations, etc., may be found in Institute Report No. 867.

V. Condition of Trout in Newly "Made" Trout Lakes

Holland Lake, Luce County:

During the first few days of the trout season in 1942, 68% of the 200 adult brook trout planted the previous fall were taken from the lake by anglers. Measurements (length and weight) were taken of 68 fish, and these had an average length of 11.5 inches and an average weight of 8.2 ounces. All fish were nicely colored and in good condition. (See Institute Report No. 783 for individual measurements and other details of this creel census.)

A planting of 200 adults was made in June, 1942.

A sample of trout was taken on September 1, 1942 to determine the condition of the fish and on the basis of their condition suggest a stocking policy for the fall of 1942. The average of 16 fish taken on this date was 8.4 inches and the average weight was 4.1 ounces. While the condition factor was not determined, these fish appeared to be in good condition. A planting of 200 adult fish and 2,000 fingerlings was recommended for the fall. This planting was made on October 22. The 200 adults were fin-clipped (right pectoral), had an average length of 7.8 inches, and weighed 22 pounds per 100 fish. The fingerlings were fin-clipped (left pectoral) and weighed 29 pounds per 1,000.

Since the fingerlings of the original planting (fall of 1941) are now of legal size, it is suggested that no stocking be done during the open season, but only in late fall after a check on the condition of the fish is made. Fall plantings should be able to maintain fair fishing throughout the season.

Airport Lake, Marquette County:

A sample of 22 fish was taken by gill net from this lake on September 11, 1942. These fish had an average length of 7.4 inches and an average weight of 2.8 ounces.

A planting of 400 adults and 1,000 fingerlings was recommended for the fall planting in 1942; this planting was made in September. The adults averaged 8.4 inches in length and weighed 28 pounds per 100. They were all fin-clipped (right pectoral). The fingerlings were fin-clipped (left pectoral) and weighed 15 pounds per 1,000.

Big Trout Lake, Marquette County:

A sample of 11 brook trout taken by gill net from Big Trout Lake on September 10-11, 1942 averaged 9.8 inches in length and 6.4 ounces in weight. At the same time 42 suckers varying in length from 7.5 to 17 inches were taken.

A planting of 1,600 adult and 2,000 fingerlings was recommended and made in September, 1942. The adults were fin-clipped (right pectoral), averaged 8.4 inches in length and weighed 28 pounds per 100. The fingerlings were fin-clipped (left pectoral) and weighed 15 pounds per 1,000.

Swanzy Lake, Marquette County:

A sample of 14 fish taken with the fly rod from Swanzy Lake on September 6-7, 1942 had an average length of 11.4 inches and an average weight of 10.1 ounces. These fish were all fat and in good condition except for a moderate infestation of gill lice.

From the number of fish taken and judging by the feeding activities of the fish in the lake, it seemed that there was a relatively large number of legal fish in the lake. In order to determine the feasibility or practicability of maintaining fishing in these newly made trout lakes by planting fingerlings only, it was recommended that no adults should be planted in 1942. A planting of 3,000 fin-clipped (left pectoral) fingerlings was made in September, 1942. These fish weighed 15 pounds per 1,000. It is recommended that no adults be planted until such time as it becomes evident that fishing can not be maintained by fingerling plantings.

VI. Little Bay de Noc Creel Census

Through the cooperation of Conservation Officer Allen Tweedy and boat livery operators Messrs. Nelson and Meltz, a creel census was conducted during the 1942 summer fishing season. A total of 825 fishermen were contacted. These anglers fished 2,942 hours and caught 2,493 legal fish, or 0.85 fish per hour. Of the 825 fishermen, 287 (or 34.7%) took no fish. About 30% of the fishermen were not Michigan residents. Other states represented include Wisconsin, Ohio, Illinois, Indiana, Minnesota, Texas, Georgia, Missouri, New York, Pennsylvania, and Iowa.

The catch was composed of the following species of fish; perch, 70.5%; walleyed pike, 14.3%; smallmouth bass, 8.0%; northern pike, 5.4%; rock bass, 1.5%; and white bass, 0.3%.

This census is being continued during the winter months and will be continued next summer. A report on the 1942 census is in progress, and further details of the census will be available upon completion of the report.

VII. Potagamissing Bay Creel Census

The creel census on the Potagamissing Bay region was conducted during 1942 as in previous years, through personnel of the Field Administration Division.

A total of 181 anglers, who fished 587 hours and caught 2,117 legal fish (or 3.6 fish per hour), were contacted. Perch made up 88% of the total catch. Other species in order were: northern pike, 5%; rock bass, 2.7%; smallmouth bass, 2.4%; walleyes, 1%; and largemouth bass, sunfish, muskallonge, and smelt—each less than 1%.

The catch per hour for the entire region increased from 1.7 in 1941 to 3.6 in 1942. Waters closed to commercial fishing increased from 1.6 fish per hour in 1941 to 2.8 in 1942, and the waters open to commercial fishing showed an increase from 1.9 in 1941 to 4.6 in 1942.

Further details may be obtained when the report on the creel census of this region, now in progress, is released.

VIII. Miscellaneous Investigations

Red Dam Lake, Dickinson County:

The Norway Restoration Club has requested that this lake be investigated to determine whether it would be advisable to attempt to convert the lake into a trout lake.

There are trout in the lake at present, and two small trout streams, Turner Creek and Fitzgerald Creek, enter the lake at the east end. The club is anxious to have the other fish removed from the lake. According to Officer J. Andrews, the lake at one time produced fair trout fishing, but pike and bass were introduced by local sportsmen, and it is these species that the club now wishes to have removed.

There is no question concerning the ability of the lake to hold trout, their presence being sufficient evidence. There was some doubt about winter conditions but an examination in March, 1942 showed adequate oxygen under the ice.

There is some question, however, about the possibility and advisability of removing the present fish population. It would not be possible to get a complete kill by poisoning because fish have access to the two inlets, and pike and bass undoubtedly wander up these streams. It would not be advisable to poison a lake with an outlet stream containing game fish (pike and bass). If poisoned out, other fish would still have access to the lake through the culvert at the outlet. (The lake was formed by the construction of a dam across the stream. A road passes over the dam and a culvert passes through the dam and spills about two feet above the level of the stream below.) The culvert could be raised, however, so that it would be impossible for fish to make the jump into the culvert.

Since it is unlikely that the lake could be cleaned out by poisoning, and it is not advisable to poison a lake whose waters flow into fishing territory below, and since there is fair pike and bass, and some trout, fishing in the lake at present, it is suggested that this lake be left as it is for the present, but that an investigation of other waters in the vicinity be carried out in an attempt to locate suitable trout lakes for the sportsmen in this locality.

Walleye Tagging at Lake Independence, Marquette County:

There has been some concern on the part of local sportsmen about the run of walleyes in the Iron River, the outlet of Lake Independence. It is claimed that large numbers of walleyes congregate below the dam and are unable to get into the lake. (It is undoubtedly true that fish are unable to negotiate the fish ladder maintained by the Kerry-Hanson Lumber Company at Big Bay.) Requests have been made for the Conservation Department to catch the walleyes and place them in the lake above the dam.

Officer R. Lahti and I spent one afternoon and evening, and the next morning, during the run at the bridge—about 1/4 mile downstream from the dam, and saw not more than 30 walleyes, 13 of which were caught, jaw-tagged, and placed in the lake. This indicates that the run at this point is not nearly as large as reported and does not justify an annual transfer of fish over the dam.

No walleyes were seen between the bridge and the dam. A swift rapids just above the bridge may have prevented their passage.

For details of the investigation, see Institute Memorandum No. 131.

Twin Lake, Marquette County:

This lake has been poisoned, and stocked with rainbow trout.

It was reported that during a period of heavy rainfall in the fall of 1941, this lake was connected by a sizable stream with Hogan Lake, which lies immediately to the south. It was thought that fish from Hogan Lake might have entered Twin Lake.

Two checks were made, one in June and one in October, with gill nets and on both occasions only trout were taken. (In the October check, however, both rainbow and brook trout were taken.) Observations around the entire shoreline also gave no evidence of the presence of other fish. It is probable, therefore, that no fish entered Twin Lake from Hogan Lake. A rock-brush filter dam was constructed between the two lakes in November to insure against any mixing of the fish populations in the future. This structure will be checked periodically.

Stoner Lake, Alger and Delta Counties:

This lake is scheduled for artificial fertilization in the spring of 1943. In June, 1942, a large sample of perch was taken for growth rate studies in order to check the effect of fertilization on the growth rate. The scale samples were sent to Ann Arbor for age determinations.

Spring Lake, Delta County:

In 1939, 1,000 fingerling brook trout were planted in Spring Lake. In the last two years the lake has been rather lightly fished. No fish have been taken, although several people report that they have seen trout in the lake. One report of a "three-pounder" getting away was received.

Three checks were made—two in June and one in August—to determine the status of the trout. On the first two occasions the lake was fished from shore with worms and flies because a suitable boat was not available. In August, two gill nets were set one afternoon and lifted the following morning. No fish were taken. Mr. Wester of Isabella and I fished the lake with flies and worms and took no fish. There were no "rises" at the surface at any time during our visit. Turtles are abundant, and it is my

opinion that the trout which were "seen and/or got away" were turtles. The lake is quite small and it seems that if the fish were present they should be of good size and should be taken by gill net, if not by hook and line. A check of the temperature and oxygen conditions in the lake indicates favorable conditions for trout. The lake was stratified thermally and adequate oxygen (6.2 p.p.m.) was present in the cold bottom layer.

Crayfish Industry in Big Bay de Noc:

According to reports the crayfish industry has been steadily increasing in recent years. It was thought desirable to make a check on the industry, to determine its extent and whether a license should be required for the privilege of fishing crayfish. It was also thought that the industry might interfere with the commercial fishing industry because of the removal of an important source of food of game fish, particularly of perch.

In the 1942 season, only one party was engaged in "crab fishing," namely Mr. Joe Hermes of Garden. He had about 400 traps. The required purchase of a license would therefore not appear to be necessary. Only the large individuals (over 4 inches in total length) of the crayfish, Cambaris virilis, were being marketed. The smaller ones were thrown back. In each trap there were several times more small ones than those of a marketable size. Since only the large crayfish, undoubtedly too large to be used as food by perch, are marketed, there should be no conflict between this industry and commercial or sport fishing. In fact, according to Mr. Hermes, an area has to be fished for crayfish in order to attract and increase the crayfish population, and it may be true that the "crab" fishing actually increases the population to such an extent that there is a larger supply available to the perch than if no "crab" fishing were done. This might be true as long as the area is not fished so intensively that too many of the larger individuals, which should serve as brood stock, are removed. It is conceivable that an area might be fished too heavily and that an inadequate brood stock would be the result. However, at the present rate of fishing in Big Bay de Noc, there seems to be little danger of depleting the population.

INSTITUTE FOR FISHERIES RESEARCH

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