

July 25, 1932

Report 164

SURVEY OF CRYSTAL LAKE, MASON COUNTY,
WITH RECOMMENDATIONS FOR IMPROVING THE FISHING

Description

Size and
location

This lake is different from the other Mason County lakes which were investigated in several ways as will be indicated later. The lake has an area of 125 acres. It is located about 6 miles east and 1-1/4 mile north of Ludington.

U. S. 10 and U. S. 31 are 1-1/4 mile south of the lake.

Inlets and
outlets

The lake is entirely landlocked. No inlets or outlets were found.

Water

Crystal Lake is unusually clear and clean. The fish appear to be in exceptionally good condition. No substances injurious to fish life were found in the lake.

Use of water

A number of cottages are located along the lake. Boats, cottages, and fishing tackle can be rented here. Resort development is chiefly on the south side, and is rather limited. Swimming is carried on to some extent. The lake is used chiefly for fishing.

Water level

Water level was low when examined. Since the lake contains no outlet the level cannot be regulated.

Temperature

Temperature was found to be high to a depth of 20 feet, while below this the water was cold. There is a definite stratification.

Oxygen

Oxygen was found to be fairly high in the warmwater area (to depth of 20 feet). The cold water area was found to contain very little oxygen. A small amount was found at a depth of 33 feet and none at the bottom (46 feet). The lake is evidently not suited for cold water fishes even though temperature is suitable in the lower depths, because oxygen is too limited in this layer of the lake.

- Other chemical conditions The water is decidedly alkaline in the upper portion and is slightly alkaline even at the bottom. It was found to be fairly soft despite the fact that considerable marl is present. No carbon dioxide was found in the upper layer. A small amount was found in the lower, cold water area.
- Depth Maximun depth found was 53 feet. Maximum depth of the east arm was slightly less than 35 feet. A sharp drop-off occurs around the entire lake. Average depth is about 30 feet.
- Bottom The bottom near the shore is almost entirely of sand. Some distance from shore the sand gives way to marl. This marl extends to the bottom of the drop-off. The bottom of the deeper part of the lake is a mixture of marl and pulpy peat. Some gravel occurs along portions of the margin. Generally, where this is found, it occurs at the present edge of the water. No gravel was found in water deep enough so that it could be utilized by the smallmouth bass for nesting purposes.
- Vegetation Some rushes, and some dwarfed muskgrass were found along the shore. In some parts of the east arm pond lilies and other weeds grow on the shoal. Excellent beds of vegetation line the slope, especially in the east arm. Weed beds in the major portion of the lake cannot be considered abundant. In the narrows and in the east portion of the lake weeds are much more common than in the west portion. Even at this end, however, much of the shoal is practically barren of weeds.
- Natural food Crayfish, snails, and clams are fairly abundant. Aquatic insects, especially dragon fly larvae, are quite common. Minnows are fairly abundant, but cannot be considered plentiful. Food, in general, may be considered good. More minnows are desirable if the supply of fish is to be built up to a noticeable degree (see recommendations).
- Productivity Portions of the shoal are relatively unproductive. The lake as a whole is relatively rich for such a clean, marl-bottom lake.
- Spawning grounds A few spawning beds were seen. Very little gravel is available for smallmouth bass spawning. Spawning conditions in general are unsatisfactory.

Species of fish present

Game fish. Smallmouth bass and walleyes are common. Perch and bluegills are present, but are almost always small. No other game fish were taken.

Coarse fish. Common suckers are large and abundant. No other coarse fish were found.

Obnoxious fish. No obnoxious fish were seen or reported.

Forage fish. The minnows will be identified in the laboratory next fall. The very desirable blunt-nosed minnow is present. A number of other species were also found.

Predators

A few kingfishers and great blue heron were found here. No snapping turtles were seen but a few may be present. Painted turtles were found. Unlike many of the other lakes worked, this lake has no apparent predator problem.

Cover

Protection for young fish is poor. The weed beds provide some shelter but this is quite inadequate. In winter almost no protection is available. Increase of cover is very desirable.

Laws and regulations

This lake is listed as a pike lake. The walleyes appear to exceed the bass in numbers, but the bass are in especially good condition, and are also common. No local controversy on the lake designation was encountered.

Acknowledgments

Boats for the investigations were provided by Mr. Comley, who owns a boat livery on the lake.

Recommendations

Stocking

Improvement of shelter preceding the planting of small fish is desirable, stocking with 20,000 walleye fry or 1000 walleye fingerlings, annually is recommended. The lake also contains excellent smallmouth bass and should in our opinion be stocked with 1000 advanced fingerlings yearly. Since the perch and bluegills are small, none are recommended. Great Lakes perch, however, might be planted as food for walleyes, to the number of not more than 10,000 per year.

Brush shelter Increased shelter for young fish is necessary, if the fishing in this lake is to be greatly increased. The construction of 30 brush shelters of the size shown in the diagram accompanying the general report, or a proportionally larger number of smaller brush heaps is recommended. Some of these should be placed on the shoal in fairly shallow water. A majority of them should be "hung" on the dropoff. Some should be placed in water.

Food increase The blunt-nosed minnow (wrongly called "horned dace" locally about the lake) is present. If the fish supply is to be built up efforts should be made to increase the supply of these very desirable minnows. Not less than 100 slabs or old boards should be placed on the sandy bottom in shallow water (1 to 3 feet). These can be submerged individually or, preferably, arranged as shown in the diagram accompanying the general report.

Vegetation increase Some increase in vegetation on the shoal area is desirable. This will be less necessary if good shelter is provided by the use of brush.

Improvement of spawning beds Very little gravel is available for the smallmouth bass. Soft marl bottom occurs where the water is at the right depth for spawning. Should the lake return to its normal level conditions would be somewhat improved since some gravel is found at the present margin. It is recommended that 60 spawning boxes of gravel (see introductory report) be placed at various places along the shore about ten feet inside the dropoff.

Predator control Not needed.

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