

July 26, 1932

Report 166

SURVEY OF BASS LAKE, MASON AND OCEANA COUNTIES,
WITH RECOMMENDATIONS FOR IMPROVING THE FISHING

Description

Size and location

Bass Lake is located a short distance from Lake Michigan. It lies in the extreme southern part of Mason County with the exception of a small portion of the south end of the lake, which is in Oceana County. The lake is located about four miles north of Pentwater. It is quite near U. S. 31.

The area is 524 acres. Length is one and eleven-sixteenth miles. Maximum is about seven-eighth mile (including outlet bay). Sand dunes occur between the lake and Lake Michigan. The surrounding country is partly wooded and partly farmed. Fruit farming is fairly extensive near the lake.

Inlets and outlets

Three fair sized inlets are found. These include Kibby Creek entering the lake at the north end, Quinn's Creek entering on the east side and "The Inlet" entering on the south side.

There are also several very small intermittent feeders. The three creeks are all flooded at their mouths due to the artificial raising of the lake level. Some weeds are present in these streams. The bottom, near the mouths, is of sand with some peat mixed with the sand in places. Kibby Creek is reported to be a trout stream. "The Inlet" discharges from a long swampy and marshy area.

The outlet flows directly into Lake Michigan. It is not over a mile long. When examined, there was no flow over the dam. The outlet has a sandy bottom. Quite a few fish were observed here. It is relatively shallow, having an average depth of about 2 to 3 feet. The dam has been placed here to raise the level of the lake. It is relatively small. The head of water is about 2 feet. It is reported that, several years ago, when the Great Lakes were unusually high, the level of Lake Michigan was higher than the top of the dam. Reference to the raising and lowering of the water will be made later.

Water

The water is brownish in color and is not regarded as good for swimming. So far as could be determined the water contained no substances injurious to fish life. The fish taken from the lake appeared to be in good condition, indicating the suitability of the water for fish life. The water is not clear, as the lake is easily roiled.

Dam in outlet

Mention of the dam has already been made. No fish ladder is provided.

Water level The time of lowering the water in the fall is more or less insignificant so far as fish life is concerned. All have spawned previous to that time. The time of raising the level in the spring is of great importance. Northern pike spawn soon after the ice leaves. Local persons seem to prefer bass fishing and a majority of them appear to dislike the fact that the northern pike have become more numerous in recent years. The time of bass and bluegill spawning depends to some extent on the season. Water should be at a permanent level by the time the bass spawning begins. For further comment see recommendations.

 The water level should be raised as high as is practicable. This level should be kept as permanent as possible during the spawning season.

Use of water Resort development is fairly extensive. Development is chiefly along the west shore, where numerous summer homes have been built. Boats, cottages and meals can be obtained. Some cottages are also found along the north east shore.

 The lake is used chiefly for boating and fishing. A number of motorboats are used on the lake. Swimming is not considered good in the lake, being generally carried on in Lake Michigan nearby.

Temperature This is a warmwater lake. No evidences of stratification were found. Wave action is effective to the bottom. Temperatures were found to be fairly high and uniform from top to bottom. With air temperature at 63° the water was found to be 63° and the bottom 64°. (The fact that the temperature was found to be a degree lower at the top than at the bottom was evidently due to the fact that the temperatures were taken after a cool night.) The lake is not suited for cold water fishes, as it doubtlessly warms up on hot days.

Oxygen Oxygen was found to be moderately high at all depths. Considerable decay of vegetation takes place here and the oxygen was found to be slightly lower than it is in many lakes but it is high enough for the fish life.

Other chemical conditions The water is fairly soft. It was found to be highly alkaline. No carbon dioxide was found at any depth.

Depth The maximum depth found was slightly less than 13 feet. The lake was lower than normal when examined. The average depth is less than 10 feet. Over most of the lake the weeds grow to the surface. The shallowness of the lake undoubtedly accounts, in part, for its productiveness. It is also responsible for the difficulties of motoring due to weeds.

Bottom The bottom below the shelf is almost entirely of pulpy peat. The shoal is chiefly of sand. Some peat occurs along the margin in portions of the outlet bay and in one or two other places. The map indicates the kind of bottom found in the various parts of the lake.

Vegetation Weeds are extremely abundant along most of the lake. On the shoal, however, where the fish spawn, there is little vegetation. The vegetation is chiefly of the pondweed type. Location of weed beds is shown on the map. The kinds of vegetation present are listed, with location, on separate cards.

The aquatic vegetation is mowed in order that motoring on the lake can be carried on without interference from weeds. Comments on the cutting of these weeds will be made in the recommendations.

Natural food Snails and clams are quite abundant. Crayfish are common. Aquatic insects are numerous. Minnows are present in considerable numbers but cannot be considered extremely plentiful. The lake is quite productive and should support a fairly large fish population. Increase of minnows is desirable. This will be discussed under recommendations. The cutting of vegetation is apt to have an undesirable effect on the food as will be discussed later.

Productivity The lake as a whole is quite rich. The shoals, however, are more or less barren in most places. They are chiefly of sand and appear to be relatively unproductive.

Spawning grounds Spawning conditions are quite favorable for perch. Some portions, such as the south side of outlet bay are also suitable for northern pike, and the marshy area up "The Inlet." Conditions for bass, bluegills, and rock bass are more or less unsatisfactory. These fish were found to spawn on the sand--either on pure sand or on weeds on the sand. In the few nests which were examined most of the eggs were found to be dead.

Species of fish present Game fish. Northern pike, perch, bluegills, black crappies, white crappies, largemouth bass, rock bass and pumpkinseed sunfish were taken. The perch are said to never exceed 7 inches in length. It is reported that the lake once had excellent bass fishing and very few northern pike present. Since Lake Michigan, and, consequently, Bass Lake, were high it is reported generally by the resorters that the pike have become much more numerous and that the bass have been greatly reduced in number. Black crappies (calico bass) are also reported to be on the decrease. Rock

bass are said to be getting more abundant. All of the fish listed above are present in moderate numbers but fish in general cannot be considered abundant, although they are more abundant than in some other lakes of the region.

Coarse fish. Brown and yellow bullheads were taken. Both are quite common, It appears that very little fishing for bullheads is carried on. Carp are reported, but none could be taken in nets or seines. No adult suckers were taken. The small fishes have not yet been identified. It is possible that suckers are present in very limited numbers.

Obnoxious fish. Gar and dogfish are both present in rather large numbers. Quite a few dogfish were seen. Both gar and dogfish were taken in the nets. No lawyers were seen or reported.

Forage fish. The minnows will be identified in the laboratory in the fall. Blunt-nosed minnows, golden shiners and other desirable species of forage fish are present. These are fairly abundant.

Predators

Predators are quite numerous. It is reported that they have become more abundant in recent years. Turtles (snapping and painted) are quite common, gar and dogfish are fairly abundant and bittern, great blue heron and kingfishers are common. The snappers removed many fish from the experimental nets. Quite a few of these were seen by members of the party.

Cover

The only cover present is that provided by the vegetation. The shoal area is quite barren of weeds. Pond weeds are abundant over most of the lake but these furnish only a limited amount of protection in summer and very little in the winter. Cover for young fish is considered unsatisfactory especially on the shoal where young fish are most apt to be found.

Laws and regulations

This is an undesignated (bass) lake. Although quite a few northern pike are present the bass, bluegills and crappies predominate. The pike, however, probably predominates over any one of the three other species mentioned. But as mentioned before, the pike have greatly increased in the last few years, along with rock bass, while black bass and crappies are decreasing.

The resorters are strongly in favor of prohibiting winter fishing the lake, because the pike are then caught in large numbers. According to Conservation Officer Knowles, the winter catch of pike remains heavy and constant, despite the large catches.

Acknowledgments

Boats and other valuable services were provided by Mr. Morrison and Mr. Summar without cost to the investigation party.

Recommendations

Stocking

Brush shelters should be provided, and it would be desirable to install these before stocking the lake this fall, so that the young fish then can be placed near or in the shelters. Under present conditions it is probable that many of these fish will be consumed by the various predatory and cannibalistic species before the young fish have a chance to become established.

The lake is shallow and productive and will hold a relatively large number of fish. Annual stocking, at least for several years, with 7500 large-mouth bass fingerlings and 12,500 bluegill fingerlings is recommended. Stocking with smallmouth bass is not recommended. All perch found in the lake by the party were quite small. According to local resorters large perch are never taken. The perch serve as a source of food for the northern pike, thus increasing the chances of survival of the bass and bluegills. Stocking with perch is not recommended.

Brush shelters

The construction of 50 shelters of the size shown in the general report, or a proportionally greater number of smaller ones is recommended. These should be placed at various places along the lake, some being placed in shallow water near shore, some submerged just below the dropoff and some placed farther out in the lake. (Those near shore would not be affected by ice action if the lake is lowered.) Those farther out would be below or almost below the ice in winter. If old logs are not available, bundles of brush, loosely wired together and weighted to sink so as to form clusters, may be used.

Food increase

Food now is fairly abundant, but an increase in minnows is desirable. If minnows are quite abundant the chances of survival of the young game fish are greater since fewer of these will be eaten. A number of objects with flat lower surfaces were picked up along the east shore in water from 3 to 20 inches deep. These objects included boards, flattened tin cans, stones, an old shoe, and old clam shells. Eighty percent had under them eggs of the very desirable and non-predaceous blunt-nosed minnow, or eggs of one of the darters. It is recommended that 300 slabs or old boards be placed on the shoal, especially on the west side, to provide more spawning sites for these minnows. These can be submerged individually or, preferably, in arrangements as shown in the diagram accompanying the general report.

Vegetation

Weed beds are abundant except on the shoal. Abundant vegetation is desirable because it provides food for some

fishes directly and provides food indirectly by providing proper conditions for insect growth. It also furnishes protection and produces oxygen. A weed cutting machine is being operated at present, to make conditions better for motor boating and trolling. The cutting of weeds unless reduced to a reasonable minimum will act detrimentally on the fish life. Excessive cutting will destroy shelter and food, and the decay of the cut weeds is likely to reduce oxygen (the fact that the lake was found by us to contain less oxygen than most lakes was probably due in part at least to the decomposition of the weeds). Furthermore, the weed tips which wash ashore and rot produce an unsightly appearance and when thick, may produce an odor nuisance unless someone goes to the considerable trouble and expense of removing the weeds from the water or shore.

Fertility increase Not needed.

Spawning bed improvement Most of the beds were found on the sand along the west shore. This is almost pure sand. Gravel spread over this area should improve conditions. It is recommended that 50 cubic yards of gravel be placed along the shoal on the west side of the lake. This should be placed fairly near the dropoff, in water about 2 to 3 feet deep. The gravel should be spread in a thin layer over the bottom. It should be placed only on the firm sand, since the bottom beyond the sand is too soft.

Water level Much controversy has arisen over the raising and lowering of the water. The water is lowered in the fall to prevent damage to docks and boat houses. It is again raised in the spring.

Any further increase in depth would tend to injure a small amount of property along the lake, especially a garden at the outlet bay. The majority of the interested property owners, however, favor a higher level. It was stated that the maximum water level has been decided, by law, following a dispute some years ago. If this were the case, any increase in the water level would, we suppose, involve legal interpretation or court action. We have, however, been unable to confirm the claim that a court ruling was made. Questions arise as to the desirability of raising the water to a higher level, and at what time and to what degree the water should be raised and lowered. Since the lake is quite shallow, the increased depth caused by the dam is very desirable, from the standpoint of fish life. Since weeds come to the surface over a large part of the lake, a raising of the level would tend to reduce the weed hazard for motors to some extent. Increased depth would, furthermore, provide better spawning areas for the bass. The raising of the water to the present level, on the other hand, has flooded and destroyed about one-half mile by stream of the trout-creek inlet (Kibby Creek). Any further increase in lake height would destroy more trout water. However, the lower part of the stream would never provide any amount of fishing comparable to

that provided by the lake. A constant level would be best for fish life, although lowering the level in the fall to protect the docks probably does no great harm. One of the chief ways in which the winter lowering of the level is detrimental is in decreasing the spawning facilities for northern pike; but this fish is not greatly favored by the resorters.

Examinations were not complete enough to determine the desirability of having a fish ladder in the outlet.

Predator control Since gar and dogfish are fairly abundant, their numbers could be reduced to the advantage of the game fish. Spearing parties (under the guidance of some conservation officer), organized more or less frequently, or efforts to take the fish by state netting should be made. The dogfish are more or less concentrated in the outlet bay and numbers were taken there in our nets. Residents report that the gars congregate along the shore by the icehouse.

Turtles are quite abundant. As has been stated in the general report, no definite recommendations can now be made regarding the desirability of removing the fish-eating birds are also present, but their removal is not recommended pending further study of these birds.

Carp, although reported to be quite common, do not appear to be present in very large numbers since none were seen or taken by the party in its netting and seining operations.

The removal, as much as possible, of the gar and dogfish, together with the construction of shelters for the young fish, should have a very desirable effect on the lake.