

September 29, 1932

Report 174

REPORT ON BEAR LAKE, MANISTEE COUNTY,  
WITH RECOMMENDATIONS FOR THE IMPROVEMENT OF FISHING

<u>Size and location</u>	Bear Lake is located on U. S. 31, about 18 miles above Manistee. The village of Bear Lake is located on the south shore. It has an area, at present water level, of 1744 acres.
<u>Inlets and outlets</u>	<p>No inlets of any size are found along the lake. The swamp at the Big Bay drains into Bear Lake but evidently has very little, if any, flow of water except after heavy rains. None was found here when the lake was examined.</p> <p>The lake has a very small outlet. Generally this is dry but it is said to flow after heavy rains. It has its source at the east end and empties into Bear Creek.</p>
<u>Water</u>	The water is fairly clear and clean. No signs of pollution were found.
<u>Use of water</u>	The lake is fished extensively. A number of boat liveries are provided. The village of Bear Lake is located on the south shore. Resort development is fairly extensive. The Dayton Club, Camp Rademaker, and quite a few summer homes are found along the shore. Hotel rooms and tourist cabins are available. Swimming is carried on extensively.
<u>Temperature</u>	The water is warm at all depths. There is quite a bit of wave action and the entire water circulates. Conditions are satisfactory for warmwater fish only.
<u>Oxygen</u>	Oxygen is fairly high at all depths. The fish can utilize the entire volume of water.
<u>Other chemical conditions</u>	The lake is moderately alkaline. The water is fairly soft and is clear. Some carbon dioxide is present near the bottom.

Depth

The entire lake is fairly shallow. Maximum depth found was 7.2 meters (23 feet). A fairly large portion of the water is less than 15 feet deep.

Bottom

A wide sand margin surrounds almost the entire lake. The bottom beyond the sand is pulpy peat. In the two bays this peat extends almost to the shoreline, which is here of fibrous peat.

Cover

There is very little protection for young fish except that provided by the vegetation. The shoreline, for the most part, is clean. Almost no vegetation occurs on the sandy margin and all brush and dead heads have been removed in the past. The vegetation, chiefly pondweeds, affords only a limited amount of cover. In winter almost no protection is available.

Vegetation

Vegetation in Bear Lake is very good on the whole. The best weed beds occur in from five to fourteen feet of water and are most widespread in the southwest, west and north-west portions. This constitutes the west middle grounds and Big Weed Bed of the lake. Three smaller and separated beds are the East and South Middle Grounds and the Little Grounds. No vegetation was found in water over fifteen feet in depth. Most of it is in less than twelve feet of water.

On the shoals vegetation is sparse around the entire lake with two exceptions. Big Bay and Little Bay both of which have an abundance of vegetation in shallow, quiet water.

Natural food

Crayfish are abundant. Aquatic insects are quite numerous in the weedy portions of the lake. Tadpoles are very common. Minnows are fairly abundant in some portions of the lake but are scarce in others. They are especially abundant in the bays. Clams are present in limited numbers. In general food is good.

Spawning grounds

Quite a few spawning beds were found in Big Bay and a limited number were located at various places along the lake. Most of the bass beds seen were in about 5 feet of water. These were generally on wood chips. Gravel is present in places in water from one to two feet deep and in a few spots reaches a depth of 3 feet. Very little of this was used by the bass.

Predators

A very few dogfish have been taken in the lake in recent years. It is believed by some local residents that these may have been introduced when Great Lakes perch were planted in the lake. This, of course, is open to question.

Great Blue Herons are quite numerous. At times 4 or 5 of these birds could be seen feeding alone along the shore. Kingfishers are common. Painted turtles are also common. Except for the few dogfish, no undesirable predatory species of fish were found here. Predators, aside from the heron, are not especially abundant.

History of fishing

Walleyes were introduced in 1900. Since that time they have gradually increased and the lake is now a very good walleye lake.

Years ago 3 fair sized sturgeon were placed in the lake. Later one was found dead, another was speared and eaten (some years ago) and the third is still unaccounted for.

Perch from Lake Michigan have been planted. Perch Occasionally reach a good size but in general, perch fishing is not considered good. Quite a few perch can be taken but they are usually small.

The lake, according to residents, has always been good for bass fishing although bass have declined in recent years.

Species of fish present

Game fish. Small perch and rock bass are abundant. Walleyed pike and smallmouth bass are fairly abundant. Pumpkinseed sunfish and northern pike are very common. Almost all of the perch are small. Walleyed pike, northern pike, and smallmouth bass reach a large size. The lake is now fairly well stocked with fish. Quite a few walleye fingerlings and yearlings were taken in seining, but small bass are few. Bluegills are reported.

Coarse fish. Common suckers are fairly abundant. No other coarse fish were seen or reported.

Obnoxious fish. One large dogfish, taken from the lake by a fisherman, was seen by our party. Dogfish are present in limited numbers. Only an occasional dogfish is taken. No other obnoxious species were seen or reported.

Forage fish. Minnows are abundant in the bays but are not very abundant elsewhere in the lake. Bait dealers generally take the minnows in Big Bay by dip netting. The minnows are chiefly straw-colored minnows and blunt-nosed minnows.

Laws and regulations

This lake was made a pike lake a few years ago. Considerable controversy still exists regarding the matter of making this a pike lake. Of the two most fished-for species (walleyes and smallmouth bass) the walleyes undoubtedly predominates.

Acknowledgments

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Recommendations

In order to have optimum fishing conditions certain improvements are considered essential. This is now a good lake but it can undoubtedly be improved to a considerable extent. Those factors which should materially improve conditions include proper stocking, increase of food and shelter, and improvement of spawning conditions.

Slab devices and a brush shelter were constructed near the campsite and were examined by a number of persons. Details of construction, and diagrams, are included in the general report.

Stocking

The entire lake is more or less productive and it should support a large fish population. Annual stocking with 20,000 walleye fingerlings or 200,000 walleye fry is recommended. This lake is also very well studied for bass and bluegills and an annual plant of 15,000 smallmouth bass fingerlings and 15,000 bluegills fingerlings is considered advisable, especially if increased protection is provided. Perch are now fairly abundant and an annual stocking of not more than 10,000 such fingerlings is recommended.

Predator control

Predators now apparently have relatively little effect on the fish population. It is advised, however, that wherever possible, the dogfish be removed. This is especially true in the early summer when schools of small dogfish are seen. At this time these

schools can easily be removed by seining. The dogfish, now, is not a serious menace, but, unless held in check, the species is apt to increase to a point where it may become a decided detriment.

Improvement of spawning beds

A considerable amount of gravel was found in some parts of the lake in water 1 to 3 feet deep. Since most of the beds were found in about 5 feet deep the gravel present was evidently in too shallow water for the fish. The bottom where it reaches a depth of 5 feet, is fairly soft.

The construction of 100 spawning boxes is recommended. These should be placed at more or less regular intervals, in Big Bay, in water 4 to 6 feet deep. This number is not nearly enough to provide proper conditions for spawning of the bass. After these boxes are provided for Big Bay, we recommend that 25 similar ones be placed in the smaller bay ("Little Bay") on the northeast corner of the lake, and that 100 yards of gravel be placed on the firm sand near its outer edge, about one bushel on a place.

Food increase

Species of minnows not already present need not, in our opinion, be planted. It is highly desirable, however, to increase the number of minnows. The construction of 125 slab devices, such as those constructed (for demonstration) at the west end of the lake, and the placing of these devices at more or less regular intervals around the shore in 6 to 16 inches of water, is recommended.

Vegetation increase

The encouragement of more weed beds in the shoal waters is desirable. They may improve as brush shelters are added since the brush often serves as a hold fast for drifting vegetation, thus enabling it to take root.

For planting in the shoal areas muskgrass, bush pondweed (Naias), sago pondweed, and wild celery are suggested. Lilies and bulrushes might also be very profitably transplanted several areas of the shoal region, especially at the west end.

The emergent shore vegetation is sparse or lacking excepting along the south and west shores. This is unfortunately in very shallow water or is in dry sand further up on the beach. Should the lake level become raised to a former higher level this shore vegetation would be of greater use to the lake. Its extension into deeper water might be encouraged.

Cover increase

As mentioned previously, cover increase is very desirable especially if bass and bluegills are to be encouraged. The construction of 75 brush shelters such as illustrated in the

general report is recommended. These should be placed at more or less regular intervals around the lake in water 5 to 10 feet deep. Big Bay should have at least 5 of these shelters.

Water level Raising the water level approximately a foot would, in some ways, be advantageous. It would probably increase the depth on the gravel sufficiently to permit more bass to use this gravel for spawning. Since the outlet is generally dry it would evidently be difficult to raise the level permanently.

Screen in outlet It is reported by some local residents (and questioned by others) that at times, during high water, fish have escaped through the outlet. Should the water level rise sufficiently to have the outlet definitely flowing, the screening of the outlet would be considered desirable.

Fish refuges It would help fishing if Big Bay should be closed to fishing in spring until the bass have completed spawning. This bay is now used rather extensively by the bass and, if improvements are carried out, will probably be used even more.

It is reported that, a few years ago, quite a few small fish were found dead along the shore. When examined these were found to contain lime sulphur. It is reported that sprays were washed in the lake. Should orchard owners still resort to this practice to any extent, an investigation would appear called for. It is reported by some local residents that the sprays have very seldom been taken into the lake and that there is little danger of fish being killed by this means.

It may prove desirable to scatter the improvement work over a period of 5 years. This would call for the construction of about 25 spawning boxes, 25 slab devices and 15 brush shelters annually.