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INSTITUTE FOR FISHERIES RESEARCH  
DIVISION OF FISHERIES  
MICHIGAN DEPARTMENT OF CONSERVATION  
COOPERATING WITH THE  
UNIVERSITY OF MICHIGAN

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SURVEY OF O'BRIEN LAKE\* - ALCONA COUNTY

O'Brien Lake has a surface area of 10.3 acres and a maximum depth of 30 feet. The shoal (depth less than 20 feet) comprises about 50% of the bottom area. It is covered wholly by marl. The bottom of the deeper water consists of marl and pulpy peat. There are no tributary streams but a number of rather large springs along the northeast shore. A beaver dam in the outlet has raised the water level and prevents passage of fish into and out of the lake. The small outlet stream flows through a marshy bed and thence to the Au Sable River.

The surface temperature on July 16, 1937 averaged 71°F. and the bottom temperature 58°F. There was only slight thermal stratification, the temperature decreasing at a more or less uniform rate from top to bottom.

The dissolved oxygen supply ranged from 8.3 ppm. at the surface to 4.2 ppm. at 30 feet. The deeper waters of this lake probably never become stagnant and uninhabitable by fish. As might be expected, the water is strongly alkaline. The pH of the surface water was 8.4 and the total or methyl orange alkalinity was 162 ppm. In general we may say that the chemical nature of the water is conducive to good fish production.

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\* Inventory was made by Horace Telford, Joseph Bailey and L. E. Shettles.

The aquatic vegetation is comparatively scarce, which accounts in part for the rather poor fish-food condition. A few crayfish, clams and snails were present on the shoal areas and midges were fairly common on the bottom of the deeper parts.

Forage fish were common. The species collected from this lake included the black-nosed and black-chinned shiners, the blunt-nosed minnow, the Iowa and least darters.

The game fish included the northern pike, yellow perch, rock bass and pumpkinseed. The common sucker was the only coarse fish recorded.

#### Recommendations

O'Brien Lake seems to have all the requisites of a trout or grayling lake. The water temperatures are suited more for cold water species than for warm water ones. It is quite possible that brook trout might be able to maintain themselves here if once established since the spring seeps in the sand and marl seem adequate as spawning grounds. This may be improved as described below.

However, with the present population of northern pike and perch, it is not very probable that plantings of even large trout will be successful. Evidence supporting this conclusion was derived from experience on similar lakes in the Pigeon River State Forest in which adult trout plantings were unsuccessful.

If the lake has sufficient value to justify the removal of the present fish population by poisoning, then we believe that trout or even grayling plantings would be successful. The cost of such poisoning would be about \$40. If such procedure is contemplated, the Institute for Fisheries Research will be pleased to aid in any way possible.

If the pike and perch are removed and brook trout or grayling stocked, we recommend the following physical improvements in the lake:

1. Gravel should be spread to a depth of 4 inches over the spring fed areas on the east side. This should not be a continuous bed but in patches (2-3 bushels) about 3 feet apart.

2. Brush shelters are recommended in order to provide a substitute for natural shelter. These should be installed in water from 5 to 15 feet in depth.

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