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December 1, 1943

REPORT NO. 906

MANAGEMENT POLICY FOR CENTRAL (INTERMEDIATE) LAKE

by

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This large lake located in Antrim County (T. 30-31 N., R. 7-8 W., many sections) was mapped and biologically inventoried in 1931 by the Institute for Fisheries Research. It was re-examined briefly by the writer on July 9 and 10, 1943. This last investigation was made primarily to determine if the lake might prove suitable for trout, since numerous requests from the residents of the village of Central Lake have been received asking that trout be planted in this body of water. Results of the 1943 investigation are not in agreement with results obtained in the 1931 survey. The chemical analyses and certain other observations show that the lake is suitable for trout in so far as dissolved oxygen and temperature are concerned.

Results of the chemical analysis made on July 9 are presented in the following table (Table 1).

Table 1

Chemical analysis of water in Central Lake, July 9, 1943

Depth Feet *	Temperature Fahrenheit	Dissolved O_2 p.p.m.	Dissolved CO_2 p.p.m.	ph-th alk. p.p.m.	M. O. alk. p.p.m.	pH
0	77.9	8.5	0.0	5.0	145	8.2
2.5	75.4					
5	73.8					
9	73.9					
12	73.4					
15	71.8					
18	68.2					
21	66.0					
24	61.5					
27	57.4					
30	54.5	8.8	3.0	0.0	153	8.0
34	52.2					
37	51.8					
40	51.6					
45	49.8					
50	49.1					
55	48.9					
60	48.6	7.5	5.0	0.0	155	7.8

* The limits of the thermocline are denoted by broken line in above table.

Institute Report No. 121 (page 2) states that no definite stratification of the water was found, but the temperature series taken on July 9 of this year shows the presence of a well defined thermocline between 18 and 34 feet. (A thermocline is defined as that layer of water in a lake where the temperature drops 1 degree Centigrade with each meter of depth or 0.55 degrees Fahrenheit per foot). The presence or absence of a thermocline is an important factor in fisheries management, for water in the lower part of the thermocline, and below the thermocline, is usually cold and if this water carries a sufficient supply of dissolved oxygen the lake may be suitable for cold-water fish.

An examination of the above table (Table 1) shows that there is a large amount of cold water (from 18 feet to the bottom) which has sufficient oxygen to carry fish. The presence of sufficient dissolved oxygen at the bottom in July makes it appear unlikely that the supply

would become depleted later in the season. From a physical-chemical standpoint the lake appears well suited to trout.

There are certain biological factors in connection with planting of cold-water fish which should be mentioned. The presence of cold-water species (ciscoes, brown trout) is ample proof that these species are able to survive in the lake. There are numerous small trout streams entering the lake, particularly along the east shore. One of these, Fisk Creek, is reported to furnish a limited amount of trout fishing. Several of these small streams were examined briefly, and all were found to be quite cold. There is probably some migration of trout up and down these small streams, and in the event of the introduction of rainbow trout, they should furnish at least a limited amount of spawning territory.

The food supply in Central Lake appears to be quite good. There are many weed beds, and minnows were observed to be numerous both during this investigation and in 1931. In other lakes ciscoes are known to be a good food supply for lake trout, and those in this lake could be utilized in the same manner.

In view of the findings of the 1943 investigation the following recommendations are made: (1) The lake should receive an annual planting of 2,000 legal-sized rainbow trout for a three-year period starting as soon as possible, preferably in the spring of 1944. The initial planting does not need to be marked but subsequent plantings should be marked by fin clipping. (2) Because the lake appears to be fairly well suited to the species, and because local sportsmen have expressed an interest in the particular species, it is also suggested that the lake receive an annual planting of 2,000 two-year-old lake trout over a three-year period. There are no extensive rocky shoals for this species to spawn on, but a limited amount of rubble is present along shore in some areas. (3) It

is also recommended that all plantings of warm-water species such as bass and bluegills be discontinued until results from trout plantings are evident. A summary of plantings for the past five years shows:

1943 - no fish stocked

1942 - no fish stocked

1941 - 60,000 perch fingerlings

1940 - 600,000 walleye fry

1939 - 100,000 perch fingerlings

Other plants in recent years which might be mentioned are 168 adult smallmouth in 1938, and 500 adult rainbow trout in 1934. We have no information concerning the success of the 1934 planting of rainbow trout.

Fishing during the summer of 1943 was reported to be fair, especially for walleyes, and smallmouth bass. Young-of-the-year largemouth bass, smallmouth bass, perch, and rock bass were observed. There are ample spawning areas for these species, and no doubt they are able to maintain their numbers. If it should become evident that the trout cannot do well in this lake, further plantings of warm-water species such as bass and walleyes might possibly have to be considered, but it is believed that rainbow trout and lake trout will be able to survive and may reproduce and furnish good fishing in this lake.

INSTITUTE FOR FISHERIES RESEARCH

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