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REPORT NO. 117 A

INVESTIGATION OF LAKE BELLAIRE, JULY 27-28, 1942

by

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This beautiful lake in Antrim County (T. 29-30 N., R. 7-8 W.) was examined by J. T. Wilkinson, Conservation Officer Miles and the District Biologist on July 27 and 28, 1942. The investigation was made as a supplement to the original inventory by the Institute for Fisheries Research on August 26, 1931. Their findings are set down in Institute Report No. 117. In as much as the lake has not furnished as good fishing as might be expected it was thought that different management policies might be inaugurated. Reports indicate that the recommendations in Report No. 117 which were partially carried out have not met with marked success.

Examination of the data already available concerning the lake and the information secured in July 1942 indicates that relatively little of the lake itself is suitable to the warm-water species suggested in the report. The steep drop off, rather narrow shoal, small amount of cover and vegetation all would tend to restrict suitable habitat for the fish inhabiting the shallow warm waters. Add to this already difficult situation, the sport fisherman, and it is obvious that the fish living in this rather confined area might be depleted with very little fishing. Additional stocking with small fish would be futile, for they would fall prey to other larger fish, and those that did reach legal size would be very vulnerable. The above ideas are expressed by Dr. Hazzard in a letter to Mr. Westerman (March 26, 1942). There are many indications that the lake is better suited to cold-water species, trout, ciscos, etc., than it is to bass and bluegills. The lake is at present furnishing some sport to those fishermen with the patience and the equipment to troll in deep water for lake trout.

Temperatures and oxygen determinations taken on July 27 and 28 indicate that from a depth of 30 feet to the bottom the lake is suitable for cold-water fish during midsummer. The lake has a maximum depth of

99 feet. Examination of inlet streams, particularly in the north arm, where several small streams enter the lake, showed that these small streams (known collectively as Grass Creek) are suitable for trout, and small brook trout were found to be fairly numerous. Suckers were also found to be present as young of the year. Besides these small streams numerous small springs were found entering the north arm. All of the little streams had gravel present, as did the small springs.

Gill nets set in the lake the evening of July 27 and lifted on July 28 caught the following:

1 smelt (<u>Osmerus mordax</u>)		8.75	inches	length
2 suckers (<u>Catostomus commersonnii</u>)	16.5-17.0	"	"	"
19 perch (<u>Perca flavescens</u>)	6.0-9.0	"	"	"
6 ciscos (<u>Leucichthys artedi</u>)	8.1-9.3	"	"	"

The nets were set in from 25 to 60 feet of water. Unfortunately no lake trout or walleyes were caught, though they are known to be present. Examination of the shallow water, particularly at the mouth of the outlet showed young of the year northern pike, largemouth bass, smallmouth bass, rock bass, bluegills and pumpkinseeds. Although exposed to considerable predation and fishing, it is evident from the young of the year found that the warm-water species are able to reproduce successfully and if some of the pressure were relieved they might increase in number. The inlet and the outlet also probably furnish a fair number of fish to the lake.

In view of its suitability for cold-water species, and its marginal production of warm-water species the following plan for the management of the sport fishing in Lake Bellaire is set forth.

Three thousand marked adult rainbow trout should be planted in the spring of 1943. Every effort should be made to secure recoveries of these marked fish, for we have no better index to the success of planting. The fish should be planted in May or June. Rainbow trout are suggested for it is felt that in the larger lakes, they offer better fishing than do brook or brown trout. Also, brown trout fishing of excellent quality is already available in Bellaire Pond, a few miles distant. It is hoped that rainbow trout will be found to feed for short periods on the surface throughout the greater part of the summer, and should therefore be more readily caught than brook trout. On October 1, 1942 — 461 adult rainbow trout were planted in Lake Bellaire. These fish were marked. Quite possibly many of these will find their way out of the lake by way of the Grass River. Up stream movement is prevented by the dam at Bellaire. However, the warm waters of the inlet and the outlet should prove an effective barrier to extensive migration for spring planted fish. It is quite possible that rainbow trout will be able to use the Intermediate River for spawning purposes in the spring. The small inlet streams and springs entering the north arm should also be suitable spawning sites.

The establishment of a population of trout may relieve the pressure on the warm-water fish, and thereby improve fishing for these species also. Rainbow trout adults were planted in Lake Bellaire in 1933 and

1934, but we have no information on the success of these plantings since the fish were not marked, and no creel census slips were obtained. However, all information on hand indicates that trout, particularly rainbow and lake trout, should do well in this lake.

INSTITUTE FOR FISHERIES RESEARCH

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