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ANGLING RESULTS ON EAST FISH LAKE, HUNT CREEK FISHERIES  
EXPERIMENTAL AREA, 1946 TROUT SEASON

By

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As well as following the angling trends on the experimental portions of Hunt Creek during the past eight years, the staff of the Hunt Creek Fisheries Experiment Station has conducted an intensive creel census each year on East Fish Lake. This lake is a designated brook trout lake (area 16.0 acres) lying in the upper headwaters of the Hunt Creek drainage.

This report will give the details of the 1946 angling results and summarize briefly the trends in the angling since 1941.

Angling results, 1946 (Table 1)

During 1946 a total of 430 anglers (made up of 186 different males and 22 different females) spent a total of 935.25 hours on East Fish Lake. This pressure was approximately the same as recorded in 1945 (436 anglers, 927.75 hours), between 57 and 58 hours per acre per season. Three hundred seventy (370), or 86.0 per cent of the 1946 anglers were unsuccessful. The legal brook trout catch amounted to 93 fish, one of which was returned to the water. The total weight of the 92 legal trout creeled was 69.39 pounds, or 4.33 pounds of trout per acre.

Table 1

## Intensive creel census summary, East Fish Lake,

1946 trout season.

(Lengths are given in inches, weights are given in ounces)

Period	Number of fishermen	Number (and percentage) taking no legal trout	Total hours of fishing	Legal brook trout caught		Sublegal brook trout returned		Pounds of legal fish taken	Pounds per hour	Average size	
				Number	catch/hour	Number	catch/hour			Length	Weight
Apr 27-May 10	46	45 (97.8)	88.25	1	0.01	1	0.01	2.14	0.028	18.3	39.0
May 11-24	12	11 (91.7)	23.00	1	0.04	...	0.00	0.34	0.015	9.4	5.3
May 25-Jun 7	60	43 (71.7)	138.50	28	0.20	...	0.00	21.78	0.157	11.8	12.4
Jun 8-21	57	50 (87.7)	122.25	12	0.10	2	0.02	9.94	0.081	11.9	13.3
Jun 21-Jul 5	87	75 (86.2)	208.25	19	0.09	...	0.00	14.64	0.070	11.5	12.3
Jul 6-Jul 19	56	50 (89.3)	119.75	7 <sup>1</sup>	0.06	3	0.02	4.42	0.037	11.3	11.8 <sup>1</sup>
Jul 20-Aug 2	32	28 (87.5)	63.75	4	0.06	2	0.03	3.34	0.052	11.1	13.4
Aug 3-Aug 16	39	33 (84.6)	93.50	9	0.10	3	0.03	3.77	0.040	9.5	6.7
Aug 17-Aug 30	29	25 (86.2)	56.00	5	0.09	1	0.02	2.36	0.042	10.5	7.6
Aug 31-Sep 2	12	10 (83.3)	22.00	7	0.32	1	0.05	6.36	0.289	12.3	14.5
Totals, averages	430	370 (86.0)	935.25	93 <sup>1</sup>	0.10	13	0.01	69.39	0.074	11.5	12.1

The catch per hour for the season amounted to 0.10 legal brook trout, only about half as good as in 1945. The pounds of fish removed per hour of angling was 0.074 pounds (also about half as good as noted in 1945). Thirteen undersized brook trout were reported returned to the water.

The average size of the 92 trout kept by the anglers was 11.5 inches and 0.76 pounds. The fish ranged from 7.0 to 20.4 inches in total length, and from two to three pounds, one ounce in weight. The average size in 1946 dropped slightly from the high point in 1945 of an average size of 11.9 inches in length and 0.83 pounds in weight. In addition to the 20.4 inch, three pound, one ounce fish, two other brook trout were captured which were between two and three pounds in weight, and 22 brook trout were taken which were between one and two pounds in weight. For the second successive year, at least a quarter of the total catch has been composed of fish weighing more than one pound each.

Angling was very poor during the first four weeks of the 1946 season. Only two legal trout were caught in 111.25 hours of fishing. The most fish were taken during the period May 25 to June 7 (28 legal brook trout weighing 21.78 pounds), although the relatively heavy pressure of 138.50 hours reduced the angling quality. During the succeeding two two-week periods extending to July 5, angling pressure reached its peak, but angling quality was only average.

After July 5, the catch per two-week period varied between four and nine legal fish, and angling pressure ranged between 22.00 and 93.50 hours per period. The best fishing of the season was enjoyed during the closing three days when seven legal trout weighing 6.36 pounds were caught in 22.00 hours of fishing, giving quality indices of 0.32 fish and 0.289 pounds of legal fish per hour of angling.

In former years the early-season angling has been observed to be of fair quality. However, in 1946 the piscatorial doldrums were not ended until the mayflies began to emerge around May 21. Even then the fishing was "spotty", despite the almost continuous hatch of mayflies which extended to Labor Day and beyond. It was observed that the emergences were not as heavy in May and June as in previous years at the same season.

It is of interest to note that 33 of the 93 fish caught were captured on four evenings: May 30-7; June 1-10; June 21-9; and August 31-7. The remaining 60 fish were taken at the rate of one to four on various days scattered through the remainder of the season.

During 1946 over three-fourths (78.4 per cent) of the catch was made by fly-fishermen. In 1945 fly-fishermen took 66.7 per cent of the total catch.

#### Origin of the brook trout in the 1946 catch

As no planting of hatchery-reared stock has been made in East Fish Lake since April, 1942, and none of these hatchery fish have entered the catches since that season (all were jaw-tagged or fin-clipped with a distinctive mark), it is certain that all brook trout taken after the 1942 season have been of natural origin. An interesting question arises: is the angling stock of East Fish Lake built up from migrants from the outlet and inlet streams, or from spawning within the confines of the lake, or from both sources?

Some information is available from the creel census data through noting the number of recoveries of tagged and fin-clipped fish which were marked as they are handled at the outlet and inlet weirs. Since September of 1944, all fish less than 4 inches long have been given a distinctive fin-clip mark at the outlet and inlet weirs; all fish larger than 4 inches have been jaw-tagged. In theory, with fish-tight weirs, if there was no spawning in the lake or in the short pieces of stream between

the weirs and the lake, a higher percentage of the anglers' catch should bear fin-clip marks or jaw-tags as time goes on, particularly the 7 to 10 inch fish.

Examination of the 1946 catch records indicates that 18 of the 93 fish taken were either jaw-tagged or fin-clipped. Thus 75 fish, or 80.7 per cent of the catch was unmarked, indicating that they had not passed through the inlet or outlet weirs, meaning that they probably were spawned somewhere in the lake or in the short pieces of stream between the weirs and the lake. The latter supposition has been confirmed by observation of brook trout fry on the downstream side of the inlet weir in the springs of 1945, 1946, and 1947. Brook trout redds were observed to be constructed immediately below the inlet weir during October, 1944, on the sand and gravel used to fill in around the sheet-piling supporting the downstream blocking arms. During the fall of 1946, brook trout spawned in the bay near the outlet, and on gravel placed on the delta at the inlet.

The available data from the creel census and marking work at the weirs plus the observations that have been made suggest that at least half of the anglers' catch is the result of spawning in the lake or in the stream below the weirs, and the remaining half is the result of migration up the outlet and down the inlet of brook trout of all sizes, chiefly of fry and fingerlings. The fact that the inlet weir is not 100 per cent fish-tight makes it impossible to state with certainty just what portion of the catch originates in the tributaries. In order to capture the fry eight mesh screens are installed about February 1 each year and kept in place until about August 1, when four mesh screens are put in the wings. When heavy rains occur, the small mesh plugs rapidly, and water flows around the ends of the weir because of the

location on low ground. At such times an unknown number of fry could escape to the lake without being marked or recorded. How many have thus escaped our attention in this manner is unknown.

Number and percentage of anglers taking various numbers of legal trout from East Fish Lake in 1946

As stated earlier, 370 of the 430 fishermen, or 86.0 of the total, caught no legal trout. The catches ranged from one (9.2 per cent) legal fish to six (0.2 per cent) legal fish. Anglers catching two legal brook trout made up 3.7 per cent of the total, while those creeling three, four, and five legal trout comprised 0.2, 0.5, and 0.2 per cent respectively of the total anglers.

Residence of anglers (Table 2)

East Fish Lake was visited by fishermen from 31 counties of the Lower Peninsula of Michigan and by non-residents from four other states and the Dominion of Canada. Montmorency County fishermen led the list with 122 persons, followed by Wayne County fishermen (77), St. Clair County anglers (28), and Bay County sportsmen (18).

Twenty-five Ohioans headed the list of non-residents. Kentucky and Louisiana were represented by three and two fishermen respectively, and Illinois and Ontario, Canada, by one each. The residence of two fishermen was not listed.

Remarks on the angling trends in East Fish Lake

The angling results of the 1945 season were the best observed in the eight years of work on East Fish Lake. One hundred sixty-nine legal trout were caught and 158 of them were creeled. The 158 fish weighed slightly over 130.6 pounds, the highest poundage removal observed from the lake in the period covered. This catch was the result of 927.75 hours of fishing. As the quality of the fishing had been holding up well since 1943 despite the increased fishing pressure, it was anticipated that the

Residence of West Fish Lake anglers

1946 trout season.

County, State or Country	Number of anglers
Arenac	2
Berrien	1
Bay	18
Calhoun	8
Crawford	11
Eaton	5
Genesee	15
Gratiot	8
Hillsdale	4
Ingham	6
Iosco	2
Kalamazoo	2
Kent	2
Lapeer	1
Livingston	2
Macomb	3
Midland	3
Montmorency	122
Oakland	19
Oscoda	7
Ogemaw	3
Otsego	6
Presque Isle	2
Roscommon	1
Saginaw	1
Sanilac	1
St. Clair	28
Shiawassee	1
Tuscola	21
Washtenaw	14
Wayne	77
Resident totals	396
Ohio	25
Kentucky	3
Illinois	1
Louisiana	2
Canada	1
Non-resident totals	32
Unknown	2
Grand totals	430

1946 season would produce angling as good as in the previous three years. Despite almost identical angling pressure, the 1946 catch was only slightly more than half of the 1945 catch, and the angling quality was reduced in proportion.

Possible explanations for this reduction in angling quality are:

1. Poorer weather during the peak of the mayfly "hatch" in May and June which kept the fish from feeding normally. We had many cold, rainy evenings at that time.

2. A much lower population of legal fish in the lake in 1946. The latter supposition is conjectural and not supported by adequate data.

Since the erection of the outlet dam in 1941, the catch of undersized fish, which probably indicates to some degree the success of spawning, has been rather low. During the seasons 1942-1946, from six to 36 sublegal fish have been returned, while in earlier years from 40 to 80 small fish were reported. During the fall of 1946 gravel was placed at the inlet delta to provide the proper spawning material, and the brook trout were observed to use it for redd construction. Also, redds were observed to be constructed within the lake proper on gravel piled up by nesting creek chubs in the shallow bay near the west end of the outlet dam. It is hoped that the mature fish will continue to use these sites in the future, and that a sufficient number of fry will survive each year to keep an adequate angling stock available.

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