

Original: Fish Division
cc: Mr. H. L. Thompson ✓
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January 3, 1944

REPORT NO. 918

BIG BEAR LAKE INVESTIGATION, 1942-1943

by

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This report will be in the nature of a very brief summary of work done at Big Bear Lake, Otsego County during the spring and summer of 1942, and spring, summer, and fall of 1943. Work done prior to 1942 is summarized in Report No. 653-A. This summary is made now since the writer is to accept a commission in the Navy on December 15.

Spring, 1942

The 1942 investigation was begun on April 23, when observations were made on the spawning of the suckers. The run lasted from April 26 to May 3, with peak of activity on the evenings of April 27, 28, 29. Between April 23 and 26 water temperatures had risen from 49 to 53 degrees Fahrenheit. Observations on spawning behavior were essentially similar to those of the spring of 1941. However, in 1942 it was noted that other fish besides the sucker were on the shoals^{*}, and numerous adult largemouth bass were observed, along with some rock bass and a few smallmouth bass. Also, in 1942 samples of freshly deposited eggs were secured and newly hatched sucker fry were secured at a later period. During the spawning run 365 suckers were removed by fishermen using seines.

* No species other than the sucker was captured by the fishermen in seining however.

Of these, 12.3 per cent had been marked in the summer of 1941. An additional 100 suckers was removed on the evening of April 27, but these were not seen by the writer, and marked fish were not recorded. In August of 1941 the per cent of marked suckers captured in the nets during the population study was 12.0 per cent. This is an indication that the nets do catch good random samples of the adult sucker population, and that the marked fish do become more or less evenly distributed throughout the lake, and tends to lend weight to the population estimates.

As in 1941, blunt-nosed minnows were observed to be very numerous on the shoal where the suckers were spawning, and appeared to be actively feeding on the freshly deposited sucker eggs. A series of blunt-nosed minnows was preserved for future examination of the stomach contents. This has been done, and it is evident that for a short period when the suckers are spawning, sucker eggs form a major part of the blunt-nosed minnow's diet. The average number of eggs per blunt-nosed minnow stomach was found to be 3.5 eggs, with a maximum of 18. Very few stomachs contained no eggs at all, and in numerous stomachs the eggs were too broken up to be counted.

Ovaries from 16 adult female suckers were preserved for egg counts. Two bottles containing freshly preserved eggs were dropped, and two ovaries were from suckers which were already partially spent. Egg counts were secured from 12 perfect ovaries. The average number of eggs per ovary was found to be 14,388 (range 10,866 - 20,146). Only mature eggs were counted, since the ovaries obviously contained immature and undeveloped eggs. Allowing 5,000 spawning female suckers in the lake, this would give a yearly potential egg production of 70,000,000. Sucker egg predation by blunt-nosed minnows is known to be considerable, but granting a high egg predation and a poor hatch, still the yearly production of fry must be several million.

Summer, 1942

The 1942 creel census was conducted by Mr. Howard Van Oosten. Results of this creel census are being tabulated. Along with his creel census duties, Mr. Van Oosten secured a good series of stomachs from game species. These have been carefully preserved, but the writer has as yet been unable to work over the stomach collections.

Between August 19 and September 17 the population analysis was made through the use of trap nets. In conjunction with the population analysis weights, measurements, and scale samples were secured from a large series of all species. The scales secured in 1942 have been mounted and aged but data have not yet been tabulated.

Results of the population analysis will be presented at the end of the report.

Spring, 1943

In the spring of 1943 the planned reduction of the sucker population was carried out by the writer and one assistant between April 30 and June 21. During this period 5,778 suckers were removed, or approximately 10,400 pounds. These suckers were sold locally and to a commercial dealer for \$404.20 or for 3 cents a pound. Theoretically, 5,778 suckers represented 55 per cent of the available population, but later observations point to an over winter loss between the fall of 1942 and the spring of 1943, or to an overly high estimate in 1942. Of the 5,778 suckers captured, 5,295 were caught between April 30 and May 17. Between May 18 and June 21 only 483 suckers were caught. Very few suckers were observed spawning, and none were captured by seine fishermen although as many tried as in former years. Also, in the fall of 1943 only 301 suckers were caught in a period of 21 days, during which the same nets were used in a population analysis. In 1942, before the removal of the suckers, 1,911

suckers were caught in a like period in the fall by nets set in approximately the same locations. It is apparent that a far larger percentage of the available population was removed than the indicated 55 per cent.

In the spring of 1943, between May 18 and June 21, the population analysis was repeated, but we continued to remove suckers during this period. As in former periods, a large series of each species was weighed, measured, and scale samples secured. These scales have not as yet been aged nor has weight, length data been tabulated. Results of population analysis will be presented at the end of the report.

Summer, 1943

The 1943 creel census was obtained by Mr. Schiffman, a resident on the lake. Along with his creel census duties he collected a good series of stomachs from game fish. These are preserved but have not yet been examined.

Fall, 1943

Again in the fall of 1943 a population analysis was made and scale samples, weights, lengths secured from large samples of all species. Results of the population analysis will be tabulated.

Table 1

Population Analyses of Big Bear Lake, Otsego County

Period	Total Estimated ¹	Sucker	L.M. Bass	S.M. Bass	Blue- gill	Pumpkin- seed	Rock bass	Bull- head	Hybrid BxPs	Perch	Total ²
Summer, '40	14,002	9,699	2,987	1,333	1,940	1,325	1,307	19	18,610
Summer, '41	18,883	11,081	2,602	1,100	2,819	3,818	723	17	35	...	22,195
Summer, '42	15,331	10,480	1,194	304	2,593	2,486	328	9	31	...	17,425
Spring, '43	4,811	...	2,080	244	1,277	1,507	266	6	5,380
Fall, '43	7,679	366	2,726	592	1,952	1,773	1,813	13	110	20	9,365

¹ Total estimated by formula regardless of species.

² Total is the sum of the specific populations estimated by formula.

Fluctuations in the above populations are explicable on the basis of weights, average lengths, ages, and numbers caught from year to year. Note that there has been an increase in all species except suckers from the spring to the fall of 1943. This increase is explained by growth resulting in a greater number of individuals reaching nettable size through the summer.

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