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THE RATE OF GROWTH OF SOME FISHES FROM
HOUGHTON LAKE, ROSCOMMON COUNTY, MICHIGAN

by

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The first scale sample collections taken from fishes in Houghton Lake date back to July and August of 1922, when Chas. W. Creaser collected samples for his work on the structure and growth of scales. Since that time, some samples were obtained in 1937, 1938, 1939, 1943, 1947, and 1948.

The ages of these fish have been determined and the growth tabulations made. For those who may not be familiar with the methods employed in age determination and growth interpretation, the following information may be of value.

The age of the fish is determined from its scales. A sample of scales is removed from the side of the fish just below the lateral line, immediately below the spiny dorsal fin. On trout other locations are used, but need not concern us here. As the fish grows, the scale also grows, although not always at the same rate. The specific ratio between growth of fish and growth of scale can be determined by special methods. As the scale grows, ridges are formed around the scale. At any time of the year then there will be a series of ridges in the process of completion. As the fish stop

growing in the winter months, the ridges do not grow to completion. With resumption of growth in the Spring, instead of each incomplete ridge of the previous growing season continuing until it is complete, a new ridge begins and soon grows around the scale, cutting across all the incomplete ridges. It is by locating and counting these cut across areas that the age of the fish is determined.

Following the assessment of the age, the fish lengths are recorded under their proper age-group, with further combinations by sex and date of collection. When the data have been recorded, further analysis can be made. First, the average size for each age-group is determined by sexes. Then these are combined and a comparison is made with the average for the state as determined in another study. From this last comparison is derived the Growth Index figure. This growth index figure is the actual average difference in inches that the particular age-groups of fishes being studied differ from the established state averages for each age-group.

When the data from Houghton Lake were tabulated and compared with the state averages for the several species, it was found that the yellow perch caught in 1922 were growing at a rate approximately normal for the species. For the purpose of defining a normal rate of growth, the range from 0.5 inches below the state average to 0.5 inches above that average is used as the normal range. The two perch taken in 1922 had a growth index of -0.4. Since that time, the rate of growth has declined and all subsequent collections exhibit a minus growth index. The growth indices for 1937 and 1938 are within the normal growth range, but those of 1939 and 1948 are below this range.

The rock bass on the other hand exhibit an above average growth for all collections. The growth index in 1922 was +1.0 and in 1948 it was

the same. The rock bass in 1948 were attaining a length of 8.2 inches in their sixth summer of life which is the length usually reached in their seventh summer. Thus, the rock bass in 1948 were about one year ahead in rate of growth.

The bluegill also showed an above average growth rate. The growth index in 1922 was +0.6, in 1943 it was +0.9, in 1947 it was +1.7, and in 1948 it was +1.2. The bluegills in 1948 reached a length of 7.4 inches in their fifth summer, a length usually reached in their sixth summer of life. The most startling change occurred in the growth in the sixth summer of life when the bluegills averaged 8.9 inches which is the length not ordinarily reached until their eleventh summer.

The pumpkinseed in 1922 had a growth index of -0.1, or was just about average. In 1939, the growth index had risen to +0.6, and in 1948 it was +1.4. In 1948 the pumpkinseeds in age group IV had attained a length of 7.0 inches, which is the length usually attained during their seventh summer or age VI.

The black crappie in 1922 had a growth index of -0.2, while in 1948 it had an index of +0.9. The black crappies are not as abundant as the bluegills or pumpkinseeds in Houghton Lake.

The smallmouth black bass had a growth index of -0.4 in 1922 while in 1948 a growth index of +1.2 was found. The smallmouth black bass caught by the survey crew were in excellent condition.

The largemouth black bass were only sampled in 1948 at which time they had a growth index of +2.5, which puts them almost two years ahead in growth rate over the average for the state as a whole.

No comparisons are made for the yellow pikeperch (walleye) or the pike because at the present time inadequate data on these two species have not permitted the establishment of a state average. The yellow pikeperch taken in the nets in 1948, however, were in excellent condition and were bigger and heavier than any other pikeperch taken by the netting crew in their summer's work. No pike were taken in the three days of netting this past summer.

Thus, with the exception of the yellow perch, all other species of fish in Houghton Lake, for which samples were available, exhibited an above average rate of growth when compared with the established average sizes of the fish at various years of life.

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