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GROWTH RATE OF NORTHERN PIKE FROM THE FLETCHER FLOODWATER, ALPENA AND MONTMORENCY COUNTIES

By

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Various resort owners on the Fletcher Floodwater, Alpena and Montmorency counties, along with sportsmen's clubs in the vicinity have appealed to the Fish Division and the Conservation Commission during 1954 to close the impoundment to winter fishing. These individuals and groups felt there has been a great change in the situation since the last creel census made in 1948. They maintained that greatly increased spearing pressure, occurring when the pike are concentrated during the winter drawdown, has resulted in an over-exploitation of the pike as evidenced by their smaller size.

In July, 1954, Dr. David Shetter distributed scale envelopes to six of the larger resorts on the Floodwater, with the request that pike scale samples be mailed to this office for analysis. Forty-three of these samples were collected in late July and aged. The results were given to the Conservation Commission during their August meeting with the recommendation that the impoundment should not be closed to winter fishing. The Commission decided to make no change in the regulations for the 1955 season but that the Conservation Department should make a further study to decide whether or not winter fishing should be curtailed in the future.

Since the first collection of scale samples was received, an additional 43 samples have been obtained, taken in late July and early August. The first collection (Table I) consisted of 93 percent age-groups I and II, while only three fish were over two years of age. The average length of the fish was 16.3 inches. Age-group II made up 58 percent of the sample yet its average length (16.4 inches) was only slightly above the average length of age-group I (15.0 inches). Age-group II had grown very little during 1954 as evidenced by their scales, while the average for age-group I obviously was influenced by the legal size and contained only the faster growing individuals.

From this first sample there was an indication of a lack of fish older than two years. Either these older, larger fish had been over-exploited, or poor spawning prior to 1952 had resulted in small numbers of these ages, or both these factors may have been at work. There was also a very distinct possibility that the sample was not representative of the population. The sample indicated one- and two-year-old fish (14 to 20 inches) were dominant in the population but by no means indicated they were abundant in the lake. However, the slow growth of most fish during 1954 (especially age-group II) was evidence that either food was scarce, water conditions were unfavorable or the fish were overpopulated.

The second sample of fish was similar to the first with one outstanding difference (Table 1). Only about 67 percent of the sample was made up of age-groups I and II. More fish of age-groups III and IV were present. The average lengths of individual age groups were not much different from the earlier sample. However, the average length of the sample (17.7 inches) was considerably larger than the average length of the first collection (16.3 inches). This was due more to the inclusion of more fish from the older age groups than to added growth since the first collection. Again it was very noticeable that

two-year-old fish especially had grown very little in 1954, although the growing season was probably three-fourths over for the year. Many of these fish had grown less than one inch this year. Some of the fish in age-group I and most of the fish in age-groups III and IV had grown more normally.

A sample of 225 pike collected from January to November, 1948 were also aged for comparison (Table 2). This sample contained fish in all age-groups from I to VIII. Average lengths for age-groups I, II and III were considerably larger than for the 1954 season. Above age-group III the average lengths were similar. Age-groups I and II made up 68 percent of the total, compared to 80 percent for 1954.

Since more of the 1948 collection was taken from January to June than later in the year, these earlier specimens would not show as much of the yearly increment as those taken later in the season. Therefore, the 1948 collection was divided into two groups; those taken before July 1 (mostly during January and February) and those taken from July 1 to November. It was felt that this latter group would be more directly comparable to the 1954 collection.

Examination of the second or late-season 1948 group showed an even greater difference in average lengths between 1948 and 1954. The comparison (1948 figure first) was 18.1 inches to 14.7 inches for age-group I, 22.2 inches to 16.7 inches for age-group II, and 24.2 inches to 17.8 inches for age-group III. This late 1948 sample differed from the entire year collection in that 83 percent of the fish were of age-groups I and II, similar to the 1954 figure of 80 percent. Earlier in the 1948 season the percentage of age-groups I and II was only 60 percent. This difference in the composition of the sample for the two parts of the season is evidently due to two factors. The early sample (mostly winter) contained very few (1 percent) one-year-olds but

considerably more three-year-old and older fish. Spearing apparently ignored the one-year-old fish principally because most of them were sublegal or barely legal at that time of year. Also, either the spearing or the scale sampling was selective for the larger fish. Evidently spearing was not too selective of larger fish since Shetter and Vondett (1949) found that the average length of 1,506 speared pike was 20.1 inches and the average length of 1,690 open-water hook-and-line pike was 19.7 inches. Size-frequency distribution of the 3,196 fish measured in 1948 shows no tendency for a greater proportion of large fish in winter than in summer. There is an indication, however, that the aged collection and the measured collection were similar as to the percentage of fish less than 17 inches in length.

It will be noted from Table 2 that the average length of the aged samples decreased from 21.8 inches for the early or winter sample to 20.8 inches for the late or summer collection. This is evidently a difference brought on by the sample since the large measured sample did not show this great a difference (20.1 to 19.7).

Apparently the younger pike in Fletcher Floodwater at this time are growing considerably slower than they were in 1948. However, the fish collected in 1948 were growing at a rate above state average growth figures and it is felt that the 1954 averages are fairly close to the state average. The principal cause for worry as indicated by the scales is the slow growth this year of the two-year-old fish. This may be temporary and the result of environmental conditions or the lack of a preferred type and size of food. It also may indicate an overabundant population of young fish.

The general small average size of the Fletcher pike at this time is not believed serious (apart from the slower growth rate), since the growth rate of pike is known to vary tremendously from year to year. The fish are mainly

young and not yet stunted. Attention may be called to the fact that small pike have been predominant in Fletcher in the past and yet have gotten larger in later years. Figures from the general creel census from 1939 to 1945 (excepting 1940) quoted by Livingston (1946) show an average length for Fletcher generally between 18 and 20 inches. In 1944 the average length was 19.8 inches for winter fish and 17.8 inches for summer fish. In 1945 the average length had slipped to 17.4 inches for winter fish and 16.1 inches for summer fish. The figure of 16.1 inches compares closely with this year's summer figure. However, by 1948 the average length was back up to 19 to 20 inches.

The situation at the present then shows a small average size for Fletcher pike with a possibly significant decrease in growth rate in younger fish and few fish older than three years. Samples of pike scales from this water should be examined over the next few years to determine whether the slow growth rate continues or becomes better or worse. If the younger fish are growing slowly because of overabundance, the present fishing pressure should be continued. If the impoundment is changing and conditions are such that the population and the growth rate are decreasing perhaps pressure on pike should be less. The situation here should be watched carefully due to the importance of the Floodwater and for the information that may be gained about impoundments in general. The problem of whether or not the pike are being overexploited here can probably not be answered short of a creel census study at least. A population study preceding the census would be of considerable value but would be difficult to make because of the size of the impoundment and the difficulty of taking pike in trap nets without considerable loss.

Table 1.--Average length and the number and percent of individuals in each age-group for the two collections separately and combined for pike from Fletcher Floodwater in 1954

Period		I	II	III	IV	V	VI	Average or total
Late July Collection 1	Average length	15.0	16.4	18.5	27.0			16.3
	Number of individuals	15	25	2	1			4.3
	Percent	34.9	58.1	4.7	2.3			100.0
Late July-early Aug. Collection 2	Average length	14.2	17.1	17.6	26.3		28.5	17.7
	Number of individuals	9	20	9	4		1	43
	Percent	20.9	46.5	20.9	9.3		2.4	100.0
Total	Average length	14.7	16.7	17.8	26.4		28.5	17.0
	Number of individuals	24	45	11	5		1	86
	Percent	27.9	52.3	12.8	5.8		1.2	100.0

Table 2.--Average length and the number and percent of individuals in each age-group for the early (mostly winter) period, and the late summer and fall period, and for both periods combined, for pike from Fletcher Floodwater in 1948

Period		I	II	III	IV	V	VI	VII	VIII	Average or total
January 1 to June 30	Average length	15.3	19.1	20.9	24.7	25.6	27.7	32.8	29.0	21.8
	Number of individuals	2	86	9	12	18	11	7	1	146
	Percent	1.4	58.9	6.2	8.2	12.3	7.5	4.8	0.7	100.0
July 1 to November 30	Average length	18.1	22.2	24.2	27.5	27.8				20.8
	Number of individuals	39	27	6	5	2				79
	Percent	49.4	34.2	7.6	6.3	2.5				100.0
Total	Average length	18.0	19.8	22.2	25.5	25.8	27.7	32.8	29.0	21.4
	Number of individuals	41	113	15	17	20	11	7	1	225
	Percent	18.2	50.2	6.7	7.6	8.9	4.9	3.1	0.4	100.0

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