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A STUDY OF THE TREND IN THE FISH CATCH FROM HOUGHTON LAKE 1928 - 1934

It has been noted, in connection with the general creel census, that a relatively large number of reports of fishing on Houghton Lake are available for each year of the census. The reports were taken largely or entirely by Conservation Officer Thomas White and were included in the general creel census data compiled by Dr. Hubbs (Repts. 238 and 265) except for the 1934 data which are being prepared at present. The sampling by Officer White was considered adequate to indicate certain trends in the fishing over the seven year period. Both the monthly trend and the annual trend for each of the five most abundantly caught species are here considered. A few species were taken in addition to the five mentioned in this report but the catch of these others was so meager that they are not included in the figures presented.

Figures are given in terms of unit hours, a unit hour being the use of one line or one spear for one hour. The census cards indicate the number of lines and the number of hours, not necessarily the number of fishermen, making it impossible to express terms in fisherman-hours for winter fishing with lines or for line fishing during the last few summers when two lines were legal.

It is not known to what extent the fishing was directed toward the catching of any one species. It is probable that few if any Perch were caught by those fishing exclusively for pike since large minnows are generally used as bait by pike fishermen. It is also not known to what extent the sampling was representative. For most of the calculations the data were not used for those months when less than 200 hours of fishing were recorded.

Table 1 shows, for each month of each year, the number of unit hours of fishing recorded. It will be noted that winter fishing was not represented in 1928 and 1929; it was poorly represented in 1930. Although the total hours fluctuated considerably from month to month, figures for summer fishing are available for almost every month for the period covered.

Table 1

Unit Hours of Fishing Recorded for Each Month.
Houghton Lake, 1928-1934

	1928	1929	1930	1931	1932	1933	1934
January	...	...	...	1434	931	1892	3374½
February	...	...	...	1098	1148½	851	1,025
March	...	...	...	736½	40	2160½	489
May	1920	2229	2808½	617	2842½	1522	1148½
June	3187½	4764½	2231	2564 3/4	238	1,677	809
July	1888	2866½	3212½	1272½	563	1,303½	1060½
August	1923	1461½	2915 3/4	...	1022	1712¼	355
September	1,777	44	...	...	220	...	20
December	...	...	983½	...	...	50	...

Table 2 shows the combined number of unit hours fished for each month and the total combined number of fish (of five species) caught each month. It will be noted that the fishing records represent 67,759¼ unit hours of fishing and a catch of 648 Sunfish, 2209 Rock Bass, 6351 Perch, 1961 Walleyes and 12,131 Northern Pike, a total of 23,300 fish (minor species not included). The percentage of each of the five species in the total catch of the five species is: Sunfish 2.8%, Rock Bass 9.5%, Perch 27.3%, Walleyes 8.4% and Northern Pike 52.1%. The lake is obviously a pike lake.

Table 2

Combined total unit hours and total catch for each month
Houghton Lake, 1928-1934
(Including months with less than 200 hours fishing)

Month	No. of Hrs.	Sunfish	Rock Bass	Perch	Walleyes	Northern Pike
January	7,631½	...	...	590	50	1360
February	4122½	...	1	562	29	651
March	3426	...	1	712	98	541
May	13087½	9	336	298	632	3082
June	15471¼	83	324	340	483	3265
July	12166½	309	672	1513	292	1481
August	8759½	231	816	1894	334	1128
September	2061	16	59	433	37	150
December	1033½	...	...	9	6	473
Total	67759¼	648	2209	6351	1961	12131

The catch per hour of fishing for each of the 5 species for each month of each year is shown in Table 3. The average catch per unit hour of effort for each species each month, obtained from data in Table 2, is listed in Table 4, along with the total catch of all 5 species combined for each month. Table 5 shows, for each summer month of each year, the mean temperature, also the average mean temperature for each of these months. Since the number of hours reported for each of the months was not consistent and since the catch per hour was not uniform from year to year the catch figures given for the average catch for any one month may be affected considerably by the taking of a large or a small number of records during a year when fishing was better than average or when it was below average.

Table 3

Catch per hour of fishing, Houghton Lake, 1928-1934

	January							February							March						
	'28	'29	'30	'31	'32	'33	'34	'28	'29	'30	'31	'32	'33	'34	'28	'29	'30	'31	'32*	'33	'34
Rock Bass	...	...	...	...	...	...	...	...	...	...	tr.	...	...	...	...	...	...	...	...	...	tr.
Perch	...	...	...	tr.	.07	.24	.02	...	...	...	.12	.22	.20	.02	...	...	...	.05	...	.28	.17
Walleye	...	...	...	...	tr.	tr.	.01	...	...	...	...	.01	.01	.01	...	...	...	.02	...	.03	.06
N. Pike	...	...	...	.18	.29	.23	.12	...	...	...	.16	.24	.17	.06	...	...	...	.13	.23	.15	.24

	May							June							July						
Sunfish	tr.	tr.	...	...	...	...	...	.01	.01	tr.	...	...	.01	...	.01	.01	tr.	tr.	.02	.09	.13
Rock Bass	...	...	...	.01	.03	.06	.13	.03	tr.	tr.	tr.	.13	.07	.07	.02	.02	.02	.04	.03	.20	.20
Perch	.01	.06	tr.	.02	.05	.04	.04	.01	tr.	.01	.01	.20	.09	.09	.01	.03	.04	.33	.20	.34	.28
Walleye	.07	.03	.05	.04	.04	.02	.10	.05	.03	.02	.01	.04	.03	.07	.02	.04	.01	.01	.01	.03	.06
No. Pike	.24	.23	.21	.22	.26	.22	.28	.21	.22	.22	.13	.28	.29	.21	.16	.12	.12	.04	.04	.21	.11

	August							September							December						
Sunfish	.01	.02	.01	...	.01	.04	.20	tr.	.02*	...	...	.02	...	.40*	...	...	...	...	...	...	...
Rock Bass	.02	.03	.05	...	.03	.21	.38	tr.	...	...	...	.04	...	.60	...	...	...	...	...	...	...
Perch	.06	.11	.06	...	.66	.33	.67	.09	...	...	...	1.24	...	.10	...	...	...	...	...	.18	...
Walleye	.01	.05	.03	...	.01	.05	.13	.02	.02	...	...	...	...	.10	...	...	tr.	...	...	.10	...
No. Pike	.07	.22	.09	...	.13	.17	.11	.07	.20	...	...	.11	...	...	...	...	.46	...	...	.48	...

* These figures not dependable because of inadequate data.

Table 4

Average catch per hour of fishing
for each month (years combined) Houghton Lake,
1928-1934

	December	January	February	March	May	June	July	August	September
Sunfish	...	...	...	...	.01	.01	.03	.03	.01
Rock Bass	...	...	...	...	.03	.02	.06	.09	.03
Perch	.01	.08	.14	.21	.02	.02	.12	.22	.21
Walleyes	.01	.01	.01	.03	.05	.03	.02	.04	.02
Northern Pike	.46	.18	.16	.16	.24	.21	.12	.13	.07
Total	.47	.26	.30	.40	.34	.29	.35	.50	.34

Table 5

Mean monthly air temperature for summer months
Houghton Lake, 1928-1934[1]

	May	June	July	August	September
1928	54.6	62.4	68.0	67.2	53.6
1929	50.6	58.6	66.6	62.2	58.9
1930	56.2	64.4	66.7	65.5	59.5
1931	54.4	66.1	70.8	66.2	64.0
1932	55.0	64.2	66.2	66.4	56.2
1933	57.4	69.3	69.2	64.2	63.2
1934	58.8	67.6	69.6	63.2	59.4
Average	55.3	64.7	68.2	65.0	59.3

[1] Data taken at Houghton Lake State Forest Headquarters, several miles from Houghton Lake. Provided by courtesy of U. S. Weather Bureau, East Lansing.

A discussion of the trend from month to month and from year to year for each of the five species as indicated in the several tables follows:

Sunfish. Sunfish were primarily caught in July and August, the two warmest months. During May and most of June these fish were protected (season opens June 25th). In general the Sunfish catch, per unit hour, declined decidedly in September. The catch of Sunfish was apparently increasing in 1933 and 1934; the species being best represented in the catch in 1934. Whether or not fluctuations in the catch are proportional to

the actual fluctuations in the total population cannot, of course, be determined although it is quite possible that there is a direct correlation between the two.

Rock Bass. Rock Bass were taken very little in winter. Rock Bass fishing was best in general, during the two warmest months (July and August). The catch was apparently improving in 1933 and again in 1934. There appears to be a relatively close correlation between rock bass and sunfish, both were most caught during the warmest months and both were increasing in the catch in 1933 and in 1934.

Perch. The Perch catch per unit hour varied decidedly in different months. During the winter the catch increased decidedly each month. There may be some connection between this increase and the approach of the spawning season. In early summer Perch fishing was apparently relatively poor, in mid-summer and late summer it was good. It will be noted that, in general, there was an inverse relationship between the perch "biting" and the Northern Pike "biting." It is believed that, when Northern Pike are "biting" well the fishing is for pike, when this fishing declines people probably turn more to Perch fishing. The increase in the catch of Perch as the summer progresses was not noted in the studies on Fife Lake (1934) and Bear Lake, Otsego County, (1935).

Winter fishing for perch was apparently best in 1932 (records for 1928, '29 and '30 are not available). Summer fishing was apparently also best (for this species) in 1932. It was decidedly poorer in 1928, '29 and '30 than in the next four years.

Walleyes. The Walleye catch per unit hour was less regular from month to month than the catch of any other species. They were better represented in the winter catch in March and, in summer, were poorest represented in July (the hottest month) and in September. Walleye fishing was decidedly better in 1934 than in previous years.

Northern Pike. The Northern Pike catch per unit hour was decidedly best in December (data for this month are relatively meager however) and declined in January and February. It was again relatively high in May and declined as the summer progressed except that there was a very slight increase in August over July. Pike fishing was poorest during the warmest month. Winter fishing for pike was best in 1932 and declined (in January and February) during the next two years. Fishing for this species fluctuated irregularly in summer. In May it was best in 1934 but was relatively uniform during

the seven year period; in June it was best in 1933 and poorest in 1931; in July it was best in 1929 and poorest in 1928 (no data for August, 1931). No correlation between the fluctuation of air temperature and of the catch for any one month over a period of years is evident. However, the lake is shallow and the mean air temperatures fail to indicate the fluctuations during the month; also, records of the catch were probably not taken uniformly throughout the month. Failure to find a correlation between mean monthly air temperatures for one month over a period of years and the catch per unit hour over the same period does not indicate that a close correlation between these two does not exist.

The catch per hour for all species collectively was best in August and December and poorest in January and June. The greatest number of "pounds per unit hour"were very likely taken in December when the catch consisted almost entirely of Northern Pike.

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