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HOUGHTON LAKE CREEL CENSUS,
WINTER OF 1936-1937

The fact that a pasture will support relatively few large animals or a much greater number of small animals applies just as much to our "aquatic" pastures as it does to farming. The trend of winter fishing in Houghton Lake during the last two seasons indicates clearly that we may expect this lake (or most any lake) to yield either relatively few large predacious game fish such as pike or a very much larger number of smaller pan fish.

In the winter of 1935-36 Houghton Lake yielded, on the average, one fish per day's fishing. The next winter it yielded 4 fish per day's fishing. During the 1935-36 season the fish had an average length of 14.3 inches and consisted of about half northern pike and walleyes and half perch; during the next winter, when fish were caught about four times as frequently as in the winter of 1935-36, the average length was only 9.6 inches and only 13 per cent were northern pike or walleye while 86 per cent were perch.

During the first winter covered by the intensive census the chances were 3 to 2 that a fishermen had no fish to show for his day's fishing (averaging 5.7 hours); during the next winter the chances were about 2 to 1 that he would catch at least one fish in the same amount of time.

It would be difficult to determine which of the two seasons on Houghton Lake was the more successful. Much would depend on the desires of the anglers-- on whether or not they prefer to catch a few large fish with the chances better

than even that they would take none, or whether they would rather catch, on the average, a larger number of smaller fish with good chances of catching at least one or more in their day's fishing.

If it is assumed that changes in the composition of the catch reflect changes in the composition of the fish population, the winter census on Houghton Lake shows that fish populations may be expected to change rapidly; legal-sized fish of one species may become decidedly more abundant and another decidedly less abundant within a single year. When a predator decreases in number the fish it normally feeds on will rapidly increase in number. In Houghton Lake the predatory fish (chiefly northern pike) have apparently declined rapidly in number and the fish (perch) which probably serve as one of their chief food supplies rapidly increased in number.

When a species declines the angler generally feels that this reduction in its numbers is due to over-fishing or to insufficient stocking from the hatcheries. A thorough study of the problem might reveal that a poor spawning year due to a reduction in water level, or some other factor may be more responsible than the fishing for the downward trend. Should the pike increase, it may be expected that the perch will decrease in number regardless of the fishing intensity.

The 1936-37 census on Houghton Lake was taken from December 21st to and including the last day of February. By action of the Commission the lake was closed to winter fishing after February. The census was again taken by Camp Houghton. According to Chief Foreman Harold S. Cliff there were an average of 20 men on the census crew. It is estimated that these men contacted 90 per cent of all the fishermen. They took the census daily from 9:30 a.m. to 5:30 p.m. Unless otherwise indicated, the discussion below is based only on the fishing of those who were actually contacted and therefore represents about 90 per cent of all the fishing. The tables, too, are based only on the actual information.

The information was again compiled for the several methods of fishing (line fishing, Table 1; spearing, Table 2; both methods used simultaneously Table 3; and all fishing combined Table 4).

Line Fishing

Records were obtained for 1,887 line-fishermen who fished for a total of 9,356 hours. Those who fished with lines caught, on the average, 6.2 fish each at the rate of 1.2 fish per hour. Line fishing was decidedly the best in February. During the previous winter the catch had been best in March and it is quite probable that line fishing would have been better in March than in February (1937) had fishing been permitted then. The reason for this increase in the catch later in the winter has not been determined but it seems probable that the increased activity of the fish may be due to more voracious feeding because of the approaching spawning season.

About half the fishermen (45%) fished with lines only. They caught three-fourths (76%) of the fish. Line fishing yielded the most fish per fisherman--also fish of the smallest average size. The catch consisted almost entirely of one species (perch) and had an average length of only $8\frac{1}{2}$ inches.

According to the records 4 small brown trout were caught. These had probably entered from one of the inlets.

About 8 per cent of those who line fished only, were women. Of those who speared only, 11 per cent were women. It seems peculiar that more women speared than line-fished but it is quite probable that they preferred sitting in heated shanties to fishing out in the open and that they preferred spearing because of the greater amount of comfort which this method provided.

Detailed information on the line fishing is shown in Table 1 by half month intervals.

Spearing

About a fourth of the fishing was with spear only. Where live minnows were used as decoys and were listed under bait the records were considered under both methods (spearing and still-fishing) combined. Spearing yielded only one fish per six hours of fishing and less than a fish (0.8) per day's spearing.

The fish, however, were of a large average size (17.9 inches long) and were primarily northern pike.

Details of the spearing are shown in Table 2.

Both Methods Simultaneously

A fourth of the fishermen used spears and bait (minnows) simultaneously. As might be expected, their catch was intermediate between that of those who line fished and those who speared. About a third of the fish they caught were northern pike; the others were primarily perch. The fish had an average length of almost 12 inches.

Details are shown in Table 3.

All Fishing

Records were obtained for 4,153 fishing-days. Almost 8 per cent of the anglers were women. The fishing yielded a total of 17,088 fish, assuming that the census covered 90% of the fishing, approximately one fish (averaging 9.6 inches long) per acre. The weight of the fish which were caught was not determined but it is improbable that Houghton Lake yielded over a pound per acre.

It would be especially desirable to determine the relation between summer and winter fishing but a thorough census of the summer fishing would require the use of almost the entire personnel of a CCC camp. Obviously such census could not be made at present.

The lake yielded about one northern pike per 10 acres. Most of the other fish caught were perch, a species which seems to be present now in large numbers. Whether or not the winter fishing deleteriously effects subsequent summer fishing in this lake is not known but it seems improbable that the winter fishing is responsible for any serious depletion of the fish population.

Fishing, in terms of number of fish caught was much better in the winter of 1936-37 than in the previous winter. Even spearing, which yielded primarily northern pike, was better the second season.

Even though the last winter was much less severe than the previous one, fewer fishermen used the lake. The season was shorter, of course, in 1936-37 because of the special restrictions permitting no fishing during March and April.

Fishing on Houghton Lake attracted anglers from 39 counties and non-residents from two states. Almost a third of the fishermen were from Roscommon County, the county in which Houghton Lake is located. A sixth of the fishermen were from Ingham County (Lansing). Residences of the anglers, with the number from each community, are listed in Table 5.

The northern pike were of about the same average size each season. More were caught (per hour) in the winter of 1936-37 than in the previous winter. Food for northern pike (perch) is probably much more abundant now than it was a year or two ago. It would not be surprising if pike fishing in Houghton Lake showed considerable improvement during the next several years regardless of whether or not winter fishing should be discontinued.

INSTITUTE FOR FISHERIES RESEARCH

By: R. W. Eschmeyer

Table 1

Line Fishing, Houghton Lake, Winter of 1936-1937

	Dec. 21-31	Jan. 1-15	Jan. 16-31	Feb. 1-15	Feb. 16-28	Average or Total
1. Number of fisherman - Male	41	110	400	636	566	1753
Female	0	8	39	36	51	134
Total	41	118	439	672	617	1887
2. No. of fish (legal-sized)	145	335	1626	4448	5130	11,684
3. No. of hours	163.25	468.50	2270.25	3398.0	3056.0	9,356.0
4. Catch per fisherman	3.5	2.8	3.7	6.6	8.3	6.2
5. Catch per hour	0.9	0.7	0.7	1.3	1.7	1.2
6. Ave. no. of hrs. per fisherman	4.0	4.0	5.2	5.1	4.0	5.0
7. Percentage taking no fish	22	48	37	24	21	28
8. Ave. size of all fish caught	10.5	8.9	8.8	8.5	8.2	8.5
9. Northern Pike - No. taken	20	33	120	150	88	411
Average size	19.9	21.3	20.1	22.6	22.4	21.6
10. Walleyes - No. taken	18	16	47	68	67	216
Average size	16.8	17.3	16.4	17.1	19.4	17.6
11. Yellow Perch - No. taken	106	281	1452	4223	4972	11,034
Average Size	7.6	7.0	7.7	7.9	7.8	7.8
12. Bluegills - No. taken	1		4	1		6
Average size	7.0		6.0	13.0		7.3
13. Brown Trout - No. taken ¹		4				4
Average size		7.0				7.0
14. Dogfish - No. taken		1	1		1	3
Average size		24.0	25.0		16.0	21.7
15. Sucker - No. taken			1	6	2	9
Average size			20.0	10.0	10.0	11.1
16. Calico Bass - No. taken			1			1
Average size			10.0			10.0

¹ Probably returned to the lake

Table 2

Spearing, Houghton Lake, Winter of 1936-37

	Jan. 1-15	Jan. 16-31	Feb. 1-15	Feb. 16-28	Total or Average
1. Number of fishermen - Male	97	286	281	265	929
Female	18	14	29	38	99
Total	115	300	310	303	1,028
2. Number of fish (legal)	108	283	222	180	793
3. Number of hours	453.75	1,403.75	1,669.25	1,583.50	5,110.25
4. Catch per fisherman	0.9	0.9	0.7	0.6	0.8
5. Catch per hour	0.24	0.20	0.13	0.11	0.16
6. Ave. no. of hrs. per fisherman	3.9	4.7	5.4	5.2	5.0
7. Per cent taking no fish	37	45	62	56	53
8. Ave. size of all fish caught	21.4	18.2	15.7	18.2	17.9
9. Northern Pike - No. taken	98	223	132	123	576
Average size	22.2	19.9	20.4	21.7	20.8
10. Walleye - No. taken ¹	5	12	6	18	41
Average size	19.8	21.5	20.0	17.5	19.3
11. Yellow Perch - No. taken ¹	5	36	80	37	158
Average size	7.4	7.8	7.2	6.8	7.2
12. Gar Pike - No. taken		2			2
Average size		25.0			25.0
13. Sucker - No. taken		8	3	1	12
Average size		12.1	18.3	18.0	14.2
14. Bullhead - No. taken		2			2
Average size		9.0			9.0
15. Dogfish - No. taken			1	1	2
Average size			40.0	20.0	30.0

¹ Probably caught on hook and line and incorrectly reported.

Table 3

Data on Both Methods (Simultaneously), Houghton Lake, Winter of 1936-1937

	Jan. 1-15	Jan. 16-31	Feb. 1-15	Feb. 16-28	Total or Average
1. Number of fishermen - Male	156	427	274	124	981
Female	4	28	34	9	75
Total	160	455	308	133	1,056
2. Number of fish (legal)	201	749	739	882	2,571
3. Number of hours	760.50	2,834.0	1,922.25	808.50	6,325.25
4. Catch per fisherman	1.3	1.6	2.4	6.6	2.4
5. Catch per hour	0.27	0.26	0.38	1.1	0.41
6. Ave. No. of hrs. per fisherman	4.8	6.2	6.2	6.1	6.0
7. Per cent taking no fish	30	35	41	23	35
8. Average size of all fish caught	18.9	15.0	10.3	8.9	11.9
9. Northern Pike - No. taken	162	383	134	60	739
Average Size	21.4	21.1	21.6	20.9	21.2
10. Walleyes - No. taken	5	23	6	12	46
Average size	19.4	19.4	15.8	19.8	19.0
11. Yellow Perch - No. taken	33	328	593	809	1,763
Average size	7.0	7.8	7.7	7.8	7.7
12. Bluegills - No. taken	1	10			11
Average size	6.0	7.9			7.7
13. Gar Pike - No. taken		2			2
Average size		30.0			30.0
14. Suckers - No. taken		3	6	1	10
Average size		19.3	13.0	12.0	14.8

Table 4

Data for All Fishing, Houghton Lake, Winter of 1936-1937

	Dec. 21-31	Jan. 1-15	Jan. 16-31	Feb. 1-15	Feb. 16-28	Total or Average
1. Number of fishermen - Male	41	369	1,157	1,226	1,033	3,826
Female	0	31	86	100	110	327
Total	41	400	1,243	1,326	1,143	4,153
2. Number of fish (legal)	145	649	2,785	5,526	6,275	15,380
3. Number of hours	163.25	1,706.25	6,712.25	7,171.0	5,896.0	21,648.75
4. Catch per fisherman	3.5	1.6	2.2	4.2	5.5	3.7
5. Catch per hour	0.9	0.4	0.4	0.8	1.1	0.7
6. Ave. No. of Hrs. per fisherman	4.0	4.3	5.4	5.4	5.2	5.2
7. Per cent taking no fish	22	38	39	38	35	37 (1549)
8. Ave. size of all fish caught	10.5	14.2	11.5	9.1	8.6	9.6
9. Northern Pike - No. taken	20	298	737	436	276	1,767
Average size	19.9	21.7	20.5	21.6	21.7	21.2
10. Walleyes - No. taken	18	26	85	80	98	307
Average size	16.8	18.2	18.1	17.2	19.0	18.1
11. Yellow Perch - No. taken	106	319	1,929	4,993	5,893	13,240
Average size	7.6	7.0	7.7	7.9	7.8	7.8
12. Dogfish - No. taken		1	1	1	2	5
Average size		24.0	25.0	40.0	18.0	25.0
13. Suckers - No. taken			12	15	4	31
Average size			14.6	12.9	12.5	13.5
14. Bluegills - No. taken	1	1	14	1		17
Average size	7.0	6.0	7.4	13.0		7.6
15. Brown Trout - No. taken		4				4
Average size		7.0				7.0
16. Bullhead - No. taken			2			2
Average size			9.0			9.0
17. Calico Bass - No. taken			1			1
Average size			10.0			10.0
18. Gar Pike - No. taken			4			4
Average size			27.5			27.5
19. Smallmouthed Bass - No. taken					2	2
Ave. size					15.0	15.0

↓ Probably returned to the lake.

Table 5

Residence of Anglers, Houghton Lake, Winter of 1936-1937

County	Dec. 21-31	Jan. 1-15	Jan. 16-31	Feb. 1-15	Feb. 16-23	Total	%
Antrim	...	...	...	...	2	2	...
Barry	...	3	...	...	...	3	...
Bay	...	2	...	16	20	33	...
Branch	...	...	...	...	1	1	...
Calhoun	...	1	...	11	3	15	...
Clare	4	15	49	90	49	207	...
Clinton	...	...	8	28	9	45	...
Crawford	...	1	9	2	...	12	...
Delta	...	...	1	1	...	2	...
Eaton	2	4	7	5	25	43	...
Genesee	2	15	99	76	73	265	...
Gladwin	3	...	2	14	15	34	...
Grand Traverse	...	...	...	...	1	1	...
Gratiot	...	18	17	24	30	89	...
Huron	...	...	...	1	...	1	...
Ingham	1	20	234	204	198	657	16
Ionia	...	...	2	...	...	2	...
Isabella	...	6	16	31	42	95	...
Jackson	...	1	18	20	6	45	...
Kent	...	3	4	2	3	12	...
Lenawee	...	...	10	4	...	14	...
Livingston	...	2	...	...	...	2	...
Mackinac	...	...	...	1	...	1	...
Marquette	...	...	3	...	...	3	...
Midland	...	7	26	22	13	68	...
Missaukee	2	69	177	120	97	465	11
Montcalm	...	3	3	...	11	17	...
Muskegon	...	1	...	...	...	1	...
Newaygo	...	...	...	...	2	2	...
Oakland	...	2	13	9	11	35	...
Ogemaw	1	7	...	2	3	13	...
Osceola	...	2	13	18	3	36	...
Presque Isle	...	...	1	...	...	1	...
Roscommon	17	166	350	389	351	1,273	31
Saginaw	...	3	17	60	45	125	...
Shiawassee	...	...	12	11	10	33	...
Washtenaw	...	5	25	7	13	50	...
Wayne	...	4	11	23	34	72	...
Wexford	...	4	25	44	27	100	...
Unknown	9	36	90	83	44	262	...
<u>States</u>							
Ohio	...	...	1	8	...	9	...
Illinois	...	...	...	...	2	2	...
Total	41	400	1,243	1,326	1,143	4,153	...

Houghton Lake Creel Census.

Take of fish during 1936-37 winter season amounted to about one fish per acre.

Weight of fish not determined but it is improbable that Houghton Lake yielded over a pound per acre.

Estimated 90% of fishermen were contacted.

1935-36 about half fish taken were northern pike or walleyes.

1936-37 only 13% were pike or walleyes.

1935-36 yield was 1 fish per day's fishing.

1936-37 " " " " 4 " " " "

When a predator decreases in number the fish it normally feeds on will rapidly increase in number.

Reduction in numbers usually felt by anglers to be due to over-fishing or under stocking from hatcheries.

Possible cause might be low water level causing poor spawning years.

Food for northern pike probably ~~is~~ is much more abundant than a year or two ago.

It would not be surprising if pike fishing in Houghton Lake improves considerably during next several years regardless of whether or not winter fishing is discontinued.