

Original: Fish Division ✓
cc: Education-Game
Inst. for Fish. Res.
K. E. Christensen
J. E. Williams
C. T. Yoder - 2

INSTITUTE FOR FISHERIES RESEARCH
DIVISION OF FISHERIES
MICHIGAN DEPARTMENT OF CONSERVATION
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ALBERT S. HAZZARD, PH.D.
DIRECTOR

ADDRESS
UNIVERSITY MUSEUMS ANNEX
ANN ARBOR, MICHIGAN

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A SUMMARY OF CREEL CENSUS DATA (1952-1954) AND A REVIEW OF SPAWNING-GROUND
RESEARCH AND MANAGEMENT SUGGESTIONS FOR OTSEGO LAKE, OTSEGO COUNTY

By

Kenneth E. Christensen, Floyd E. Simonis and John E. Williams

Otsego Lake is located in the north central portion of the Lower Peninsula of Michigan. The lake is nearly 2,000 acres in size. A fisheries survey was conducted by the Institute for Fisheries Research in 1949. ✓

The Conservation Commission, by special order, closed Otsego Lake to spearing, beginning in 1937, for a period of three years. The order was renewed in 1940 for a period of five years, and again in 1945 for another five years. The order was last renewed in 1949, for a period of five years commencing January 1, 1950. The Conservation Commission discontinued the order prohibiting spearing, in 1953, and instead, closed the lake to all fishing from December 1, 1953 to May 15, 1954, inclusive. This order was renewed again on Otsego Lake for the winter of 1954-1955, with the expiration date set at May 1, 1955 instead of May 15.

Census Methods

The census year was divided into four periods, namely: (1) spring (opening of pike, bluegill and sunfish season to the day before opening of

✓ A Fisheries Survey of Otsego Lake, Otsego County, Michigan, by Clarence M. Taube. Institute for Fisheries Research, Report Number 1255 (Mimeographed), 19 pp.

bass season), (2) summer (opening of bass season to Labor Day), (3) fall (day after Labor Day to October 31), and winter (December 15 to March 31), all dates inclusive. No census was conducted from April 1 to the day before opening of pike, bluegill and sunfish season, or from November 1 to December 14, due to the lack of fishing pressure.

Mr. Floyd E. Simonis was assigned the duties of creel census clerk on Otsego Lake. Since it was impractical to attempt to contact all anglers, a method of sampling was utilized in order that an estimate of total fishing could be made. The working day during the non-ice season was either from 7:30 A.M. to 2:00 P.M., or from 1:00 P.M. to darkness. The schedule of working days and of morning or afternoon shifts was designed to give equal attention to each day of the week and to morning and afternoon fishing. The work day during the winter was from 9:00 A.M. to darkness.

The clerk could not contact all of the anglers during a work period. Therefore a method of deriving the average hourly fishing pressure was utilized based on counts of the boats engaged in fishing; these counts were made at two-hour intervals during each work period. The counts were made partly on odd, and partly on even clock hours, and the figures for each hour were then averaged for the seasonal number of boats per hour. The boats-per-hour figure was then multiplied by the average number of anglers per boat (based on contact records), and the product multiplied by the number of fishing hours in the season to arrive at an estimate of total angling hours. An estimate of the total number of angler-trips was made by dividing the estimated total hours by the average number of hours fished by each angler (from actual contacts). The estimate of total catch of fish was determined by multiplying the total hours of angling by the average catch per hour of the anglers contacted.

The winter census of fishermen not using shanties was conducted in the same manner as the census during the other seasons. The clerk contacted the anglers as they left the lake and recorded the pertinent data on census forms. The shanty anglers were censused by the use of angling records kept by the fishermen and collected from them at the end of the ice-fishing season. The census clerk attempted to contact each shanty owner soon after he put his dark house on the ice. He requested that a record be kept of the dates fished, the number of hours spent fishing each trip, and the number of each species of fish taken. Mimeographed forms were supplied for this purpose. The returns from this type of census were not as satisfactory as actual day-to-day contacts, because some shanty fishermen were missed at the end of the season and their records could not be obtained. Total shanty fishing and total catch were computed from available records by assuming that, in fishing effort and catch, the shanty fishermen who were missed were comparable to the others.

The census clerk, in addition to contacting anglers and making periodic counts, recorded climatological data, made water-gauge readings, and conducted investigations concerning pike spawning and movement.

Creel Census Data

The creel census was begun April 26, 1952. Census data are here summarized (Table 1) for three spring seasons, three summer seasons, three fall seasons, and one winter season (1952-53). The lake was closed to all fishing during two of these winters.

The average fishing pressure for the three spring seasons was 4,278 hours of angling and the average catch was 3,652 fish. The species totals (spring averages) were: bluegill, 662; perch, 1,733; pumpkinseed, 1,049; rock bass, 128; pike, 80; and common shiner, 16.

The average fishing pressure for the three summers was 94,153 hours of angling and the average catch was 137,497 fish. The species composition was: bluegill, 16,738; perch, 79,624; pumpkinseed, 36,828; rock bass, 1,805; bullheads, 173; largemouth bass, 1,664; smallmouth bass, 277; pike, 356; and suckers, 32.

The average fishing pressure for the three fall seasons was 2,784 angling hours during which an average of 2,950 fish were caught. This catch was composed of: bluegills, 250; perch, 2,024; pumpkinseeds, 610; rock bass, 10; largemouth bass, 28; and pike, 28.

The lake was open to fishing in the winter of 1952-1953 and during this ice-fishing season a total of 54 shanties were used. Usable reports were received from 36 of these shanties, and estimates of total shanty fishing were based on these 36 reports. An estimated 2,722 hours of hook-and-line fishing were spent, and the estimated catch was 916 fish. The composition of the catch was: 706 perch, 5 bluegills, and 205 pike. An estimated 94 angler-days were recorded for anglers who braved the elements and fished on the ice without benefit of a shanty. They fished 188 hours and took 94 fish, all perch.

The northern pike was, for some time, the most important game fish in Otsego Lake. As early as 1933, interested individuals became worried about an apparent decline in catch of northern pike. Investigations by Institute personnel indicated that the northern pike were being overfished and that winter spearing was harmful to summer fishing for northern pike. ²

²The Problem of Winter Versus Summer Fishing in Otsego Lake, Otsego County, by Carl L. Hubbs. Institute for Fisheries Research, Report Number 245, 5 pp. with appendix.

Table 1. Summary of Creel Census Data for Otsego Lake, Otsego County, 1952-1954

Season	Year	Estimated totals			Species composition							
		Hours	Anglers	Fish	Bluegill	Perch	Sunfish	Rock bass	N. Pike	Large-mouth bass	Small-mouth bass	Other
Spring	1952	5,080	2,162	4,623	1,466	733	2,086	254	84	...	...	...
	1953	2,752	1,182	1,712	222	761	665	32	32	...	...	...
	1954	5,002	2,374	4,669	297	3,706	395	99	123	...	...	49 ^v
Summer	1952	112,256	55,824	228,172	32,583	124,103	67,607	1,871	137	1,323	411	137 ^v
	1953	81,862	38,417	104,857	14,103	54,893	31,929	1,971	...	1,531	325	105 ^v
	1954	88,341	41,044	79,463	3,528	59,876	10,950	1,573	930	2,138	95	373 ^v
Fall	1952	2,613	1,180	2,611	669	536	1,406	...	...	...	...	...
	1953	1,986	860	3,002	...	2,796	177	29	...	...	...	...
	1954	3,752	1,766	3,237	83	2,739	249	...	83	83	...	...
Winter	1952-53	2,910	722	1,010	5	800	...	...	205	...	...	...

^vOther = bullheads, suckers, shiners.

Spawning Research and Lake Management

The marsh at the north end of Otsego Lake has been the site of exploratory research to develop a method for increasing the survival of pike eggs and fry in a natural environment. As mentioned in Institute for Fisheries Research Report No. 1385,³ great numbers of yellow perch were observed to follow spawning pike into the marsh, and stomach sampling proved that the perch were eating great numbers of pike eggs. Creel census and spawning observations also indicated that the majority of pike were over 24 inches in length, proving that spawning success had apparently been poor for at least several years. It was decided in 1953 to experimentally determine whether or not the exclusion of perch from the central section (B) of the marsh would increase the survival of pike to fingerling size. All fish were allowed to enter Section B from the lake via Section A in April, 1953, and it was estimated that about 50 adult pike spawned here amongst great numbers of perch, bullheads, mudminnows and other fishes. A fry trap was operated at the culvert between sections A and B during the summer to record the migration of young pike. No pike were taken by the trap, and poisoning of Section B on October 7 and 8 revealed the presence of only 18 pike, 12 of which were young of the year.

After poisoning Section B in October, 1953, screens were installed in both culverts (between sections A and B, and Sections B and C) to prevent the reintroduction of small predatory fish. In April, 1954, all pike that attempted to migrate into Section B to spawn were allowed to do so. The great majority of other fish were excluded (about 50 mudminnows were observed entering the section while the trap was being installed). Only

³Observations on Pike Spawning at the North End of Otsego Lake, Otsego County, During the Spring of 1953, by John E. Williams. Institute for Fisheries Research, Report Number 1385.

12 adult pike spawned in this section in 1954. The fry trap was again operated in the culvert during the summer of 1954, and it took only one pike fingerling migrating to the lake (in August). The second poisoning of Section B on October 13 and 14, 1954 showed only 12 young pike present.

All pike which were recovered during the fall poisonings, were inhabiting the dredgings which contained most of the water in the section at that time. These dredgings were undoubtedly influencing the pike fingerlings to remain in the marsh throughout the summer instead of migrating to the lake. Partly because of this factor but also because of the variability in the size of the spawning runs into Section B, it was decided in the fall of 1954 to transfer the site of the experiment to Section A of the marsh. Section A, directly connected to the lake by a lagoon and a channel 150 feet wide, would be ideal for such an experiment, provided that a fish-proof barrier and trap could be installed across the connecting channel. For the past four years Section A has served as the spawning area for most of the pike seen in the north marsh. It was planned that the experiment should begin with a "natural" year (i.e., one in which pike would spawn surrounded by all natural enemies, including perch) and this would have allowed time for a barrier to be installed after spawning was completed in 1955. The barrier, to be installed by the Lake and Stream Improvement Section of the Fish Division, would be of sheet piling with a simple two-way trap in the center. Portable screens would serve as interchangeable wings.

Spawning conditions were ideal during April of 1955, with a high water level and numerous pike in Section A. However, attempts to secure an easement from Mr. Frank Summers, owner of the marsh, were met with delay when he wanted time to consider his position. When Mr. Summers had reached no decision by June 1, permission was received from him to install temporary screens across the channel. This was done on June 4 to insure that pike

fingerlings did not migrate to the lake before they could be enumerated. When no further word was heard from Mr. Summers, he was contacted on August 19 concerning his decision. He expressed his interest in the project and the future of the lake (being the owner of one of the largest real-estate ventures on the lake) but wanted the department to compromise and give him added freedom above that stated in the circuit court decree involving his property. His first proposal was that in return for giving his permission for the installation of a barrier on his portion of the lake bottom, the department should allow him to construct an access channel across the high land near the end of the northern peninsula into Section A, thence into Section B (bridged by the road between the sections), thence into Section C (again bridged by a road) and back to the lake itself. Spoil would be confined to the inner margin of the horseshoe-shaped channel. This dredging would of course be a violation of the court decree. Mr. Summers' second proposal was that if the department would give him three 40-acre tracts of state-owned land bordering Fowler Lake to the west of the north-end marsh, he would give us title to all marsh land at the north end of Otsego Lake to manage as we please.

Since it is extremely doubtful that the department will agree to either of Mr. Summers' proposals, it would appear that the possibility of further experimentation to increase pike-spawn survival here is ended. Increasing the numbers of pike in Otsego Lake must, if necessary, be done by other more artificial methods.

The Otsego Lake Chamber of Commerce has, with the permission and assistance of the Fish Division, secured adult pike from Lentz Fisheries on Saginaw Bay and from the Seney Wildlife Refuge. A plant of 515 pike from Seney in April, 1954, which were marked by a right-pelvic fin clip, resulted

in a return to anglers during 1954 of 283 fish (55 percent). These fish made up about 25 percent of the total pike caught in Otsego Lake during 1954, according to creel census data. On October 26, 1954, an additional 57 adult pike from Saginaw Bay (with the left pelvic fin clipped) were stocked in Otsego Lake. Data on their rate of recapture by anglers are not available as yet. The Otsego Lake group requested that the lake be closed to winter fishing to protect stocked pike during the winters of 1953-1954 and 1954-1955. The department granted this request, as noted in an earlier section of this report.

The Otsego Lake Chamber of Commerce has again requested the department to allow them to stock 1,000 pike in Otsego Lake this fall. They will furnish transportation for the fish from Saginaw Bay. They also desire that the lake be closed again to winter fishing or at least to spearing and shanty fishing to protect these pike.

The Fish Division, in keeping with the North American Fish Policy and in accordance with Conservation Commission policy, cannot conduct maintenance plantings of pike at Otsego Lake because of the economics involved. However, there is no doubt that the local group can continue to have pike fishing in Otsego Lake on a limited basis by their own expensive maintenance stocking program.

Apparently the fish population at Otsego Lake at the present time is in a state that cannot be corrected by stocking of predatory fish, except perhaps by a major effort. Examination of a small series (19) of scale samples from perch, the most abundant fish in the creel census records, reveals that this species is extremely stunted. Although further study is needed to clarify the extent of the problem, it is apparent that overproduction of perch in recent years has resulted in a reduction in the number

of pike by egg predation, and a reduction in their (perch) own growth rate such as to render them unpopular as an angling species.

It is extremely doubtful if the perch in Otsego Lake can be partially controlled sufficiently to result in increased growth rate and a more satisfactory survival of young pike. Probably the most positive and least expensive method of achieving these aims would be to completely poison the lake. Restocking with a simple species combination, such as pike, largemouth bass and bluegills, would insure that within a very short time the lake would again furnish excellent fishing. If poisoning should be done in the fall and the lake restocked early the following year with legal size fish, only a winter seasons fishing would be lost. It is estimated that chemical for the poisoning would cost less than \$1,000.

From a biological standpoint nothing would be gained by again having Otsego Lake closed to fishing this winter. The pike population may be low, but obviously it is not going to get any larger by itself and the present pike may as well be harvested as die of old age. The Northland Sportsmans Club of Otsego County is in favor of the lake being opened to winter fishing but they have not requested that the lake again be opened to spearing. As mentioned previously, the Otsego Lake Chamber of Commerce and the Otsego County Chamber of Commerce favor keeping the lake closed. A large part of this thinking is influenced by the proposed stocking of adult pike, which they have suggested for this fall. It is recommended that Otsego Lake be left open to winter fishing but that it be kept closed to winter spearing until such a time as the fish population of the lake shows, or is forced to show, a more healthy balance between predators and pan fishes.

INSTITUTE FOR FISHERIES RESEARCH

Kenneth E. Christensen, Floyd E. Simonis
and John E. Williams

Approved by G. P. Cooper

Typed by A. D. Waterbury