

Original: Fish Division and carbon copy  
cc: Education - Game  
Institute for Fisheries  
Research  
C. T. Yoder  
H. L. Thompson  
J. E. Williams

INSTITUTE FOR FISHERIES RESEARCH  
DIVISION OF FISHERIES  
MICHIGAN DEPARTMENT OF CONSERVATION  
COOPERATING WITH THE  
UNIVERSITY OF MICHIGAN

ALBERT S. HAZZARD, PH.D.  
DIRECTOR

ADDRESS  
UNIVERSITY MUSEUMS ANNEX  
ANN ARBOR, MICHIGAN

June 11, 1951

Report No. 1286

( AN INVESTIGATION OF THE PIKE SPAWNING AREA AT THE  
NORTH END OF OTSEGO LAKE, OTSEGO COUNTY,  
MICHIGAN, DURING APRIL, 1951 )

By

John E. Williams

Abstract

The Michigan Conservation Department on October 18, 1950 obtained a consent decree in Otsego County Circuit Court, whereby Mabel Fowler and George and Mary Hoffman, in order to continue cottage development at the north end of Otsego Lake, Otsego County, must build culverts to permit the flow of water and passage of northern pike into their important spawning grounds. It was therefore decided that a member of the Fish Division should be on hand to make a check of conditions during the pike-spawning season of 1951. Accordingly, the area was checked every day during the month of April. Conditions seemed right for a spawning run from April 8 to 15, but no pike were observed until April 24 to 27, when perhaps a dozen pike were seen evidently spawning around the edge of the lagoon near the entrance to the spawning site from the lake. During this time water temperatures of the marsh varied from the low 40's F. at night to above 70° F. during the day. The water gage level at the lake stood near 1.54.

The two fills across the marshy area at the north end of Otsego Lake effectively barred the pike from access to most of the marsh, as the first culvert was not installed until April 28. The terms of the decree stated that the culverts were to be installed before the pike spawning period. Low water levels were evidenced by April 26 by which time snow meltage had either run into the lake or various dredgings in the marsh, except in the area dammed between the two fills.

It was felt that most of the pike spawning had probably occurred between April 8 and 15 and had been unobserved by Conservation Officer Leo Marlatt of Gaylord. Regardless of when the spawning occurred, the fills had prevented them from using at least two-thirds of the marsh. The low water level west of the fills had partly been caused by the damming action of the fills and had thus restricted the pike even further. There was evidence that any connection of the marsh to the lake on the east side of the marsh would considerably hasten the draining of the marsh during snow meltage time and during years of low lake water level might be advantageous to pike, in that it would prevent them from spawning where eggs and fry would be stranded.

Original: Fish Division  
cc: Education - Game  
Institute for Fisheries  
Research  
C. T. Yoder  
H. L. Thompson  
J. E. Williams

INSTITUTE FOR FISHERIES RESEARCH  
DIVISION OF FISHERIES  
MICHIGAN DEPARTMENT OF CONSERVATION  
COOPERATING WITH THE  
UNIVERSITY OF MICHIGAN

ALBERT S. HAZZARD, PH.D.  
DIRECTOR

ADDRESS  
UNIVERSITY MUSEUMS ANNEX  
ANN ARBOR, MICHIGAN

June 11, 1951

Report No. 1286

AN INVESTIGATION OF THE PIKE SPAWNING AREA AT THE  
NORTH END OF OTSEGO LAKE, OTSEGO COUNTY,  
MICHIGAN, DURING APRIL, 1951

By

John E. Williams

The north end of Otsego Lake, Otsego County (T. 29-30 N., R. 3 W., Sections many) within the past year has been the site of resort development which the Conservation Department feared would destroy the most important northern pike spawning habitat of the lake. Institute for Fisheries Research Report No. 1255 by Clarence M. Taube (1950) indicated that any filling in of this area should be considered a direct threat to the sport fishery for northern pike, which has been of considerable importance in Otsego Lake. Therefore on October 18, 1950, in Otsego County Circuit Court, the Michigan Conservation Department obtained a consent decree whereby property owners, Mabel Fowler and George and Mary Hoffman, in order to continue cottage development in that area, must install culverts to permit the flow of water and passage of pike into the important spawning grounds. Culvert installation was to have been finished prior to the spring pike-spawning season. There also was to be no further filling in the area known as government lot one in Bagley Township, below the contour elevation of 1274.5 feet above sea level. It was therefore decided to have a member of the Fish Division on hand to make a check of

conditions during the pike spawning season of 1951. Accordingly, in March, 1951, the writer asked Conservation Officer Leo Marlatt of Gaylord to notify the Institute for Fisheries Research when a pike spawning run occurred at Otsego Lake.

On April 8, on my way to Douglas Lake, Cheboygan County, I stopped at Otsego Lake to check conditions at the "pike factory." Conditions found are shown partly by figures 2 to 5. The state of the thaw and ice breakup seemed ideal for a pike run at that time, but no fish were in evidence. Most of the marsh contained open water, section A (see Figure 1) being entirely flooded to depths of 6 inches to 1 foot, and sections B and C from 1 to 2 feet. Efforts had been made to connect sections A and B at the south end of fill No. 1 (where a culvert was later placed) but were ineffectual. Thus pike had no access to either section B or Section C. It was easily seen that the water level in section B was at least 6 inches higher than that in section A. The water gage reading on April 8 was 1.37, the temperature of the lake water was 37° F., and the temperature of the water in the marsh varied from 50° to 52° F. on the east side of the fills to 40° to 42° F. on the west side of the fills (due to the presence of ice still remaining on the west side of the fills). There was approximately 10 feet of open water around the north end of the lake. Mr. Marlatt had seen no evidence of a pike run as yet in daily checking.

During the afternoon of April 15, I again stopped at Otsego Lake on my return trip to Ann Arbor and checked the area. No pike were seen and Mr. Marlatt still reported no activity. At this time all ice had disappeared from the marsh, although there was still ice remaining on the lake. Most of section A was now too dry for pike spawning but water in sections B and C

was still high and still inaccessible to the pike. The gage reading was 1.39, the temperature of the lake water 40° F., and the marsh water temperature 37° to 39° F. (air temperature was 32° F.).

On April 25 a call was received from Mr. Marlatt that pike were spawning in Otsego Lake. He and his fire control man had been checking Otsego Lake since before the ice began to loosen at the shore. The ice went out completely about April 21, but no activity was seen until the afternoon of the 24th when possibly a dozen pike were seen splashing around the edge of the lagoon in section A (shown by P on Figure 1) and part way up to fill No. 1. They were definitely identified as northern pike and although no attempt was made to strip these fish, they were undoubtedly in spawning condition as they were easily caught in shallow water with the hands. I arrived at Otsego Lake late in the evening of April 25. Two fish had been seen around the edge of the lagoon that afternoon. April 26 was spent at the marsh searching for pike, taking pictures, reading the water gage and in examining Fowler (Mud) Lake and its connection to Otsego Lake. No pike were seen although the water temperature of the marsh rose to 72° F. by 3 P.M. The lake temperature at that time was 52° F. and the water gage reading was 1.53 or .14 higher than on April 15. The four 24 inch culverts were still out by County Road 618 and Mr. Summers, title owner to the land, indicated that he hoped to get them put in by April 30. The reason given for the culverts not being in on schedule was the high water in the marsh. Mr. Paddison, State Engineer, ran the line from the bench mark on April 26 and put in stakes to mark the elevation of the top of the culverts.

The water level in the marsh had changed considerably since April 15. Section A was now nearly dry with the only area available to pike being around the immediate edge of the lagoon and a portion of the area

southwest of the lagoon. Section B, still blocked by fills, was at about the same level as on April 15. Section C, however, was now almost entirely dry except for the potholes and dredgings.

Some time was spent on April 26 examining Fowler (Mud) Lake (T. 30 N., R. 3 W., Section 20) to the west of the north end of Otsego Lake, and its outlet draining across County highway 618 toward Otsego Lake. Fowler Lake has pike in it and has excellent spawning marshes around most of its periphery, especially on its northeast, east and southeast shores. It drains through a culvert under County road 618, through a barely discernible intermittent channel through the woods to the marsh at the north end of Otsego Lake. Upon reaching the marsh the water spreads out and for a distance of perhaps 100 yards there is no channel. In fact, at the time of my observation it would have been impossible for a fish to negotiate its way over this 100 yards, so nearly dry was it. At a distance of 75 yards from the lagoon this marsh water again collects into a channel and flows into the lagoon. I feel that this must be a very intermittent inlet to Otsego Lake since there is no complete connecting channel and that even at this time of year a fish could not have travelled it. Of course, it is possible that the high water level this year may not have been as high as some or perhaps most of the preceding years (examination of gage records will establish the facts). Conservation Officer Marlatt felt that the water level was exceptionally low this year. Several persons asked me about dredging this channel through to Fowler Lake so that pike could get to Fowler to spawn. Further study of the differences in level between the two lakes would have to be made, and of the effect of a deeper channel on Fowler Lake. It seems to me it would be necessary to dam Fowler Lake to prevent its draining and this would, of course, nullify the work as far as benefit to pike would be concerned. The fact that the channel would cross under County road 618 would lead to an enforcement problem if pike did run.

On April 27, 3 pike were seen at the edge of the lagoon at about 5 P.M. Two of these seemed in the act of spawning but my presence caused the larger female to dart into the lagoon. The male was easily caught by hand in the shallow grassy water. Examination of the male showed it to be 22 inches in length and ripe. A search of the immediate area was unproductive as far as freshly extruded eggs were concerned (Figure 9). The water temperature at the spot where the male was captured was 64° F., while the lake temperature was 54° F. One other fish was seen in shallow water nearly about an hour later but escaped capture. Mr. Summers was present at the lake at the time, digging a channel through fill No. 1 for the culvert, and observed the ripe male.

Although April 28 was a warm day and the marsh was patrolled morning and afternoon, no pike activity was seen. Mr. Summers laid the culvert on this day connecting the lagoon water with the impounded water between the two fills, which being about 6 inches higher in elevation flowed into the lagoon. Mr. Marlatt and I checked the elevation of the culvert and found it to be 5 to 6 inches higher than stipulated. We conferred upon this matter with Mr. Summers and were informed by him that the County Drain Commissioner had assured him that it would settle the necessary distance after filling. We informed Mr. Summers that if the settling failed to take place it would be his responsibility to lower it, but that if he placed it at the stipulated level and it settled thereafter, it would then be the responsibility of the Highway Commission to raise it. Mr. Marlatt was to check further on the subject before any changes were made.

Various cuts and dredgings done to the south and east of fill No. 2 for the purpose of connecting section C directly with the lake and serving as boat channels giving access to the rear of the eastern peninsula were serving rather efficiently to lower the water level in section C, which except for the canals and several potholes was nearly dry. These cuts are

not yet completely out across the peninsula but when they are it appears that they will very rapidly carry out the melted snow water rather than letting it drain to the west and into the lagoon. In years of low lake water level this may be advantageous to pike and prevent them from spawning where eggs will be stranded. The potholes on the southern side of section C had been connected to the lake about April 22 and were draining into the lake. The water gage was checked again on April 28 and was at 1.54.

During the entire period of observance from April 25 to 28 the lagoon and marsh immediately surrounding it were thickly populated with bluegills, pumpkinseed sunfish, yellow perch, shiners and small bass. While plentiful in the edges of the marsh, they were especially congregated at the mouth of the inlet from Fowler Lake, feeding at the surface on material washing into the lagoon. A concentrated search for pike eggs around the edge of the lagoon revealed only 2 or 3 eggs which obviously were only one or two days removed from deposition. The question was raised in my mind whether low water levels forcing the pike to spawn near the edge of the lagoon amid the presence of thousands of shiners might account for the few eggs found. I know, however, of no instance where minnows have been observed to feed on pike eggs. Usually, of course, the location of pike marshes and the attending low water temperatures prevent the minnows from being present before the eggs hatch.

The unusual thing about these observations on pike spawning is the advanced season, high water temperatures and the few pike seen. Pike runs should have occurred around April 5 to 8 when the ice began to loosen around the north shore of the lake. However, none were noticed until April 24. The water temperature in the marsh didn't get above 42° F. until after April 16 and 17 and then went up to the 60's and 70's in a hurry, possibly catching the pike at spawning ripeness then. However, pike are notorious for running before any appreciable warm weather occurs and indeed



often before the ice even loosens around the lake except at inlets. I feel therefore that rather than the observed spawning from April 24 to 27 representing the spawning in its entirety, that it represented only the last of the action and that the bulk of the spawning occurred before this time and was unobserved. Certainly the fact that the first culvert wasn't put in until April 28, combined with the low water level in the marsh to the west of the first fill, partly due to the water being impounded by the fills, effectively reduced the habitat for pike spawning by at least two-thirds and will probably show results in the number of pike caught 2 to 3 years hence.

Literature cited

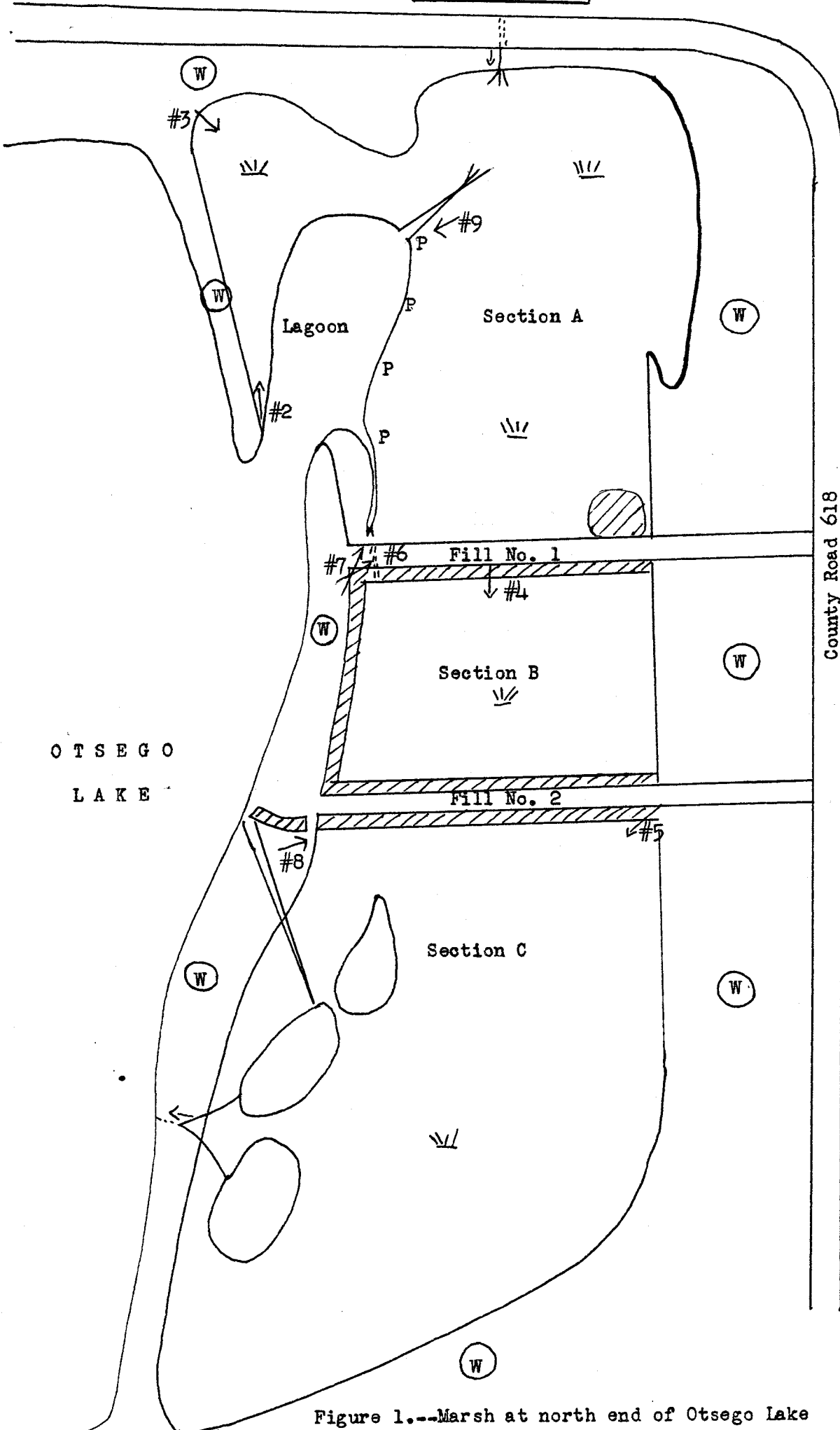
Taube, Clarence M.  
1950. A Fisheries Survey of Otsego Lake, Otsego County, Michigan.  
Report (unpublished), Institute for Fisheries Research,  
No. 1255, May 3, 1950.

INSTITUTE FOR FISHERIES RESEARCH

John E. Williams

Approved by: A. S. Hazzard

Typed by: B. A. Lowell



OTSEGO  
LAKE

County Road 618

LEGEND:

- Marsh
- Wooded
- Dredging
- Pike Observed
- Culvert
- Ditch
- #2-#9 - Location of Figures 2-9. Arrows show direction of photo.

SCALE  
1" = 400' (approx.)

Figure 1.--Marsh at north end of Otsego Lake



Figure 2.--Photo taken April 8, 1951, looking west along peninsula on left and lagoon on right in section A. (All locations and directions of photos shown on map, Figure 1.)



Figure 3.--Photo taken April 8, 1951, looking northeast across section A. Lagoon shows in distance in center background.



Figure 4.—Photo taken April 8, 1951, showing section B from center of fill No. 1.



Figure 5.—Photo taken April 8, 1951, showing section C, looking southeast from the north end of fill No. 2.



Figure 6.---Photo taken April 15, 1951, looking northwest along fill No. 1. Foreground shows attempt to connect sections A (on left) and B (on right) by ditch at future location of culvert.



Figure 7.---Photo taken April 15, 1951, looking west across ditch shown in Figure 6, and showing dryness of most of section A. (Lagoon off picture at left.)



Figure 8.—Photo taken April 26, 1951, showing fill No. 2 (on left) from south end and dredging to its right.



Figure 9.—Photo taken April 27, 1951, looking south across lagoon in section A, showing partly flooded grass in foreground where pike were observed spawning.