

Original: Fish Division ✓  
cc: Education-Game  
Institute for Fisheries  
Research  
R. S. Marks  
E. H. Bacon  
O. H. Clark

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

ALBERT S. HAZZARD, PH.D.  
DIRECTOR

June 19, 1952

ADDRESS  
UNIVERSITY MUSEUMS ANNEX  
ANN ARBOR, MICHIGAN

Report No. 1337

SURVEY OF SWAN LAKE, (T. 1 N., R. 14 W., Secs. 15, 16, 21, 22),  
ALLEGAN COUNTY

by

I. A. Rodeheffer and Jason Day

Abstract

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Swan Lake has a surface area of about 200 acres, is generally shallow, and is one of the headwaters of Swan Creek, a well known trout stream in the southwestern part of the State. The water of the lake is hard, and brown in color. The bottom soil in the deeper parts consists of muck; on the shoal there are sand, muck, and marl. Land surrounding the lake is entirely under private ownership. Boats are available for rental.

Since the lake is generally shallow and subject to high water temperatures in summer, it is limited to warm-water species. Game fish present include the bluegill, black crappie, largemouth bass, warmouth, northern pike, and yellow perch. This lake is reputed to be one of the most productive in the county for bluegills and crappies. It is heavily fished. Collections and observations made during the survey tended to bear out the good reputation.

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Swan Lake in Allegan County lies in Cheshire Township. Good gravel roads lead to the lake from a blacktop county road, No. 406, running about three-fourths of a mile north of the lake in an east and west direction; a similarly improved road, No. 665, runs north and south about a mile east of the lake. The lake lies a mile east and three-fourths of a mile south of Chicora, Michigan, and a mile west and three-fourths of a mile north of Cheshire Center.

The fisheries survey of Swan Lake was made during July 13 to 21, 1947. The survey party consisted of I. A. Rodeheffer and Jason Day, of the Institute for Fisheries Research. The purpose of the survey was to determine the physical, chemical, and biological conditions of the lake, and particularly the makeup of the fish population and its possible effect on fish in Swan Creek, which becomes suitable for trout several miles below Swan Lake.

Data on water depths and bottom soils were obtained by the survey party. This information is contained on a pencil-copy map on file with the Institute copy of the report.

This lake is connected with Swan Creek which empties into the Kalamazoo River about 6 miles northwest of Allegan. The upper reaches of the Swan Creek system include Mud Lake and Silver Lake in Sections 10 and 11 of Cheshire Township. The outlets of these lakes join to form a single stream which empties into Swan Lake. Eagle Lake, mostly in Section 35, and Duck Lake, in Section 36, are also parts of this drainage system, as is Muskrat Lake in Sections 2 and 3 of Bloomingdale Township, Van Buren County. These three lakes give rise to another inlet, flowing into Swan Lake from the southeast. The outlet from Swan Lake is the beginning of Swan Creek which, after flowing in a northerly direction for approximately 8 to 10 miles, enters Swan Creek Pond which is formed by a dam at M-89. About 2 miles below the dam Swan Creek empties into the Kalamazoo River.

Inasmuch as the dam at M-89 is quite distant from Swan Lake, it has no noticeable effect upon its level. In the spring of 1947 the water of the lake was reported to have been at its highest recent level. Marks on trees along shore showed the water had been about 3 feet above the level found on July 16, 1947.

The dam at M-89 affects Swan Lake, however, in that it apparently keeps carp and other fish found below the dam from getting into the upper reaches of the Swan Creek drainage system. Carp, nevertheless, are reported present in Swan Lake, having escaped from a farmer's pond during a period of flooding. Seining and netting operations, however, produced no carp.

The inlets from the upper lakes of the Swan Creek system flow through open farm lands and probably carry little, if any, pollution. No pollution of any kind was noted by the survey party.

The country around Swan Lake is rich farm land with woodlots scattered here and there. Where the inlets were seen their banks were low and mostly wooded. As these streams approach the lake they flow through low swampy areas. Around the lake, property owners have left trees along the shore so that it is generally wooded, with cultivated fields adjacent. Ownership of the lake shoreline is completely private.

Swan Lake furnishes recreation to large numbers of fishermen who may rent boats at Mr. M. Brindley's livery on the north shore or Mr. John Burton's livery on the southeast shore. The latter is owned and used mostly by colored people. A public road meets the lake between Sections 15 and 16 of Cheshire Township, and usually 8 or 10 boats are chained to trees at the end of this road.

Ten cottages are found along the lake shore,<sup>4</sup> in the vicinity of the Brindley landing, 5 on the west side, and 1 on the southeast shore. There are no resorts or hotels. Very little swimming is done, probably because the sand is fine and somewhat colored so that the water becomes roily when stirred.

Swan Lake has an area of about 200 acres of which approximately 50 acres support vegetation. Of its total area, approximately 85 percent is shoal described as that area of the lake which lies above a depth of 15 feet. The lake has no abrupt drop-off, its depth increasing gradually toward the deepest points which were found to be 18 feet in the southeast quarter of the lake and 28 feet in the western half of the lake.

Much of the shoreline of Swan Lake and the shoal extending out 50 feet or more is sand. About 20 to 30 percent of the shoreline is muck. In these latter areas yellow water lilies occur. The sandy

part of the shoal has a heavy growth of rushes (Scirpus), and arrow-head (Sagittaria). The bottom is shallow water beyond the sand is composed of muck with some flaky marl. One area of about 20 acres in the southeast bay is mostly flaky marl. The bottom beyond the 15-foot depth was found to be muck.

The color of the water of Swan Lake is uniformly dark brown. The secchi disk could be distinguished only to depths of between 5 and 6 feet.

#### Temperature and chemistry

The surface temperature on July 16, 1947, was 78° F. while the temperature of the air was 80° F. Bottom temperatures at 25 feet and 17 1/2 feet were found to be 56° F. and 62° F., respectively.

A thermocline existed on July 16, 1947, after a week of warm, quiet weather between the depths of 10 and 15 feet, temperatures ranged from 65.5° F. at 10 feet to 75° F. at 15 feet.

On July 21, after several days of cool, rainy, and stormy weather, temperatures and chemical data were taken at a station where the water was 15 feet deep. The water temperature here was the same from top to bottom, 22.4° C. or 72° F. Temperatures taken in the deepest part of the lake on this date showed the greatest drop in temperature (8° F.) to be between the 15- and 20-foot depths. The strong winds, along with the change of air temperature, had caused a cooling and mixing of the water.

Chemical data were collected at 3 stations in the lake. Chemistry at Stations No. 1 and No. 2 was taken after a week of warm, quiet weather. After several rainy and stormy days a retake was made at

Station No. 2. At the surface the dissolved oxygen varied from 7.2 to 9 ppm. A sharp decrease in the amount of dissolved oxygen was noted at Station No. 1 in 7.5, to 12.5 feet of water. Here the values dropped from 8.1 ppm. at 7.5 feet, to 1.8 ppm. at 10 feet, and to 1.1 ppm. at 12.5 feet on July 16, 1947.

Determinations at Station No. 2 on July 16 showed 5.5 ppm. of dissolved oxygen at 7.5 feet, to 1.8 ppm. at 10 feet, and none at 15 feet. On July 21, oxygen determinations at this same station showed the values to be 7.2 ppm. at the 10-foot depth, 5.1 ppm. at 12.5 feet, and 0.7 ppm. at 15 feet. Hence on July 16, fish life probably was limited to the upper 10 feet of water. It is interesting to note in this connection that successful fishermen had their bobbers only 4 to 6 feet above the hook, although they might be fishing over 25 feet of water. Obviously this lake ordinarily will not support fish life below the 15-foot depth during the summer months.

The range in ph-th alkalinity varied from 0 to 8 ppm. Methyl orange alkalinity ranged from 123 to 132 ppm.

#### Biological Data

Swan Lake affords plenty of natural cover for aquatic life, mostly in the form of vegetation. However, at the time of the survey during July, 1947, the water was extending into the woods in 3 large areas so that cover was also furnished by brush and trees.

Aquatic plants consisted of large areas of yellow and white water lilies extending from 50 to 100 feet from shore, with other vegetation abundantly spread completely around the lake to an average distance of approximately 100 feet from shore. The total area covered by aquatic

vegetation equaled about 50 acres of the lake or almost one-fourth its area. Vegetation was not found beyond the depth of 6 feet. In one part of the lake, about 300 feet southwest from the Brindley boat livery, a shallow area harboring emergent, submergent and floating plants covered an area of approximately 8 acres. This mass of plants grew from depths of 3 to 6 feet on sandy shoal.

Aquatic plants consisted of 8 species of Potamogeton, 2 species of duckweed (Lemna and Spirodela), Anacharis, Ceratophyllum, white and yellow water lilies (Nymphaea and Nuphar), Sagittaria, and Scirpus. Algae were abundant on some of the submerged rooted vegetation.

Wherever vegetation was inspected for aquatic fish foods, the fresh-water shrimp was found to be abundant, while numerous forms of insects such as mayflies, damselflies and dragonfly nymphs were common.

Spawning areas of bluegills were found along the south and west shores in water from one-half to 2 feet in depth. The spawning area of this species is quite extensive. Many bluegills were seen occupying their nests. Numerous largemouth bass beds were found along the north shore. These beds were deserted, and schools of young bass were seen in the area.

Turtles were most numerous of the predators, the painted turtle seeming most abundant. Blue herons were also abundant on Swan Lake.

Parasites of fish were found to be especially scarce. A few fish of various kinds were infested with the yellow grub, warmouth bass showing the larger numbers. White- and black-spot parasites were noted. Tapeworm was present in 1 fish. Of the 39 fish examined for parasitic infestations, 28 were found to have none at all while 11 were found to be sparsely infested with either white- or black-spot or yellow grubs.

Only one of these 11 was host to more than a few parasites, that fish being a largemouth bass about 18 inches long which showed tapeworms in the ovary and intestinal tract and 2 yellow grubs on the gills.

#### Fish and Fishing

Swan Lake was reported by every one contacted as being the best fishing lake in Allegan County. The survey party was impressed by the strings of fish caught day after day. Mr. Brindley reported that good fishing continues all summer and that the lake has always been a good producer of good-sized fish.

On July 16, 1947, between the hours of 6 and 8 p.m., 38 boats were counted on the lake. Of these, 18 carried 45 fishermen who showed an average individual catch of 4.3 bluegills per hour and 1.4 crappies per hour or a total of 5.7 fish of both species per hour. About 95 percent of these fishermen were using cane poles with worms for bait.

On July 13, 14, and 15, at 9 o'clock in the morning 14, 13, and 20 boats, respectively, were counted on the lake. At no time during the survey party's working hours were there less than 10 boats out. Mr. Brindley reported that there never is a day when his 17 boats are not rented at least once.

In an attempt to determine the variety of the fish inhabiting Swan Lake, the survey party set gill nets and seined. The gill nets were set for a total of 120 hours and covered 875 lineal feet at depths from 7 to 12 feet. The gill nets produced 30 perch, 7 largemouth bass, 4 bluegills, 4 black crappies, a white sucker, 3 yellow bullheads, 9 warmouths, and 7 golden shiners. Operations with an 8-foot common sense seine and 50-foot straight seine produced in addition a young



northern pike and a grass pickerel (Esox vermiculatus).

In the gill nets, 7 golden shiners were caught. No other minnows could be found or seen in the lake, and Mr. Brindley reported that there were none. However, numerous minnows were seined in the mouth of the inlet from Eagle Lake. The dominant species represented in this collection were the sand shiner, bluntnose minnow, Johnny darter, creek chub, mudminnow, and common, blacknose, and mimic shiners.

On the strings of fishermen 3 northern pike, 4 largemouth bass, 2 dogfish, numerous perch, and untold numbers of bluegills and black crappies were observed by the survey party.

Records show that 500 largemouth bass were planted in 1945; the latest stocking record for the lake. Stocking of bluegills, largemouth bass, or northern pike should not be necessary, judging from the large numbers of young taken with seines and observed.

#### Improvement Recommendations

At present Swan Lake has no public fishing site. The gravel road that runs north and south one mile east of Chicora touches the lake shore and numerous fishermen use it to launch their boats if they do not wish to pay for this privilege. A public fishing site and picnic grounds are recommended for the area, just east of where this road meets the lake.

INSTITUTE FOR FISHERIES RESEARCH

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