

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

ADDRESS  
UNIVERSITY MUSEUMS ANNEX  
ANN ARBOR, MICHIGAN

June 13, 1952

Report No. 1336

SURVEY OF SWAN CREEK POND

(T. 2 N., R. 14 W., Secs. 17, 20), ALLEGAN COUNTY

by

I. A. Rodeheffer and Jason Day

Abstract

Swan Creek Pond was formed by a dam built by the federal government in 1936. The impoundment has an area of about 54 acres. It is rather shallow, 11 feet being the maximum depth found. Surrounding land is Allegan State Forest property.

The pond has scenic value, is fished intensively, and some duck hunting is done on it. The main species of fish sought by anglers are bluegill, pumpkinseed, and bullheads. Other sport species present are northern pike, largemouth bass, black crappie, and warmouth. While summer temperatures in the creek channel were found adequate for trout, the pond as a whole is not considered trout water because of over-all warm temperatures and competition from other species.

RECEIVED  
JUN 27 1952  
FISH DIVISION

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 13, 1952

ADDRESS  
UNIVERSITY MUSEUMS ANNEX  
ANN ARBOR, MICHIGAN

Report No. 1336

SURVEY OF SWAN CREEK POND

(T. 2 N., R. 14 W., Secs. 17, 20), ALLEGAN COUNTY

by

I. A. Rodeheffer and Jason Day

Swan Creek Pond, which lies wholly within the boundaries of Valley Township, is formed by a dam across Swan Creek. This dam was built by the federal government in 1936 on the site of an old mill at the bridge across Michigan Highway 89, and has a head of 10 feet. The area of the pond is about 54 acres.

The Institute had learned of at least two problems in connection with Swan Creek Pond: First, there had been requests for draining the pond to make Swan Creek wholly a trout stream; second, there was a reported decline in pike fishing, about which there was some concern. A survey was made of the pond during the period of June 27 to July 9, 1947, by I. A. Rodeheffer, party leader, and Jason Day, both of the Institute for Fisheries Research.

Data on depths and survey stations are included on field maps (pencil copies) which are on file with the Institute copy of the report.

The damming of Swan Creek at M-89 has formed a "T" shaped body of water, the stem of which is designated here as the south

arm; the right-hand cross of the stem, the east arm; and the left-hand cross, the west arm. The south arm is approximately one-half mile in length, and the east and west arms are each about one-third mile long; the average width of the south and east arms is approximately 500 feet while the average width of the west arm is about 300 feet.

The east arm, lying along M-89, is definitely of scenic value. This area was reported as once an unsightly swamp. The survey party learned, however, that the original purpose of the dam was to maintain the water level of surrounding lakes---Ely, Round, and Crooked, last of which was reported as having been dry in the summer of 1946.

Throughout the lengths of the south and east arms, the original bed of Swan Creek was discernible. A channel averaging about 12 feet in width was found to range in depth from 5 to 11 feet, the depth increasing gradually as the channel approached the dam. At no other place in the lake where soundings were taken was a depth found greater than this 11 feet. At the time of the survey it was possible to use an outboard motor from the dam to the mouth of Swan Creek at the south end of the south arm by following the course of the stream channel.

Flow of Swan Creek into the pond was at a rate of 33 cubic feet per second on July 7, 1947, and the current was noticeable as far north to where the east arm of the pond begins, opposite Pine Point.

The channel bottom is firm over all its length except in the immediate vicinity of the dam. The bottom of the south arm is

composed of a thin layer of silt over sand, with pockets of silt about a foot deep covering a considerable area. Here and there a few spots of sand may be seen in water 6 to 12 inches in depth.

Near the entrance of the stream, two duck blinds were seen, and at about the middle of the south arm were two other blinds. All these structures showed evidence of use in the fall of 1946. About 50 deadheads jut up through the shallow waters of the south half of this arm, the north half showing only about 15.

The north half of the south arm embraces two islands, one about 50 by 50 feet, the other approximately 50 by 100 feet. Both are wooded and rise an average of 3 to 5 feet above the water.

Both sides of the south arm are heavily wooded with hardwoods, including a scattering of white pines. The banks are steep, from 20 to 30 feet in height, and consist mainly of sand. In five places where the banks approach the channel evidence of fishing done from shore appeared.

The west arm of Swan Creek Pond is designated as the area of water extending westward from a small island approximately 40 feet in diameter lying 100 feet northwest of Pine Point. The arm is about one-third mile in length; steep banks on either side reach heights of 20 to 30 feet. These banks are also heavily wooded with hardwoods, with white pines scattered here and there.

At the western end of the arm the high banks have been divided about 100 yards apart to admit a cold, clear stream, apparently unnamed, about 4 feet wide, which on July 2, 1947, had a velocity of 1 foot per second and a volume of 1.5 cubic feet per second. This stream rises from seepage and springs in a swampy pot hole about

one-fourth mile south of its mouth. The stream has a mucky bottom over 200 feet of its length near its mouth, but upstream for several hundred feet it is sand. The flow is apparently dissipated as it enters the west arm as no evidence was found of a channel through that arm. Three small springs were also noted as flowing into the arm from the south shore.

The bottom of the western half of the west arm was found to be composed of muck to a measured depth of 1 foot in places, while the eastern half was composed of muck thinly spread over sand.

The depths measured in the west arm were found to range from 2 to 7 feet, the average being approximately 3 feet.

The east arm of Swan Creek Pond is described as the area extending from Pine Point to the dam at M-89. The 20- to 30-foot banks of the north and south shores are heavily wooded with hardwoods, but on the east end the forest is mostly planted Norway pines. It is at this end that the Forestry Division maintains a dock for public use and has established a road for access to the pond, and another road which gives entrance to a camp site on the east shore of the south arm just south of Pine Point. All the land around Swan Creek Pond is a part of the Allegan State Forest. Fishermen use the shore about the dock for their boats, 10 or 12 usually being beached or tied to trees in that area. Very little swimming is done in any part of the pond.

The water of the east arm, as in the other two extensions, is clear, and the secchi disc could be seen to the maximum depth found there--11 feet.

#### Physical Data

The area of Swan Creek Pond, computed from aerial photographs by the squared paper method, was estimated to be 54 acres. Of this

area, it was calculated that about 95 percent or approximately 50 acres, supports vegetation. The pond is shallow, with a maximum depth of 11 feet. The bottom soil is almost entirely sand, which in many places is covered with several inches of silt. In the upper end of the west arm, muck 18 inches to 2 feet deep covers the sand.

Water temperatures at the surface on July 3, 1947, were 19.3° C. (66.7° F.), at the upper end of the south arm near where the stream enters the pond, while the temperature of the stream above the pond was 65° F., 20.4° C. (68.7° F.) in the stream channel at Pine Point about half way down to the dam, and 23.6° C. (74.5° F.) at the lower end just above the dam. Surface temperatures taken at numerous places in the south, west, and east arms ranged from 72° to 76° F. the first few days in July. Air temperatures during the day at this time ranged from 75° to 78° F.

Surface water temperatures at the same locations on July 30, 1947, ranged from 70° F, at the upper end of the south arm to 72° F. at Pine Point and 76° F. at the lower end. The temperature of the inlet above the pond was 65° F. on this date.

Bottom temperatures on July 3 ranged from 17.6° C. (63.7° F.), at the upper end of the south arm in the stream channel in 6 feet of water and at Pine Point in 8 feet of water, to 21° C. (69.8° F.) in 10 feet of water near the dam.

On July 30, 1947, these bottom temperatures at the same locations were 17.8° C. (64° F.) at the upper south end, 17.1° C. (62.8° F.) at Pine Point, and 21° C. (69.8° F.) near the dam. The air temperature at this time was 92° F., with the preceding days warm and the sky clear.

### Chemical Data

Dissolved oxygen content from surface waters on July 3 was 8.4 ppm. at the upper end of the south arm near the Swan Creek inlet, 7.1 ppm. near the center of the pond at Pine Point, and 7.2 ppm. at the lower end near the dam.

Dissolved oxygen tests made on July 30, at the same locations from surface waters showed the dissolved oxygen content to be 10.5 ppm. at the upper end, 8.7 ppm. at Pine Point, and 10.2 ppm. near the dam. Dissolved oxygen from bottom samples at the same locations were 9.5, 7.1, and 8.7 ppm., respectively.

Ph-th alkalinity registered 0.0 at all 3 stations on July 3, and the same on July 31. Methyl orange alkalinity ranged from 131 to 132 ppm. at the 3 stations on July 3, and 111 to 124 ppm. on July 31.

### Biological Data

Swan Creek Pond has a large amount of cover for fish life in the form of stumps, tree trunks with submerged branches, and tag alder stubs; the latter were abundant in the upper end of the south arm where Swan Creek enters the pond. In the west arm there are numerous stumps and a few piles of submerged brush.

Aquatic plants are very plentiful in Swan Creek Pond. In fact by July 1, 1947, the greater part of the pond was covered with emergent and floating vegetation, particularly in the shallower south and west arms. In general, the only areas not covered with vegetation in the south and west arms were those places where the stream channel meanders through the area, where large trees shade the water along the shore, and to some extent where the water is

over 5 feet deep. Practically the entire bottom of the pond is covered with vegetation. In water over 5 feet deep it was generally the submergent type.

Yellow water lilies (Nuphar) were common in the south and west arms, growing in water from one-half foot to 3 feet in depth. Beds of lilies from 10 by 10 feet to 50 by 100 feet were numerous, and covered from a fifth to a fourth of the total pond area.

Potamogeton natans, interspersed with other plants, formed dense mats over several acres in the upper part of the south arm. This plant is found in numerous places in the pond but is more dense in the south arm.

The broad-leafed pondweed (Potamogeton amplifolius) was common, frequently forming beds 10 by 20, and even 30 to 50 feet, in area. One narrow-leafed Potamogeton formed heavy mats that were semi-floating. The roots were easily seen in the water. These masses of plants were usually submerged and anchored to the bottom by several long, dark stems. Another narrow-leafed Potamogeton formed dense mats of vegetation several acres in extent in the south and west arms. Anacharis formed dense mats, estimated from 1 to 2 acres in extent, in the lower halves of the south and west arms. Ranunculus was in blossom around the first of July, the small white flowers standing out above other floating vegetation over much of the south and west arms. Duckweed (Lemna) was very abundant, covering entire bays in the quieter water in the upper parts of the pond. Other plants such as Ceratophyllum, Vallisneria spiralis, Brasenia, eight species of Potamogeton, Chara, and Spirogyra contributed to the mass of vegetation in the pond. Vegetation was so thick that it was impossible to use an outboard motor any place except in the channel of the old stream bed.



## Fishing and Fish Life

Allegan sportsmen reported that after the dam was built and Swan Creek Pond flooded the pond furnished good trout fishing for several years. As trout fishing declined, northern pike fishing became better. Now local sportsmen feel that pike fishing is on the decline. At present, bluegill and pumpkinseed fishing seems to be the dominant sport. This angling is usually done with long cane pole and bobber, although fly casting for bluegills from boats is also commonly practiced.

The pond is heavily fished both by shore and boat fishermen. Observations covering the period from June 27 to July 10, 1947, never found the pond without fishermen whether early in the morning, during midday or late in the day. It is a favorite fishing spot for family groups, women and children fishing from the shore while the men use a boat. Several family groups were usually fishing along the shore any week day, while on Saturday and Sunday as many as 20 shore fishermen and 14 boats with 1 to 3 fishermen per boat were observed. At the time of the survey there was no boat livery and all boats were privately owned. Normally about 10 boats were counted locked along the shores. Other boats were brought in with trailers or on the tops of cars.

One interesting phase of fishing activity here is the angling done for bullheads by colored people. Groups of colored men, some coming from as far away as Chicago, make all-night fishing excursions. They wear heavy clothing, boots, and gloves, and build smudge fires for protection from mosquitoes. Then, to use the expression of one of them, they hang onto a tree to keep the mosquitoes from carrying them away.

Good catches of bluegills are frequently made. We talked to fishermen who caught their limit, and numerous strings of 3 to 4 and 8 to 10 fish were observed. Many undersized fish are caught, but also many 7- to 9-inch bluegills were seen on stringers. Other anglers did not have any legal fish. Local sportsmen informed us that the amount of fishing normally decreases as the season progresses.

Experimental gill nets with different sized mesh were set at the lower or deeper end of the pond near the dam, in about the middle of the pond near Pine Point, and in the upper end of the south arm near where Swan Creek enters. In each instance a part of the net was set across the channel where it was thought that trout might be caught if they inhabited the pond.

Species taken in the gill nets and with seine were northern pike, largemouth bass, bluegill, warmouth, pumpkinseed, black crappie, longear sunfish, green sunfish, lake chubsucker, bullhead, white sucker, and golden shiner. Northern pike were taken at all 3 stations, but in small numbers. No young pike were observed at any place in the pond. Legal sized largemouth bass were not caught in the nets, nor were any seen on fishermen's stringers, although legal bass were reported for earlier fishing trips. The young of largemouth bass were frequently observed along the shore, and were readily caught with seines. Some were still on the nests on July 9, 1947.

Seining and netting and observations of fish in the pond and on the stringers of fishermen gave the impression that bluegills are the most abundant species in the lake. They are caught mostly in pockets of the vegetation, from shore along the lower end, and around Pine Point where the stream bed runs along shore. The young were present in great numbers among the vegetation in shallow

water. Some bluegills were seen on the nests, and numerous ripe females and males were caught from June 30, to July 2, 1947. The pumpkinseed sunfish was frequently seen and was fairly well represented on the stringers of fishermen. Ripe females occurred among those in the nets.

Fifteen chubsuckers were caught in the small mesh of the gill nets, and 1 golden shiner. No other forage species were seen or captured. The pond seemed to be largely devoid of forage fishes, although on July 27 one school of possibly 200 golden shiners was seen.

#### Spawning grounds

The greater part of the shoreline of Swan Creek Pond is sandy, and spawning areas are numerous. The area along the south shore of the east arm, from just east of Pine Point to the boat landing, is a more or less continuous spawning area for bluegills, pumpkinseeds, and some largemouth bass. The lower point in the south arm on the east side, which lies just south of Pine Point, was being used almost exclusively by largemouth bass. Seven nests were counted here in a small area (about 100 feet of shoreline). Along the south shore of the west arm numerous spawning areas of bluegills and pumpkinseeds were found.

Insects were abundant in the aquatic vegetation. Fresh-water shrimp were also very common. They could be freely picked from a handful of vegetation. Midge larvae and mosquito wigglers were plentiful in the shallow quiet water of the bays. Damselfly, mayfly, and dragonfly nymphs were numerous.

Several kinds of turtles were commonly found in Swan Creek Pond. Great blue herons were numerous. A few water snakes inhabit the shore areas.

### Management Recommendations

Some local sportsmen have favored the draining of Swan Creek Pond to increase the amount of trout water in that locality. Although temperatures in the stream channel of the pond were suitable for trout in July, 1947, it is rather questionable whether anything would be gained by draining the pond. Trout would have to compete with pike and other warm-water species which now occur in this part of the drainage system. The impoundment provides good fishing for warm-water fishes (especially bluegills), and is quite intensively utilized for angling. Furthermore, the pond possesses considerable scenic interest. Therefore it is recommended that the pond be retained. It has been reported that the pond was largely drained for a time in the fall of 1947 when repair work was done on the dam.

As for the decline of fishing for northern pike, no practicable corrective measure was found for improvement. Netting results did indicate that pike were not especially plentiful. However, such fluctuation in pike abundance as reported for the pond has been observed in other impoundments; the species shows a marked increase shortly after flooding, followed then by a leveling off in numbers as the artificial lake ages.

INSTITUTE FOR FISHERIES RESEARCH

I. A. Rodeheffer and Jason Day

Approved by: A. S. Hazzard

Typed by: M. C. Tait