*Michigan Department of Natural Resources*
*Status of the Fishery Resource Report 96-6, 1996.*
*Renumbered in 2024, Status of the Fishery Resource Report 0050*

# HALL LAKE

*Barry County (T3N, R10W, Sec.27)*
*Surveyed May 4-6, and May 21, 1992*

**James L. Dexter Jr.**

## Environment

Hall Lake is a natural lake which has been enlarged with a small dam. It is located in west-central Barry County within the Yankee Springs Recreation Area. It lies about 6 miles south of the town of Middleville and about 1 mile east of Gun Lake.

Rolling hills and sandy soils characterize the geography of the area (see map of Hall Lake). The watershed is predominantly a mixture of mature oak and pine forest. It lies in a soil association dominated by Coloma-Boyer-Spinks, which are moderately sloping to steep, excessively drained sandy soils on outwash plains and moraines. There are several small springs that feed the lake and one unnamed warmwater outlet at the dam located in the southeast corner of the lake. The outlet stream runs west and becomes a tributary to Gun Lake. It is also the source of water for the Gun Lake's Association's walleye rearing ponds, cooperatively operated with the DNR. Gun Lake's water eventually flows to the Kalamazoo River watershed of Lake Michigan.

Originally, Hall Lake was only about 8 acres in size with a maximum depth of about 6 feet. When the county built Gun Lake Road, the outlet culvert was placed high enough to flood 42 acres. The addition of a dam in 1965 made the lake deep enough to stop once-common winter fish kills, but the lake only increased by 4 more acres, to its present size of 46 acres.

The vast majority of the lake could be considered shoal area, as the deepest water is 20 feet. Before the dam was added, the maximum depth was 12 feet. Organic materials are the predominate bottom type, but there are some marl areas in the deeper portions of the lake and some sandy bottom on the western shores. Submergent and emergent vegetation is common. There are many submerged stumps and logs in the shallower half of the lake due to impounding.

Water quality conditions were surveyed August 8, 1992. There was a slight brown color to the water, but it was quite clear with a Secchi disk reading of 10 feet. Within the water column, alkalinity ranged from 119 to 133 ppm, and pH from 8.5-9.0. These values indicate that the water is hard and well buffered. The water temperature at the time of this survey varied from 72F at the surface to 66F at the bottom. There was no evidence of a thermocline. Dissolved oxygen levels were above 4 ppm from the surface to 13 feet deep. Below 13 feet oxygen levels dropped to 1 ppm. Similar water quality conditions were noted in surveys conducted in 1973 and 1985. My overall impression of the water quality is that it is very good.

There is no development at Hall Lake as it lies entirely within the Yankee Springs Recreation Area. It is accessed by boat anglers from the south shore of the lake, off Gun Lake Road. The access site is dirt, well-maintained, and has room for several vehicles and trailers. Shore fishing access is also good, especially on the south and west shores, as the woods are mature with little underbrush to interfere with casting.

## Fishery Resource

According to historical records, Hall Lake has been actively managed by the state since 1955, when a winterkill was investigated. Examination of the lake at ice out in 1955 revealed a moderate kill had occurred, which included many bluegill and largemouth bass, and some yellow perch, lake chubsuckers, and shiners. Other fish noted as present at that time included northern pike and pumpkinseed. Dead bass averaged 13 inches in size, while bluegill averaged 7 inches. Winter fish kills were also noted in 1956 (2,000 largemouth bass fingerlings were re-stocked in Hall Lake in 1957), and again in 1958. In 1962, northern pike, largemouth bass, and bluegill were restocked to replace continued winter mortalities. These species were stocked once again in 1966 after a complete chemical renovation was conducted in October 1965. The renovation complemented rebuilding of the outlet structure to raise the water level, thereby enhancing recreational opportunities and alleviating frequent winterkills. This construction was completed in 1967.

A fishery survey 10 months after the reclamation indicated that the kill was not total, as pumpkinseeds, lake chubsuckers, and bullheads were collected. Bluegill also survived. An angler interviewed during the survey had an 8.5-inch bluegill, and indicated he had caught other large bluegills earlier in the year.

Electrofishing and netting surveys were conducted on Hall Lake during the late 1960s and early 1970s to follow the progress of the renovation. Throughout this time period the lake provided a very good winter fishery for northern pike. However, reports from anglers and conservation officers indicated that the quality of the fishery collapsed during the winters of 1974 and 1975. A 1976 survey found bluegill and largemouth bass growth rates to be well below state average rates. Because of these results, another chemical reclamation was conducted in September 1977. An extensive fish kill was obtained. Largemouth bass and bluegill fingerlings were stocked soon after the treatment, followed by more largemouth fingerlings in 1978 and 1979. In addition, for some undocumented reason, 800 yearling brown trout were stocked in 1979.

Four electroshocking surveys were conducted between 1978-1983 to follow up on the reclamation. While largemouth had good growth rates during these surveys, bluegill growth slowed to almost 2 inches below state average.

In 1987, DNR Fisheries research personnel recommended Hall Lake as a candidate for a study on stunted bluegill lakes and possible management techniques for improving the fishery. Even though Fisheries Division supported this, and conducted a 1988 spring evaluation (bluegill were still growing well below state average), Parks Division and Law Enforcement Division did not support the use of Hall Lake in the proposed project. The park manager suggested that the lake was popular with kids, and that they didn't mind catching small bluegill. Due to this opposition, Fisheries Division subsequently dropped this lake from consideration.

In 1992 a full survey of the lake was conducted, primarily to evaluate stocking of northern pike. A total of 2,860 northern pike spring fingerlings had been stocked into Hall Lake between 1984-1991. This survey was conducted using two standard trap nets (6'x3'x1.5" mesh), two full-size fyke nets (small mesh), four experimental gill nets (125', six mesh sizes), and a boomshocking boat (240-V DC, nighttime).

Several species of fish were collected during this survey that were not introduced by the state (Table 1). These species included pumpkinseed, yellow perch, black crappie, green sunfish, rock bass, yellow and black bullhead, and golden and common shiners. Bluegill, yellow perch, pumpkinseed, and largemouth bass were the species of greatest importance.

Bluegill were the most abundant fish caught in terms of number and weight. Even though over 40% of the bluegill were of acceptable size (>6.0 inches), the overall mean growth index for

bluegill was almost 1.0 inch below state average. Using Schneider's Index (1990) for bluegill ranking, the population ranked poor to average.

Yellow perch were collected in good numbers, with representatives from ten age classes. Perch growth was at the state average rate (Table 2), and over 90% of the catch reached an acceptable size (>7.0 inches).

Largemouth bass and black crappie were also growing at state average rates. Few older largemouth bass were collected. Only 3 of 401 largemouth were legal size (>12.0 inches). Black crappie were not very abundant, with only age group II being collected in significant numbers.

Three northern pike were collected, all from the 1989 stocking. There was no evidence of natural reproduction of this species. Pike were growing well above the state average rate.

Recruitment rates of bluegill and yellow perch to the first few age classes was variable and low (Table 3). This may be related to sampling gear efficiencies, but I doubt it, as all gear types were deployed. Longevity of adult bluegill and yellow perch is very satisfactory. Black crappie also exhibited typical variability in recruitment, with a very strong 1990 year class and a missing 1988 year class. Largemouth bass exhibited strong survival characteristics through age III, but had very poor survival rates after that. Northern pike recruitment appeared to rely entirely upon our stocking efforts.

Fishing at Hall Lake can be a very pleasurable experience. Pleasant landscapes and good water quality will be preserved because there is no development in the watershed and it is entirely state owned. Access is assured by Yankee Springs Recreation Area. Bluegill, yellow perch, and largemouth bass should continue to provide good fishing, although there are not many big fish available to anglers, except for perch.

## Management Direction

Hall Lake will continue to be managed as a warmwater fishery. Currently, our only management practice at this lake calls for continued stocking of northern pike to provide an additional large predator for anglers to catch. In the past, successful pike stockings have been very popular with anglers who fish this lake. However, no pike have been stocked since 1991 due to the collapse of the pike rearing program at Wolf Lake State Fish Hatchery (the solar facility has been out of order).

We should also consider a low level introduction of flathead catfish into this lake to promote better bluegill growth. Flathead catfish introduction for small bluegill control appears to be working in some test lakes in west Michigan. If the pike program continues to falter, we should stock flatheads into Hall Lake at the rate of 2-4 pounds per acre. (The test lakes are being stocked at a higher rate, 5-10 pounds per acre, because they are more productive than Hall Lake).

The present fishery is better and more stable than any in the past. Improvements can probably be continued by stocking rather than resorting to chemical reclamation. Even though there are dozens of warmwater lakes in the area available to anglers, this one has good access, has very pretty surroundings, and keeps many anglers-especially young ones-quite happy.

Our management goal into the next century will be to maintain or enhance the present fishery without having to resort to chemical reclamation. Stocking of predators will contribute to the fishery for those species, and may improve the bluegill fishery by enhancing the growth and size structure of the bluegill population. Obstacles to obtaining this goal are: 1) failure to raise northern pike at Wolf Lake State Fish Hatchery for stocking and 2) Parks Division possibly not supporting introduction of flathead catfish.

Report completed: December 23, 1996.

## References

Schneider, J.C. Classifying bluegill populations from lake survey data. MDNR Fisheries Division Technical Report 90-10. Ann Arbor.

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**Table 1**.--Number, weight, and length (inches) of fish collected from Hall Lake with trap, gill, and fyke nets and DC boomshocker, May 4-6, and May 21, 1992.

| Species | Number | Percent by number | Weight (pounds) | Percent by weight | Length range (inches)[1] | Average length | Percent legal size[2] |
|---|---|---|---|---|---|---|---|
| Bluegill | 656 | 47.6 | 84.6 | 31.0 | 2-7 | 5.4 | 40 (6) |
| Pumpkinseed | 132 | 9.6 | 27.6 | 10.1 | 2-8 | 6.1 | 59 (6) |
| Yellow perch | 100 | 7.3 | 33.4 | 12.3 | 2-11 | 9.0 | 93 (7) |
| Black crappie | 15 | 1.1 | 3.0 | 1.1 | 2-10 | 6.8 | 27 (7) |
| Green sunfish | 16 | 1.2 | 1.1 | .4 | 3-5 | 4.5 | (6) |
| Rock bass | 5 | .4 | 1.4 | .5 | 5-8 | 7.1 | 80 (6) |
| Largemouth bass | 401 | 29.1 | 75.2 | 27.6 | 3-19 | 7.9 | 1 (12) |
| Northern pike | 3 | .2 | 18.1 | 6.6 | 29-30 | 29.8 | 100 (20) |
| Yellow bullhead | 32 | 2.3 | 15.5 | 5.7 | 7-12 | 9.7 | 100 (7) |
| Black bullhead | 14 | 1.0 | 12.2 | 4.5 | 10-13 | 12.3 | 100 (7) |
| Golden shiner | 4 | .2 | .4 | .2 | 2-8 | 4.3 | - |
| Common shiner | 1 | .1 | 0 | 0 | 4 | 4.5 | - |
| Total | 1379 | 100.0 | 272.6 | 100.0 | | | |

[1]Note some fish were measured to 0.1 inch, others to inch group: e.g., "5"=5.0 to 5.9 inches, "12"=12.0 to 12.9 inches, etc.

[2]Percent legal size or acceptable size for angling. Legal size or acceptable size for angling is given in parentheses.

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**Table 2**.--Average total weighted length (inches) at age, and growth relative to the state average, for fish sampled from Hall Lake with all gear, May 1992. Number of fish aged is given in parentheses.

| Species | Age I | II | III | IV | V | VI | VII | VIII | IX | X | Mean growth index[1] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Bluegill | 1.4 (7) | 2.1 (12) | 3.8 (19) | 5.5 (12) | 6.0 (9) | 6.6 (11) | 6.6 (3) | 7.5 (1) | --- | --- | -0.9 |
| Yellow perch | 3.4 (2) | 6.8 (1) | 7.4 (5) | 9.4 (1) | 9.3 (8) | 9.1 (6) | 9.1 (4) | 9.1 (2) | 10.0 (9) | 9.6 (2) | 0 |
| Black crappie | 2.6 (1) | 6.4 )10) | 8.0 (1) | --- --- | 9.9 (2) | --- --- | --- --- | --- --- | --- --- | --- --- | +0.4 |
| Largemouth bass | 4.6 (27) | 7.6 (21) | 9.5 (23) | 11.0 (7) | 10.5 (1) | --- | --- | --- | --- | --- | -0.2 |
| Northern pike | --- | --- | 29.4 (3) | --- | --- | --- | --- | --- | --- | --- | --- |

[1]Mean growth index is the average deviation from the state average length at age

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**Table 3**.--Estimated age frequency (percent) of fish caught from Hall Lake with all gear, May 1992.

| Species | Age I | II | III | IV | V | VI | VII | VIII | Number caught |
|---|---|---|---|---|---|---|---|---|---|
| Bluegill | 5 | 4 | 9 | 30 | 19 | 28 | 4 | 0 | 656 |
| Yellow perch | 2 | 1 | 8 | 4 | 21 | 20 | 13 | 5 | 100 |
| Black crappie | 7 | 73 | 7 | --- | 13 | --- | --- | --- | 15 |
| Largemouth bass | 24 | 30 | 39 | 6 | 1 | --- | --- | --- | 240 |
| Northern pike | --- | --- | 100 | --- | --- | --- | --- | --- | 3 |

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**HALL LAKE**

*Barry County (T3N, R10W, Section 27)*

**MANAGEMENT PLAN**

*based on*

*Status of the Fishery Resources Report 96-6*

**James L. Dexter Jr.**

Our fisheries management goal into the next century will be to maintain or enhance the present fishery and enhance bluegill growth rates without having to conduct a third chemical reclamation. There are two options for obtaining this goal.

Option 1 is to manage for northern pike by continuing the request for spring fingerlings; they would be stocked at the rate of 7/acre/year. While pike stocking most likely will not cause any substantial change in the growth rates of other game fish in Hall Lake, pike would provide an additional predator for anglers and would help maintained the present fishery. If pike cannot be obtained for stocking, then we will proceed to option 2.

Option 2 is to implement flathead catfish introduction. As a first step, the concept should be discussed with Parks Division. If there is a reasonable climate for this introduction, the next step is to obtain flathead catfish adults (15-20 inches long) from the Kalamazoo River for stocking into Hall Lake for bluegill control. Flatheads would be stocked at the rate of 2-4 pounds per acre.

If flatheads are stocked, it will be preceded by a trapnet survey to assess the bluegill population. This would be followed with similar surveys 3 and 5 years after the introduction to assess flathead effects on bluegill size, growth, and number.

If flathead catfish are not stocked, but northern pike stocking resumes, assessment surveys will be conducted at the usual 6-year intervals.

We do not anticipate any obstacles to achieving our management goal. Water quality is good, fishing is good at present, but it could be better. If neither options 1 or 2 are accomplished, then we can probably expect the fishery to slip to a poorer quality, similar to what was experienced before the last chemical reclamation.

Anglers should not expect a yield of flathead catfish from Hall Lake. This would be considered an experimental introduction and the catfish would be protected from harvest. If northern pike are stocked, I would optimistically expect 20-25% to be harvested at legal size at the rate of 2-3 pounds per acre.

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**Last Update:** 08/05/02
**Web Author:** *Tina M. Tincher, Librarian*

**Questions, comments and suggestions are always welcome! Send them to**
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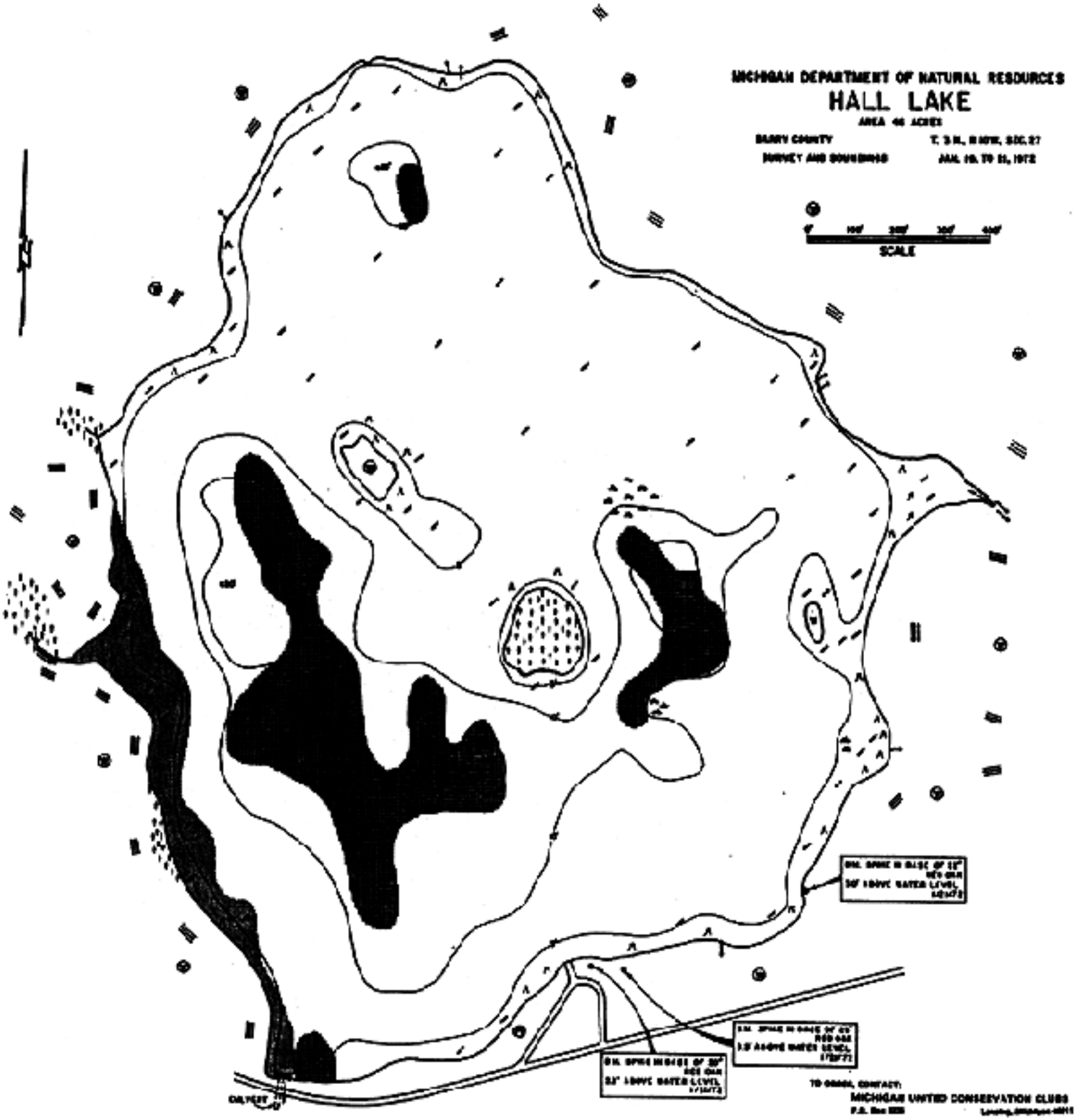
MICHIGAN DEPARTMENT OF NATURAL RESOURCES
HALL LAKE
AREA 46 ACRES
BARRY COUNTY
T. 3 N., R 8 W., SEC. 27
SURVEY AND SOUNDINGS
JUNE 10, TO 11, 1972
SCALE
LEGEND
BOTTOM
Sand
Organic
Marl
Deadhead
Stump
SHORE FEATURES
Encroaching shore
Steep slope
Wooded
Partly wooded
Brush
Marsh
Spring
Improved road
Inlet or outlet
Dam
TO OBTAIN CONTACT:
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