Michigan Department of Natural Resources
Status of the Fishery Resource Report 96-2, 1996.
Renumbered in 2024, Status of the Fishery Resource Report 0046

FOUR MILE LAKE

Washtenaw County (T2S, R4E, Section 4)
Surveyed May 1995

Michael P. Herman

Environment

Four Mile Lake is located in the Chelsea State Game Area which is approximately 1 mile north and 2 miles east of the Village of Chelsea (see map of Chelsea State Game Area). This lake covers a surface area of 256 acres, has a maximum depth of only 18 feet and is part of the Huron River watershed. There is a shallow intermittent inlet at the lake's northeast end and a permanent outlet to Mill Creek is located at the lake's southwest end.

Because of periodic flooding which has historically resulted in seasonal fluctuations in the Four Mile Lake level, several affected property owners petitioned the Washtenaw County Board of Commissioners in 1982 to set a legal lake level. In 1984, the legal lake level was set at 887.0 feet above sea level. The first phase of this project, completed in 1988, involved cleaning out the Four Mile Lake drain and installing a new water control structure. The second phase of the project was completed in 1991 and included the installation of a sediment basin and a water pump on the lake's northeast side near where Drain #3 enters Four Mile Lake. This pump was installed to prevent the backflow of water from Four Mile Lake onto private lands after the lake level was raised. Over time, water from Four Mile Lake began flowing through the wetland area on the lake's southwest side. In March of 1996, litigation involving the alleged flooding of an adjacent property owner (Mr. Martin Merkel) was initiated. This suit claims that Mr. Merkel's property has been flooded as the result of two breaches in a dike maintained by the State of Michigan. This litigation is pending.

Four Mile Lake was dredged for marl in the past and nearly the entire lake bottom is composed of it (Brown 1941). A cement plant once operated on the south end of this lake. Located just south and west of Four Mile Lake are several ponds, locally called "the marl pits," which were created from past marl dredging operations. There is also a marl pond located just north of Four-Mile Lake. Collectively these ponds cover an area of approximately 60 acres (see map of Chelsea State Game Area). Local Conservation Officers report that all of these ponds have fair to good bass and bluegill populations and anglers can access them by trails or small boats. No fishery survey data is on file for these ponds.

Four Mile Lake is characterized as having gradual drop-offs and over 75% of the lake's surface area has water less than 5 feet in depth (see map of Four Mile Lake). Submergent aquatic vegetation is abundant in Four Mile Lake. Coontail (*Ceratophyllum sp*.) and broad-leaf pond weed (*Potamogeton sp.*) are the most prominent vegetation types; Eurasian milfoil (*Myriophyllum spictatum*), bulrush, pond lily, and other pond weed species are present. Cattails are abundant along the southern and western shores. This lake is almost completely surrounded by state land and is mostly undeveloped. Approximately 10 seasonal and year-round homes are located on the east side of the lake and the remainder of the lake's shoreline is low and marshy. A small, gravel boat launch is located on the south end of the lake.

History

Bluegill, largemouth bass, yellow perch, and northern pike were stocked in Four Mile Lake in the late 1930s and in the 1940s. These stocking programs were discontinued shortly thereafter. Hatchery-reared northern pike were stocked in Four Mile Lake in 1983, 1984, and 1985. This lake was mapped in March 1941.

The first fish survey on record was conducted in 1941 (Brown 1941). It captured bluegill, pumpkinseed sunfish, yellow perch, black crappie, rock bass, largemouth bass, and northern pike as well as an assortment of various types of minnows. In 1960, an extensive survey with a very large seine was made. Bluegill and pumpkinseed were the most abundant species. Based on fish scale analysis, bluegill, pumpkinseed, yellow perch, black crappie, and northern pike were all growing slightly above state average growth rates. In 1976, a fall survey indicated a slight decline in bluegill and pumpkinseed growth rates and a significant improvement in the growth of black crappie had occurred since 1960.

A trap net and gill net survey in 1985 resulted in a very good catch of bluegill, pumpkinseed sunfish, rock bass, bullheads, and northern pike. Bluegills averaged 6.4 inches and exhibited growth rates that were approximately 0.5 inch below the state average. Age and growth analysis revealed that fish were attaining a large size because they are relatively long-lived. This survey also indicated a very impressive population of pumpkinseed sunfish was present Their average size exceeded that of the bluegill. Usually pumpkinseeds are substantially smaller average size than bluegills. Growth analysis indicated that pumpkinseeds exhibited above average growth rates and were long-lived. Black crappies exhibited near-average growth rates and a large average size. This survey produced a good catch of northern pike, however, these fish were growing well below the state average growth rate. Northern pike fingerlings, which were raised in the hatchery system on dry pellet food, were stocked for 2 years prior to the 1985 survey. If the pike captured in this survey were aged correctly, then none of the stocked fish were captured. Only 3- and 4-year-old pike were taken. The pike stocking program for this lake was subsequently discontinued.

A catch of fish very similar to previous trap and gill net surveys of Four Mile Lake was made during a survey in 1990. Bluegills comprised 40% of the trap net catch and averaged 6.3 inches. Pumpkinseed average size, nearly 7 inches, once again exceeded that of bluegill. Pumpkinseeds exhibited growth rates nearly 1 inch above the state average, whereas bluegills had moderately slow growth. Nearly 200 bullheads were captured in trap nets. They comprised over 32% of the total catch by number and nearly 50% of the catch by weight, and had an average length of 12.5 inches. Because bullheads were both abundant and large, they appear to be underutilized by anglers. Even though largemouth bass are infrequently captured with trap or gill nets, 14 bass averaging nearly 14 inches were caught during the 1990 survey and over 50% of them were legal size. Sixteen fast-growing northern pike were captured which averaged over 21 inches in length.

Fisheries personnel from the Jackson District have successfully raised redear sunfish since 1984 and have stocked over 2.5 million fingerlings in over 30 area lakes. This fast-growing panfish, originally native to the southeastern United States, has become increasingly popular among anglers since their first introduction to a few southern Michigan lakes in the early 1950s. Preliminary evaluations have generally shown good survival of stocked redears, and their natural reproduction has been confirmed in several lakes. Redear sunfish were introduced into Four Mile Lake in 1987. Although only four redears were caught during the 1990 survey, they averaged nearly 9 inches and appeared very healthy and robust. More redear sunfish were stocked in this lake in 1991, 1992, and 1993.

This lake has historically been very popular with anglers and receives moderately heavy fishing pressure during the open water and ice fishing seasons. The lake is apparently heavily used by waterfowl hunters in the fall as evidenced by the numerous hunting blinds located along the

shoreline.

Fishery Resource

Four Mile Lake was last surveyed in May of 1995 with four standard trap nets (8 x 5 x 3-foot, 1.5-inch mesh) and two experimental gill nets (125-ft long, six mesh sizes). The trap nets were fished for 2 nights and the gill nets were fished for 1 night. Gamefish species captured during this survey in descending order of abundance included bluegill, redear sunfish, yellow bullhead, black crappie, northern pike, brown bullhead, rock bass, largemouth bass, pumpkinseed sunfish, and yellow perch (Tables 1a and 1b).

Evaluation of the redear sunfish previously stocked into this lake was one of the primary objectives of the 1995 fish survey. Approximately 78,000 fingerlings were stocked in 1987-93. The 1995 survey resulted in the capture of 52 redear adults, most of which were 4 years old and were likely survivors from fingerlings stocked in 1991. Redear growth was 0.5 inch above the state average, as verified by fish scale analysis. Age analysis indicated that some redears belonged to year classes which had not been stocked (1989 and 1990) and that some natural reproduction had taken occurred Some redears over 10 inches were captured, indicating the goal of creating a "trophy" panfish had been achieved. Natural reproduction, growth and survival of this species should continue to be monitored and a follow-up survey is tentatively scheduled for the spring of 1999.

Bluegills comprised over 30% of all fish caught in trap nets and they averaged nearly 6 inches long. Fifty-three percent of the bluegills caught in trap nets were at least 6 inches, an acceptable size to most anglers (Table 1a). Based on growth analysis using fish scales, bluegills caught in trap and gill nets during 1995 exhibited growth rates that were approximately 0.5 inch below the state average (Table 2a).

Black crappie caught in trap nets averaged 9.5 inches in length and exhibited growth rates slightly above the state average rate. Over 90% of all the crappies were over 7 inches long or "keeper" size.

The northern pike catch was impressive. Twenty-four pike ranging in size from 17 to 29 inches (average over 21 inches) were captured in trap and gill nets. As a group, northern pike exhibited slow growth but those caught during the 1995 survey appeared very healthy and robust.

In general, few largemouth bass are caught with trap and gill nets and this survey was no exception. Only 15 largemouth were captured and they averaged just over 12 inches. Largemouth bass exhibited below average growth trends but too few fish were sampled to be statistically significant.

Pumpkinseed sunfish caught in trap nets averaged nearly 7 inches and approximately 75% of them were of acceptable size to anglers. Fish scale analysis indicated these fish were growing just above state average rates.

Many large bullheads were caught in trap nets. They averaged nearly 11 inches each, and all exceeded 7 inches in length, the size acceptable to most anglers.

Anglers interviewed during the fish survey reported consistent angling success for northern pike and panfish during the open water months as well as during the ice fishing season.

Analysis

Bluegills are targeted for sampling in inland lakes because of their role in determining fish community structure and overall sportfishing quality (Schneider 1981). Even though the goal of lake surveys is to sample all fish species and all sizes present, many times the bluegill population is the only one adequately sampled because bluegills are typically the most abundant. Recently a

ranking system has been developed that allows fish managers to get an idea of the relative quality of a lake's fish population (Schneider 1990). On a scale of 1 to 7, the quality of the bluegill population in Four-Mile Lake based on the trap net catch was calculated as 3.25 or "acceptable".

Survey records show that species composition has remained relatively unchanged since the lake was first surveyed in 1941. Bluegill growth has remained consistent over the last 50 years. Although bluegill growth is slightly below the state average, this species is quite abundant and provides anglers with significant angling opportunities.

Pumpkinseed growth improved markedly since the 1976 survey of this lake when pumpkinseeds were observed growing 0.5 inch below the state average. In 1990, pumpkinseeds exhibited growth rates of nearly 1 inch above the state average and they presently exhibit growth rates of nearly 0.5 inch above the state average.

Northern pike are quite abundant in Four Mile Lake and provide anglers with excellent angling opportunities.

Improvements in black crappie growth have been observed since the 1985 survey when crappie exhibited somewhat slow growth. In 1990, crappies exhibited growth rates that were approximately 0.5 inch above the state average, and in 1995, crappies grew just above the state average rate.

Age composition and survival characteristics of the species listed in Table 2 appear to be normal based on scale sample frequencies. The longevity of black crappie appears to be above average.

Management Direction

Four Mile Lake supports a varied fish community and most gamefish species are growing at state average rates. Redear sunfish introductions have been successful and anglers have reported catching these large panfish. Continued evaluation of redear sunfish growth, survival and natural reproduction is recommended. Four Mile Lake presently supports good populations of bluegill, redear sunfish, black crappie, and northern pike for angling and anglers are very satisfied with the existing fishery. Additionally, area Conservation Officers have reported anglers catching large numbers of bluegills each summer for the past several years. Even though these fish are not large, they are considered "keeper" size, are very abundant, and provide significant angling opportunity for many anglers. No radical fishery management is recommended at this time.

Report completed: December 30, 1996.

References

Brown, C. J. D. 1941. Fisheries survey of Four Mile Lake, Washtenaw County, Michigan. Michigan Department of Natural Resources, Fisheries Research Report 694, Ann Arbor.

Schneider, J.C. 1981.Fish communities in warmwater lakes. Michigan Department of Natural Resources, Fisheries Research Report 1890, Ann Arbor.

Schneider, J.C. 1990.Classifying bluegill populations from lake survey data. Michigan Department of Natural Resources, Fisheries Technical Report 90-10, Ann Arbor.

Table 1a.-Number, weight and length indices of fish collected from Four Mile Lake with trap nets, May 25 and 26, 1995.

	Length	Percent

Species	Number	Percent by number	Weight (pounds)	Percent by weight	range (inches)[1]	Average length	legal size[2]
Bluegill	114	34.7	17.5	6.0	4-7	5.9	53
Largemouth bass	7	2.0	9.6	3.4	7-18	12.6	43
Pumpkinseed	13	4.0	3.7	1.0	5-8	6.9	77
Black crappie	34	10.0	17.8	6.0	5-12	9.5	91
Yellow perch	1	0.1	0.3	0.1	8.5	8.5	100
Golden shiner	1	0.1	0.4	0.1	7.5	7.5	--
Redear sunfish	49	15.0	24.9	9.0	5-10	8.6	96
Rock bass	11	3.0	4.5	2.0	5-10	7.8	73
Northern pike	7	2.0	22.4	8.0	18-29	23.8	43
White sucker	4	1.0	12.7	4.0	18-19	19.0	--
Yellow bullhead	33	10.0	20.4	7.0	7-12	10.8	100
Brown bullhead	15	4.0	17.0	6.0	12-14	13.6	100
Hybrid sunfish	1	0.1	0.2	0.1	6.5	6.5	0
Bowfin	43	13.0	128.8	46.3	13-24	20.1	--
Longnose gar	2	1.0	3.2	1.0	22-29	26.0	--
Total	335	100.0	283.4	100.0			

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

[2]Percent legal size or acceptable for angling.

Table 1b.-Number, weight and length indices of fish collected from Four Mile Lake with gill nets, May 25, 26 1995.

Species	Number	Percent by number	Weight (pounds)	Percent by weight	Length range (inches)[1]	Average length	Percent legal size[2]
Bluegill	2	3.0	0.6	0.8	7.5	7.5	100
Redear Sunfish	3	4.5	1.3	1.7	7-9	8.2	100
Black crappie	2	3.0	1.4	1.8	9.5	9.5	100
Yellow perch	3	4.5	1.4	1.8	7-12	9.8	100
Largemouth bass	8	11.9	7.3	9.6	9-14	11.9	25
Northern pike	17	25.4	34.9	45.6	17-26	20.8	18
Yellow bullhead	13	19.4	7.7	10.1	7-12	10.7	100
Brown bullhead	5	7.5	5.7	7.5	11-14	13.5	100
White sucker	1	1.5	3.4	4.5	19.5	19.5	--
Rock bass	8	11.8	3.1	4.1	6-9	7.9	100
Longnose gar	4	6.0	9.2	12.1	23-39	29.8	--
Grass pickerel	1	1.5	0.3	0.4	11.5	11.5	--
Total	67	100.0	76.3	100.0			

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

[2]Percent legal size or acceptable size for angling.

Table 2.-Average total length (inches) at age, and growth relative to the state average, for five species of fish sampled from Four Mile Lake with trap and gill nets, May 25 and 26, 1995. Number of fish aged is given in parentheses.

	Age								Mean Growth
Species	I	II	III	IV	V	VI	VII	VIII	Index[1]

Bluegill			4.6 (6)	5.3 (12)	6.6 (16)	7.1 (4)	7.7 (3)		-0.4
Largemouth bass			9.2 (4)	10.5 (3)	10.9 (1)	13.6 (5)			-1.1
Redear sunfish			6.2 (3)	8.5 (24)	8.7 (5)	7.2 (1)			+0.5
Black crappie		5.6 (6)	8.3 (3)	9.1 (9)	9.9 (12)			12.4 (3)	+0.2
Northern pike		18.7 (4)	19.0 (7)	21.2 (7)	24.3 (2)	26.8 (5)			-1.4
Pumpkinseed				6.1 (1)	6.5 (6)	7.6 (3)	7.9 (2)		+0.3

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

Table 3.-Estimated age frequency (percent) of five species of fish caught from Four Mile Lake with trap and gill nets, May 25 and 26, 1995.

					Age					Number
Species	I	II	III	IV	V	VI	VII	VIII	IX	caught
Bluegill			16	30	42	12				116
Redear sunfish			10	75	13	2				52
Black crappie		11	11	30	40			5	3	37
Northern pike		16	28	28	8	20				24
Pumpkinseed				8	50	25	17			12

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

Questions, comments and suggestions are always welcome! Send them to
tinchert@michigan.gov

FIGURE 1

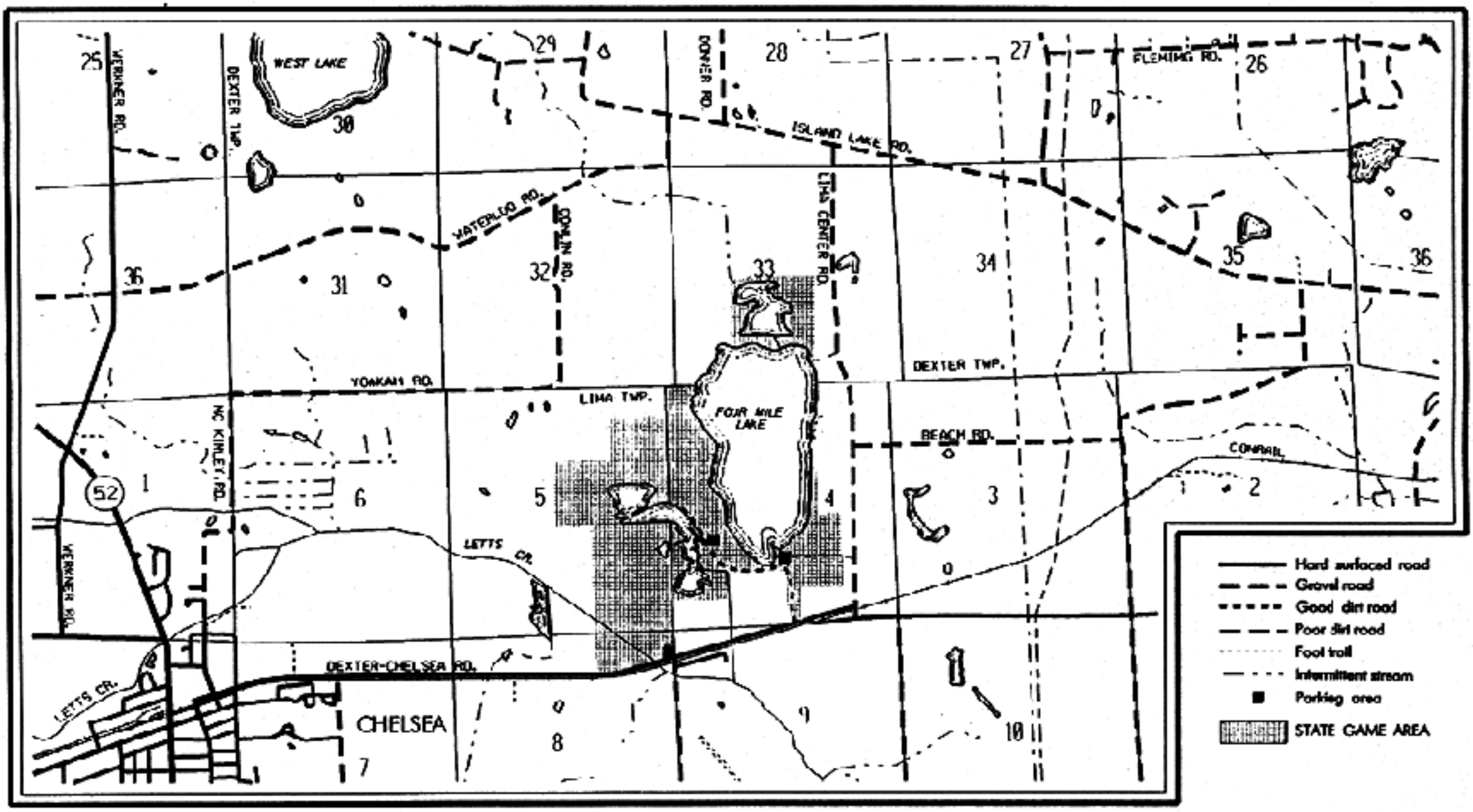
MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

CHELSEA STATE GAME AREA

WASHTENAW COUNTY, MICHIGAN

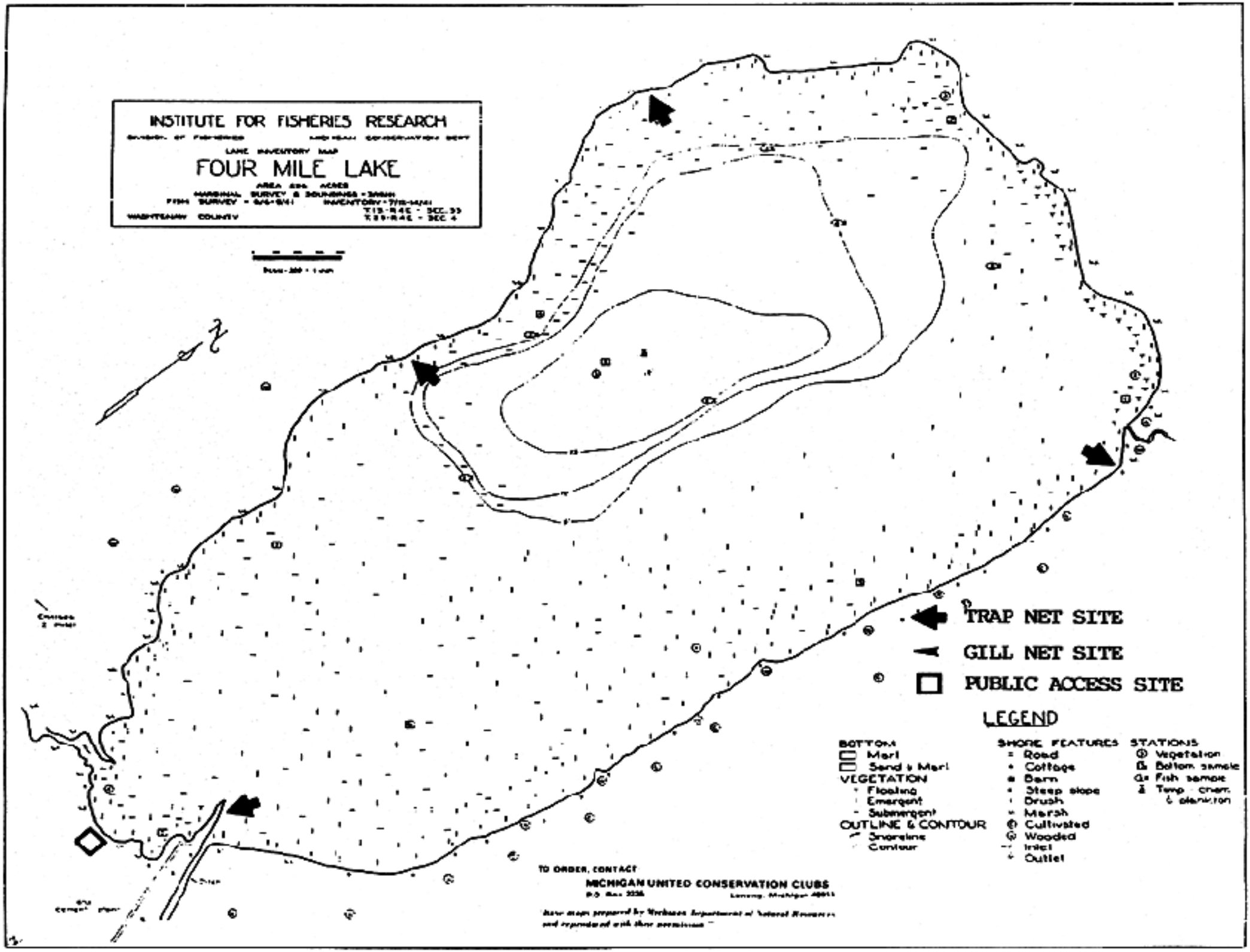
Scale

0 1 2 Miles



DNR

FIGURE 2


INSTITUTE FOR FISHERIES RESEARCH
LAKE INVENTORY MAP
FOUR MILE LAKE
WASHTENAW COUNTY
TRAP NET SITE
GILL NET SITE
PUBLIC ACCESS SITE
LEGEND
BOTTOM
Marl
Sand & Marl
VEGETATION
Floating
Emergent
Submergent
OUTLINE & CONTOUR
Shoreline
Contour
SHORE FEATURES
Road
Cottage
Barn
Steep slope
Brush
Marsh
Cultivated
Wooded
Inlet
Outlet
STATIONS
Vegetation
Bottom sample
Fish sample
Temp. chem. & plankton
TO ORDER, CONTACT
MICHIGAN UNITED CONSERVATION CLUBS