

## KIRK LAKE

*Cass County (T6S, R13-14W, Sections 19 and 24) Surveyed  
June 27-28, 1990*

**James L. Dexter, Jr.**

### Environment

Kirk Lake is a natural lake located in east central Cass County ([see map of Kirk Lake](#)). It lies about 2 miles east of the small town of Vandalia. Small rolling hills characterize the topography of the area. The northeastern shoreline is owned by the State of Michigan (Crane Pond State Game Area).

The watershed is a mixture of cultivated farm fields, pig farms, and woods. No information exists on the soil types of the area.

Kirk Lake is 41.5 acres in size and has a maximum depth of 23 feet. Shoals, composed mostly of pulpy peat and marl, make up about 40% of the lake area. Aquatic vegetation is abundant throughout the lake. Floating and emergent species ring the entire lake to a depth of about 5 feet.

Belas Lake is the source of the only inlet. An outlet drains west into Wildcat Drain and eventually into Christianna Creek. Both inlet and outlet are rated as second quality warmwater streams. This small watershed lies in the St. Joseph River Basin.

Water quality conditions were studied on July 27, 1990. The color of the water was light brown, and Secchi disk readings were 11.5 inches. Within the water column, alkalinity ranged from 144 ppm at the surface to 162 ppm at the bottom. The pH was 7.8 at the surface. These values indicate that the water is well buffered and very hard. Water temperatures ranged from 76.1°F at the surface to 55.4°F at the bottom (20 feet). A thermocline began at 8 feet. Dissolved oxygen levels were sufficient for fish to a depth of 11 feet (2.5 ppm). Surface oxygen levels were 8.1 ppm.

Development is very limited on Kirk Lake, because much of the surrounding shoreline is marshy or wet. An access site exists on the south side of the lake. This site can handle up to five vehicles with trailers.

### Fishery Resource

There are few historical records for this lake. Bluegills were stocked from 1934 through 1940. During the late 1940's, there was good fishing for bluegill, largemouth bass, and fair fishing for perch and black crappie. White suckers and bowfin were said to be numerous. This same type of fishery was documented in a 1973 netting survey. Growth rates of bluegill and crappie were well above state averages.

Before the access site was upgraded in 1980, access to the lake was possible only by a very poor trail road. This was passable only in dry periods, which kept angler use of Kirk Lake to a minimum.

During this most recent survey, three different types of nets (2 each) were fished for one night. These

nets included standard 6' x 3' x 1.5" trapnets, mini-mesh (1/4") full-size fyke nets, and 125'- long experimental gillnets. The fish community found during this survey (Table 1) was virtually unchanged from previous surveys. However, a few species were found in the 1990 survey that had not been previously recorded. These included carp, pumpkinseed sunfish, and shortnose gar. No black crappies were collected in this survey, although they had been found in the past.

The present fish community of Kirk Lake is dominated by good numbers of large bluegills. More than 76% of the bluegills captured were 6 inches or larger, and 43% of these were over 7 inches. Schneider (1990) developed five criteria for ranking bluegill populations from survey catches in Michigan. Using these criteria, Kirk Lake bluegills ranked about 5 (good) on a scale of 1-7. Data from the 1973 survey ranked bluegills at 4.8, or slightly below the current ranking. Bluegills as large as 9.5 inches were collected in the 1990 survey.

Only a few northern pike, largemouth bass, and yellow perch were collected in this survey. The northern pike may be the offspring of 100 fall fingerlings stocked into Belas Lake in 1954. Too few of these species were collected to make any determination about their status. One angler reported that bluegill, crappie, and northern pike fishing at Kirk Lake was very good, and that most angler pressure occurred during the winter.

Growth rates of bluegills were just above state average (Table 2). The few largemouth bass, yellow perch, and northern pike collected were growing at state average rates.

The age composition and survival characteristics of bluegills appear to be normal considering that relatively few small fish were sampled (Table 3). Significant mortality, either from fishing or natural causes, apparently takes a large portion of the bluegills between age IV and V.

Fishing at Kirk Lake can be a very enjoyable experience. Limited development and low fishing pressure lend a wilderness aura to the lake. Compared to other area lakes similar in chemical and physical properties, Kirk Lake is a good fishing lake. The bluegill population is better than those found in many other lakes. Natural reproduction by northern pike should be a welcome addition in this area where pike are sparse.

### **Management Direction**

No intensive management activities need to be undertaken for this lake. The fishery, the surrounding lake shore area, and the watershed should not be undergoing any major changes in the near future. Kirk Lake should continue to produce a high quality warmwater fishery for years to come. A favorable balance among natural reproduction, growth, species mix, and low public use will all contribute to maintaining the good health of the fish community.

Report completed: June, 1991.

### **References**

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

**Table 1.-**Number, weight, and length (inches) of fish collected from Kirk Lake with trap, fyke, and gill nets on June 27-28, 1990

Species	Number	Percent by number	Weight (pounds)	Percent by weight	Length range (inches) <sup>1</sup>	Average length	Percent legal size <sup>2</sup>
Bluegill	180	74.7	34.1	36.7	2-9	6.6	76.1 (6)
Pumpkinseed	18	7.5	2.5	2.7	4-7	5.9	50.0 (6)
Bullhead	9	3.7	4.2	4.5	8-11	10.2	100.0 (7)
Yellow perch	8	3.3	1.7	1.8	6-8	7.9	87.5 (7)
Warmouth	7	2.9	0.5	.5	4-5	4.9	0.0 (6)
Bowfin	7	2.9	32.7	35.2	20-30	23.9	-
Largemouth bass	5	2.1	1.8	1.9	7-10	9.7	0.0 (12)
Shortnose gar	4	1.7	5.7	6.1	14-26	20.8	-
Northern pike	2	0.8	1.2	1.3	14-17	16	0.0 (20)
Carp	1	0.4	-	-	24	24.5	-
Total	241	100.0	84.4	90.9			

<sup>1</sup>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.

<sup>2</sup>Percent legal size or acceptable size for angling. Legal size or acceptable size for angling is given in parentheses.

**Table 2.-**Average total length (inches) at age, and growth relative to the state average, for fish sampled from Kirk Lake with trap, fyke, and gill nets on June 27-28, 1990. Number of fish aged is given in parentheses. Top average is weighted by length frequency distribution; bottom average is not weighted.

Species	Age								Mean growth index <sup>1</sup>
	I	II	III	IV	V	VI	VII	VIII	
Bluegill	3.0	3.8	5.6	7.3	8.2	8.5	-	9.2	+0.6
	(6)	(12)	(19)	(10)	(6)	(4)	-	(1)	-
	3.1	4.0	5.8	7.2	8.2	8.5	-	9.2	-
Largemouth bass	-	-	9.5	-	-	-	-	-	+0.1
	-	-	(5)	-	-	-	-	-	-
	-	-	9.5	-	-	-	-	-	-
Yellow perch	-	-	6.6	8.0	-	-	-	-	+0.2
	-	-	(1)	(7)	-	-	-	-	-
	-	-	6.6	8.0	-	-	-	-	-
Northern pike	-	14.4	17.3	-	-	-	-	-	-
	-	(1)	(1)	-	-	-	-	-	-
	-	14.4	17.3	-	-	-	-	-	-

<sup>1</sup>Mean growth index is the average deviation from the state average length at age.

**Table 3.-**Estimated age frequency (percent) of fish caught from Kirk Lake with trap, fyke, and gill nets on June 27-28, 1990.

Species	Age								Number caught
	I	II	III	IV	V	VI	VII	VIII	
Bluegill	4	8	39	44	3	2	-	1	180
Largemouth bass	-	-	100	-	-	-	-	-	5
Yellow perch	-	-	13	88	-	-	-	-	8
Northern pike	-	50	50	-	-	-	-	-	2

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