

CLEAR LAKE

Jackson County (T1 and 2S, R2E, Sections 1, 2, 35, and 36)
Surveyed May 30, 1991

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Environment

Clear Lake lies in extreme eastern Jackson County, less than one mile from the Washtenaw County line. The small community of Waterloo is less than two miles to the north and the City of Jackson is approximately 12 miles to the southwest.

This lake, in the Waterloo Recreation Area, is surrounded by rolling tree-covered hills. Many other lakes and marshes dot the landscape nearby. Clear Lake was mapped in 1944 by the Michigan Department of Conservation. In the mapping report, R. Scholman, mapping party leader, referred to Clear Lake as "the most scenic lake in Jackson County". Permanent houses and cottages now surround nearly 75% of the shoreline. A county park on the western shore offers swimming and carry-on boat access, but there is no public boat launch.

Clear Lake spans 136 acres and has one major basin with a maximum depth of 34 feet ([see map of Clear Lake](#)). Basin substrates are composed mostly of marl, with lesser amounts of sand and fibrous peat. There are no large inlets; apparently spring-flow from surrounding hills maintains the lake water level. Water exits the lake through a small outlet along the northern shore. A concrete sill helps to maintain the water level in the lake.

In 1944, an inventory of aquatic plants was conducted. *Chara* sp., a macro-algae, was found to be the most dense plant in the lake. Lily pads, bulrushes, pondweeds, and many other plant species common to area lakes were also found. Details of that study can be found in the files.

History of the Fishery

The first recorded inventory of biological and physical features of Clear Lake occurred in 1936. At that time there were numerous cottages, a few resorts, and "one or two" boat liveries. Even at that time, summer fishing pressure was reported as "heavy" and the lake had a good fishing reputation. During that study, a rather typical collection of warmwater fish was present including: bluegill, largemouth bass, yellow perch, pumpkinseed, rock bass, green sunfish, mud pickerel, black crappie, brown bullhead, yellow bullhead, and a host of shiners, darters, and minnows. Conspicuously absent from that report were northern pike, a large predatory species common to area lakes.

Stocking records indicate that Clear Lake was planted with bluegills, bass and perch several times between 1937 and 1946. This was a common practice in public waters until fishery research showed that such stocking was unnecessary and uneconomical. Fingerling smallmouth bass (3,000) were stocked in 1946. Sandy shoals with fair amounts of gravel led to expectations of smallmouth bass reproduction. Apparently similar considerations were made when walleye fry were stocked from 1951 through 1955. Subsequent surveys and fishing reports indicate that neither of these species survived.

The lake mapping party reported that "nice catches of bluegills, perch and pike" were made by anglers during the winter of 1944. The party did not attempt to collect fish.

The first detailed fishery survey of Clear Lake was conducted in 1956. Trap nets, gill nets and seines were used in an effort to fully evaluate the fish population. Similar species (as those reported earlier) were found with the additions of northern pike and bowfin (dogfish). The growth rates of game fish captured in 1956 were analyzed using fish scales. Average growth rates for most species were found to be below state averages. Yet, pumpkinseed, yellow perch, and rock bass appeared to be growing above state average rates.

Another survey, in 1961, captured nearly 4,400 fish. During this survey a large seine (1,600 feet long) was used to sample approximately 10 acres of the lake. Once again growth rates were poor. Bluegills and black crappie were found to be growing an inch or more below state average growth rates. Largemouth bass and northern pike were growing more than 2 inches below state averages. Only pumpkinseed and yellow perch were growing at average rates. The largest bluegill captured during that survey was 7.3 inches long.

A survey in 1971 (using gill, fyke, and trap nets) again captured many fish, but of relatively small size. Growth was not analyzed, but observers reported that bluegills appeared "stunted" while pumpkinseed were in fair condition. The average size of the pumpkinseed catch (5.9 inches) was 0.4 inches above that for bluegills.

In 1985, another intensive survey of the fish population indicated that growth trends over time were very stable and, in general, well below state averages. The average growth rates for bluegills and crappie were well below state rates. Some larger bluegills were captured in this survey (up to 8.3 inches), but they were found to be old fish. In fact, over 71% of scale-sampled bluegills were 5 years old or older. After that study, it was concluded that fish were growing slower, but surviving longer than in other comparable lakes. This resulted in a fair to good panfish fishery. Pumpkinseed once again supported a larger average size than bluegills. Fishing pressure remained "intense" during that period with many reports of limit catches of bluegills in the first few weeks of the ice fishery.

Because pumpkinseed sunfish consistently exhibited good growth and condition in the lake, redear sunfish were stocked in 1987. Redear usually do well in clear, marl bottom

lakes. Snails are a preferred food item of both pumpkinseed and redear. However, unlike pumpkinseed, redear sunfish grow to large sizes-up to 12 inches-in some Michigan lakes.

Encouraged by riparians and the water quality in this lake, Fisheries Division stocked smallmouth bass in Clear Lake in 1987. However, an experiment to raise smallmouth bass in nearby Portage Creek Pond was all but a failure. The entire annual production of 415 fingerlings was stocked in Clear Lake.

Fishery Resource in 1991

The 1991 survey of the fish population provided some information very similar to previous surveys as well as some improvements and surprises (Tables 1-3).

The 288 bluegills captured in trap nets averaged 6.5 inches long. Seventy three percent of these were long enough to be considered acceptable size to most anglers (6 inches or larger) and there were a few bluegills 8 inches or larger. However, the majority of the fish appeared thin and in rather poor condition. Bluegill growth dynamics were again analyzed using fish scales. As with all past surveys, bluegill growth was about an inch below the state average rate. Young bluegills were growing relatively more slowly than older fish.

Redear sunfish proved to be a good addition to the fishery. Seventy-one redear were caught; they averaged 8.4 inches long and appeared to be in good condition. A local fisherman reported catching 30 redear this size a few days prior to this survey. These were caught in the shallows, over nests, with a bubble bobber and fly tipped with a wax worm. It will be several years before natural reproduction can be verified; however, many active redear nests were observed during this survey. This species adds the dimension of a large, heavy-bodied panfish to this fishery.

The 19 channel catfish captured in 1991 were a great surprise. These averaged more than 24 inches and 6.5 pounds. No known record of stocking channel cats exists in the files. However, subsequent to this survey, one lake resident reported that he had stocked 100 yearling (6") channel cats in 1986 or 1987. Pectoral spines, used for aging, were taken on several fish captured in 1991. The majority of the catfish appeared to be at least 7 years old, which would date them back to 1984. The fingerlings reported above may have been older than yearlings at the time of stocking- or these may not be the same fish. At any rate, the results of this study indicate that channel catfish will survive and add significantly to the game fish biomass in this fishery. Over 52% of the total catch (by weight) was made up of catfish.

Only two smallmouth bass were captured in 1991. Both fish were "legal-sized" (12 inches or larger) and were probably some of those stocked by Fisheries Division in 1987. It is probably too soon to know with certainty if this species will become established in Clear Lake. However, I do not believe that enough rocky substrate (or

many of the other features important to smallmouth) are present in this lake for a significant population to develop.

This survey also produced a fair catch of pumpkinseed. The 31 fish caught averaged an impressive 6.6 inches (a bit larger than the average size of bluegills). Historically, this species has exhibited better growth rates and larger average sizes than bluegills in Clear Lake. Growth rates observed in the 1991 sample of pumpkinseed were somewhat slower in age group IV when compared to past data (1961). This may indicate some stress from competition with the redear introduced 4 years ago. However, much more data would be needed to verify this condition.

Fishing Reports

Clear Lake has a history of intense fishing pressure in the winter months when the public can access the lake from the county park. Limit catches of bluegills (especially during the first 2 to 3 weeks of good ice) have not been unusual in the past several years. Clear Lake has the reputation of producing "lots of action" during the winter ice fishery but much "sorting" is needed since the fish are rather small.

Management Direction

The fish populations in Clear Lake have exhibited uncanny stability over at least the last 40 years (since survey records have been kept). As decades have passed, growth trends, average sizes, and relative densities (based on catch-per-effort) for the various fish species have been near mirror images. The vast array of physical and chemical features that make Clear Lake what it is have apparently changed very little over this time period. In most lake systems, major modifications in these features (for example changes in water quality, fluctuating water levels, etc.) drive fish populations to change. Introduced species can also lead to changes, but to date, the stability of the Clear Lake fish population seems to be intact.

Clear Lake has historically supported a rather mediocre panfish fishery. This is a lake that produces lots of recreational fishing and plenty of fish for the table...as long as anglers are not too concerned with large size fish. This system has historically not produced large numbers of large predators, but occasionally nice catches of bass and pike are reported. In general, anglers have been relatively satisfied with the fishery, although a few complaints have been received regarding small sizes of panfish. These complaints were considered when redear sunfish were introduced.

Redear sunfish management should continue in Clear Lake. The occasional large redear in the anglers catch will add significantly to better impressions of this panfish fishery. This species may become self-perpetuating in this lake. A one-time stocking of redear fingerlings in nearby Crooked Lake in 1956 resulted in an established population that is presently producing redear up to nearly 12 inches long. However, to ensure survival redear fingerlings should be planted at least 2 years in succession. Since several fish were observed over nests in 1991, it could be assumed that a 1991 year-

class of redear exists. I recommend additional fingerling plants in 1992 and 1993 in hopes of developing three year-classes of relatively similar size and maturity for future breeding.

Channel catfish are excellent food fish and formidable sport fish. One riparian interviewed during the survey reported catching a large channel cat in 1990. Large catfish are quite piscivorous and are undoubtedly serving the lake well as a predator of small bluegills (which seem to be in great abundance). Self-propagation of this species in this lake is doubtful. Clear Lake surface water temperatures may reach channel catfish spawning temperatures (75 F to 85 F) briefly in mid-summer, but this lake is well north of the natural range of the species. Also, large crevices, cavities, hollow logs, etc. are important for nesting sites; this type of substrate is lacking in Clear Lake.

I recommend stocking 6- to 8-inch catfish fingerlings every other year for 6 years. Periodic surveys will be necessary to evaluate the progress of both the redear and catfish populations. Pumpkinseed growth should continue to be analyzed to ascertain any possible competition with redear.

Report completed: February, 1992.

Table 1.-Number, weight, and length indices of fish collected from Clear Lake with trap nets, May 30, 1991.

<u>Species</u>	<u>Number</u>	<u>Percent by number</u>	<u>Weight (pounds)</u>	<u>Percent by weight</u>	<u>Length range (inches)</u>	<u>Average length</u>	<u>Percent legal size¹</u>
Bluegill	288	65.2	52.0	21.8	4.5-8.5	6.5	73
Largemouth bass	1	0.2	0.6	0.3	10.5	10.5	-
Redear sunfish	71	16.1	33.7	14.1	7.5-9.1	8.4	100
Channel catfish	19	4.3	124.9	52.4	22.5-26.5	24.4	100
Pumpkinseed	31	7.0	5.3	2.2	4.5-8.5	6.6	71
Black crappie	11	2.5	0.8	0.3	4.5-7.5	5.4	9
Smallmouth bass	2	0.5	3.0	1.3	12.5-15.5	14.0	100
Bullhead	9	2.0	7.8	3.3	10.5-12.5	11.5	100
Rock bass	7	1.6	0.5	0.5	4.5-7.5	6.1	57
Bowfin	2	0.5	8.9	3.7	21.5-23.5	22.5	-
Hybrid sunfish	1	0.2	0.2	0.1	6.5	6.5	100
Total		100.0		100.0			

¹Percent legal size or acceptable size for angling.

Table 2.-Average total length (inches) at age, and growth relative to the state average, for two species of fish sampled from Clear Lake with trap nets, May 30, 1991. Number of fish aged is given in parentheses.

<u>Species</u>	<u>Age</u>							<u>Mean growth index</u> ¹
	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>	<u>V</u>	<u>VI</u>	<u>VII</u>	
Bluegill	-	-	4.5	4.9	6.1	7.2	7.7	-0.9
	-	-	(3)	(12)	(13)	(10)	(4)	
Pumpkinseed	-	-	4.6	4.9	6.5	7.2	7.7	-0.2
			(1)	(5)	(12)	(11)	(1)	

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

Table 3.-Estimated age frequency (percent) of two species of fish caught from Clear Lake with trap nets, May 30, 1991.

<u>Species</u>	<u>Age</u>								<u>Number caught</u>
	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>	<u>V</u>	<u>VI</u>	<u>VII</u>	<u>VIII</u>	
Bluegill	-	-	2	15	41	35	7	-	288
Pumpkinseed	-	-	3	16	39	38	4	-	31

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Questions, comments and suggestions are always welcome! Send them to
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