Michigan Department of Natural Resources
Status of Fishery Resource Report 96-7, 1996.

GULL LAKE

Barry County (T1N, R9W, Sections 31, 36)
Kalamazoo County (T1N, R9-10W, Sections 6, 7, 8, 17, 18, 20, 1, 2, 12)
Surveyed June 1993

James L. Dexter, Jr.

Environment

Gull Lake is one of only a few lakes in southern Michigan that could be classified as a mesotrophic, perhaps slightly oligotrophic lake. Born of glacial origin about 14,000 years ago, the lake lies mostly in northern Kalamazoo County. Gull Lake is located just 2 miles from Richland, and about 6 miles south of Delton. The population center of Kalamazoo is about 11 miles to the southwest of the lake.

The land surrounding the lake is mostly well-drained loamy sand formed from glacial outwash. The topography ranges from nearly level farmland to steep hills (usually associated with small wetland systems). Land use in the watershed includes farming (corn, wheat, and hay), woodlots, and residential areas.

The drainage area of the lake is relatively small (17,000 acres) compared to the size of the lake (2,030 acres). The watershed is in the Kalamazoo River basin, which drains into Lake Michigan. The outlet (Gull Lake outlet or Gull Creek) is at the south end of the lake. A control structure was built on the outlet in the mid-1800s to provide power for a grist mill and to control lake level. At present, the lake has no legally established lake level and is maintained about 8 feet above its original level. Each fall the lake is drawn down 8-10 inches to prevent ice damage to the shoreline. Lake levels are raised back to normal at ice out. This practice of seasonal alteration of water level has been occurring since at least 1935.

A number of inlets exist, all of which are quite small. Prairieville Creek, a designated trout stream, drains into the north end of the lake and is the largest inlet (approximately 5-10 ft^3/s). A water budget analysis of Gull Lake was completed in 1977, and indicated that this creek provides 21% of the annual water budget. Along the west shore, Long, Miller, and Grass lakes drain into Gull Lake. Wintergreen Lake drains into Gull Lake on the east shore. Numerous springs are located along the shores.

The long axis of Gull Lake extends in a northwest-southeast direction. The lake is over 4 miles long and more than 1 mile wide for most of its length. Mapped in 1941 by the Institute for Fisheries Research, several deep depressions exist in the lake. The deepest (110 feet) is located almost exactly in the middle of the lake. Another depression (108 feet) is located at the north end of the lake. One large island exists toward the southern end. This island used to be a peninsula before the dam structure was installed. Two sunken islands, locally known as the "Hogs backs", are present in the middle of the lake. Both are about 20 feet underwater.

The shoal areas of Gull Lake cover approximately 30% of the total surface area. Composed primarily of sand, gravel, and rubble, the shoal areas less than 10 feet deep are kept clean by strong

wave action. Marl extends from the edge of the sand/gravel areas to about the 30-foot contour. The rest of the lake bottom is largely a mixture of marl and pulpy peat.

The water quality of Gull Lake is excellent. A sewage system was completed around the lake in 1983. Water clarity, and perhaps quality, has improved considerably since that time. The water of Gull Lake is clear, although from a distance it appears to be emerald green due to the suspension of marl in the water column. Secchi disk readings in May of 1989 were as deep as 40 feet. A water chemistry survey in August of 1993 found Secchi disk readings of 10 feet. Dissolved oxygen levels were at least 5 ppm down to 42 feet. Water temperatures ranged from 77° at the surface to 48° at the bottom, with a thermocline from 30 to 44 feet. Alkalinities ranged from 133 to 168 ppm (hard) and pH readings were alkaline (8.6-8.8). These values are similar to those found in the 1940s. Many years of limnology records and profiles, some years extending over several months, are on record at Michigan State University (MSU), Kellogg Biological Station.

In 1941, Perry and Brown (1942) observed Gull Lake was "well supplied with submergent vegetation from the edge of the sand and gravel shoals to depths as great as 40 feet". They identified 24 aquatic plant species. Today, I would rank the overall aquatic plant community as "sparse" rather than "well-supplied", but have not examined it closely.

Most of the lake shore has been developed into home sites. A four-lane boat launching ramp is located in Prairieville Township Park on the north shore. This site can handle 70 boat trailers. Another small access site is at the end of Baseline Road on the northeast shore. MSU owns a sizable portion of the east shore, upon which the Kellogg Biological Station and Bird Sanctuary is located. Two marinas and a golf course are also located on the shores of the lake.

Fishery Resource

Biologists (state and university) have collected 55 species of fish from Gull Lake (Appendix 1). At least 10 species have been introduced. Gull Lake probably has one of the most diverse fish communities found in any inland lake in Michigan.

The earliest fish surveys were made in the 1930s and 1940s, primarily with seines. Collected were a variety of forage species including several shiner and minnow species, four darter species, brook silverside, and mottled sculpin (Appendix 1). Common gamefish species at that time were largemouth and smallmouth bass, yellow perch, rock bass, bluegill, and cisco (now believed to be extinct). Northern pike and walleye were considered much less common. Walleye were introduced by private citizens only once in the late 1920s. Local anglers considered that stocking to be very unsuccessful.

The fish community present today is probably little changed from that of 60 years ago except for the addition of some species by stocking. In addition to those fish listed above, landlocked Atlantic salmon, rainbow trout, lake trout, brown trout, splake, and smelt, have been added at one time or another (Appendix 2). Presently, only rainbow trout are stocked yearly. Brown trout, although not stocked since 1964, are still occasionally captured. Atlantic salmon are still captured also, but stocking was discontinued in 1992 due to consistent hatchery rearing problems. A fair number of lake trout persist even though they have not been stocked since 1982.

The last smelt run was observed in 1983. We have reinstituted stocking of smelt, starting in 1991, to try to reestablish this population. Appendix 2 lists stocking efforts to date. It should also be noted at this point that Latta (1995) suggested that some smelt introductions may have extirpated lake herring. Other lakes in Michigan, notably Higgins Lake, however, maintain good populations of both smelt and lake herring today.

The last comprehensive fish survey was in 1989 (Dexter 1991a). Recent activities have included yearly monitoring of smelt runs and collecting of fall Atlantic salmon broodstock. In the mid

1970s, the Division's primary involvement with Gull Lake was in assisting MSU with studies. The majority of the work by Division biologists was accomplished in the first half of this century.

The most recent survey, in 1993, was conducted in response to numerous complaints by anglers regarding poor bluegill and yellow perch fishing and recruitment rates. Anglers felt that stocked Atlantic salmon had decimated recruitment of these two species, claiming that hardly any small fish had been caught for the last 2 years. Indeed, adult salmon population estimates for fall 1991 were very high at about 7/acre (Dexter 1992).

In 1993, we sampled fish with 6' x 3' x 1.5" mesh standard trap nets, 125' six-panel experimental gill nets, and AC boat electroshocking. For some unknown reason, we could not draw or stun fish with DC current the night we sampled.

Similar to the 1989 survey, rock bass dominated the catch by number, but not by weight (Table 1). Our survey period happened to coincide with tremendous longnose gar and bowfin pre-spawn movements. These two species accounted for over 63% of the total catch by weight.

All game fish collected were quite large in size, although none were taken in large quantities. Rock bass up to 12 inches were collected, as well as bluegill and pumpkinseed over 8 inches, yellow perch over 14 inches, northern pike over 36 inches, and trout and salmon over 20 inches. Growth rates of game fish collected in 1993 were very poor, however (Table 2). Yellow perch, largemouth bass, and smallmouth bass were all growing below state average rates. In 1989, they were growing at state average rates. Bluegill growth had also declined, from 0.6" above state average in 1989 to 0.2" below state average in 1993. Northern pike had also experienced declining growth rates, from 1.9" above average to 0.2" above average. Only rainbow trout exhibited excellent growth, being a full 3 inches above the state average rate. Growth rates of most game species in 1993 more closely resembled the 1976 samples collected by MSU (Dexter 1991).

A couple of theories can be advanced at this point regarding declining growth rates. Anglers have been discussing over the past 3-4 years the disappearance of traditional weed beds. While I cannot document this, if it is true, it could relate to installation of a sewage line around the lake in the early 1980s. This action probably reduced runoff, lowered phosphorus levels in the lake, and shifted the ecological classification of the lake towards oligotrophy. Another theory anglers have proposed is that the Atlantic salmon are so active that they constantly chase schools of bluegill and perch around, impairing their growth. It is quite hard to discern at this point the actual cause of declining growth rates.

The age composition of the game fish is interesting (Table 3). Age I fish were under-represented for all species except rainbow trout and perhaps perch. In part, this was because some young fish were too small to net and too deep to electroshock. However, we should have been able to collect some age I bluegill and largemouth bass. The preceeding summer, 1992, was one of the coolest in recorded history. From across the state came reports of many waters where bluegill had not attempted to spawn that year. Lack of age I bluegill in our sample may, likewise, indicate recruitment failure of that year class. The remainder of the bluegill and largemouth bass age frequency appears normal. Yellow perch show good recruitment of age I fish, but very poor recruitment rates for the 1990 and 1991 year classes. Perch frequently have variable recruitment levels, similar to walleye, so this really is not a concern. (Note: perch recruitment exploded in 1993, 1994, and 1995 at Gull Lake, based on personal observation with lights at night). Northern pike were also missing a couple of year classes. To our knowledge, there is no reproduction of pike within Gull Lake; all pike come from tributary lakes. These lakes have excellent recruitment, and many fry travel downstream to Gull Lake. Both black bass species appear to have a high mortality rate after age IV. This is indicative of either high harvest rates, high natural mortality, or our failure to collect them.

The clear, cool environment of Gull Lake would seem to offer better habitat for smallmouth bass than for largemouth bass. However, the largemouth bass is the more abundant species according to fish surveys. Studies by graduate students have noted that smallmouth bass reproduction is impaired by heavy infestations of the bass tapeworm, Proteocephalus ambloplitis. Records dating back 50 years indicated that most smallmouth bass are infected.

The bluegill population suffered a mortality of unknown magnitude in 1991-1993 due to spring die offs. Substantial numbers of large bluegills (7-10 inches) died each year. In 1991 other species of fish were also observed. A similar mortality was reported at some northern Indiana lakes. The mortality was not sudden, but occurred over a 2-3 week period each year between ice-out and the end of April, with sick fish taking several days to die. Ten dying individuals were collected in 1993 for pathological examination. Nothing could be found to identify the cause of the mortality (Hnath 1993). We received several reports each year of "many large" dead and dying bluegill covering the bottom of the Bible Conference Bay, and along the north and east shores of the lake (prevailing wind side). Because the 1991 kill involved several other species (rock bass, large- and smallmouth bass, and pumpkinseed) and coincided with a period of rapid water warm up, we attributed that die-off to natural causes.

Currently, a good fishery exists for most game species. Large bluegills, abundant and large rock bass, and yellow perch are the mainstay of the fishery. Northern pike, although not extremely abundant, grow to a very large size and are caught primarily by ice anglers. Each winter, at least a couple of pike over 20 pounds are landed. The largemouth bass population in the lake is very good. The bass populations support one or more organized bass tournaments every week, from the end of May through October.

Rainbow trout have provided an excellent year-around fishery ever since stocking rates were increased in 1991 (Appendix 2). We have heard that rainbows as large as 20 pounds have been landed. Although we collected no lake trout in 1993, we did collect 14 in the fall of 1989. Many lake trout were caught by anglers in the fall of 1993 and, especially, in 1994, at the access site at the north end.

The fall of 1994 was a strange period, as thousands of rainbows and many lake trout remained in water 2-4 feet deep right at the access site next to the inlet creek. These fish provided fantastic fishing during September, October, and November. We suspect that they were there in such numbers due to oxygen depletion below a depth of 35 feet in September. Many rainbows and a few lake trout have appeared in this area each year since 1989 or so, while Atlantic salmon were congregating to spawn. But by 1994 most of the Atlantic salmon were gone, so we don't believe these trout were "following the salmon". To further confuse things, in 1995 the oxygen depletion of the Lake was just as bad as 1994, but no trout showed up on the north end. It appears from angler reports and our fall 1995 netting that the entire 1995 rainbow stocking disappeared. (Similarly, the 1995 rainbow stocking in Higgins Lake was reported to be a total failure).

Since 1992 Gull Lake has been stocked with Eagle Lake strain rainbow trout. Age analysis from fall salmon broodstock collections show these rainbows to be exceptionally fast growers, with many individuals reaching 20" by the end of their second year. All stockings of this strain, except in 1995, have provided a fabulous fishery.

Landlocked Atlantic salmon were reintroduced to Gull Lake in 1986 (Dexter 1991b). This fishery quickly peaked in 1991 and then fell steadily to its current very low level. Atlantics were stocked as spring yearlings in 1986-1990, then as fingerlings in 1990-1992. This change came about because the hatcheries had a difficult time keeping yearlings free of the disease furunculosis. By stocking at an earlier age, they avoided the disease problem. But because of the high numbers of predators in Gull Lake, survival of small fall fingerlings was poor and the adult population quickly dwindled.

Management of the Atlantic salmon was also difficult. They are very susceptible to angling, grow fast (when not overcrowded) and live 6-8 years. In 1989 the size limit on Atlantics was 18" with a possession limit of 2. This was changed in 1991 to 25" and a possession limit of 1. This change had the effect of stockpiling too many salmon, and growth rates dropped. In 1994 the size limit was reduced to 20" with a 1 fish possession. These constant management changes, all reflecting the biology of what was happening with salmon growth and abundance, did not sit very well with most anglers.

It is known that rainbow trout, Atlantic salmon, smelt, suckers, and perhaps brown trout all utilize Prairieville Creek as a spawning site. Rainbow trout reproduction is quite successful, as indicated by the healthy resident population of small rainbows in the creek. A few naturally produced salmon have also been found in the creek (Dexter 1991c). Smelt sustained themselves for 3 decades by spawning in and near Prairieville Creek.

The last documented run of smelt in Prairieville Creek was in 1983. During the late 1970s there was a huge die-off of smelt in the spring. Apparently, they never fully recovered and had slowly disappeared from the lake by 1984. Since 1991, smelt have been stocked in an attempt to regain the fishery they once provided. Stocking efforts have included to the transfer of adults from New Buffalo (Lake Michigan) and AuGres (Lake Huron), and the transplanting of eggs to Prairieville Creek from Lake Leelanau (Appendix 2). Spot-check gill netting in August of 1995 verified survival of significant numbers of adult smelt (37 adults were collected in 12 vertical gill net lifts). We expect the first run of these smelt to Prairieville Creek in 1996, and will most likely stock adults one more time in 1996. In addition, a sediment basin will be installed in Prairieville Creek in 1996 to facilitate sediment removal and successful smelt spawning in the lower 100 yards of the creek.

Creel surveys were conducted at Gull Lake during June-August 1986, and January-September 1987 (Dexter 1991). Basically, bluegill, rock bass, largemouth bass, and yellow perch sustain the fishery, providing over 80% of the harvest. Catch rates ranged from a high of 0.492/hour for bluegill to a low of 0.001/hour for rainbow trout in 1987 (no rainbows were stocked in 1987 due to the Atlantic Salmon program). Highlights of the 1987 survey included: 1) over 64,000 angler hours expended; 2) over 63,000 fish harvested; and 3) during January and February, over 1,150 illegally kept Atlantic salmon were recorded, along with 13,583 Atlantics caught and released (only 25,556 Atlantics were stocked in 1986).

Management Direction

Currently, the Michigan Department of Natural Resources manages the coldwater fishery more intensively than the warmwater fishery. Rainbow trout are stocked each year as spring yearlings at about 12/acre. Regulations for rainbow trout are typical (year-round season, five trout/day possession limit, and 10-inch minimum size limit). Atlantic salmon are still present, and there is some natural reproduction occurring. Salmon regulations were discussed previously. Stocking of Atlantic salmon will probably not be resumed anytime soon, as the majority of the public really didn't like them much. Smelt will be stocked one additional time in 1996.

Changes in water quality parameters are currently being investigated by MSU. A study is in progress assessing changes in the phytoplankton and zooplankton communities due to the installation of the sewage system.

Since the last status report, we have reached 3 of our 4 management goals. A trophy landlocked salmon fishery was developed (and has since collapsed), we expanded the trout fishery to almost unbelievable proportions, and we are re-introducing smelt to regain a winter fishery. Our last goal of maintaining good growth rates for warmwater fish was not achieved; however, good fishing for those species still exists.

Our expectations for this fishery are many-fold. With coldwater species, we expect rainbows to provide the bulk of the fishery, with an occasional lake trout and salmon added in. We hope that the smelt population will regain its former status and become self-sufficient. Bass fishing has significantly improved since 1993 when the 14" size limit was instituted (as reported to us by several anglers). We expect this fishery to remain good for many years to come. Perch, bluegill and northern pike fishing are hard to predict, as their recruitment lately has been variable. The large year classes of small perch recently observed by myself and other anglers, indicates good recruitment is occurring, and will result in high catches of small perch for the near future.

Gull Lake will continue to be one of southern Michigan's best fisheries for years to come. There are few lakes in the state that can compare with it. Our major goal will be to maintain the excellent health of the fish community and the environment. Minor goals over the next several years include: full restoration of the smelt population, stable recruitment of Eagle Lake strain rainbow trout, possible reintroduction of lake trout at low levels (1-2/acre), and maintenance of the warmwater fishery. Obstacles to attainment of these goals include failure of the proposed sediment basin to increase suitable spawning substrate for smelt in the lower creek, failure to develop a sustainable smelt population, and a possible continued decline in growth of warmwater species due to unknown factors. Without a sustainable smelt population we will not restock lake trout. We also view the increased recruitment of northern pike from tributary lakes to be a detriment to the rainbow fishery, as the pike appear to prey heavily on them. At this time we do not have a sense for what the angling public values more, pike or trout. This may need to be investigated in the future. Also, zebra mussels were discovered in the lake in 1994 and were fully established by fall of 1995. Future impacts to the aquatic community from zebra mussels are unknown at this time.

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Table 1. - Number, weight, and length (inches) of fish collected from Gull Lake with trap nets, gill nets, and AC boomshocker June 3 - June 18, 1993.

Species	Number	Percent by number	Weight (pounds)	Percent by weight	Length range (inches)[1]	Average length	Percent legal size[2]
Rock bass	333	23.3	83.1	6.5	3-12	6.6	39.0 (7)
Yellow perch	317	22.2	50.6	4.0	2-14	6.7	54.9 (7)
Bluegill	207	14.5	21.4	1.7	2-8	4.8	22.2 (6)
Bowfin	104	7.3	595.2	46.9	18-31	25.1	
Largemouth bass	85	5.9	48	3.8	5-17	9.9	5.9 (14)
Longnose gar	80	5.6	214.8	16.9	23-36	30.4	
Bluntnose minnow	66	4.6	0.4	--	1-3	2.0	
Log perch	36	2.5	--	--	2	2.5	
Rainbow trout	34	2.4	21.9	1.7	7-18	11.4	61.8 (10)
Smallmouth bass	33	2.3	15.1	1.2	3-14	9.0	6.1 (14)
Brown bullhead	31	2.2	27.9	2.2	9-15	13.4	100.0 (7)
Northern pike	25	1.7	91.2	7.2	18-36+	23.9	28 (24)
Atlantic salmon	25	1.7	60.7	4.8	16-23	19.6	0 (25)
Pumpkinseed	16	1.1	6.8	.5	3-8	6.9	75.0 (6)
White sucker	10	.7	24	1.9	4-23	18.4	----
Green sunfish	10	.7	.7	.1	3-6	4.3	20.0 (6)
Hybrid sunfish	5	.3	1.1	.1	5-7	6.7	60.0 (6)
Sand shiner	4	0.3	--	--	2	2.5	
Warmouth	3	.2	.4	.0	4-6	5.5	33.3 (6)
Mottled sculpin	2	0.1	--	--	2	2.5	
Johnny darter	2	0.1	--	--	1-2	2.0	
Carp	1	0.1	6.0	0.5	23	23.5	
Total	1429	100.0	1,269.3	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.

Table 2. - Average weighted total length (inches) at age, and growth relative to the state average, for fish sampled from Gull Lake with trap nets, gill nets, and AC boomshocker, June 3 - June 18, 1993. Number of fish aged is given in parentheses.

	Age								Mean growth
Species	I	II	III	IV	V	VI	VII	VIII	index[1]
Bluegill	---	3.0	4.8	5.7	7.3	8.3	---	---	-0.2
	---	(23)	(24)	(21)	(10)	(16)	---	---	
Yellow perch	2.9	5.9	6.3	7.6	8.3	8.9	11.6	---	-0.5
	(20)	(11)	(3)	(27)	(17)	(26)	(2)	---	
Largemouth bass	---	6.6	9.7	10.3	14.9	14.5	---	---	-1.6
	---	(14)	(21)	(28)	(2)	(1)	---	---	
Smallmouth bass	3.5	7.4	9.6	11.0	12.2	14.6	---	---	-1.7
	(1)	(18)	(4)	(7)	(3)	(1)	---	---	
Rainbow trout	9.5	17.5	---	---	---	---	---	---	+3.0
	(16)	(6)	---	---	---	---	---	---	
Northern pike	---	---	21.4	25.0	---	31.6	36.4	38.0	+0.2
	---	---	(17)	(5)	---	(2)	(1)	(1)	

[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 Gull Lake with trap nets, gill nets, and AC boomshocker, June 3 - June 18, 1993.

	Age								Number
Species	I	II	III	IV	V	VI	VII	VIII	caught
Bluegill	---	32	31	27	5	5	---	---	207
Yellow perch	29	5	2	24	17	21	1	---	317
Largemouth bass	---	16	30	46	4	1	---	---	85
Smallmouth bass	3	53	11	21	9	3	---	---	33
Rainbow trout	65	15	---	---	---	---	---	---	34
Northern pike	---	---	73	23	---	4	---	---	23

Appendix 1.-Referenced taxonomic list of Gull Lake fish.

Family, generic, and common name	Reference source[1]	Current status, if known
Lepisosteida		
Lepisosteus osseus	a, b, c, d, f, h	Abundant
Longnose gar		(50 or more captures)

Amiidae		
Amia calva Bowfin	a, b, d, f, h	Abundant (50 or more captures)
Salmonidae		
Coregonus artedii Lake herring (cisco)	a, b, d	? Unknown (Not captured)
Salvelinus namaycush Lake trout	b, c, f, h	Uncommon - introduced (10-20 captures)
Oncorhynchus mykiss Rainbow trout	b, f, h	Abundant (50 or more captures)
Salmo salar Atlantic salmon	a, b, f, h	Few - introduced
Salmo trutta Brown trout	b, f, h	Few - introduced (1-10 captures)
S. namaycush x fontinalis Splake (hybrid)	Stocked in 1965	? Unknown - introduced (Not captured)
Osmeridae		
Osmerus mordax Rainbow smelt	a, b, h	Abundant - introduced (reintroduction efforts 1991-1996)
Catostomidae		
Catostomus commersonni White sucker	a, b, d, f, h	Common (20-50 captures)
Hypentelium nigricans Northern hog sucker	f	Few (1-10 captures)
Cyprinidae		
Nocomis biguttatus Hornyhead chub	d	? Unknown (Not captured)
Notemigonus crysoleucas Golden shiner	a, b, c, f	Common (20-50 captures)
Notropis anogenus Pugnose shiner	e	? Unknown (Not captured)

Notropis atherinoides Emerald shiner	c	? Unknown -introduced (Not captured)
Notropis cornutus Common shiner	a, b, c, d, f	Common (20-50 captures)
Notropis heterodon Blackchin shiner	c, d, e	? Unknown (Not captured)
Notropis heterolepis Blacknose shiner	a, b, c, d, e	Uncommon (10-20 captures)
Notropis rubellus Rosyface shiner	e	? Unknown (Not captured)
Notropis stramineus Sand shiner	a, b, c, h	Abundant (More than 50 captures)
Notropis texanus Weed shiner	a, b, e	Uncommon (10-20 captures)
Pimephales notatus Bluntnose minnow	a, b, c, d, h	Abundant (More than 50 captures)
Rhinichthys atratulus Blacknose dace	a, b	? Unknown (Not captured)
Cyprinus carpio Common carp	f, h	Few (1-10 captures)
Ictaluridae		
Ictalurus natalis Yellow bullhead	a, b, d	Uncommon (10-20 captures)
Ictalurus nebulosus Brown bullhead	a, b, h	Common (20-50 captures)
Ictalurus punctatus Channel catfish	a, b	Few (1-10 captures)
Ictalurus melas Black bullhead	g	Few (1-10 captures)
Noturus gyrinus Tadpole madtom	a, b, d	Few (1-10 captures)

Umbridae		
Umbra limi Central mudminnow	b, d	Few (1-10 captures)
Esocidae		
Esox lucius Northern pike	b, d, f, h	Common (20-50 captures)
Esox americanus vermiculatus Grass pickerel	a, b, c, f	Few (1-10 captures)
Cyprinodontidae		
Fundulus diaphanus menona W. banded killifish	c, d	? Unknown (Not captured)
Percidae		
Etheostoma caeruleum Rainbow darter	a, b, c, d	Uncommon (10-20 captures)
Etheostoma exile Iowa darter	a, b, c, d	Uncommon (10-20 captures)
Etheostoma nigrum Johnny darter	a, b, c, d	Common (20-50 captures)
Etheostoma microperca Least darter	d	? Unknown (Not captured)
Percina caprodes Logperch	a, b, c, d, h	Abundant (More than 50 captures)
Perca flavescens Yellow perch	a, b, c, d, f, h	Abundant (More than 50 captures)
Stizostedion vitreum Walleye	d	? Unknown - introduced (Not captured)
Centrarchidae		
Ambloplites rupestris Rock bass	a, b, c, d, f, h	Abundant (More than 50 captures)
Lepomis cyanellus Green sunfish	a, b, c, d, f, h	Common (20-50 captures)
Lepomis gibbosus	a, b, e, f, h	Common

Pumpkinseed sunfish		(20-50 captures)
Lepomis gulosus	a, b, f, h	Few
Warmouth		(1-10 captures)
Lepomis macrochirus	a, b, c, d, f, h	Abundant
Bluegill		(More than 50 captures)
Lepomis megalotis	a, b, d	Few
Longear sunfish		(1-10 captures)
Lepomis spp.	f, h	Few
Hybrid sunfish		(1-10 captures)
Micropterus dolomieui	a, b, c, d, f, h	Abundant
Smallmouth bass		(More than 50 captures)
Micropterus salmoides	a, b, c, d, f, h	Abundant
Largemouth bass		(More than 50 captures)
Pomoxis nigromaculatus	b, f	Few - introduced
Black crappie		(1-10 captures)
Anthernidae		
Labidesthes sicculus	a, b, c, d	Common
Brook silverside		(seen at night)
Cottidae		
Cottus bairdi	a, b, d, h	Uncommon
Mottled sculpin		(10-20 captures)
Gasterosteidae		
Culaea inconstans	b, c	Few
Brook stickleback		(1-10 captures)
Pungitius pungitius		1 record, 1920s
Ninespine stickleback		

[1]Reference sources:
a=Michigan State University Museum specimen collected 1974-80.
b=Captured or observed 1962-79, per W. C. Johnson.
c=Ichthyology class records 1959-62.
d=Perry and Brown (1942).
e=Collected G. P. Cooper, October 18, 1935 (MDNR).
f=Michigan DNR surveys, 1989.
g=1968 MSU Gill net data -- on file at Plainwell.
h=Michigan DNR surveys, 1993 and fall Atlantic salmon broodstock nettings, 1989-1995.

Compiled by: W. C. Johnson, Kellogg Biological Station.
Updated by: Jim Dexter, MDNR Plainwell, 1996.

Appendix 2. - Fish stocked in Gull Lake[1]. (**A**=adult, **f**=fingerling, **ff**=fall fingerling, no designation=yearling).

Year	Lake trout[2]	Rainbow trout	Atlantic salmon	Smelt
1965		15,000 **f**		
1966	157 **A**	4,000 **ff**		
1967				
1968		8,000		
1969		8,000 **ff**		
1970	8,100	8,000 **ff**		
1971		12,000		
1972	4,525	10,070		
1973		14,000		
1974	10,000	14,000	2,558 (37 **A**)	
1975	10,000		11,366	
1976	10,000		29,905	
1977	10,000		280 **A**	
1978	10,000	22,023	324 **A**	
1979	13,700	30,000		
1980	15,000	30,000		
1981		22,000		
1982	10,000	25,000		
1983		30,000		
1984	194 **A**	19,000		
1985		29,900		
1986		7,500	25,356	
1987			23,632	
1988		6,018	11,956	
1989		5,300	23,688	
1989		25,000 **ff**		
1990		6,000	25,103	
			29,949 **ff**	
1991		20,209	26,869 **ff**	13,179 **A**
1992		26,400	26,871 **ff**	500,000 Fry
1993		21,600		44,320
				1,000,000 Fry
1994		30,000		
1995		27,154		47,610 **A**

Additional stocking: Bluegill, largemouth bass, yellow perch-1930's and 1940's; emerald shiners-1933 and 1934 (160,000); smelt-1950-1953; splake-1965; brown trout-1964 and 1966.
[2]Lake trout also stocked in 1949, 1957, and 1961.

GULL LAKE
Barry County (T1N, R9W, Sections 31, 36)
Kalamazoo County (T1N, R9-10W, Sections 6, 7, 8, 17, 18, 20, 1, 2, 12)

Management Plan
based on
Status of the Fishery Resource Report 96 -7, 1996.

James L. Dexter, Jr.

The management goals for Gull Lake are three-fold. The first and primary goal is to sustain the current health of the fishery and the lake environment. This will hopefully be accomplished by careful fish management and watershed initiatives in the local community. Our second goal is to restore the smelt population to a self-sustaining level that is fishable. This will be accomplished by two objectives: (a) stocking of adults through 1996 at the rate of 50,000-100,000/year; and (b) digging a sediment basin in the lower end of Prairieville Creek in winter 1996 to remove sediments from spawning substrate in the lower 100 yards of creek before it enters the lake. Goal number three will be to reinstate lake trout stockings at the rate of 1-2/acre, if the smelt become established.

Other objectives necessary to complete these goals include monitoring of potential smelt runs after ice-out each year, fall netting surveys to evaluate rainbow trout and Atlantic salmon, and a full survey to be conducted around the year 1999 to evaluate the overall status of the fish community. It will be important that the next full survey be conducted in mid-to late- May, with water temperatures in the 50's. The last survey, conducted at a water temperature of 68, contained too few centrarchids and percids, and too many gar and bowfin.

I expect to be successful in all of our management goals. Returns of stocked rainbow trout are probably at 50%. There can hardly be found a better inland rainbow fishery in the Midwest. I also expect that if smelt are successful that a fishery similar to that at Higgins Lake will quickly develop.

Plan completed: March 1996.
Approved: Joan Duffy, District Biologist, April 1996.

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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