Lake St. Helen
Roscommon County
Au Sable River Watershed, last surveyed 2018

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Environment

Lake St. Helen is 2,400 acres in size and located in eastern Roscommon County adjacent to the town of St. Helen, Michigan (Figure 1 and 2). Its maximum depth is approximately 25 feet with most of the lake less than 10 feet deep. The lake has three basins or segments, known as first lake, second lake, and third lake. The largest basin is the first lake and is the easternmost part of the overall waterbody. The deepest hole is in the third lake, but this deeper area is relatively small compared to the amount of shallow shoals prevalent throughout the remainder of the lake. There are three primary small tributaries entering the lake including Russell Creek, Carter Creek, and Marsh Creek. The outlet of Lake St. Helen is the South Branch Au Sable River which is part of the Au Sable River and Lake Huron drainage. A lake level control dam, built in 1930, is located on the river just downstream of the lake. The structure has a 3.5 foot head and provides for 4,800 acre-feet of water storage. This control structure is maintained and operated by the Roscommon County Drain Commissioner. The lake has a legally established lake level based on a court order in 1998. The legally established summer gage height of Lake St. Helen is 1,155.25 feet elevation. The legally established winter gage height is 1,154.75 and is maintained from November to April 15.

The shoreline of Lake St. Helen is partially developed and primarily private. Some State of Michigan public land exists along the third basin. A Department of Natural Resources (DNR) managed public boat launch is located on the east shore of the eastern basin and provides a hard surface boat launch and ample parking for trailers. The bottom substrate of Lake St. Helen is primarily sand with muck. Aquatic vegetation is fairly abundant. A private applicator, on behalf of individual lake property owners, has applied for permits for 14 chemical treatments of nuisance aquatic vegetation at Lake St. Helen over the last 25 years (Ryan Crouch; Michigan Department of Environment, Great Lakes, and Energy; personal communication). Treatments have been for several different shoreline or canal areas throughout the lake

Standard State of Michigan fishing regulations apply for Lake St. Helen with the exception of Northern Pike. Anglers are allowed to harvest five pike per day, of which only one may be 24-inches or larger.

History

Known stocking records for Lake St. Helen date back to the 1930s, initiated by the Department of Conservation (DOC). During this time frame the State of Michigan was experimenting with rearing various warm- and cool-water species and stocking at low rates in waterbodies across Michigan. Stocking was done regardless of the need to stock some of these species. Walleye fry and fingerlings were stocked infrequently from 1937-1959. Yellow Perch fall fingerlings were stocked in 1937 and 1938. Recent stocking levels (beginning in 1985) can be found in Table 1.

Initial observations of Lake St. Helen by the DOC were made in 1924 when they found a clear, shallow lake with sand/muck substrate and a variety of aquatic vegetation types. Notes indicated previous

Walleye and Smallmouth Bass stocking efforts, but numbers were unknown. DOC personnel used seining and lake netting and found Bluegill, Pumpkinseed, Yellow Perch, Largemouth Bass, Northern Pike, Smallmouth Bass (stocked the day prior to survey), bullhead species, Bluntnose Minnow, Common Shiners, and Blacknose Shiners.

An additional low effort fish community survey was made by the DOC in August 1945 in the first lake. Seining and gill nets were used to find abundant Bluegill, Pumpkinseed, Rock Bass, Largemouth Bass, and Northern Pike. Walleye were found to be common following recent stocking efforts. Aquatic vegetation was noted as abundant, and voluntary angler reports indicated good fishing for Bluegill, Largemouth Bass, and small Northern Pike. Reports indicated that the Walleye fishery was improving.

Extensive seining efforts were undertaken in Lake St. Helen by the DOC in late April 1958. The species collected were the same as in past surveys, and typical of a warm- to cool water fish community. A more extensive fish community survey was done by DOC in early June 1960 and utilized trap nets, fyke nets, and experimental gill nets. The panfish community was dominated by Bluegill which had an average length of 6.5 inches, followed by Pumpkinseed and Rock Bass with average lengths of 6.2 and 7.9 inches, respectively. Very few Yellow Perch were collected in the survey. The catch of predator fish in the 1960 survey consisted of Northern Pike, Walleye, and Largemouth Bass, with average lengths of 24 inches, 19 inches, and 14 inches, respectively. Large numbers of bullheads were collected along with lesser numbers of White Suckers. Growth rates were calculated as average to poor for most species, with the exception of Walleye which showed excellent growth when compared to the statewide average.

DOC conducted low effort fish surveys of Lake St. Helen in the fall of 1964, and in spring 1965. Survey gear included trap nets, fyke nets, and gill nets. The surveys were done in response to angler complaints about the fishery. Species diversity was similar to previous surveys, though Common Carp and Bowfin were collected for the first time. The panfish communities were diverse, but large specimens were scarce. Predators such as Largemouth Bass, Northern Pike, and Walleye were present but in relatively low numbers. No pike larger than 22 inches were collected. It was noted that non-game predator fish were becoming more prolific based on survey catches, particularly bullheads. Recommendations were made to chemically reclaim the fish community and follow the treatment with stocking efforts of desirable fish such as Walleye, Largemouth Bass, and Bluegill. This management action was not undertaken, likely due to costs and lake size.

By the late 1960s, managers were beginning to get a clearer picture of the Lake St. Helen fish community. Panfish growth was slow and large specimens were scarce. Predator numbers were not abundant enough to impact panfish populations or provide a consistent fishery. In addition, non-game predators (primarily bullheads) were increasing and were thought to have an impact on the desirable fish communities through predation and competition. Managers recognized the stunted Northern Pike community and liberalized pike regulations in 1968, allowing for additional harvest of small pike. The standard statewide pike regulation was inadvertently restored in 1973 or 1974 at Lake St. Helen, only to be reversed again by 1978. Since 1978, Northern Pike regulations have been liberal at Lake St. Helen to encourage harvest of small pike and reduce competition among pike.

Trap nets and gill nets were used to survey the fish community of Lake St. Helen in 1974 and 1976. The DNR conducted the surveys with the assistance of Kirtland Community College students in 1974, though detailed catch information exists for the 1976 survey (Table 2). The summer surveys were again in

response to angler complaints over the fishery. Panfish numbers were deemed low when compared to other regional lakes. Numbers were thought to be low due to recruitment issues associated with bullhead predation. The bullhead populations were considered to be increasing and were the most abundant species in the lake based on numbers and weight (Table 2) and dominated the non-game rough fish community. White Sucker and Bowfin numbers were also higher than found in previous surveys and considered to be a limiting factor on panfish recruitment. Non-game species such as bullheads, White Suckers, Bowfin, and Common Carp dominated the catch, comprising 63% of the 1976 survey catch number, and 88% of the survey catch by weight.
Predator game fish appeared "healthy although reproduction by Largemouth Bass and Walleye is limited." Numbers of Largemouth Bass were not considered high, but good numbers of large fish were present, and growth was considered excellent. Northern Pike were abundant, demonstrated average growth, with acceptable numbers and age-classes of larger fish present. Despite this, anglers only reported catching small pike. Walleye numbers were considered low when compared to other regional lakes that were maintained through natural reproduction. Growth rates of Walleye were excellent, and anglers reported routinely catching them.

Recommendations from the 1974 and 1976 surveys were to enhance game fish populations at Lake St. Helen through non-game fish removal, particularly bullheads. The DNR attempted this management action in the fall of 1978. Trap nets and fyke nets were used by the DNR for a total of 410 net nights. This pilot project removed 1,000 pounds of bullheads along with 1,100 pounds of Common Carp from Lake St. Helen. Few White Suckers were removed since they were caught in low numbers.

No follow-up surveys were made at Lake St. Helen after the 1978 non-game fish removal. However, Walleye stocking efforts were again initiated at the lake beginning in 1985 (Table 1) as a means of increasing predator densities and providing a better fishery. It was believed that Walleye natural reproduction was low in Lake St. Helen and stocking was needed to maintain a population large enough to achieve these objectives.

Beginning in 1990, survey efforts at Lake St. Helen focused on evaluating Walleye stocking efforts (see Table 1) as well as examining possible changes in the fish community. To evaluate the 1990 stocking event, DNR electrofished the shoreline of the lake on one night in October for nearly four hours. Only three age-0 Walleye were collected along with a handful of adult fish. Based on age analysis, some of the adult Walleye may have been from non-stocking years. Recommendations were made to continue periodic stocking of Walleye fingerlings (Table 1). Other notes from the electrofishing survey were that Northern Pike and Largemouth Bass were numerous. Pike growth was considered extremely slow. For the first time, Black Crappie were also observed to be part of the Lake St. Helen fish community. It was not known if Black Crappie were purposely or inadvertently stocked in the lake.

DNR surveyed Lake St. Helen again in May 1993 to continue evaluation of recent Walleye stocking efforts (1985, 1988, 1990, 1992). Sampling effort included fyke nets and experimental gill nets for a total of 30 net nights. Walleye were again collected in low numbers (Table 3) and representation from stocked and non-stocked years was observed. Neither Largemouth Bass nor Northern Pike were collected in high numbers. Panfish were also collected in lower numbers, especially Bluegill and Pumpkinseed. Black Crappie were found to be plentiful (Table 3) and were represented by six age classes showing their establishment in the Lake St. Helen fish community. Bullheads, Bowfin, White Sucker, and Common Carp still comprised a significant portion of the total catch by number and weight.

Based on the 1993 survey, DNR managers recommended continued Walleye stocking and increasing stocking rates. This management action was undertaken as stocking rates and numbers increased for spring fingerlings in subsequent years. In addition, private stocking efforts were also made for smaller numbers of fall fingerlings in 1994 and 1995 (Table 1).

Another follow-up fish community survey was made by the DNR at Lake St. Helen in May 1999. Sampling effort was similar to the 1993 survey, with 30 fyke-net nights and 2 experimental gill-net nights. Some small-mesh fyke nets were included in the fyke-net effort. A total of 1,284 fish were collected (Table 4). Panfish made up 48% of the total catch number, and 23% by weight. Most Bluegill and Pumpkinseed were less than 8-inches in length (Table 5) and 6-8 years of age (Table 6); growth was average compared to statewide averages for each species during that period. As in many past surveys, young Bluegill were not collected. Black Crappie were again relatively common with most individuals below 10 inches (Table 5). Seven year-classes of crappie were collected (Table 6).

Predator game fish remained relatively low in abundance. Largemouth Bass, Northern Pike, and Walleye comprised only 5% of the catch number, and 11% by weight. Largemouth Bass were the most abundant of these predators, with a good size distribution (Table 5), though few small bass were surveyed. The Northern Pike catch was low with few fish larger than 20 inches present. Pike growth remained very low compared to the statewide average during that period. Walleye were represented by six year-classes (Table 6) though catch numbers were low. Walleye growth was still considered good and a good proportion of the fish surveyed were 20 inches or larger (Table 5).

Rough fish remained abundant. Bullheads, Common Carp, White Sucker, and Bowfin made up 46% of the total catch number, and 64% by weight (Table 5).

Both Walleye fry and fingerlings were stocked in Lake St. Helen in the spring of 1999 (Table 1). The DNR conducted another fall juvenile assessment of this species with nighttime electrofishing in the first and third lake basins (Table 7). A good catch rate of 23 age-0 Walleye per hour was achieved during the one-night shocking event and indicated likely survival of the stocked fish to their first fall. Recommendations were made to continue Walleye stocking.

Another juvenile Walleye assessment was made in the fall of 2001 with nighttime electrofishing. Over 100,000 spring fingerlings were stocked in Lake St. Helen in spring 2001; stocked fingerlings were marked with the antibiotic oxytetracycline (OTC) to allow managers to potentially decipher stocked fish versus natural fish contribution to the year-class. Another good catch rate of 16 age-0 Walleye per hour was achieved (Table 7). Unfortunately, juvenile samples were not analyzed for OTC and no information was gained on stocked versus wild fish contribution.

DNR stocked nearly a half-million Walleye fry in Lake St. Helen in the spring of 2003. A fall assessment at the lake was completed again with nighttime electrofishing gear to assess the stocking event. No age-0 fish were found in the electrofishing effort (Table 7). Following the fall assessment, DNR stocked over 78,000 small (2.9-inches) fall fingerling Walleye in Lake St. Helen from nearby rearing ponds.

Current Status

The most recent general fish community survey was at Lake St. Helen in 2010. The survey was done by the DNR under the statewide Status and Trends survey protocol where sampling effort is a product of lake acreage. Sampling effort in early June consisted of 12 large-mesh fyke-net nights, 5 mini-fyke net nights, 8 trap-net nights, 9 inland gill-net nights, and 2 large seine hauls. An additional 30 minutes of nighttime electrofishing was also completed in late-July of 2010. Sampling effort was conducted in all three of Lakes St. Helen's lake basins.

A total of 3,555 fish were collected during the 2010 survey with a total estimated weight of 851 pounds (Table 8). Due to the high catches of juvenile Largemouth Bass and Sand Shiners, we show the relative catches of game and non-game fishes by weight only. Panfish, predator game fish, and rough fish comprised 31%, 37%, and 30% of the total catch by weight, respectively. These percentages were more balanced compared to previous surveys.

The panfish catch was comprised of Bluegill, Rock Bass, Pumpkinseed, Black Crappie, Yellow Perch, and hybrid sunfish (Table 8). Bluegill up to 8 inches were collected (Table 9). Eight year-classes of Bluegill were represented in the catch, but no fish older than age-8 were captured (Table 6). Bluegill growth was slow compared to the statewide average. Pumpkinseed were less abundant than Bluegill, with most specimens 6-8 inches in length and slow growing. Black Crappie were relatively common with fish 5-12 inches collected. The majority of crappie were 8-10 inches (Table 9). A healthy nine age classes of Black Crappie were collected (Table 6). This is not typical for northern Michigan lakes with crappie, where fewer year classes are usually found. Growth of Lake St. Helen crappie was nearly one inch below the statewide average. Rock Bass were abundant with fish ranging in length from 3-11 inches. Yellow Perch were found in higher numbers than previous surveys, but few were large enough to be attractive to anglers. Perch growth, as for other panfish, was below the statewide average. Hybrid sunfish had been stocked by a private source in small numbers in years prior to the survey (Table 1). Only three hybrid sunfish were collected in the 2010 survey, indicating low survival of stocked fish, or more likely, low stocking rates.

Largemouth Bass, Smallmouth Bass, Northern Pike, and Walleye comprised 37% of the catch composition by weight, compared to 11% of the weight in the 1999 survey. Two Smallmouth Bass were collected in the survey, a rarity compared to past surveys when they were not collected. Largemouth Bass were considered abundant (Table 8), but most fish collected were juveniles. Despite this, many Largemouth Bass were 10-14 inches, with very acceptable numbers of bass 15 inches or larger (Table 9). Thirteen year-classes of Largemouth Bass were collected (Table 6) but growth was very slow compared to the statewide average for this species. On average, it takes a Lake St. Helen bass 7-8 years to attain legal size (14 inches). Northern Pike were not as abundant compared to previous surveys and ranged in length from 13-31 inches (Table 9). Most pike collected were less than the standard statewide length limit (24 inches). Growth of this species from the 2010 survey was significantly lower compared to pike growth across Michigan waterbodies (Table 6). Seven year-classes of this species were found. On average, it takes a Lake St. Helen Northern Pike over five years to reach 24 inches. The few that attain this size are likely females. Walleye were a relatively common predator gamefish in the 2010 survey, with sizes ranging from 15-26 inches (Table 9). All Walleye sampled were larger than the statewide minimum size limit (15-inches). Six year-classes of Walleye were collected, and growth was slightly slower than the statewide average for this species (Table 6). This had not been the case for Walleye in previous surveys. Walleye were relatively abundant from the 2002, 2003, 2005, and 2006

year-classes. This species was stocked in Lake St. Helen in 2003 and 2006, but not in 2002 or 2005. This could indicate some natural reproduction in some years, or possibly aging error.

Non-game fish including bullheads, Common Carp, White Sucker, and Bowfin made up 30% of the catch composition by weight. This was a positive change when compared to 88% and 64% in the 1976 and 1999 surveys, respectively.

Temperature and dissolved oxygen profiles were also conducted at Lake St. Helen as part of the Status and Trends survey on August 11, 2010 (Figure 3). These were completed at the deepest point in the third basin. The lake was slightly thermally stratified at this location, ranging from 80F at the surface to 71F near the bottom. Dissolved oxygen levels suitable to most fish (6ppm or greater) were low or absent below 6 feet.

Walleye fry or spring fingerlings continued to be stocked in Lake St. Helen by DNR following the 2010 survey, in 2011, 2013, 2014, 2016, 2017, and 2018 (Table 1). The DNR stocking prescription for this period was an aggressive 60 spring fingerlings per acre, which was well within the DNR stocking guidelines of 25-100 spring fingerlings per acre. The actual stocking rate exceeded the 60 per acre recommendation in most of the stocked years.

Three more juvenile Walleye stocking assessments were made with fall nighttime electrofishing in 2011, 2016, and 2018 when fish were stocked. The shoreline was electrofished in all three basins for 2.5 hours in October 2011; nearly 5 shoreline miles were sampled. A total of 68 age-0 Walleye were collected for a good catch rate of 27 per hour (Table 7). The spring fingerlings stocked in 2011 were marked with OTC (Table 1), allowing for analysis of stocked or wild origin. Twenty juveniles from the electrofishing event were sacrificed and analyzed for the mark on their skeletal structure. All 20 fish were found to have the mark, indicating a strong reliance on that year-class of stocked fish. No age-1 or older Walleye were collected, though catch rates of adults from fall electrofishing surveys is less reliable.

The second juvenile assessment with nighttime electrofishing was made in September of 2016. Spring fingerlings were also stocked in 2016 (Table 1), yet fish were not marked with OTC. Another good year class was observed based on a catch rate of 24 age-0 Walleye per hour over three hours of electrofishing (Table 7). Angler reports for Walleye during this period were considered satisfactory, and our assessment was that a fishery for this species remained established.

The third and most recent juvenile Walleye assessment was made at Lake St. Helen in the stocking year of 2018. Again, fingerlings were not marked this year. The fall survey covered four miles of shoreline in two hours of sampling. The catch rate of age-0 Walleye was again good (Table 7) and very comparable to the assessments made in 2011 and 2016. It was determined that stocking was likely contributing significantly to the Lake St. Helen Walleye population. In addition, 12 age-1 and older Walleye were also collected in the fall 2018 assessment.

Analysis and Discussion

The Lake St. Helen aquatic community and limnology can be characterized as having the following:

1) Prolific aquatic vegetation - Aquatic vegetation provides the base of the food chain but also may prevent efficient thinning of prey fishes by predators. Despite this, the vegetation is important to the primary productivity of the lake;

2) A slow growing but diverse panfish community consisting of Bluegill, Rock Bass, Pumpkinseed, Black Crappie, and Yellow Perch - It is believed that the recruitment of panfish has been limited historically by the large biomass of non-game rough fish species in the lake, through predation or competition. This might be less dramatic today compared to past decades. The Bluegill and Pumpkinseed populations are the strength of the panfish fishery. These species can attain acceptable sizes, but large specimens are rare. The Black Crappie population is relatively abundant and can occasionally produce quality catches. This species was not present in historical surveys and is a relatively new member of the fish community. It is likely that Black Crappie often prey on and compete with other panfish. Yellow Perch are dominated by smaller size groups with few individuals growing to desirable sizes. Rock Bass are also a common fish community member in Lake St. Helen;

3) A predator population consisting of Largemouth Bass, Northern Pike, and Walleye - Largemouth Bass are the most abundant predator and offer anglers the ability to catch trophy size fish. Growth of bass is slow, and fish likely reach larger sizes due to longevity, rather than fast growth. Northern Pike remain common in Lake St. Helen but exhibit very slow growth, likely due to the shallow, warm water found in the lake throughout the summer. Walleye numbers are higher in recent decades, compared to historical abundance. The fishery for Walleye is likely sustained through periodic stocking events;

4) An abundant non-game fish community of sucker species, bullhead species, Common Carp, and Bowfin. It is believed that this non-game fish community has always had an impact on game fish populations in the lake, particularly prior to the 21st century. Based on surveys, the biomass of these species appears to have declined from the 1970s to today, and;

5) A lake chemistry profile which is typical for warm water species and lacking dissolved oxygen suitable to fish below certain depths in the summer.

Management Direction

1. The standard State of Michigan fishing regulations (bag limits and size limits) for game fish are appropriate, with the exception of those for Northern Pike. The current regulations for Northern Pike are 5 fish per day of any size, with no more than one fish larger than 24-inches. This regulation is in place to encourage the harvest of pike less than 24-inches, which are often males that do not attain larger sizes. It also can help protect the few females that reach larger sizes which are able to prey on non-game fish as well as stunted panfish and even stunted pike.

2. Spring-fingerling Walleye stocking efforts have been relatively consistent at Lake St. Helen for decades. There may be some natural reproduction of this species in the lake, but it is believed that stocking is necessary to provide enough adults to support a fishery. This species can grow to large sizes in Lake St. Helen, and they also provide the lake with an additional needed predator on non-game fish and stunted panfish. Angler reports support that a fishery does exist for this species. DNR should continue periodic stocking of spring fingerlings at a rate of 60 per acre in alternate years, or at least every third year.

3. Spot treatments of aquatic vegetation at Lake St. Helen have been ongoing by private contractors for nearly 25 years. Efforts should be made by the State of Michigan EGLE to survey the current aquatic vegetation community of the lake to gather a comprehensive list and distribution of plants in the lake, both for native and invasive species.

4. Anglers of Lake St. Helen should share their catch information with fisheries managers. This allows for a more complete understanding of the fishery, and for better management of the lake, both today and in the future. Anglers can do this by speaking with their local fisheries biologist through phone calls or emails.

5. The next general fish community survey of Lake St. Helen should be between the years 2025 and 2035. Survey effort should mimic the survey protocol from the 2010 survey so that better comparisons can be made between years. Spot checks of Walleye can continue to be made periodically in stocking or non-stocking years to evaluate stocking effectiveness (i.e., percent wild fish contribution).

References

Figure 1.-Location of Lake St. Helen in the northern Lower Peninsula of Michigan.

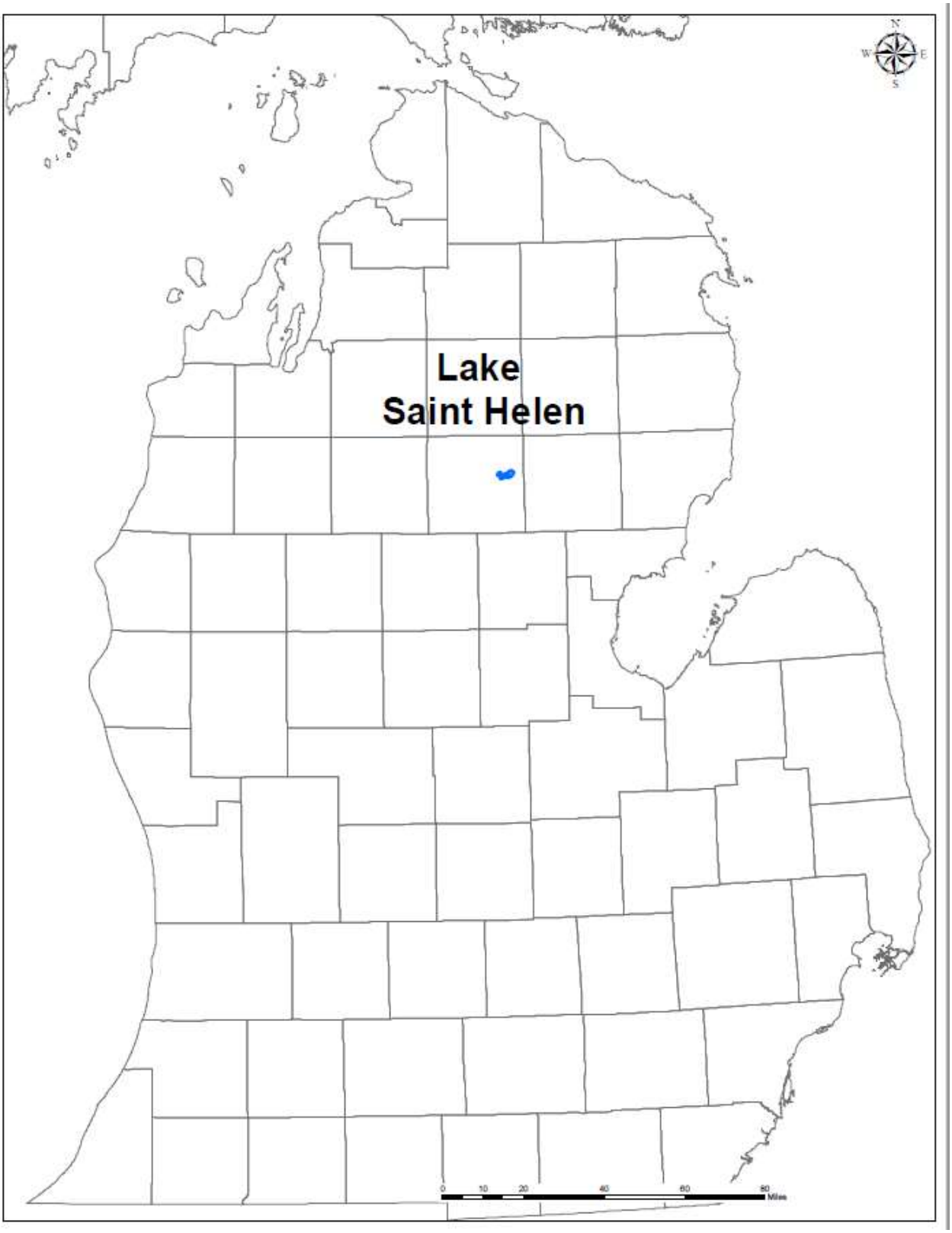

Figure 2.-Closeup view of Lake St. Helen and surrounding area.

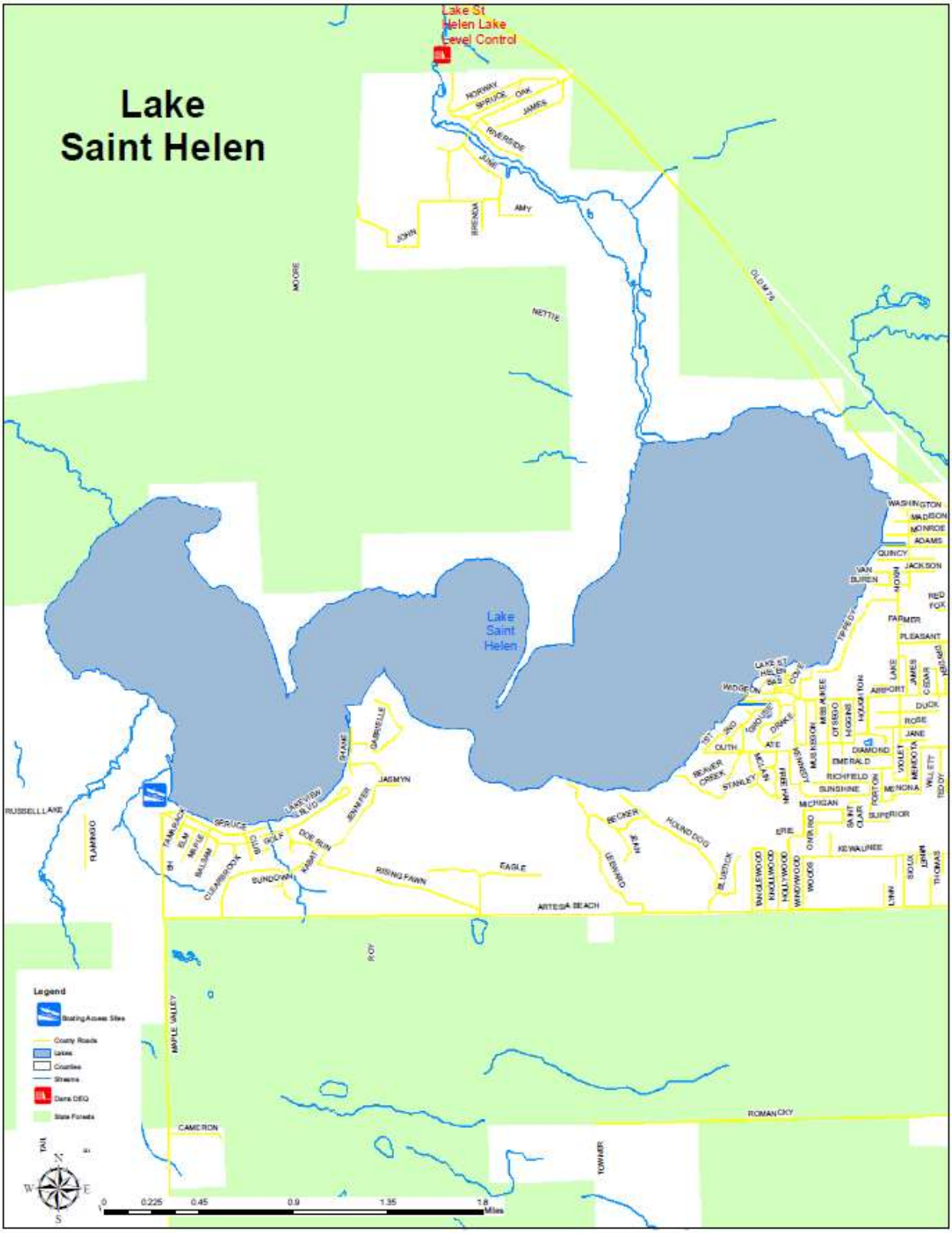

Figure 3.-Temperature and dissolved oxygen profiles for Lake St. Helen, August 11, 2010.

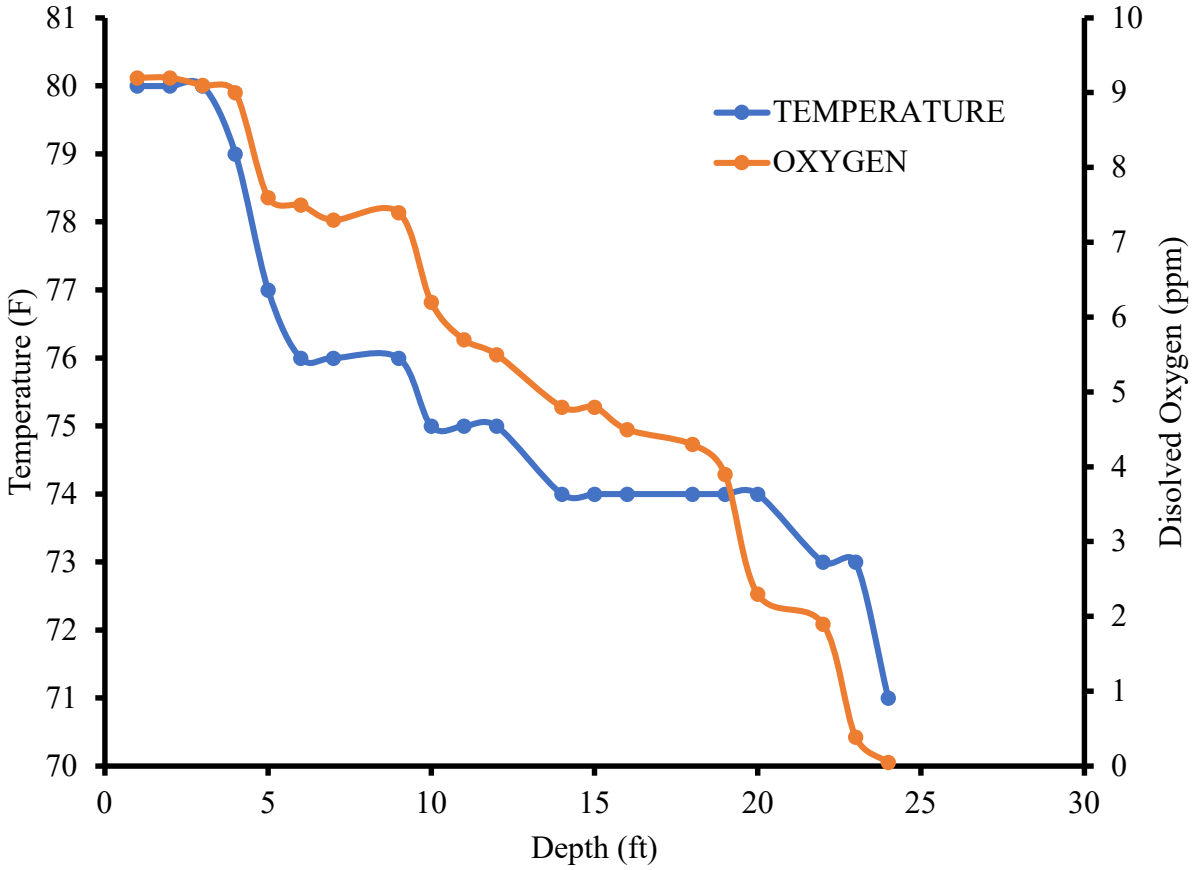

Table 1.-Recent stocking history of fish for Lake St. Helen by the Department of Natural Resources or private sources. OTC is oxytetracycline.

Year	Source	Species	Strain	Length (in)	No. Stocked	Mark
1985	DNR	Walleye	Muskegon	0.9	76,920	--
1988	DNR	Walleye	--	1.6	59,670	--
1990	DNR	Walleye	Muskegon	2.2	69,812	--
1992	DNR	Walleye	Bay De Noc	1.9	31,509	--
1994	DNR	Walleye	Muskegon	4.3	14,930	--
1995	DNR	Walleye	Muskegon	1.6	150,948	--
1995	DNR	Walleye	Muskegon	3.5	15,815	--
1999	DNR	Walleye	Bay De Noc	0.4	2,000,000	--
1999	DNR	Walleye	Muskegon	1.9	121,363	--
2001	DNR	Walleye	Musk./Titt.	1.4	111,467	OTC
2003	DNR	Walleye	Bay De Noc	0.3	450,000	--
2003	DNR	Walleye	Muskegon	2.9	78,372	--
2006	DNR	Walleye	Tittabawassee	1.9	153,479	OTC
2011	DNR	Walleye	Muskegon	2.0	203,849	OTC
2013	Private	Walleye	--	7.9	1,420	--
2013	DNR	Walleye	Muskegon	1.4	226,246	--
2014	DNR	Walleye	Muskegon	1.4	150,920	--
2016	DNR	Walleye	Muskegon	1.7	148,415	--
2017	DNR	Walleye	Muskegon	0.1	2,300,000	--
2018	DNR	Walleye	Muskegon	1.8	203,256	--
1999	Private	Bluegill	--	4.6	1,500	--
2004	Private	Bluegill	--	3.5	2,000	--
2005	Private	Bluegill	--	5.0	2,400	--
2007	Private	Bluegill	--	2.9 – 5.0	1,650	--
1983	Private	Hybrid Sunfish	--	--	5,000	--
2003	Private	Hybrid Sunfish	--	5.1	1,543	--
2004	Private	Hybrid Sunfish	--	3.5	1,500	--
2006	Private	Hybrid Sunfish	--	5.0	1,600	--

Table 2.-Length-frequency of certain fish collected during gill net and trap net surveys in May 1976. *Bullheads dominated the rough fish catch.

Length group (in)	Bluegill	Pumpkinseed	Largemouth Bass	Walleye	Northern Pike	Bullhead/suckers/ Bowfin*
4.0-5.9	5					
6.0-7.9	21	14				25
8.0-9.9	22	5				220
10.0-11.9			5	1	1	392
12.0-13.9			10		3	18
14.0-15.9			17		14	7
16.0-17.9			20	1	38	18
18.0-19.9			10	6	44	39
20.0-21.9			10	11	29	55
>=22			1	6	60	56

Table 3.-Length-frequency of certain fish collected during fyke- and gill net surveys in Lake St. Helen in May 1993.

Length group (in)	Bluegill	Pumpkinseed	Black Crappie	Largemouth Bass	Walleye	Northern Pike	Bullhead/suckers/ Bowfin/Carp
<5	1	12	1				
5-5.9	5	8	1				
6-6.9	14	31	7				1
7-7.9	8	13	15				17
8-8.9	4	1	11				37
9-9.9	1		19	1			61
10-10.9			3			1	62
11-11.9			2	2			14
12-12.9							1
13-13.9				2		1	
14-14.9				2	1	1	
15-15.9						1	
16-16.9						3	2
17-17.9						1	2
18-18.9				1		7	5
19-19.9						4	1
20-20.9					3	5	5
21-21.9					2		2
22-22.9					1	2	2
23-23.9					1	2	4
24.24.9					1		3
25-25.9							2
26-26.9							3
27-27.9							1
28-28.9							1
29-29.9							
30-30.9							
31-31.9							
32-32.9						1	

Table 4.-Fish collected from Lake St. Helen May 17-May 20, 1999 by DNR with small and large mesh fyke-nets, and experimental gill nets. Weight was estimated from Michigan length-weight relationships.

Species	Total Catch	Percent by number	Weight (lbs)	Percent by weight	Length range (in)
Brown Bullhead	450	35.0	275.6	23.2	7-21
Rock Bass	295	23.0	164.8	13.9	4-10
Pumpkinseed	181	14.1	62.8	5.3	4-8
Black Crappie	79	6.2	37.0	3.1	6-12
Yellow Bullhead	63	4.9	44.9	3.8	9-12
Bluegill	62	4.8	19.1	1.6	4-8
Largemouth Bass	46	3.6	90.8	7.7	6-20
Bowfin	38	3.0	159.5	13.4	16-28
Common Carp	24	1.9	228.7	19.3	20-35
White Sucker	20	1.6	54.9	4.6	15-21
Northern Pike	14	1.1	16.9	1.4	9-29
Walleye	9	0.7	30.9	2.6	15-29
Yellow Perch	2	0.2	0.1	0.0	5
Brown Trout	1	0.1	0.9	0.1	13
Total	**1,284**		**1,186.8**		

Table 5.-Length-frequency of certain fish collected during fyke- and gill net surveys in Lake St. Helen in May 1999.

Length group (in)	Bluegill	Pumpkinseed	Black Crappie	Largemouth Bass	Walleye	Northern Pike	Bullhead/suckers/ Bowfin/Carp
<5	1	1					
5-5.9	6	3					
6-6.9	6	62	1	1			
7-7.9	45	106	2				1
8-8.9	4	9	31				8
9-9.9			25			1	50
10-10.9			12	1		2	120
11-11.9			2	2		1	95
12-12.9				6			5
13-13.9				8			1
14-14.9				7			
15-15.9				1	2	1	1
16-16.9				6			5
17-17.9				3	1	2	6
18-18.9				7	1	2	4
19-19.9				2		2	5
20-20.9				2	1	1	7
21-21.9							11
22-22.9							9
23-23.9						1	9
24.24.9					2		5
25-25.9					1		
26-26.9							6
27-27.9							6
28-28.9							4
29-29.9					1	1	2
30-30.9							
31-31.9							
32-32.9							1
33-33.9							
34-34.9							
35-35.9							2

Table 6.-Comparison of mean length (inches) at age for prominent game fishes of Lake St. Helen from 1976 to 2010. Number in parentheses represents number aged. The growth index is the growth for each species at Lake St. Helen in 2010 compared to the statewide average for that species.

Species	Age group	May 1976	May 1993	May 1999	June 2010	Growth Index (in)
Bluegill	I	--	--	--	2.7 (3)	-0.8
	II	4.7 (5)	--	--	3.3 (11)	
	III	5.7 (7)	--	--	4.7 (5)	
	IV	6.4 (9)	4.0 (2)	4.1 (1)	5.5 (15)	
	V	7.0 (7)	5.0 (5)	5.7 (4)	6.4 (15)	
	VI	7.7 (9)	5.6 (14)	7.0 (13)	7.1 (7)	
	VII	8.2 (6)	6.5 (3)	8.0 (1)	7.4 (9)	
	VIII	--	6.9 (1)	7.4 (10)	7.8 (4)	
	IX	--	7.0 (6)	7.2 (3)	--	
	X	--	--	7.0 (1)	--	
Pumpkinseed	III	--	--	--	3.2 (8)	-2.0
	IV	5.9 (5)	4.4 (6)	--	--	
	V	6.5 (8)	5.3 (12)	6.8 (5)	--	
	VI	7.2 (3)	6.6 (14)	6.9 (22)	--	
	VII	7.4 (1)	7.0 (4)	8.0 (1)	--	
	VIII	7.6 (1)	7.6 (2)	8.0 (3)	--	
	IX	--	7.2(3)	8.1 (1)	--	
	X	--	--	8.1 (2)	--	
L. Bass	I	--	--	--	5.0 (2)	-2.1
	II	10.2 (12)	--	6.7 (1)	6.9 (2)	
	III	13.6 (14)	9.9 (1)	10.5 (1)	9.7 (2)	

Table 6.-Continued.

Species	Age group	May 1976	May 1993	May 1999	June 2010	Growth Index (in)
L. Bass	IV	15.1 (19)	11.3 (1)	12.0 (3)	10.7 (19)	
	V	16.5 (5)	13.4 (5)	13.6 (19)	11.7 (14)	
	VI	17.5 (7)	--	14.2 (3)	13.0 (16)	
	VII	18.8 (10)	18.5 (1)	17.4 (4)	13.8 (17)	
	VIII	19.5 (2)	--	17.2 (5)	15.2 (14)	
	IX	20.5 (3)	--	17.7 (5)	16.6 (10)	
	X	21.7 (1)	--	--	16.9 (5)	
	XI	--	--	--	18.4 (3)	
	XII	--	--	--	20.0 (2)	
	XIII	--	--	--	20.5 (2)	
Black Crappie	I	--	--	--	4.8 (1)	-0.8
	II	--	--	--	--	
	III	--	5.4 (3)	--	7.3 (13)	
	IV	--	7.3 (20)	8.4 (2)	7.9 (21)	
	V	--	8.9 (11)	8.7 (10)	8.8 (9)	
	VI	--	9.6 (6)	9.5 (9)	9.6 (6)	
	VII	--	10.3 (3)	10.1 (6)	10.7 (3)	
	VIII	--	--	10.6 (5)	10.7 (5)	
	IX	--	11.1 (1)	10.9 (2)	10.3 (3)	
	X	--	--	12.4 (1)	11.2 (1)	

Table 6.-Continued.

Species	Age group	May 1976	May 1993	May 1999	June 2010	Growth Index (in)
Northern Pike	I	14.4 (25)	10.5 (1)	10.0 (3)	14.0 (1)	-4.7
	II	17.5 (49)	16.2 (7)	14.7 (3)	14.5 (8)	
	III	20.7 (49)	19.3 (17)	18.8 (5)	16.2 (8)	
	IV	23.1 (10)	22.3 (1)	19.2 (2)	17.9 (5)	
	V	26.8 (16)	23.3 (2)	23.0 (1)	23.5 (9)	
	VI	30.5 (7)	--	29.7 (1)	30.1 (2)	
	VII	--	32.7 (1)	--	28.9 (1)	
	VIII	37.8 (1)	--	--	--	
Walleye	I	9.4 (1)	--	--	--	-0.7
	II	15.7 (1)	--	--	--	
	III	17.6 (5)	14.5 (1)	--	--	
	IV	20.0 (10)	--	15.3 (2)	16.2 (9)	
	V	21.8 (5)	20.8 (4)	17.4 (1)	17.1 (12)	
	VI	--	20.4 (1)	19.4 (2)	--	
	VII	--	23.3 (1)	--	20.0 (5)	
	VIII	--	24.8 (1)	24.2 (1)	20.5 (6)	
	IX	--	22.4 (1)	--	--	
	X	--	--	--	25.0 (2)	
	XI	--	--	24.6 (1)	26.7 (1)	
	XII	--	--	--	--	
	XIII	--	--	25.3 (1)	--	

Table 7.-Fall Walleye nighttime electrofishing assessments at Lake St. Helen. Percent stocked determined in years when fingerling Walleye were stocked and marked with oxytetracycline. Sample size of age-0 fish tested is in parentheses.

Year	Date	Water Temp (F)	Hours shocked	Miles shocked	Age-0 Walleye	No. Age-0 per hour	Age-1+ Walleye	Percent stocked (n)
1990	10/16	50	3.9	3.0	3	0.7	5	--
1999	9/21	59	2.0	3.0	47	23.5	0	--
2001	9/20	60	2.0	4.6	32	16.0	4	--
2003	9/11	70	--	2.8	0	0.0	4	--
2011	10/12	60	2.5	4.7	68	27.2	0	100 (20)
2016	9/26	61	3.1	6.0	75	24.3	4	--
2018	10/4	56	2.1	4.0	47	22.6	12	--

Table 8.-Fish collected from Lake St. Helen in June 2010 by DNR with small and large mesh fyke-nets, trap nets, seine hauls, nighttime electrofishing, and experimental gill nets. Weight was estimated from Michigan length-weight relationships.

Species	Total Catch	Percent by number	Weight (lbs)	Percent by weight	Length range (in)
Largemouth Bass	1,490	41.9	164.2	19.2	1-20
Sand Shiner	671	18.8	4.5	<1	1-3
Bluegill	466	13.1	73.0	8.5	1-8
Rock Bass	215	6.0	103.2	12.1	3-11
Yellow Bullhead	168	4.7	86.2	10.1	1-12
Pumpkinseed	148	4.1	43.7	5.1	2-8
Black Crappie	122	3.4	43.7	5.1	4-11
Yellow Perch	96	2.7	3.2	<1	1-8
Brown Bullhead	65	1.8	39.0	4.5	8-12
Walleye	36	1.0	85.5	10.0	15-26
Northern Pike	33	<1	61.8	7.2	13-31
Common Carp	11	<1	80.0	9.3	19-31
White Sucker	9	<1	23.5	2.7	16-20
Bowfin	7	<1	31.9	3.7	20-25
Creek Chub	5	<1	0.1	<1	3
Bluntnose Minnow	4	<1	0.0	<1	2
Hybrid Sunfish	3	<1	0.9	<1	5-8
Spottail Shiner	3	<1	0.0	<1	1-2
Smallmouth Bass	2	<1	6.1	<1	17-18
Brown Trout	1	<1	0.8	<1	12
Total	**3,555**		**851.3**		

Table 9.-Length-frequency of certain fish collected during Status and Trends survey in Lake St. Helen in June and July 2010.

Length group (in)	Bluegill	Pumpkinseed	Black Crappie	Largemouth Bass	Walleye	Northern Pike	Bullhead/suckers/ Bowfin/Carp
<5	142	12	1	1382			5
5-5.9	50	11		1			1
6-6.9	146	39	9	1			
7-7.9	111	73	31	1			1
8-8.9	7	13	45	1			18
9-9.9			20				66
10-10.9			13	17			74
11-11.9			3	13			48
12-12.9				13			20
13-13.9				18		3	
14-14.9				12		3	
15-15.9				9	5	5	
16-16.9				4	5	4	2
17-17.9				9	8	2	
18-18.9				5	2	5	2
19-19.9					5		5
20-20.9				4	5	1	4
21-21.9					2	1	4
22-22.9						1	2
23-23.9					1	2	1
24.24.9					1	1	2
25-25.9							1
26-26.9					2	1	
27-27.9						1	
28-28.9						2	1
29-29.9							1
30-30.9							
31-31.9						1	2