

Platte Lake

Benzie County, 26, 27N, 15W, Sections 1-3, 33-36, and 26-27.
Platte River watershed, last surveyed July 2010

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Environment

Platte Lake (Fig. 1) is 2,516 acres in size and located several miles northwest of the city of Honor, in northwestern Benzie County, Michigan, in the northwestern Lower Peninsula. The maximum depth of Platte Lake is about 90 feet, with the average depth being about 25 feet. Approximately one third of the lake is shallower than 15 feet. Platte Lake is in the Platte River watershed (Fig. 2), with the Platte River flowing into the southeastern shore of the lake and flowing out of the northwestern shore; there is no lake-level control structure. Platte Lake is accessible to migrations of fish from Lake Michigan, although a seasonal salmon weir is operated by the Michigan Department of Natural Resources (DNR) on the lower Platte River. The weir is used to temporarily block migrating coho and Chinook salmon so that they can be counted, and in some cases, harvested. The weir is operated annually during September and October.

The shoreline of Platte Lake is heavily developed with homes and cottages, except for the southeastern shore where the Platte River flows into Platte Lake. Shallow, near-shore areas of Platte Lake are predominately sand, with large stretches of gravel shoals in 2 to 10 feet of water. The remaining deep water areas are marl, or a muck/marl combination (Seites 2010). In addition to the Platte River, there are several other small, unnamed, coldwater spring-fed creeks that flow into Platte Lake. The surrounding landscape is mostly hilly and forested, with predominately sandy soils, although the area directly to the east of Platte Lake is a large lowland area locally known as the Deadstream Swamp. Public access to Platte Lake is available through a DNR boat launch on the southwestern corner of the lake (Fig. 1).

In the Platte River watershed, Platte Lake is a significant feature. Only Long Lake, at the very headwaters of the watershed, is larger. The Platte River watershed begins in Long Lake, in western Grand Traverse County. The outlet from Long Lake flows downstream into Lake Dubonnet, and then into Lake Ann and several smaller lakes, including Bronson Lake. From there, the Platte River flows for approximately 15 miles before flowing into Platte Lake. About one mile downstream of Platte Lake, the Platte River flows into Loon Lake. From Loon Lake, the Platte River flows for about two miles before entering Platte Bay of Lake Michigan.

The North Branch of the Platte River (also locally known as "The Deadstream") enters the Platte River approximately 0.25 miles upstream from Platte Lake. Little Platte Lake (805 acres) flows into the North Branch of the Platte River (Fig. 1).

The Platte River watershed drains approximately 93,000 surface acres (Wicklund and Dean 1958). Approximately 82% of the landcover of the Platte River watershed is forest, open land, and wetlands. Agricultural and urban are the other two land uses of the Platte Lake watershed (Anonymous 2005). Approximately 76% of the watershed is publicly owned either by the National Park Service as part of the Sleeping Bear Dunes National Lakeshore, or the State of Michigan as state forest land.

The Platte River is a relatively small river, with annual flows averaging approximately 124 cubic feet per second (Canale et al. 2009). The Platte River is a very stable, groundwater-fed river with flows that show only minor fluctuations with precipitation. This is due to the sandy soils found in the watershed that allow rainwater to percolate into the soil to become groundwater. The section from the Bronson Lake outlet to Platte Lake is a Designated Trout Stream, and it supports naturally reproducing populations of brown trout, steelhead, Chinook salmon, and coho salmon. Downstream of Platte Lake, the Platte River is a warm-water stream, although it supports seasonal migrations of salmon and trout.

There is one lake association on Platte Lake, the Platte Lake Improvement Association (PLIA). The PLIA is a non-profit, voluntary organization composed of lakeshore residents and property owners as well as other interested individuals. The PLIA was formed in 1978, and was founded "for the express purpose of restoring, protecting and preserving Platte Lake, one of Michigan's finest natural resources" (www.platte-lake.org).

History

The earliest anecdotal reports available for Platte Lake (Brown 1901) indicate that at that time, Platte Lake had good populations of smallmouth bass, walleye (referred to as "pickerel"), Great Lakes muskellunge, rock bass, and yellow perch. Bluegill are also briefly mentioned. Since no records exist of fish stocking on Platte Lake prior to 1909, it is assumed that these species were all native to Platte Lake. The report mentions the presence of tourist resorts on the lake that catered to anglers. Sportfishing-based tourism was, and still is, very important to the local economy.

The first recorded fish stocking in Platte Lake was in 1909 when lake trout and smallmouth bass fry were stocked (Table 1). Since then, Platte Lake has had a long and varied stocking history. In the 1930s and 1940s, bluegill, largemouth bass, smallmouth bass, walleye, and yellow perch were stocked. Lake trout were again stocked from 1946-1948. A one-time stocking of brook trout occurred in 1965, and brown trout were first stocked in 1969. In 1985, a walleye fry stocking program began, with walleye fry stocked in 1985-1987, and 1990-1992. In 1994, the stocking strategy switched from walleye fry to brown trout yearlings, and brown trout were stocked from 1994 until 2002. In 2002, walleye stocking (spring fingerlings versus fry) was reinstituted, and have also been stocked in 2003, 2004, and 2009.

The first documented fisheries survey of Platte Lake was conducted in 1940 (Brown and Funk 1940) by the Michigan Department of Conservation (MDOC; the precursor to today's Department of Natural Resources). The researchers used experimental gill nets, a fyke net, and seines in the survey. The catch was comprised mostly of yellow perch, rock bass, smallmouth bass, and northern pike. Despite walleye fry and fertilized egg stocking efforts in the decade prior to the survey, no walleye were caught. The researchers recommended managing Platte Lake for native species like "black bass" and bluegill, and recommended against further stocking of those species, based on the presence of adequate spawning and rearing habitat. The researchers also recommended stocking walleye fingerlings instead of fry and eggs to see if that would establish a walleye fishery. They also discussed the potential stocking of trout and black crappie, but recommended against those strategies.

Other fisheries surveys of Platte Lake were conducted by the MDOC and DNR in 1952, 1975, 1981, 1992, and 1997. All of the surveys documented large numbers of yellow perch and rock bass, and in each survey, growth was poor for yellow perch. The 1975 and 1981 surveys documented good numbers of northern pike up to nearly 40 inches, although the Biologists noted a lack of smaller northern pike in those surveys (Hay 1981). Despite the fact that walleye were not stocked between 1942 and 1985, they were present in Platte Lake. Although no walleye were caught in the 1952 netting survey, at least one was caught via hook and line by the researchers. Another file entry in 1953 describes observations of walleye in Platte Lake by anglers. Three adult walleye were caught in the 1975 survey and five were caught in the 1981 survey. The 1992 survey was conducted to assess the walleye stocking program that had been initiated in 1985. Only eight walleye were caught, and according to the Biologists, the walleye fry plants were not faring well due to alewife predation (Hay 1992). Shortly thereafter, the walleye stocking program was discontinued in favor of brown trout.

In 1997, a general fisheries survey of the Platte Lake fish community was completed using fyke and inland gill nets (Table 2). Large numbers of brown bullhead, white sucker, longnose gar, rock bass, and yellow perch were caught. Longnose gar comprised 21% of the catch by number, and over 50% of the catch by weight. Smaller numbers of alewife, bluegill, brown trout, bowfin, common carp, largemouth bass, northern pike, pumpkinseed sunfish, rainbow trout, silver redhorse, smallmouth bass, and walleye were also caught. It was difficult to make management recommendations from the 1997 survey, based on the small numbers of panfish and gamefish caught in the survey. One of the primary reasons for conducting the 1997 survey was to evaluate the brown trout stocking program, which had been underway since 1994 (Table 1). However, only three brown trout were caught in the 1997 survey. As a result, the brown trout stocking program was eventually discontinued in 2002. Walleye stocking resumed in that year, this time with spring fingerlings instead of fry.

After the resumption of walleye stocking in 2002, three fall walleye electrofishing surveys (2004, 2008, and 2009) were conducted on Platte Lake (Table 3). A survey was also attempted in 2003, but extremely poor weather conditions forced the crew to abort the survey. The purpose of these surveys was to evaluate walleye year class strength, using the protocols outlined by Serns (1982, 1983). Age-0 walleye were caught in both 2004 and 2009 (Seites 2010), but not in 2008. Both 2004 and 2009 were years in which walleye were stocked into Platte Lake, while no walleye were stocked in 2008. In 2004, a total of 12 age-0 walleye were caught, resulting in a catch rate of 2.0/mile. In 2009, a total of 48 age-0 walleye were caught, resulting in a catch rate of 8.0/mile. According to Ziegler and Schneider (2000), catch rates of less than 45 age-0/mile indicates a "poor" year class. Because these were targeted walleye surveys, other fish species were not captured or evaluated.

In early 2004, a steep-pass fish ladder was installed on the North Branch of the Platte River, at the lake level control structure for Little Platte Lake. The project was a cooperative effort between the PLIA and DNR. Northern pike had been observed stacking up below the lake level control structure, which blocked fish passage for northern pike migrating for spawning purposes. It was hoped that the fish ladder would allow northern pike to access the Deadstream Swamp and Little Platte Lake, which both provide excellent spawning and rearing habitat. The overall goal of the project was to improve the northern pike population of Platte Lake.

In 2005, a manual fish removal was conducted on Platte Lake. A total of 275 longnose gar weighing 774 pounds and four common carp weighing 32 pounds were removed from Platte Lake. The removal

was a cooperative effort between DNR and PLIA, and was conducted due to the high biomass of longnose gar collected in the 1997 survey. More carp were observed during the effort, but many of them avoided the fyke nets used in the effort.

The Platte River State Fish Hatchery is a prominent and unique feature within the Platte River watershed. It is located approximately 5 miles downstream of Bronson Lake. The hatchery was constructed in 1928 as a trout rearing facility, and then converted in 1972 to a salmon rearing hatchery. The hatchery is a vital component of Michigan's hatchery system, as it is the only State hatchery that raises coho salmon. The hatchery rears 1.5 million coho salmon and 1.9 million Chinook salmon annually. Coho salmon egg take is conducted at the hatchery, as the Platte River serves as the coho salmon broodstock stream for Michigan. The hatchery is also currently rearing Atlantic salmon on an experimental basis.

During the 1970s, the hatchery was discharging in excess of 3,000 pounds per year of phosphorus into the Platte River. On the grounds that excess phosphorous being released by the hatchery was polluting Platte Lake, the PLIA initiated a lawsuit against the DNR and the State of Michigan in 1986. On March 3, 2000, the two parties signed a Consent Agreement which limits the amount of phosphorous that the hatchery is allowed to discharge to 175 pounds in any given year or 55 pounds in any 3 month period. The hatchery underwent a major renovation project in 2001-2003 which included the installation of a new effluent treatment facility. Since then, the hatchery has met the annual phosphorus loading requirements, except for 2009, but has struggled to meet the 3-month phosphorous discharge limits set by the Consent Agreement (Canale et al. 2009). All parties continue to work to reduce amounts of phosphorous being released by the hatchery. One component of the Consent Decree requires water quality data collection at many locations in the Platte River watershed, including Platte Lake. This has led to Platte Lake being "one of the most sampled waterbodies of its size in the United States" (Gary Whelan, DNR, personal communication). While the extensive water quality data is not presented in this report, it is available on the PLIA website (www.platte-lake.org) or by contacting DNR - Fisheries Division.

From 1994-2010, a total of 51 exceptional fish caught from Platte Lake have been entered into the DNR Fisheries Division Master Angler program (Table 4). Of those 51 fish, 13 different species were represented. Rock bass, longnose gar, channel catfish, and smallmouth bass were the most commonly represented species, with at least eight entries per species. Notable entries include a 19.6 pound northern pike speared in 2008, and a 36 inch walleye that was caught and released in 2010. The large number of Master Angler entries for Platte Lake exemplifies the quality of Platte Lake fish populations and the popularity of the Platte Lake fishery. A number of the Master Angler entries on Platte Lake were submitted by bow and arrow fishers. Platte Lake is a popular destination for bowfishing, in addition to hook and line angling.

Current Status

The most recent comprehensive fisheries survey of Platte Lake was conducted in the summer of 2010. Status and trends netting protocols (Wehrly et al. 2009) were used for the survey. The netting portion of the survey took place from May 24 through May 27. Survey gear used included one large-mesh fyke net (3 net-nights), three trap nets (9 net-nights), and three experimental graded-mesh inland gill nets (8 net-nights). Seining and electrofishing were conducted on July 13, 2010. A total of 6 seine hauls were

completed, along with 3 ten-minute electrofishing transects conducted with an electroshocking boat. The primary purpose of this survey was to assess the status of all fish populations in Platte Lake, with additional focus on the walleye population.

During the 2010 May netting survey, a total of 1,499 fish were caught, representing 20 different species (Table 5). Rock bass were the most frequently collected species, with a total of 956 caught. They represented 64% of the total catch by number and ranged from 1 to nearly 12 inches in length. Other panfish species collected included bluegill (67 from 4-8 inches), pumpkinseed sunfish (38 from 4-8 inches), and yellow perch (70 from 5-10 inches).

Game fish species caught in the 2010 May netting survey primarily included smallmouth bass and walleye (Table 5). A total of 63 smallmouth bass were caught, ranging from 6-19 inches. The smallmouth bass averaged 14.9 inches, with 76% over 14 inches in length. The walleye catch consisted primarily of larger fish, with 27 individuals from 7-25 inches. All but two were larger than 18 inches. Other gamefish species caught in smaller numbers included 1 brown trout (18 inches), 3 channel catfish (24-27 inches), 1 coho salmon (7 inches), 4 largemouth bass (10-17 inches), 5 northern pike (21-32 inches), and 1 rainbow trout (16 inches).

During the July seining and electrofishing portion of the 2010 survey, a total of 772 fish were caught, representing 20 different species (Table 6). Spottail shiners were the most frequently collected species, with a total of 298 caught, representing 39% of the total catch by number. Other nongame species present included bluntnose minnow, bowfin, brown bullhead, creek chub, common shiner, Johnny darter, logperch, longnose gar, round goby, sand shiner, shorthead redhorse, and white sucker. Panfish and gamefish species captured included bluegill, largemouth bass, pumpkinseed sunfish, rock bass, smallmouth bass, walleye, and yellow perch. The six walleye caught were all smaller fish, ranging from 7-9 inches in length.

In the netting portion of the survey, most species caught showed above-average growth (Table 7), with the exception of yellow perch. Age-4 and -5 bluegill were growing 0.6 inches faster than the State of Michigan average length at age. Age-3, -4, and -5 pumpkinseed sunfish were growing 0.5 inches faster than the state average length at age. Rock bass ages-3 through -9 were growing 0.6 inches faster than the state average length at age. Smallmouth bass ages-3 through -6 and -8 were growing 0.7 inches faster than the state average length at age. Walleye exhibited good growth, with ages-6 and -7 growing 1.5 inches faster than the state average length at age. However, yellow perch were growing slowly, with ages-3 through -6 growing 1.5 inches slower than the state average length at age. Not enough (fewer than five of any one age class) brown trout, coho salmon, largemouth bass, northern pike, and rainbow trout were collected to make statistical inferences regarding age and growth.

In the electrofishing/seining portion of the survey, age-2 bluegill were growing 0.5 inches slower than the state average length at age (Table 8). Age-1 and -2 largemouth bass were growing 0.8 inches faster than the state average length at age. Age-2 and -3 pumpkinseed sunfish were growing 0.9 inches slower than the state average. Age-1 walleye were growing 0.2 inches slower than the state average, and age -2 yellow perch were growing 1.8 inches slower than the state average. All walleye caught in both the netting and seining/electrofishing portions of the 2010 survey originated from stocking years.

Fish species that were not caught in the 2010 survey of Platte Lake but had been reported in previous surveys included black crappie, blacknose shiner, brook stickleback, bluntnose minnow, buffalo (caught in the 1981 survey, no indication of whether it was a bigmouth or black buffalo), Chinook salmon, common carp, Iowa darter, lake herring, mimic shiner, rainbow smelt, rosyface shiner, silver redhorse, spottail shiner, and trout-perch. Coho salmon were caught in a fisheries survey of Platte Lake for the first time in 2010 (although coho salmon have obviously used Platte Lake as a migration corridor since 1966). Freshwater drum, Great Lakes muskellunge, and lake sturgeon have not been caught in any fisheries surveys of Platte Lake; however, catches of these species have been reported by anglers (DNR files, Cadillac). According to Brown (1901), Platte Lake was a destination fishery for Great Lakes muskellunge in the late 1800's. The most recent report of a Great Lakes muskellunge being caught from Platte Lake was in 1998. This fish is listed in the DNR Master Angler reports as being a tiger muskellunge; however, a file picture shows that it is a Great Lakes muskellunge. The only other DNR record of muskellunge in Platte Lake was one fish recorded in a 1930 MDOC creel census study (Brown and Funk 1940).

Limnological data was collected on Platte Lake by the US Geological Survey in mid-August, 2008 (Table 9). The Secchi disk reading (a measure of the water clarity) was 6.7 feet. Chlorophyll pigment is a measure of biological productivity and high levels can often lead to algal blooms. The results for Platte Lake in August of 2008 were 1.8 micrograms per liter ($\mu\text{g/l}$). This value is relatively low for inland lakes, and indicates that Platte Lake likely did not have an algae bloom occurring during the sampling. The average chlorophyll a concentration for other large, deep lakes in Michigan was 4.2 $\mu\text{g/l}$. The total phosphorus was measured at 10 $\mu\text{g/l}$ at a depth of 3 feet, and 11 $\mu\text{g/l}$ at a depth of 39 feet. Total nitrogen was measured at 270 $\mu\text{g/l}$ at a depth of 3 feet, and 400 $\mu\text{g/l}$ at a depth of 39 feet. These readings are also fairly low for large, deep, inland lakes. The average total phosphorous for other large, deep lakes in Michigan is 21 $\mu\text{g/l}$. The average total nitrogen for other large, deep lakes in Michigan is 422 $\mu\text{g/l}$.

Shoreline data was collected on Platte Lake by DNR Fisheries personnel on June 1, 2010 (Table 10). Data collected included the number of docks, submerged trees, and houses found per kilometer of shoreline, as well as how much of the shoreline is armored or hardened with a structure in order to prevent erosion. Platte Lake averaged 21.4 docks per kilometer (34.2 docks per mile), 22.2% shoreline armoring, 4.3 submerged trees per kilometer (6.9 submerged trees per mile), and 31.7 houses per kilometer (50.7 houses per mile).

Analysis and Discussion

One of the reasons for conducting the 1997 survey was to evaluate the brown trout stocking program, which had been underway since 1994 (Table 1). However, only three brown trout were caught in the survey. The low catch of brown trout in the 1997 survey, combined with a lack of positive angler catch reports of brown trout in Platte Lake, led to the discontinuation of the brown trout stocking program. While it is generally accepted that the brown trout stocking program did not create much of a brown trout fishery in Platte Lake, some anglers claimed that the stocked brown trout migrated downstream to Platte Bay and created a good brown trout fishery there. However, a robust brown trout fishery was not documented in creel survey results from Platte Bay (Table 11). Catches of brown trout from Platte Bay in 2000 and 2001 were very low, despite the brown trout stocking program in Platte Lake.

The 2010 DNR fisheries survey showed that Platte Lake has generally healthy gamefish populations. Smallmouth bass in particular were numerous and are a keystone predator. The smallmouth bass population of Platte Lake is well balanced, with good growth, multiple year classes represented in the catch, and many individuals exceeding the minimum legal-size limit of 14 inches. Platte Lake should be recognized as one of the better smallmouth bass lakes in the northwestern Lower Peninsula. Largemouth bass and northern pike were not collected in large numbers during the 2010 survey, although some relatively large individuals of each species were present. The lack of northern pike in the catch of the 1997 and 2010 surveys of Platte Lake is concerning, considering the numbers and size of fish caught in the 1975 and 1981 surveys.

Although 33 walleye were caught in the 2010 survey, the catch consisted of only four different year classes, all of which were from stocking years. This indicates that the latest walleye stocking program, which was initiated in 2002, is contributing to the fishery. This represents a switch from earlier walleye stocking efforts, which were perceived as unsuccessful. One potential reason for earlier failures may have been predation on walleye fry by alewife (Hay 1992). The switch to spring fingerlings in the most current walleye stocking efforts may have alleviated the predation problem, as spring fingerlings are typically at least one inch long, which is large enough to preclude alewife predation. Although 20th century walleye stocking efforts were not particularly successful in Platte Lake, there always seemed to be at least a few walleye present in Platte Lake, as evidenced by catches of walleye in fisheries surveys and anecdotal reports from anglers. These walleye may have been produced naturally or they may have been immigrants from Lake Michigan or upstream waterbodies (particularly during the period from 1942-1985 when no walleye stocking took place in Platte Lake).

The fact that walleye were only present from stocked year classes in the 2010 fisheries survey catch may indicate that walleye natural reproduction is not occurring in most years in Platte Lake. Despite this, the stocked walleye are clearly growing well and thriving. Angler reports for walleye in recent years have been very positive. Although the 2004 and 2009 Serns fall walleye sampling efforts all resulted in "poor" year classes according to Ziegler and Schneider (2000), it is possible that the index does not provide an ideal metric for assessing the Platte Lake walleye population. That is, a poor year class according to Ziegler and Schneider (2000) may actually be a good year class in Platte Lake.

The panfish populations in Platte Lake appear to be healthy, for the most part. Although the bluegill and pumpkinseed sunfish populations in Platte Lake are not overly large, they grow well and attain "keeper" sizes. The rock bass population in Platte Lake is robust, including many individuals exceeding the minimum Master Angler length of 11 inches. The yellow perch population of Platte Lake is less robust, with few large "keeper" fish present in the 2010 survey catch. The 2010 survey also revealed that Platte Lake yellow perch are growing much slower than the State average. This result is similar to that seen in all of the previous Platte Lake fisheries surveys, indicating that stunting has been a problem with Platte Lake yellow perch for many decades.

Platte Lake is much more heavily developed with docks and dwellings than other lakes in Michigan (Table 10). Platte Lake had 21.4 docks per kilometer (34.2 docks per mile) of shoreline, while the average large deep lake in Michigan had only 4.3 docks per kilometer (6.9 docks per mile, Wehrly et al. 2010). Platte Lake also had 31.7 dwellings per kilometer (50.7 dwellings per mile), compared to 9.2 dwellings per kilometer (14.7 dwellings per mile) for other large deep lakes in Michigan. Platte Lake also had less submerged woody debris (4.3 trees per kilometer or 6.9 trees per mile) than other large

lakes in Michigan (average = 8.4 trees per kilometer or 13.4 trees per mile) Platte Lake did have slightly less shoreline armoring (22%) than other large, deep, inland lakes in Michigan (average = 24.2%). It is likely that the amount of development on Platte Lake is linked to the lack of woody debris, as many riparian land owners either remove trees that fall into the water, or remove trees along the shoreline that have the potential to fall into the water.

Management Direction

At this point, the Platte Lake walleye fishery appears to be dependent upon stocking. Therefore, spring fingerling walleye (Muskegon River strain) should continue to be stocked into Platte Lake, at a rate of 50/acre (125,800 fish) every other year, starting in 2011. Continued walleye stocking should allow Platte Lake to be one of the better walleye fishing lakes in the area. Fall walleye electrofishing surveys should be conducted in years when walleye are stocked to assess the survival of the stocked fish. By looking at older walleye in addition to age-0 fish, the contribution of natural reproduction from non-stocking years can also be ascertained from these surveys.

Native species like bluegill, pumpkinseed sunfish, rock bass, and smallmouth bass should continue to thrive in Platte Lake without direct management efforts.

Any remaining riparian wetlands adjacent to Platte Lake should be protected as they are critical to the continued health of the lake's aquatic community. Future riparian development and wetland loss may result in deterioration of the water quality and aquatic habitat. Healthy biological communities in inland lakes require suitable natural habitat. Human development within the lake watershed, along the shoreline, and in the lake proper has a tendency to change and diminish natural habitat. Appropriate watershed management is necessary to sustain healthy biological communities, including fish, invertebrates, amphibians, reptiles, birds and aquatic mammals. Generally for lakes this includes maintenance of good water quality, especially for nutrients; preservation of natural shorelines, especially shore contours and vegetation; and preservation of bottom contours, vegetation, and wood structure within a lake. Guidelines for protecting fisheries habitat in inland lakes can be found in Fisheries Division Special Report 38 (O'Neal and Soulliere 2006).

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Fig. 1. Platte Lake, Benzie County.

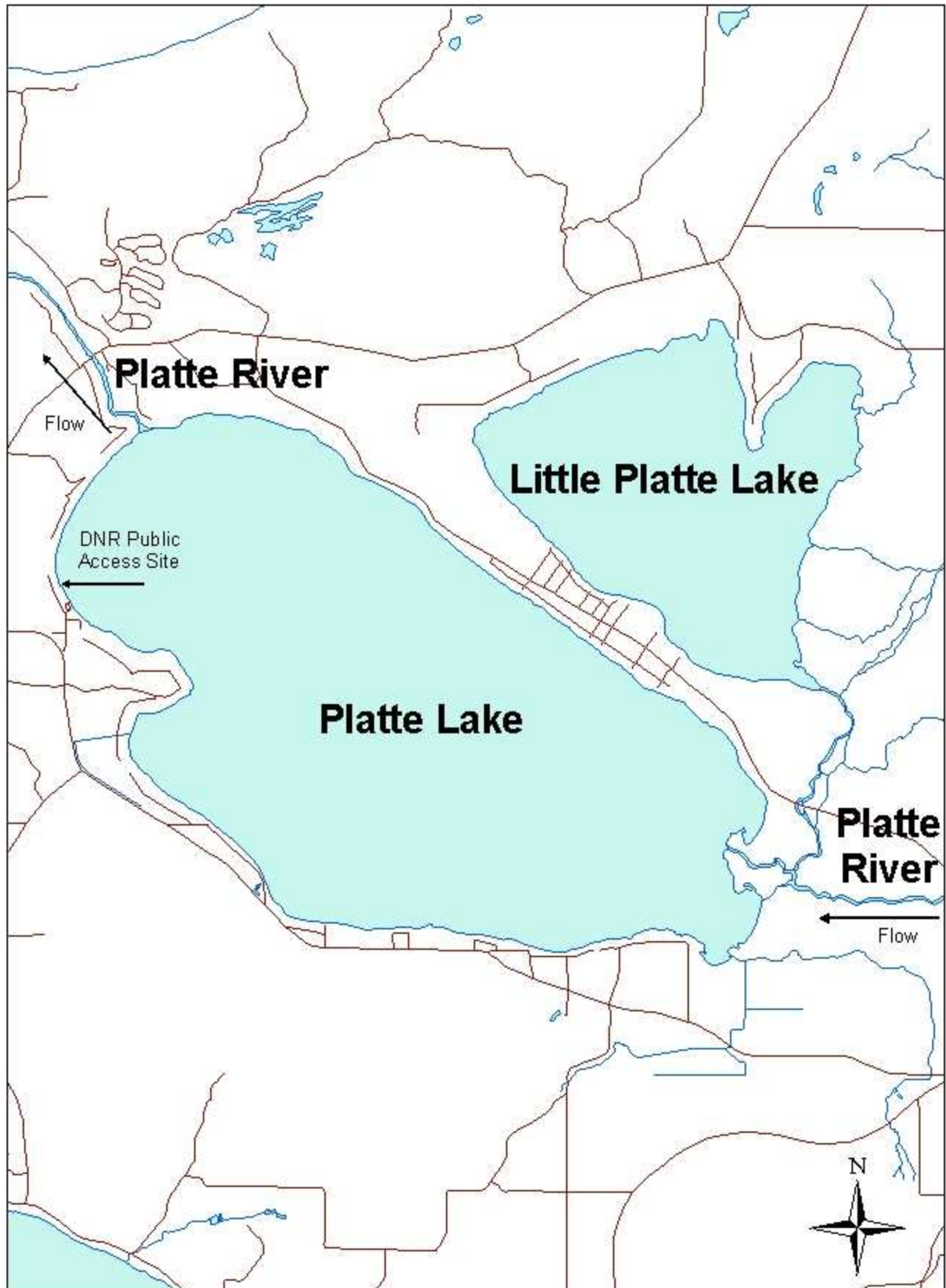


Fig. 2. Platte River Watershed, Benzie and Leelanau Counties.

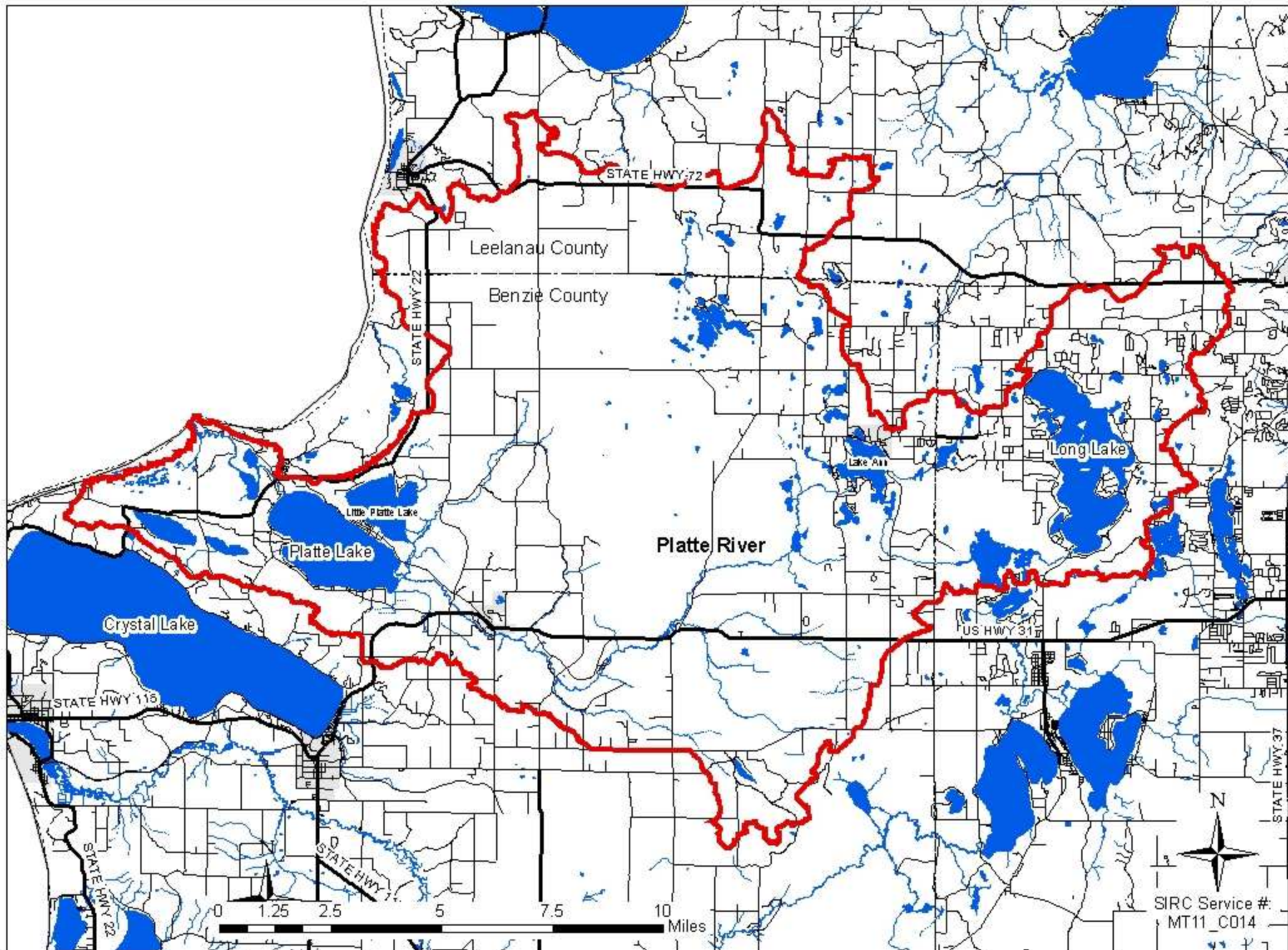


Table 1. Fish stocked in Platte Lake, Benzie County, 1909-2010.

Year	Species	Number	Size/age	Strain
1909	lake trout	22,500	fry	
1909	smallmouth bass	8,000	fry	
1910	lake trout	20,000	fry	
1910	walleye	125,000	fry	
1932	largemouth bass	500	unknown	
1934	bluegill	10,000	3 months	
1935	bluegill	10,000	4 months	
1935	walleye	170,000	fry	
1936	walleye	375,000	fry	
1937	bluegill	15,000	5 months	
1937	largemouth bass	1,800	fry	
1937	smallmouth bass	500	fry	
1937	walleye	375,000	fry	
1938	bluegill	10,000	3 months	
1938	largemouth bass	1,500	3 months	
1938	smallmouth bass	1,000	5 months	
1938	walleye	400,000	fry	
1938	yellow perch	20,000	7 months	
1939	bluegill	10,000	4 months	
1939	smallmouth bass	2,000	4-5 months	
1939	walleye	300,000	fry	
1939	yellow perch	30,000	7 months	
1940	bluegill	34,260	4 months	
1940	smallmouth bass	12,000	4 months	
1940	walleye	12,000	fry	
1941	bluegill	25,000	4 months	
1941	largemouth bass	2,000	4 months	
1941	smallmouth bass	675	4 months	
1942	bluegill	15,000	4 months	
1942	largemouth bass	400	4 months	
1942	smallmouth bass	2,225	5 months	
1942	walleye	200,000	fry	
1943	bluegill	1,000	yearlings	
1943	smallmouth bass	800	3 months	
1944	bluegill	1,000	15 months	
1944	smallmouth bass	1,680	4 months	
1946	lake trout	2,000	2-year	
1947	lake trout	5,000	adult	
1948	lake trout	3,000	9"	
1965	brook trout	15,000	legal	
1969	brown trout	3,000	yearlings	
1985	walleye	6,840	spring fingerlings	Manistique
1986	walleye	5,800	spring fingerlings	Bay De Noc
1987	walleye	5,000,000	fry	Muskegon
1987	walleye	75,000	fry	Manistique
1990	walleye	2,000,000	fry	Muskegon
1991	walleye	3,600,000	fry	Muskegon
1992	walleye	2,000,000	fry	Muskegon
1994	brown trout	20,000	yearlings	Saint Croix
1995	brown trout	18,598	yearlings	Seeforellen

Table 1 continued. Fish stocked in Platte Lake, Benzie County, 1909-2010.

1995	brown trout	1,400	yearlings	Soda Lake
1997	brown trout	21,299	yearlings	Seeforellen
1998	brown trout	17,270	yearlings	Seeforellen
1999	brown trout	19,988	yearlings	Seeforellen
2000	brown trout	21,900	yearlings	Seeforellen
2001	brown trout	19,114	yearlings	Seeforellen
2002	brown trout	4,000	yearlings	Wild Rose
2002	brown trout	20,140	yearlings	Gilchrist Creek
2002	walleye	67,950	spring fingerlings	Muskegon
2003	walleye	63,112	spring fingerlings	Muskegon
2004	walleye	63,728	spring fingerlings	Muskegon
2009	walleye	138,277	spring fingerlings	Muskegon

Table 2. Number, weight, and length of fish collected from Platte Lake with large mesh fyke nets and inland gillnets on June 9-13, 1997.

Species	Number	Percent by number	Weight (Pounds)	Percent by weight	Length range (inches) ¹	Average length	Percent legal size ²
alewife	10	0.9	0.8	0.1	4-7	6.7	
bluegill	21	1.9	2.5	0.2	3-7	5.3	29 (6")
brown trout	3	0.3	6.7	0.6	8-19	15.8	100 (8")
bowfin	5	0.5	30.7	2.9	24-27	25.9	
brown bullhead	248	22.8	158.1	14.7	8-12	11.0	100 (7")
common carp	1	0.1	9.4	0.9	27-27	27.5	
largemouth bass	2	0.2	4.8	0.4	16-16	16.5	100 (14")
longnose gar	226	20.8	560.4	52.2	18-41	29.8	
northern pike	1	0.1	7.9	0.7	32-32	32.5	100 (24")
pumpkinseed sunfish	28	2.6	3.1	0.3	3-8	4.9	14 (6")
rainbow trout	13	1.2	21.3	2.0	6-29	11.6	69 (8")
rock bass	230	21.1	67.2	6.3	3-11	6.9	70 (6")
silver redhorse	3	0.3	8.3	0.8	19-21	20.5	
smallmouth bass	21	1.9	31.0	2.9	7-19	12.8	48 (14")
walleye	5	0.5	19.2	1.8	22-23	22.7	100 (15")
white sucker	113	10.4	114.9	10.7	9-18	13.5	
yellow perch	158	14.5	27.4	2.6	4-16	7.0	30 (7")
Total	1,088	100	1073.7	100			

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

²Percent legal size or acceptable size for angling. Legal size or acceptable size for angling is given in parentheses.

Table 3. Comparison of Platte Lake Serns Index survey data.

	# walleye captured	Catch Rate (# walleye/mile of shoreline sampled)	Year Class strength estimate	Serns Index (# walleye/surface acre)
2004				
Age 0	12	2.00	1178	0.468
Age1	0	0.00	0	0.000
2008				
Age 0	0	0.00	0	0.000
Age1	0	0.00	0	0.000
2009				
Age 0	48	8.00	4710	1.872
Age1	0	0.00	0	0.000

Table 4. Michigan DNR Master Angler awards issued for fish caught from Platte Lake, Benzie County, 1994-2010.

Species	Number of Master Angler awards issued
Brown trout	1
Carp	2
Channel catfish	8
Chinook salmon	1
Coho salmon	2
Freshwater drum	1
Longnose gar	11
Northern pike	1
Pumpkinseed sunfish	2
Rock bass	11
Smallmouth bass	8
Tiger Muskellunge	1
Walleye	2
Total:	51

Table 5. Number, weight, and length of fish collected from Platte Lake with large mesh fyke nets, trap nets, and inland gillnets on May 24-27, 2010.

Species	Number	Percent by number	Weight (Pounds)	Percent by weight	Length range (inches) ¹	Average length	Percent legal size ²
alewife	4	0.3	0.5	0.0	7-8	7.8	
black bullhead	31	2.1	23.1	2.2	9-14	11.6	100 (7")
bluegill	67	4.5	15.4	1.5	4-8	6.8	78 (6")
brown trout	1	0.1	2.7	0.3	18-18	18.5	100 (8")
bowfin	1	0.1	4.0	0.4	22-22	22.5	
brown bullhead	85	5.7	67.0	6.3	7-14	11.8	100 (7")
channel catfish	3	0.2	17.4	1.6	24-27	25.8	100 (12")
coho salmon	1	0.1	0.1	0.0	7-7	7.5	0 (8")
largemouth bass	4	0.3	5.2	0.5	8-17	12.8	25 (14")
longnose gar	63	4.2	151.1	14.3	22-38	29.4	
northern pike	5	0.3	19.8	1.9	21-32	25.5	80 (24")
pumpkinseed sunfish	38	2.5	9.6	0.9	4-8	6.5	76 (6")
rainbow trout	1	0.1	1.6	0.2	16-16	16.5	100 (8")
rock bass	956	63.8	412.5	39.0	4-11	7.8	65 (6")
shorthead redhorse	3	0.2	8.3	0.8	15-20	18.8	
smallmouth bass	63	4.2	118.9	11.2	6-19	14.9	76 (14")
walleye	27	1.8	82.9	7.8	7-25	20.4	96 (15")
white sucker	60	4.0	98.4	9.3	7-20	16.1	
white perch	16	1.1	9.9	0.9	9-11	10.6	100 (7")
yellow perch	70	4.7	8.8	0.8	5-10	6.6	19 (7")
Total	1,499	100	1057.2	100			

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

²Percent legal size or acceptable size for angling. Legal size or acceptable size for angling is given in parentheses.

Table 6. Number, weight, and length of fish collected from Platte Lake by seining and electrofishing on July 13, 2010.

Species	Number	Percent by number	Weight (Pounds)	Percent by weight	Length range (inches) ¹	Average length	Percent legal size ²
bluegill	34	4.4	0.5	1.1	1-4	2.7	0 (6")
bluntnose minnow	17	2.2	0.1	0.2	1-2	2.3	
bowfin	3	0.4	7.0	15.8	16-21	18.5	
brown bullhead	3	0.4	1.6	3.6	10-10	10.5	
creek chub	2	0.3	0.1	0.2	4-5	5.0	
common shiner	2	0.3	0.1	0.2	4-4	4.5	
johnny darter	11	1.4	0.5	1.1	1-2	1.9	
largemouth bass	39	5.1	8.5	19.1	1-14	6.5	3 (14")
logperch	54	7.0	0.8	1.8	2-4	3.5	
longnose gar	1	0.1	5.3	11.9	37-37	37.5	
pumpkinseed sunfish	103	13.3	5.0	11.3	2-6	3.1	1 (6")
rock bass	18	2.3	6.5	14.6	2-11	6.8	56 (6")
round goby	2	0.3	0.0	0.0	2-2	2.5	
sand shiner	93	12.0	0.3	0.7	1-3	2.2	
shorthead redhorse	1	0.1	3.4	7.7	20-20	19.3	
smallmouth bass	18	2.3	0.1	0.2	1-4	1.8	0 (14")
spottail shiner	298	38.6	0.5	1.1	1-4	1.6	
walleye	6	0.8	1.1	2.5	7-9	8.3	0 (15")
white sucker	1	0.1	0.1	0.2	5-5	2.4	
yellow perch	66	8.5	2.9	6.5	2-8	4.5	5 (7")
Total	772	100	44.4	100			

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

²Percent legal size or acceptable size for angling. Legal size or acceptable size for angling is given in parentheses.

Table 7. Average total weighted length (inches) at age, and growth relative to the state average, for fish sampled from Platte Lake with trap nets, fyke nets, and inland gill nets, May 24-27, 2010. Number of fish aged is given in parenthesis. A minimum of five fish per age group is statistically necessary for calculating a Mean Growth Index, which is a comparison to the State of Michigan average.

Species	I	II	III	Age IV	V	VI	VII	VIII	IX	X	Mean Growth Index
Bluegill			4.6 (2)	6.3 (24)	7.5 (6)	7.8 (4)	8.0 (2)				+0.6
Brown trout			18.0 (1)								
Coho salmon	7.5 (1)										
Largemouth bass			12.2 (2)			17.5 (1)					
Northern pike			24.7 (2)					32.8 (1)			
Pumpkinseed sunfish			5.4 (7)	6.3 (6)	6.4 (10)	8.3 (2)	7.8 (3)				+0.5
Rainbow trout		16.2 (1)									
Rock bass			5.3 (21)	6.6 (6)	7.1 (15)	8.6 (11)	9.5 (5)	10.2 (9)	10.8 (10)	11.4 (3)	+0.6
Smallmouth bass		7.9 (2)	10.5 (9)	14.1 (7)	15.2 (8)	16.1 (14)	17.0 (3)	17.9 (6)	18.6 (1)	19.0 (1)	+0.7
Walleye	7.5 (2)					20.7 (14)	22.0 (11)	21.7 (1)			+1.5
Yellow perch			5.6 (5)	6.3 (6)	6.5 (14)	7.5 (6)	8.2 (3)			10.5 (1)	-1.5

Table 8. Average total weighted length (inches) at age, and growth relative to the state average, for fish sampled from Platte Lake by seining and electrofishing, July 13, 2010. Number of fish aged is given in parenthesis. A minimum of five fish per age group is statistically necessary for calculating a Mean Growth Index, which is a comparison to the State of Michigan average.

Species	I	II	III	Age IV	V	VI	VII	VIII	IX	X	XIII	Mean Growth Index
Bluegill		3.7 (7)										-0.5
Largemouth bass	5.4 (17)	9.5 (8)	13.7 (1)	14.6 (1)								+0.8
Pumpkinseed sunfish		3.3 (5)	4.3 (15)	5.3 (2)								-0.9
Rock bass		3.0 (1)										
Smallmouth bass	4.7 (1)											
Walleye	8.0 (6)											-0.2
Yellow perch	3.2 (4)	3.9 (14)	4.9 (2)			7.8 (2)	7.8 (1)					-1.8

Table 9. Total phosphorous, total nitrogen, secchi depth, and chlorophyll for Platte Lake, Benzie County. Sampling was conducted by the U. S. Geological Survey on August 11, 2008.

Depth (ft)	Total phosphorous µg/l	Total nitrogen µg/l	Chlorophyll A µg/l
3	10	270	
14			1.8
39	11	400	

Secchi depth = 6.7 feet

Table 10. Shoreline data for Platte Lake, Benzie County. Sampling was conducted by DNR Fisheries personnel on June 3, 2010.

	Small docks per km	Large docks per km	Total docks per km	Percent shoreline armoring	Submerged trees per km	Dwellings per km
Platte Lake	21.4	0.0	21.4	22.2	4.3	31.7

Table 11. Estimated catch of brown trout from Platte Bay as measured by DNR creel census, 1985-2009.

Year	Estimated number of brown trout harvested	Estimated number of brown trout released	Estimated total annual catch
1985	824		824
1986	587		587
1987	412		412
1988	267		267
2000	80		80
2001	169	18	187
2005	157	11	168
2009	120	33	153