Lake Lancer

Gladwin County, T20N, R1W, Sec 16, 20, 21, and 29
Tittabawassee Watershed, last surveyed 2025

April S. Morey, Fisheries Management Biologist

Environment

Lake Lancer is a 685-acre impoundment on the Sugar River located approximately nine miles north of Gladwin in north-central Gladwin County (T20N, R1W, Sec 16, 20, 21, and 29; Figure 1). Lake Lancer (also referred to as Sugar Springs Flooding), is an impoundment that was created in 1976 when a privately owned earthen dam was constructed. The public can access the lake from the Butman Township access site on the east side of the lake, located off Hockaday Road. Additionally, the State owns a parcel of land with development restrictions on the lake's west end, accessible from Butman Road, which provides another small boat access point. This impoundment is hydrologically connected Lake Lancelot (sometimes referred to as Grass Lake) and they collectively provide waterfront properties in the community of Sugar Springs. It is important to note that Lake Lancelot is only accessible through a private boat launch and, therefore, is not surveyed by the Michigan Department of Natural Resources (MDNR).

Upstream of Lake Lancer, the Sugar River is a Type 1 designated trout stream. This regulation continues downstream of the impoundment ending just north of Ritchie Rd. The Sugar River outlet flows southeast to the Tittabawassee River and eventually enters the Smallwood Impoundment. Prior to the establishment of Sugar Springs, historical angler reports classified the Sugar River as a high-quality coldwater stream. However, due to thermal pollution from Lake Lancer, the downstream portion of the Sugar River no longer supports trout. A coldwater discharge system was constructed alongside the dam to mitigate the increased river temperature from Lake Lancer, as required by the Clean Water Act of 1972. This effort appeared to offset some of the thermal pollution; however, it has been inoperable for nearly a decade, negating all mitigation efforts. Additionally, a fish ladder was installed at the time of construction, but it proved ineffective and was formally abandoned in the mid-2020s.

Lake Lancer was originally classified by DNR as an oligotrophic lake, a category generally characterized by low nutrient levels and high water clarity, which supports a less productive aquatic community. However, recent data on fish community and limnology indicate a shift toward a mesotrophic system. Temperature and dissolved oxygen profiles show a weak thermocline around 14-15 ft deep in late summer, with hypoxic conditions (i.e., dissolved oxygen < 3.0 mg/L) beginning at 16 ft (Figure 2). While the average depth of Lake Lancer is unknown, much of the lake is less than 15 ft deep, with a maximum depth of 32 ft near the dam. The dominant structural fish habitats in Lake Lancer include docks and aquatic vegetation.

The vegetation community in Lake Lancer is diverse. In September 2011, the Michigan Department of Environment, Great Lakes, and Energy (EGLE) conducted an aquatic plant survey to determine cumulative cover, plant diversity, and abundance. The cumulative cover value is calculated by determining the percent cover at each site, multiplying by a weighted density value for standardization, and dividing by the total number of aquatic vegetation assessment sites (AVAS). A total of 18 submerged plant species and five emergent species (including attached floating species) were identified, along with common duckweed and watershield (Table 1). The dominant submerged plant

species was southern naiad, with a cumulative cover value of 39.14. Southern naiad was found at nearly all 209 AVAS, with a density ranging from 2% to over 60% per site. The dominant emergent plant species was cattail, with a cumulative cover value of 4.9. Cattails were present at 92 of the 209 AVAS, with densities ranging from less than 2% to up to 60% per site. Among the invasive species identified, variable leaf watermilfoil was the most common, appearing at nearly all 209 AVAS with densities ranging from less than 2% to over 60% per site.

Lake Lancer has a highly convoluted shoreline measuring approximately 7.7 miles, featuring numerous small coves. The shoreline development index (SDI) quantifies the shape of a waterbody and estimates its littoral zone (Cole et al., 2016). With an SDI of 2.1, Lake Lancer's shoreline is significantly more complex compared to a perfectly circular lake (SDI = 1). This convoluted shoreline provides diverse aquatic habitats, enhances productivity through increased edge habitat, and supports a variety of recreational opportunities. Edge habitats are vital for many aquatic species, serving as spawning, feeding, and shelter areas. However, as a lake's SDI increases, the risk of erosion also rises, particularly in areas lacking vegetation or affected by development. Approximately 75% of Lake Lancer's shoreline is armored with seawalls and riprap installed by property owners, exceeding the statewide average. While the Tittabawassee River watershed is predominantly agricultural, the area surrounding Lake Lancer is primarily residential, with a golf course also present (Figure 3). The surrounding topography ranges from gently rolling to hilly, with slopes varying between 0% and 12%. While some areas are flat (0%), allowing precipitation to soak into the sediment and filter out some pollutants, there is still terrain that is steep enough to increase runoff into the lake. Therefore, best management practices for land use is important for protecting the water quality of Lake Lancer.

History

Lake Lancer has consistently been managed as a warmwater fishery, despite being an impoundment on a trout stream. Fisheries management efforts began in 1984 when 80,120 spring fingerling Walleye (Table 2) were stocked with the purpose of creating a fishery. A fisheries inventory conducted in the fall of 1985 identified a typical warmwater fish community, primarily composed of Largemouth Bass and a variety of panfish (Table 3). Interestingly, a single 9-inch Brown Trout was also captured. Another survey in May 1986, using a trap, fyke, and gillnets, showed a community dominated by Bullhead spp. No Walleye were captured in either survey, suggesting limited success of the first stocking effort.

The lake was stocked again in 1988, followed by nearly annual stocking events throughout the early 2000s. In the 1990s, the Gladwin Area Walleye Association was formed to support the DNR in rearing Walleye for Gladwin County lakes. The rearing pond operated via this partnership for at least 10 years; A 1990 un-signed lease agreement was found for the co-op pond and the last stocking effort from this pond on file was 2006. The Gladwin Area Walleye Association Pond is no longer in use due to a change in ownership. A stocking evaluation conducted in 1992 identified two young-of-the-year Walleye. Multiple Walleye-focused surveys were conducted in Lake Lancer in subsequent years, demonstrating that some stocked fish survived were growing, on average, 2.1 in above the statewide average. Additionally, a multi-day netting survey on May 30, 2000, re-evaluated Lake Lancer's fish community, revealing a community predominantly composed of Bluegill (75%). Despite the continued stocking efforts, the primary predator in Lake Lancer is the Largemouth Bass, although some Walleye were collected during the 2000 survey. Walleye continue to be a management priority and stocking has continued at a rate of 75 fingerlings per acre every other year since 1996.

In 2002, MDNR established the Inland Lake Status and Trends Program (STP), a statewide initiative with annual obligations for all management units across the state. The program's goal is to conduct standardized fishery and limnological survey on public inland lakes over 10 acres, allowing for statewide comparisons. Surveys are conducted over a one- to two-week period in late spring or early summer, when water temperatures range between 55 and 80°F. Multiple gear types are used to sample fish from different habitats at randomly selected sites, and these sampling efforts result in population data on several species that can then be compared statistically among other sampled lakes throughout the state (Wehrly et al. 2015; Table 4). The first Status and Trends survey for Lake Lancer was completed in 2010. During this survey, Bluegill were the most abundant species, with Pumpkinseed, Rock Bass, Black Crappie, and Northern Pike found in moderate abundance. Each of these species exhibited a stable size structure, average to high growth rates, and occurred in appreciable numbers. Walleye and Yellow Perch were found in low abundance.

In addition to Walleye, Northern Pike populations in Sugar Springs (Lake Lancer and Lake Lancelot, both) are also actively managed. In 2004, anglers raised concerns about an overabundance of small Northern Pike in Lake Lancer. Although the Status and Trends survey methods are not well-suited for assessing Northern Pike populations due to seasonal timing and gear placement, angler reports indicated below-average growth rates. To address this, the daily bag limit for Northern Pike in Lake Lancer was liberalized in 2006, allowing anglers to take five fish of any size, with only one over 24 inches, to encourage increased harvest, reduce density, and improve growth rates. In 2022, the same regulation was applied to Lake Lancelot.

Current Status

A recent comprehensive fisheries community survey as part of the STP was conducted on Lake Lancer from May 15 to 18, 2023. Sampling efforts included one seine net, two trap nets, four experimental gillnet sets, four small- and seven large-mesh fyke nets (Figure 4). Additionally, three nighttime electrofishing transects were conducted, each lasting 600 seconds and covering a total of one mile of shoreline. The overall sampling effort consisted of six seine hauls and 42 net-nights. All fish captured were measured (total length [TL] to the nearest inch). Fish weights were estimated using length-weight regression equations compiled by Schneider et al. (2000). For each game species, an age structure (fin or scales) was collected for up to 10 individual fish per inch bin, and age was estimated. Mean growth indices were calculated from age estimates for species with at least five individuals sampled (Schneider et al., 2000). A mean growth index within ±1 inch of the statewide average is considered satisfactory for predator sport fish, and ±0.5 inch is acceptable for panfish.

Shoreline data were collected in 1,000-foot segments until the entire shoreline was surveyed. Using methods described by Wehrly et al. (2015), data on the number of dwellings, large (>2 boat slips) and small (1-2 boat slip) docks, submerged and partially submerged logs, and large-diameter tree limbs (≥3 inches in diameter, referred to as coarse woody debris) were recorded. The percentage of shoreline armoring was also determined.

A total of 1,784 fish, representing 17 species, were captured in Lake Lancer (Table 5). The fish community was dominated by Bluegill, which made up nearly 50% of the collection by number. Most other species represented 8% or less of the fish community, with the exception of Bullheads, which accounted for 25%. Overall, the fish community was composed of 63% panfish, 10% predators, 1% forage fish, and 29% non-sport species. "Panfish" refers to species typically small enough to fit in a pan, including Bluegill, Black Crappie, and Yellow Perch. Predators in this context are larger fish

species that feed on other fish, such as bass and Northern Pike, and Walleye. Forage species, like shiners and darters, feed on zooplankton and insects and serve as prey for larger fish. Non-sport fish are ecologically valuable species not regulated in Michigan (e.g., Bowfin, bullheads, and White Suckers). A mean growth index was not calculated for these groups.

A total of 62 Black Crappie (mean total length = 8.1 inches) were collected, with 42% of the catch larger than the desired angler harvest length of 6 inches. Black Crappie were growing below the statewide average, with a mean growth index of -0.8. Multiple year classes (ages 3-9) were found, suggesting stable recruitment to the fishery.

A total of 865 Bluegill (mean total length = 5.3 inches) were collected, with 12% of the catch larger than the desired angler harvest length of 6 inches. Bluegill were growing slightly below the statewide average, with a mean growth index of -0.5. Multiple year classes (ages 1-7) were found, indicating stable recruitment to the fishery.

A total of 147 Pumpkinseed (mean total length = 6.5 inches) were collected, with 66% of the catch larger than the desired angler harvest length of 6 inches. Pumpkinseed were growing above the statewide average, with a mean growth index of +1.0. Multiple year classes (ages 2-5) were found, suggesting stable recruitment to the fishery.

A total of 53 Yellow Perch (mean total length = 7.8 inches) were collected, with 51% of the catch larger than the desired angler harvest length of 7 inches. Yellow Perch were similar to the statewide average with a mean growth index of +0.3. Multiple year classes (ages 2-12) were found, suggesting stable recruitment to the fishery.

A total of 53 Largemouth Bass (mean total length = 12.3 inches) were collected, with 57% of the catch larger than the 14-inch minimum size limit (MSL). Largemouth Bass were growing above the statewide average, with a mean growth index of +1.6. In addition to the fish collected in this survey, Largemouth Bass were also measured and aged at a bass tournament held a year prior. Most bass were brought to the weigh-in station, while undersized bass (<14 inches) were measured on the boat and released by anglers. Ninety-two Largemouth Bass were caught, averaging 14.1 inches (range 5-21 inches), with 68% of harvestable size. The growth index from the tournament aligns with the survey results, with multiple year classes (ages 1-9) represented.

A total of 78 Northern Pike (mean total length = 22.1 inches) were collected, with 26% of the catch larger than the standard statewide MSL of 24 inches. Northern Pike were growing below the statewide average, with a mean growth index of -0.7. Multiple year classes (ages 1-7) were found, indicating stable recruitment to the fishery.

Six Walleye (mean total length = 23.8 inches) were collected, with 100% of the catch larger than the 15-inch MSL. Growth rate was not calculated due to the lack of ten individuals per inch group. Walleye ages ranged from 5 to 13, with most ages not aligning with stocking years, indicating some level of natural reproduction. However, without oxytetracycline (OTC) marks, it is difficult to confidently distinguish between stocked and naturally reproduced fish.

Several invasive species have been observed in Lake Lancers, such as variable leaf watermilfoil, rusty crawfish, and zebra mussels. While it is not explicitly known how these species were introduced into the lake, they likely entered by hitchhiking on unwashed boating gear or through an aquarium release.

The establishment of invasive species threaten the aquatic ecosystem by competing native species due to their lack of natural predators.

Finally, Lake Lancer contained 672 small docks, 7 large docks, 516 dwellings, and 56 submerged trees (CWD) at the time of this survey. Based on data collected from 78 shoreline segments, the average percentage of armored shoreline was approximately 75%. While there is some anecdotal evidence that fish are attracted to the shade provided by docks, Garrison et al. (2005) found that shading caused by docks reduces vegetation growth and ultimately displaces fish. Submerged trees, however, offer valuable fish habitat due to its more complex structure and support of aquatic invertebrates (Schindler et al. 2000).

Analysis and Discussion

In general, the fish community of Lake Lancer can be described as:

1) The panfish community is dominated by Bluegill with an average length of 5.3 in, but their growth rate is trending downward. Black Crappie, Pumpkinseed, Rock Bass, and Yellow Perch are also present.
2) The predator community appears to be dominated by Northern Pike followed closely by Largemouth Bass. Largemouth Bass appears to be the most popular species to target in Lake Lancer based on angler communication and show exceptional growth.
3) Walleye density remains low despite many years of stocking efforts.

Characteristics of the fish community in Lake Lancer have shifted since the 2010 Status and Trends survey (Figure 5). Growth rates of Black Crappie and Bluegill decreased over time, from -0.1 for both to -0.8 and -0.5, respectively. These reduced growth rates suggest that these species may be leading towards a stunted population due to either overabundance or competition for limited resources, such as suitable habitat (i.e., lack of CWD). The Northern Pike population has remained relatively stable, with a growth rate that has remained slightly below the statewide average, consistent with the 2010 survey. A spring ice-out survey is recommended to assess whether the liberalized regulation for Northern Pike remains necessary on Lake Lancer.

Largemouth Bass in Lake Lancer are growing exceptionally well, with an increased growth rate from +0.3 to +1.6 since 2010, indicating capacity for more bass in the lake. Given this imbalance, it appears that Lake Lancer lacks enough predators to regulate the panfish population effectively. In 2022, a few Largemouth Bass tested positive for Largemouth Bass virus after anglers observed lesions. This virus, typically fatal to large bass, persists in the system; however, surviving individuals develop antibodies, and the virus's impact on the ecosystem gradually diminishes. Based on fluctuations in abundance and growth, as well as the low number of positive cases, Lake Lancer seems to be recovering from this infection. Allowing time for the Largemouth Bass population to recover should help restore balance to the fish community in Lake Lancer.

With the health of the bass population in mind, Sugar Springs residents have voiced concerns of the apparent increase in bass tournaments and decrease in winning bass size, particularly following the Tittabawassee dam failures of 2020. These failures resulted in the draining and subsequent closure of Secord, Smallwood, Wixom, and Sanford Lakes, nearby reservoirs that were popular for tournament bass fishing. Michigan DNR initiated the Fishing Tournament Information System in 2016 requiring all tournaments targeting bass, Walleye, and Muskellunge to be registered. The tournament records suggest that despite the perception of increased tournament pressure on Lake Lancer, the number of

tournaments have remained fairly consistent since the closure of the four lakes on the Tittabawassee. Additionally, the average weight and largest bass size has remained constant at approximately 2.7 and 5.34 lbs, respectively (Figure 6). Given these results, there are currently no concerns about the number of tournaments on Lake Lancer. From 2016-2024, a total of 85 tournaments have been held on Lake Lancer with an average of 9.4 tournaments a year (Table 6). This ranks Lake Lancer (Sugar Spring Flooding) 83 out of 404 for the most popular waterbody for bass fishing. However, when considering the size of the lake, Lake Lancer has fewer bass tournaments per year than other lakes of a similar size (11 events).

MDNR formalized an inland Walleye management plan in 2011 (Herbst et al. 2021). Within this management plan, stocked lakes were classified based on water quality, stocking history, fisheries surveys, etc. to facilitate adaptive management. Lake Lancer is classified as a Class 2 Walleye lake with a level 5 natural reproduction rank. Class 2 lakes are expected to show resilience to climate change but may have inconsistent natural reproduction, typically relying on stocking to sustain Walleye populations. The level 5 natural reproduction rank indicates that Lake Lancer relies solely on regular stocking. The Walleye collected during 2023 STP survey that were assigned an age that did not align with a stocking year suggest there may be low levels of natural reproduction in the lake.

Management Direction

1) Hardened shorelines, such as seawalls and riprap, can harm aquatic ecosystems by increasing turbidity, scouring bottomlands, damaging neighboring properties, reducing water quality, and promoting the spread of invasive species. Given the significant shoreline development around Lake Lancer, it is essential to consider the impacts on fish habitat. Aquatic vegetation provides critical ecosystem services by stabilizing shorelines with deep roots, filtering nutrient runoff, and offering habitat for prey and nursery areas for fish. Additionally, research shows that coarse woody debris (CWD) supports diverse macroinvertebrate communities, offers refuge for prey, and enhances aquatic food webs (Schindler et al. 2000). The removal of CWD has been linked to poor fish growth and reduced abundance of forage species, while adding CWD supports panfish growth and increases prey diversity. Property owners should consider natural shoreline improvement projects, especially in areas near or exceeding the recommended 25% alteration threshold (Figure 7, 8).
2) Lake Lancer was given the liberalized Northern Pike regulation of no minimum size limit (1 ≥ 24") and a five fish daily bag limit in 2006. The current Northern Pike population structure appears to be healthy with growth rates similar to the statewide average (Figure 9). The Northern Pike population will continue to be monitored to determine if the special regulation is still necessary.
3) Lake Lancer has been stocked with spring fingerling Walleye at a rate of 75/acre for several decades. Despite these efforts, a Walleye fishery has not been established, and the stocking prescription should not be renewed. Lake Lancer appears to be more suitable for Largemouth Bass and Northern Pike.
4) Anglers are encouraged to reports their fishing experience to SLHMU to assist in monitoring population trends overtime.
5) To stop the spread of invasive species and fish diseases, Michigan law requires boaters to remove boat plugs, drain water, and remove plant/debris prior to leaving the launch. Anglers are encouraged to clean all fishing gear and live wells, as well. Additionally, it is illegal to dump unused bait and aquariums into waterways.

References

Garrison, P. J., D. W. Marshall, L. Stremick-Thompson, P. L. Cicero, and P. D. Dearlove. 2005. Effects of pier shading on littoral zone habitat and communities in Lakes Ripley and Rock, Jefferson County, Wisconsin. Wisconsin Department of Natural Resources PUB-SS-1006 2005.

Schindler, D.E., S.I. Geib, and M.R. Williams. 2000. Patterns of fish growth along a residential development gradient in north temperate lakes. Ecosystems 3:229-237.

Wehrly, K.E., G.S. Carter, and J.E. Breck. In press. Inland Lake Status and Trends Program sampling protocols. Chapter XX in Schneider, James C. (ed.) 2000. Manual of fisheries survey methods II: with periodic updates. Michigan Department of Natural Resources, Fisheries Special Report 25, Ann Arbor.

Tables and Figures

Table 1. The standard aquatic vegetation summary sheet from the 2011 aquatic vegetation survey conducted by EGLE staff.

LAKE NAME- Lake Lancer							COUNTY- Gladwin					SURVEY DATE: 9/11 -14/2011	
Standard Aquatic Vegetation Summary Sheet							SURVEY BY: R. Van Goethem, K. Proulx, S. Hostetler						
		Total number of AVAS's for each Density Category					Calculations for Each Category				Sum of Previous 4 Columns	Total No. of AVAS	Quotient of Column 9 divided by Column 10
		A	B	C	D		A x 1	B x10	C x 40	D x 80			
Code No.	Plant Name	1	2	3	4		5	6	7	8	9	10	11
1	Eurasian milfoil	10	1	0	0		10	10	0	0	20	209	0.1
2	Curly leaf pondweed	16	13	1	0		16	130	40	0	186	209	0.9
3	Chara	11	102	69	3		11	1020	2760	240	4031	209	19.3
4	Thinleaf pondweed	4	22	29	0		4	220	1160	0	1384	209	6.6
5	Flatstem pondweed	7	24	35	5		7	240	1400	400	2047	209	9.8
6	Robbins pondweed	0	0	0	0		0	0	0	0	0	209	0.0
7	Variable pondweed	0	0	0	0		0	0	0	0	0	209	0.0
8	Whitestem pondweed	0	0	0	0		0	0	0	0	0	209	0.0
9	Richardsons pondweed	0	0	0	0		0	0	0	0	0	209	0.0
10	Illinois pondweed	13	40	1	0		13	400	40	0	453	209	2.2
11	Large leaf pondweed	32	64	24	0		32	640	960	0	1632	209	7.8
12	American pondweed	11	19	1	0		11	190	40	0	241	209	1.2
13	Floating leaf pondweed	0	0	0	0		0	0	0	0	0	209	0.0
14	Water stargrass	2	1	0	0		2	10	0	0	12	209	0.1
15	Wild Celery	4	16	47	5		4	160	1880	400	2444	209	11.7
16	Sagitteria	0	0	0	0		0	0	0	0	0	209	0.0
17	Northern milfoil	3	1	0	0		3	10	0	0	13	209	0.1
18	M. verticillatum	0	0	0	0		0	0	0	0	0	209	0.0
19	M. herterophyllum	6	66	54	74		6	660	2160	5920	8746	209	41.8
20	Coontail	7	30	170	1		7	300	6800	80	7187	209	34.4
							0						
21	Elodea	6	6	3	0		6	60	120	0	186	209	0.9
22	Utricularia spp.	21	11	4	0		21	110	160	0	291	209	1.4
23	Bladderwort-mini	0	0	0	0		0	0	0	0	0	209	0.0
24	Buttercup	0	0	0	0		0	0	0	0	0	209	0.0
25	Najas spp.	0	2	202	1		0	20	8080	80	8180	209	39.1
26	Brittle naiad	1	1	1	0		1	10	40	0	51	209	0.2
27	Sago pondweed	0	0	0	0		0	0	0	0	0	209	0.0
30	Nymphaea	39	35	4	0		39	350	160	0	549	209	2.6
31	Nuphar	21	17	0	0		21	170	0	0	191	209	0.9
32	Brasenia	1	0	0	0		1	0	0	0	1	209	0.0
33	Lemna minor	6	0	0	0		6	0	0	0	6	209	0.0
34	Spirodella	0	0	0	0		0	0	0	0	0	209	0.0
35	Watermeal	0	0	0	0		0	0	0	0	0	209	0.0
36	Arrowhead	0	0	0	0		0	0	0	0	0	209	0.0
37	Pickerelweed	0	0	0	0		0	0	0	0	0	209	0.0
38	Arrow Arum	0	0	0	0		0	0	0	0	0	209	0.0
39	Cattails	25	56	11	0		25	560	440	0	1025	209	4.9
40	Bulrushes	29	3	0	0		29	30	0	0	59	209	0.3
41	Iris	0	0	0	0		0	0	0	0	0	209	0.0
42	Swamp Loosestrife	0	0	0	0		0	0	0	0	0	209	0.0
43	Purple Loosestrife	0	0	0	0		0	0	0	0	0	209	0.0
44	Smartweed	7	0	0	0		7	0	0	0	7	209	0.0
45	Nitella	10	34	85	13		10	340	3400	1040	4790	209	22.9

Table 2. State stocking history of Lake Lancer, Gladwin County, 1984-2024.

Year	Species	Average total length (in)	Number
1984	Walleye	1.9	80,120
1988	Walleye	2.6	12,475
1989	Walleye	1.8	49,848
1991	Walleye	3.2	75
1992	Walleye	2.1	40,835
1994	Walleye	1.8	25,331
1994	Walleye	2.1	50
1994	Walleye	4.4	3,525
1995	Walleye	1.8	49,535
1996	Walleye	1.8	76,226
1998	Walleye	1.4	74,250
2000	Walleye	1.3	59,235
2002	Walleye	1.4	34,724
2004	Walleye	1.5	38,554
2006	Walleye	1.9	18,564
2011	Walleye	1.8	56,993
2012	Walleye	2.3	34,279
2014	Walleye	2.1	81,337
2016	Walleye	1.7	58,488
2018	Walleye	1.7	59,036
2022	Walleye	1.5	57,959
2024	Walleye	1.7	58,8954

Table 3. Fish species captured during the 1985 fish inventory survey on Lake Lancer. Columns represent number of fish, length range (in), mean length (in), and percent harvestable

Species	**Functional Group**	**Number**	**Length Range**	**Mean Length**	**% Harvestable***
Black Crappie	Panfish	31	6-10	7.8	58
Bluegill	Panfish	68	3-7	6.1	65
Brown Trout	Predator	1	9	9.0	0
Green Sunfish	Panfish	2	3-4	4.0	0
Largemouth Bass	Predator	10	3-13	9.9	0
Pumpkinseed	Panfish	1	7	7.0	100
Yellow Perch	Panfish	53	5-12	6.9	21

*Panfish do not have a legal minimum size legal, therefore the desirable angler harvest length of 6 inches is used.

Table 4. Description of gear types utilized during the Status and Trends survey on Lake Lancer, Gladwin Co.

Gear type	Stretch mesh size (in)	Pot dimensions (length x width, ft)	Lead dimensions (length x width, ft)
Trap net	1.5	8 x 5	150 x 6
Large-mesh fyke net	1.5	6 x 4	100 x 4
Small-mesh fyke net	0.18	6 x 3.5	50 x 4

Gear type	Stretch mesh size (in)	Stretch mesh increment (in)	Panel dimensions (length x width, ft)	No. of panels
Experimental gill net	1.5-4.0	0.5	25 x 6	5

Gear type	Stretch mesh size (in)	Total length (ft)	Height (ft)
Seine	0.18	25	5

Gear type	Current	Duty cycle	Amps
Electrofishing	Pulse DC	60	7

Table 5. Fish species captured during the June 2023 Status and Trends survey on Lake Lancer. Columns represent number of fish, length range (in), mean length (in), age range of sport species, percent harvestable, and mean growth index (MGI) were appropriate.

Species	Functional Group	Number	Length Range	Mean Length	Age Range	% Harvestable*	MGI
Black Crappie	Panfish	62	5-13	8.1	3-9	42	-0.8
Bluegill	Panfish	865	1-8	5.3	1-7	12	-0.5
Brown Bullhead	Non-sport	248	7-16	12.2	NA	100	NA
Central Mudminnow	Forage	2	3-3	3.5	NA	100	NA
Emerald Shiner	Forage	1	3-3	3.5	NA	100	NA
Golden Shiner	Forage	11	5-8	7.6	NA	100	NA
Greenside Darter	Forage	1	2-2	2.5	NA	100	NA
Hybrid Sunfish	Panfish	1	7-7	7.5	NA	100	NA
Largemouth Bass	Predator	53	2-17	12.3	1-8	57	+1.6
Northern Pike	Predator	78	14-28	22.1	1-7	26	-0.7
Pumpkinseed	Panfish	147	4-8	6.5	2-5	66	+1.0
Rock Bass	Panfish	52	3-11	7.9	NA	85	NA
Spotfin Shiner	Forage	1	3-3	3.5	NA	100	NA
Walleye	Predator	6	20-27	23.8	5-13	100	-
White Sucker	Non-sport	10	17-22	20.3	NA	100	NA
Yellow Bullhead	Non-sport	193	4-14	10.5	NA	99	NA
Yellow Perch	Panfish	53	2-12	7.8	1-7	51	+0.3

*Panfish do not have a legal minimum size legal, therefore the desirable angler harvest length of 6 inches is used.

Table 6. Number of bass tournaments and average number anglers per event in 2016-2024 hosted at Lake Lancer compared to the state average for similarly sized lakes.

Year	No. of Tournaments	Avg. No. of Anglers	State Avg. of Tournaments	State Avg. of Total Anglers
2016	3	37	7.8	26
2017	13	24	8.3	25
2018	12	37	7.8	27
2019	11	40	7.9	26
2020	13	22	8.1	26
2021	11	19	8.6	25
2022	8	27	8.6	24
2023	4	23	8.2	23
2024	10	23	8.5	23

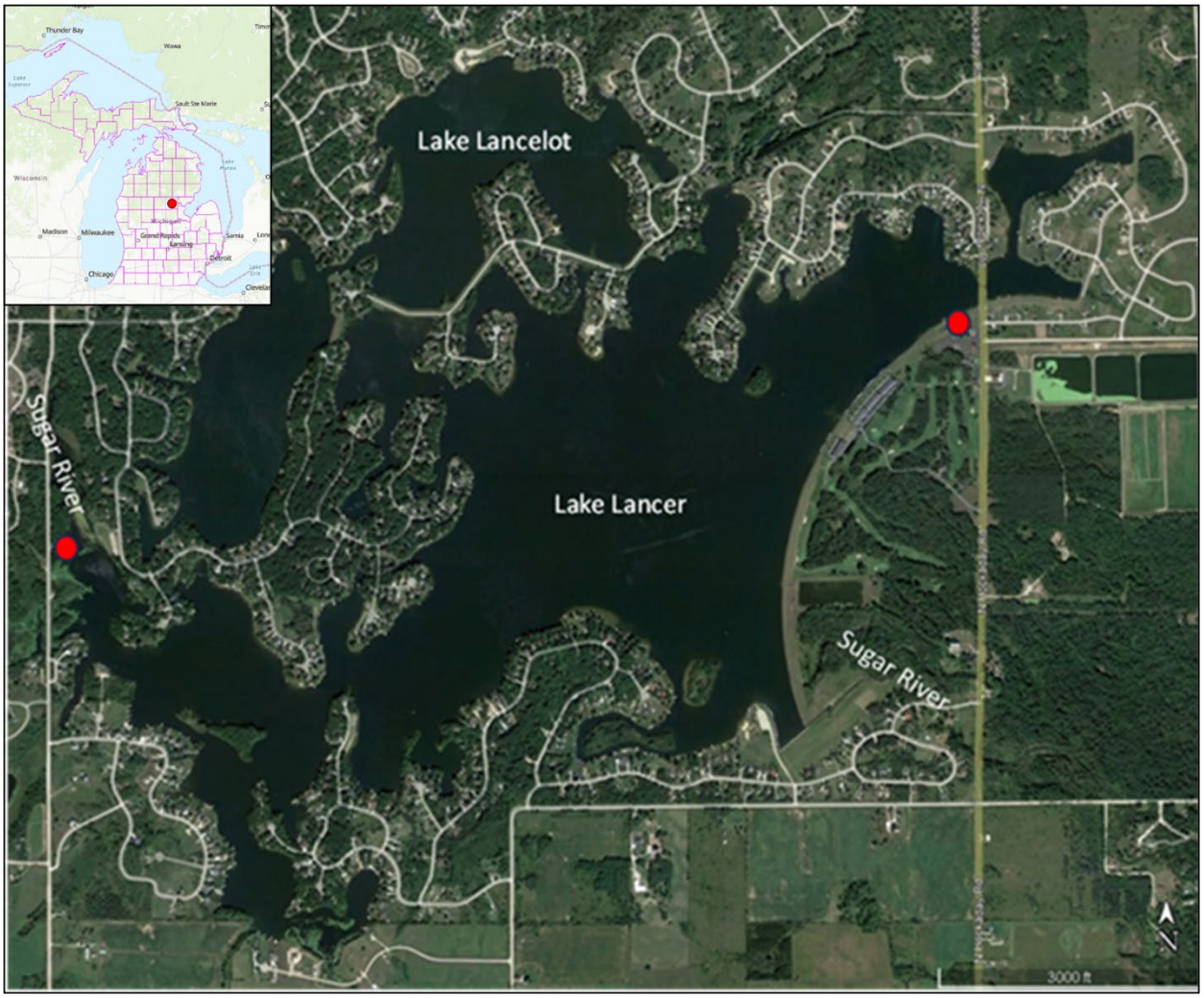

Figure 1. Lake Lancer in Gladwin County, Michigan. Public access points are indicated by the red circles on the west and east side of the lake.

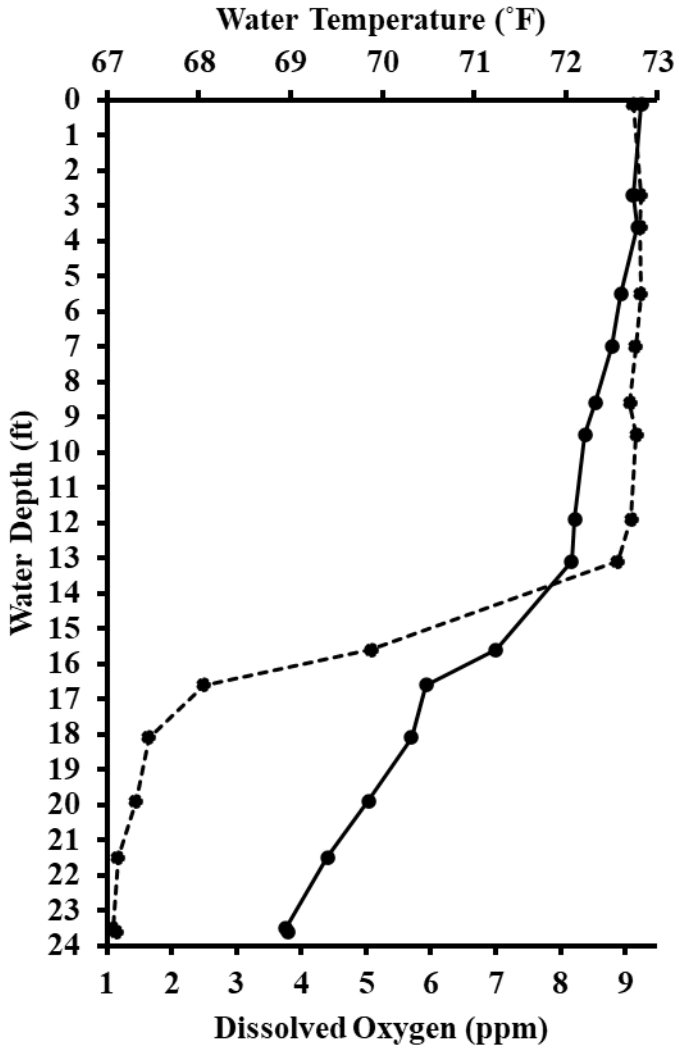

Figure 2. The thermal stratification of Lake Lancer, Gladwin County in September of 2024. The solid line represents the temperature, and the dashed line represents the dissolved oxygen levels from the surface (0 ft) to the bottom of Lake Lancer (24 ft). The thermocline was present at approximately 15ft.

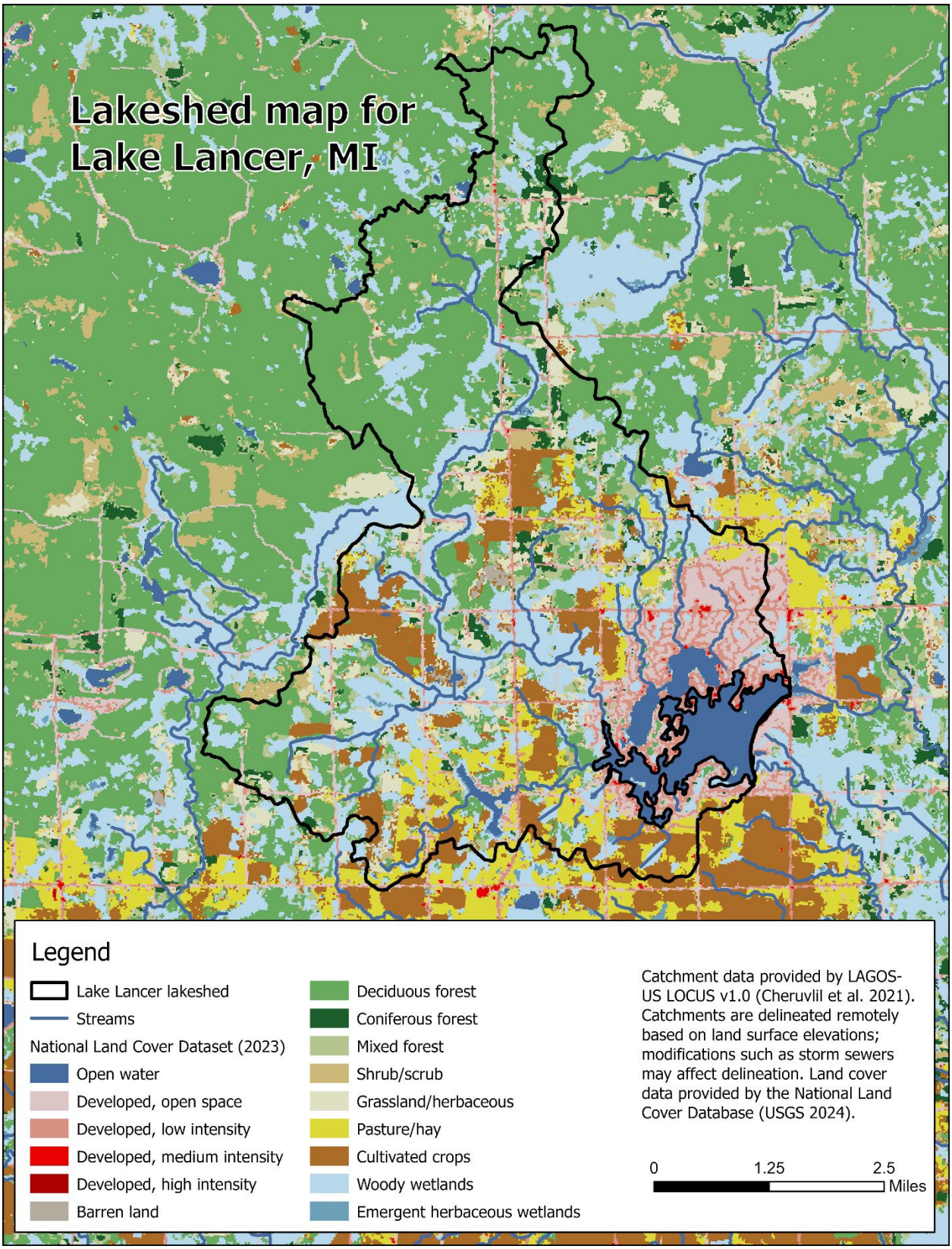

Figure 3. Land use for the Lake Lancer (Gladwin County) lakeshed.

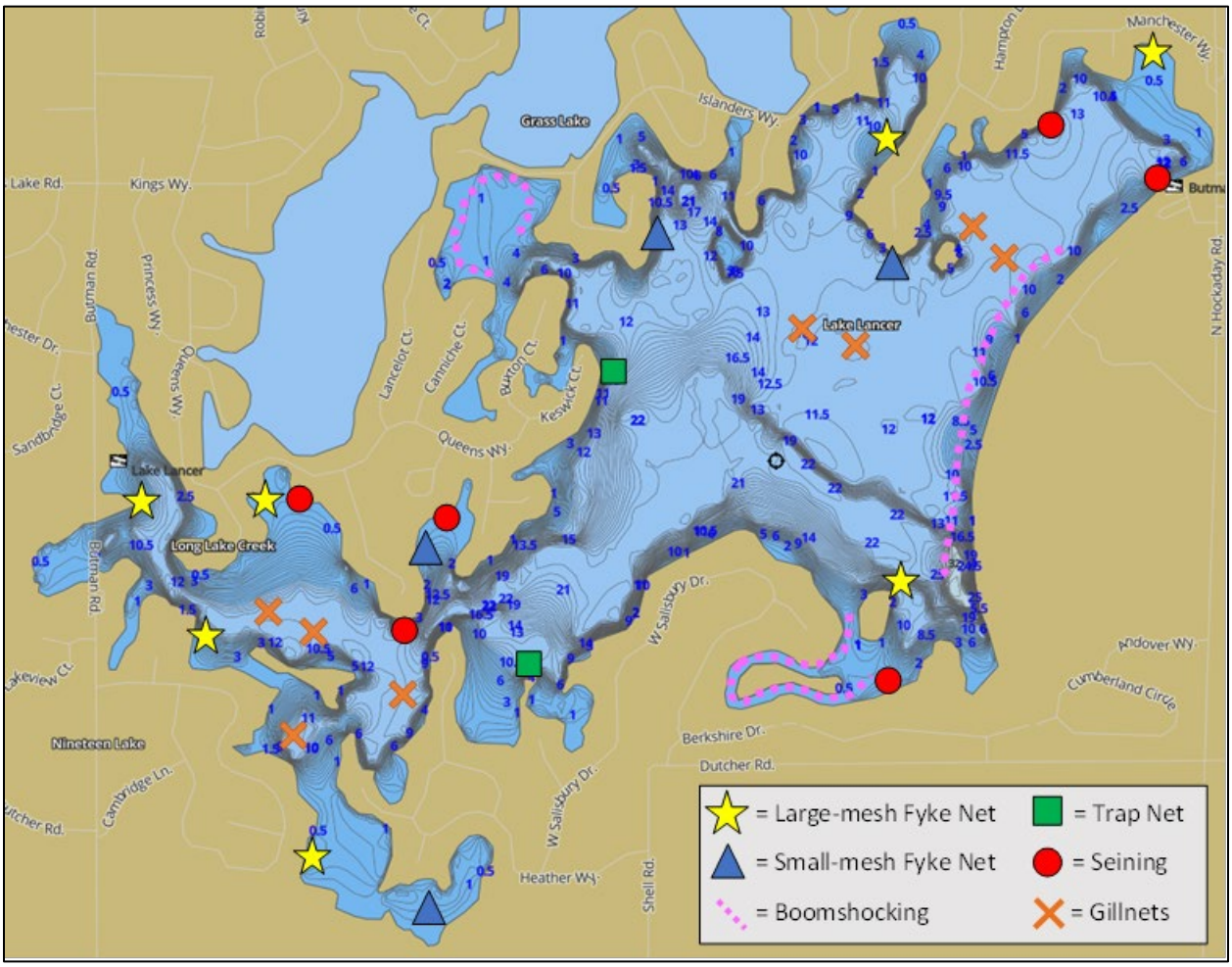

Figure 4. Location of gear set on Lake Lancer from May 15-18, 2023.

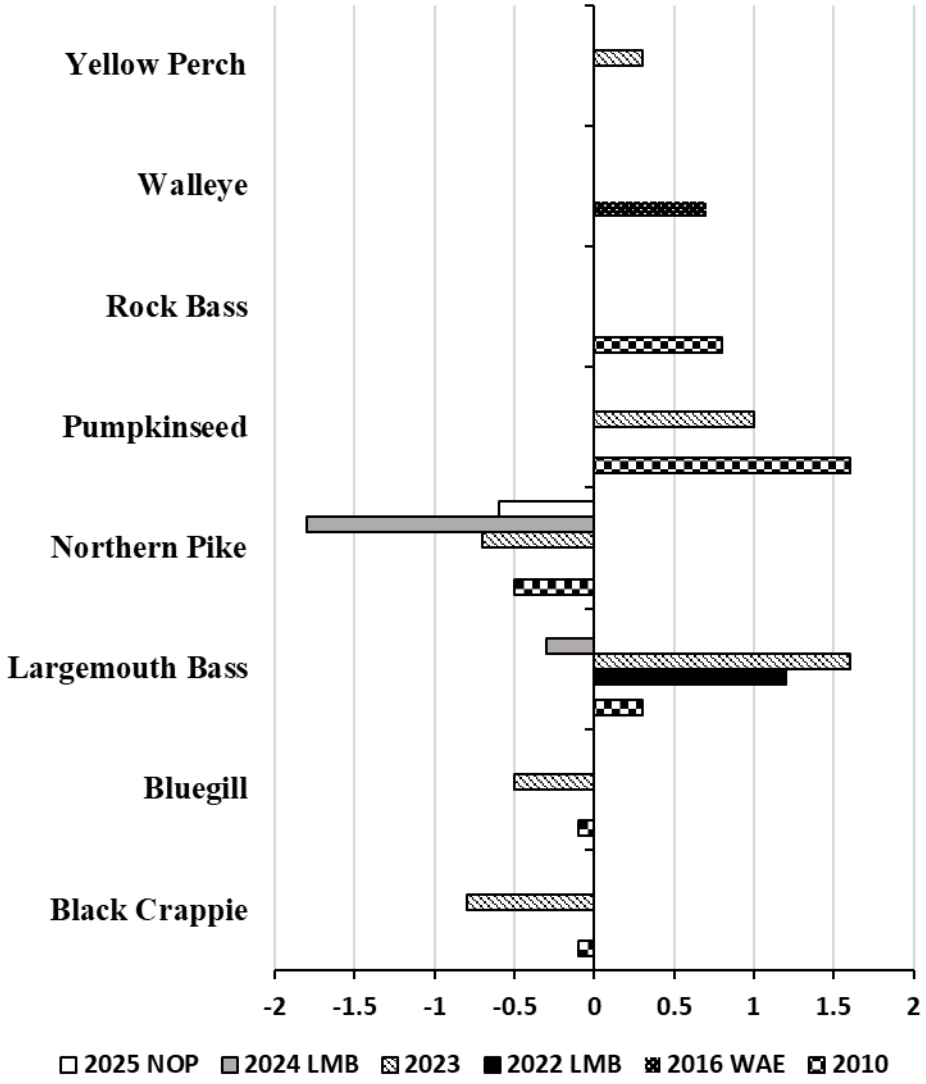

Figure 5. Mean growth index (x-axis) for sportfish captured in adequate numbers in 2010, 2016 (Walleye, WAE) 2022 (Largemouth Bass, LMB), 2023, 2024 (LMB), and 2025 (Northern Pike, NOP). The larger the bar to the left or right of zero, the larger the deviation from the statewide average and the slower or faster the growth rate, respectively.

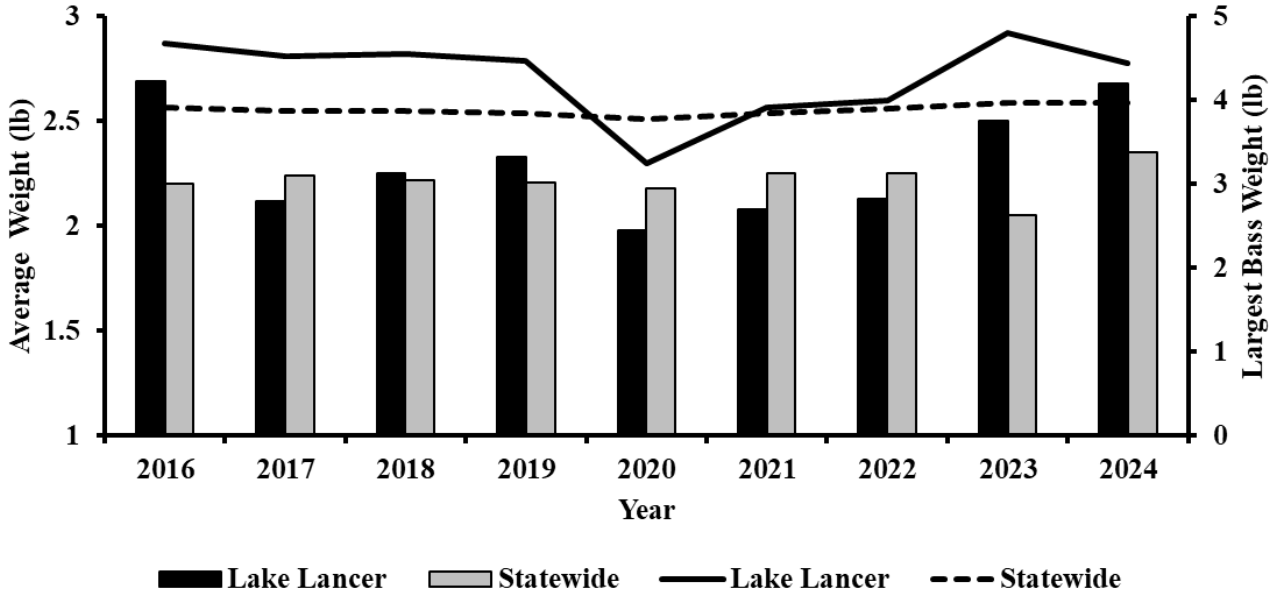

Figure 6. Average weight and largest bass registered at bass tournaments hosted in Lake Lancer (black) from 2016-2024 compared to the statewide average (gray, dashed).

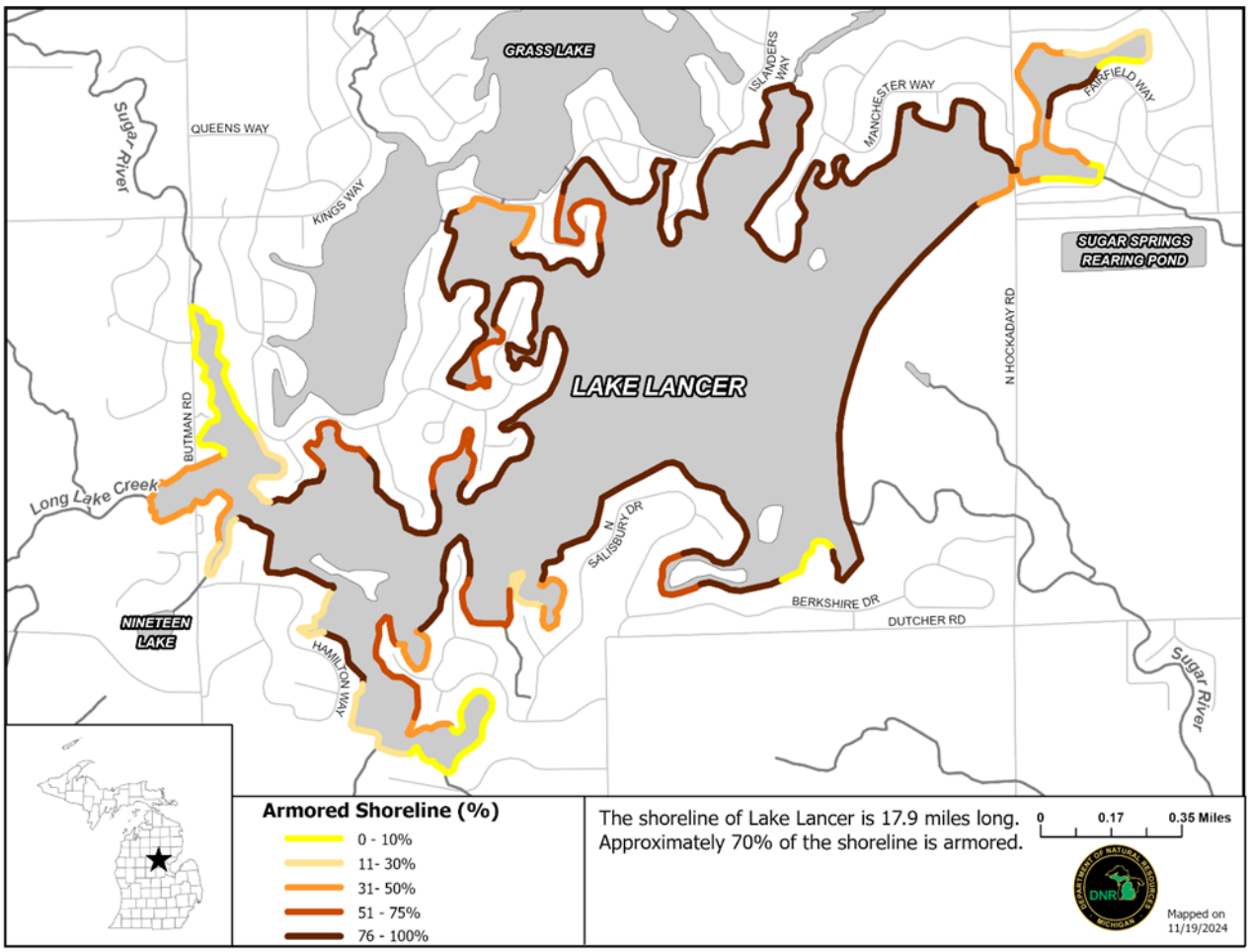

Figure 7. The shoreline of Lake Lancer is 17.9 miles long and approximately 70% of the shoreline is armored as of 2023.

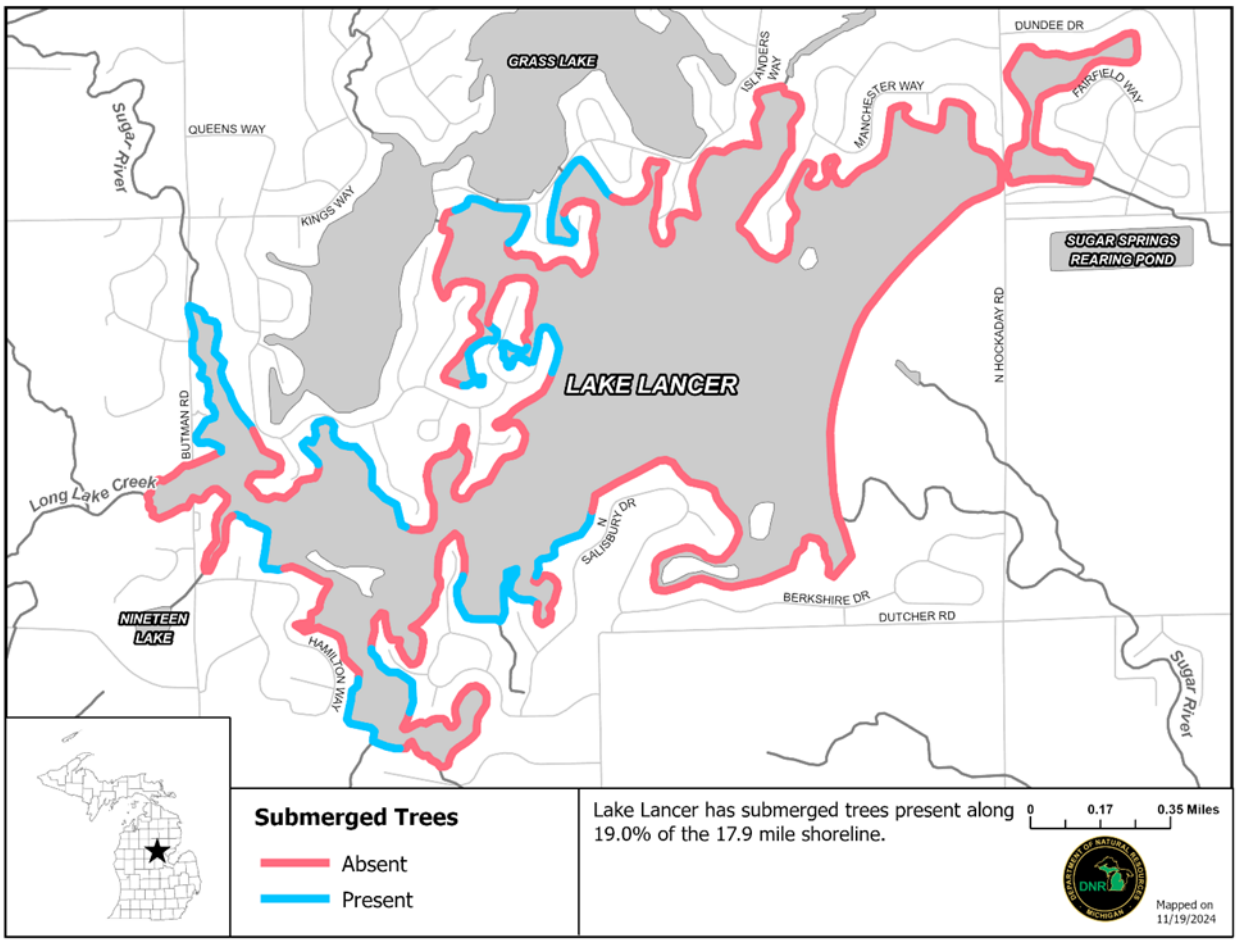

Figure 8. The shoreline of Lake Lancer is 17.9 miles long and approximately 19% of the shoreline has submerged trees (coarse woody debris) as of 2023.

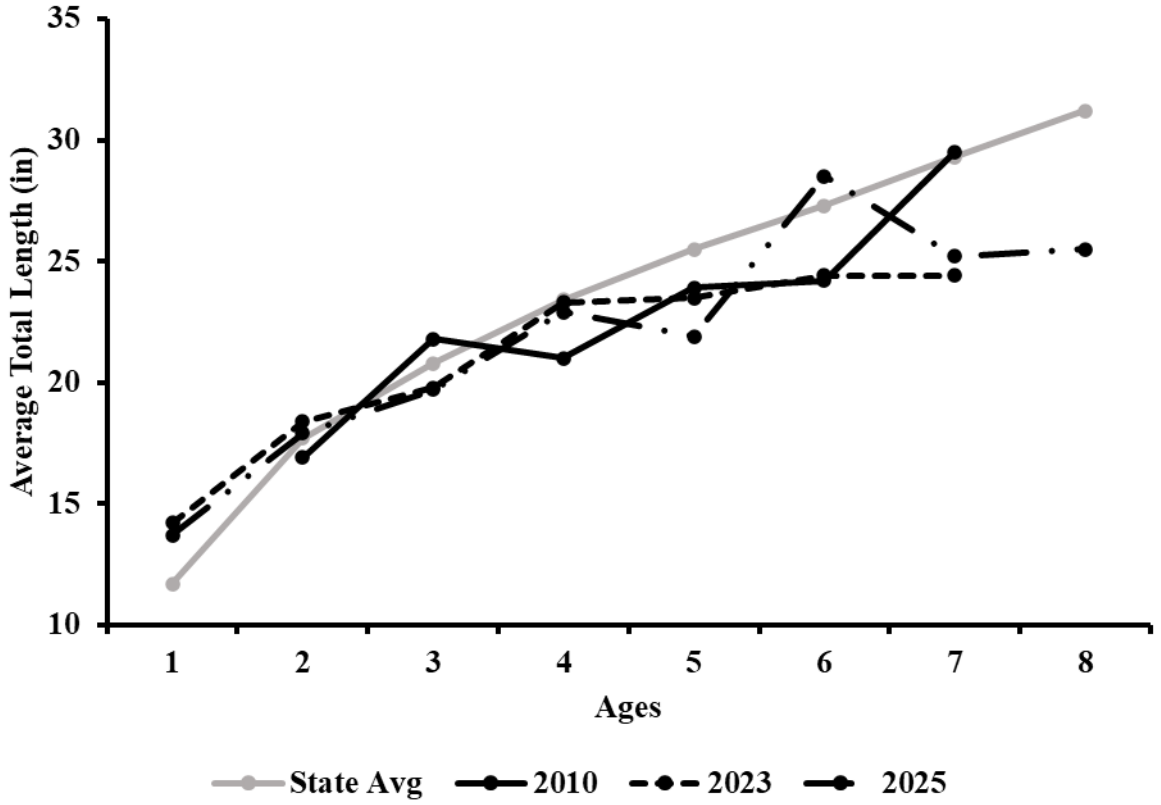

Figure 9. The average total length of Northern Pike ages 1-8 captured in 2010, 2023, and 2025 compared to the statewide average.

Literature Path

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Jeff Jolley, Unit Review and Approval

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