WISCONSIN DEPARTMENT OF NATURAL RESOURCES

Spring Fishery Survey of Lee Lake

Richland County, Wisconsin 2019

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Executive Summary

The Wisconsin Department of Natural Resources (DNR) conducted a tier 1 baseline lake electrofishing survey of Lee Lake in 2019 (SE2). The primary focus of this survey was to estimate relative abundance and size structure of bass and panfish as well as other gamefish populations in the lake.

The largemouth bass catch-per-unit effort (CPUE) was 60 fish/mile, ranking high when compared to other lakes in the simple-riverine lake class. Bluegill CPUE during spring electrofishing was calculated at 142 fish/mile, ranking above average when compared to other lakes in the simple-riverine lake class. Walleye CPUE was calculated at 5.5 fish/mile which was low, despite the numerous private stocking events by the local Cazenovia Turkey Busters club. Yellow perch, pumpkinseed, black crappie, white sucker, black bullhead and yellow bullhead were also captured in this survey.

Overall, the Lee Lake fishery is simple and dominated by largemouth bass and bluegill. This fishery features an abundant largemouth bass population, a moderately abundant bluegill population and a minor walleye fishery.

Lake and Location

Lee Lake, Richland County
T12N, R2E Section 13

Physical/Chemical Attributes

- Morphometry: 46 acres, maximum depth 11 feet, 2 miles of shoreline
- HUC-12 Watershed: Cazenovia Branch
- Lake type: Drainage
- Water clarity: Low
- Littoral substrate: Sand and silt
- Trophic status: Eutrophic
- Boat landings: One public boat landing is available
- Other features: Lee Lake is located within the Cazenovia Memorial Park. Public Picnic area is available.

Purpose of Survey

Baseline lake survey tier 1 assessment.

Dates of Fieldwork

Electrofishing survey was conducted on May 13, 2019 (SE2).

Fishery

The Lee Lake fishery consists of bluegill, black crappie, yellow perch, pumpkinseed, largemouth bass and walleye.

Introduction

Lee Lake is a 46-acre reservoir located in Richland County, Wisconsin. Lee Lake is a eutrophic drainage lake with a maximum depth of 11 feet. This lake is fed by the Cazenovia Branch and flows out into the Cazenovia Branch which eventually reaches the Little Baraboo River.

This lake has a few species of panfish including bluegill (*Lepomis machrochirus),* pumpkinseed (*Lepomis gibbosus*), black crappie (*Pomoxis negromachulatus*) and yellow perch (*Perca flavescens*), as well as predatory gamefish including largemouth bass (*Micropterus salmoides)* and walleye (*Sander vitreus*). Curly-leaf pondweed (*Potamogeton crispus*), Eurasian watermilfoil (*Microphyllum spicatum*) and purple loosestrife (*Lythrum salicaria*) are the known invasive species present in the lake.

Lee Lake followed the general fishing regulations for all species until 1997 when the DNR implemented a special regulation. This regulation allowed for the harvest of three walleye, sauger, or hybrids, all which must be at least 18 inches in length (Table 1).

Since 1973, lake surveys have been conducted and include general surveys, baseline monitoring surveys and standardized fisheries assessments. This is the first spring fisheries assessment completed on Lee Lake with the last survey being conducted in the fall of 2005. The main objective of this survey was to assess abundance and size structure of gamefish and panfish populations.

Stocking has occurred on Lee Lake since 1974. Originally, stocking was limited to northern pike and brown trout until a large stocking event in 1993, when multiple species were stocked including largemouth bass, bluegill, walleye, black crappie, golden shiner and pumpkinseed. Since 1993 only walleye have been stocked except for yellow perch and largemouth bass in 2017. In the decade preceding the 2019 survey (2009-2018), Lee Lake was stocked 5 times, most recently with 700 large fingerling walleyes in 2018 (Table 2).

Methods

A spring night electrofishing survey was conducted at Lee Lake on May 13, 2019, following standard DNR procedures listed in the DNR Fisheries Management Handbook (Simonson 2015). The primary objective for this spring survey was to collect and measure predatory gamefish and panfish. One all-species station was sampled totaling half a mile and all species were collected (Figure 1). For the remainder of the entire shoreline survey only predatory gamefish were collected. One boat operator and two experienced technicians, using 3/8” mesh dip nets conducted the surveys. All panfish and predatory gamefish from each species were dipped from the tub and measured.

Results

Summary of catch rates for gamefish and panfish sampled during the spring electrofishing survey:

	Bluegill	Pumpkinseed	Largemouth bass	Yellow perch	Black Crappie	Walleye
Total Catch	71.0	6.0	120.0	10.0	1.0	11.0
CPUE (number per mile)	142.0	12.0	60.0	20.0	2.0	5.5

BLUEGILL

A total of 71 bluegills was collected during spring electrofishing in 2019. Bluegill CPUE during spring electrofishing was calculated at 142 fish per mile. Lee Lake's catch rates rank above average when compared to other lakes in the simple-riverine lake classification (Figure 2). Mean length of all bluegill sampled was 5.1 (SD = 1.0) inches with lengths ranging from 2.8 to 7.5 inches (Figure 3).

LARGEMOUTH BASS

A total of 120 largemouth bass was collected during spring electrofishing surveys in 2019. Largemouth bass CPUE was calculated at 60 fish per mile. This ranks high when compared to other lakes in the simple-riverine lake classification (Figure 4). Average length of all largemouth bass sampled in Lee Lake was 11.8 (SD = 3.5) inches with lengths ranging from 4.1 to 18.0 inches (Figure 5). Approximately 35% of the fish captured during the survey were over 14 inches.

WALLEYE

A total of 11 walleyes was collected during spring electrofishing survey in 2019. Walleye CPUE was calculated at 5.5 fish per mile. Average length of all walleyes sampled in Lee Lake was 9.1 (SD = 0.8) inches with lengths ranging from 7.1 to 10.0 inches (Figure 6).

OTHER SPECIES

White sucker, yellow perch, pumpkinseed, black crappie, black bullhead and brown bullhead were also present in the lake in very small numbers. A total of 248 white suckers, 10 yellow perch, 6 pumpkinseeds ,1 black crappie, 1 black bullhead and 1 yellow bullhead was collected.

Discussion

Overall, the Lee Lake Fishery is a very simple fishery that lacks diversity and mainly consists of largemouth bass and bluegill. Like other small eutrophic lakes, bluegill is the most abundant species. Fishing opportunities are present from shore in Cazenovia Memorial Park or by boat with the availability of one public boat launch also located in the park. Possible concerns for Lee Lake are the number of invasive aquatic plants including curly-leaf pondweed, Eurasian watermilfoil and purple loosestrife; however, no significant problems to the fishery or fishability of the lake has resulted from these invasives thus far.

Bluegill was moderate in abundance in Lee Lake. This moderate abundance is expected, given the small size of this lake and the high-density largemouth bass population. However, the mean length is lower than we'd like to see in a lake with moderate abundance where we might expect mean lengths closer to 6 inches. Given that no aging structures were taken, we were unable to assess bluegill growth rates. Therefore, DNR will continue to manage the panfish population under the statewide regulation of 25 panfish per day and will assess bluegill age structure during the next comprehensive survey in 2028.

Largemouth bass in Lee Lake are doing quite well. Catch rates during spring electrofishing surveys documented 60 largemouth bass per mile. Largemouth bass is the dominant predatory gamefish species in Lee Lake, and this will likely continue given good natural reproduction and recruitment to the fishery.

The walleye population in Lee Lake is lacking, despite the numerous stocking events by the local Cazenovia Turkey Busters club. Lee Lake received an average of 633 large fingerling walleyes in 2009, 2011 and 2018. However, despite multiple prior stocking events, the 2019 walleye catch only included a single year class that was stocked the previous fall. Since we didn't conduct a spring netting survey with a follow up early spring electrofishing survey (SE1), it's possible that adults are present in the lake since the timing and temperatures during this electrofishing event don't target aggregations of mature, spawning spring walleye. The only fyke netting survey that has been conducted in Lee Lake was in 2006. This survey was conducted in the summer and only mini-fyke nets were used.

Additionally, the club has continued to stock walleye annually through 2025 following this survey (Table 2). Considering that, Lee Lake would benefit from having a spring netting (SE1) and follow-up electrofishing (SE1) survey conducted to gather information on the current status of the walleye population. This would give DNR baseline information as to how this lake should be managed. This is especially important considering the stocking practices put forth by the local club up to this survey in 2019 and continued stocking events in years after the survey. The DNR could then make sound management decisions on the future of stocking and if walleye is a species that should be a priority for management. Therefore, a full comprehensive fishery survey should be conducted during the spring of 2028. If the comprehensive survey concludes that a fishable walleye population is non-existent, then stocking efforts should be discontinued and management efforts should be focused

elsewhere. However, if a fishable population >2 adults per acre is present, stocking of walleye can continue by the local club to provide a fishery.

Management Recommendations

Goal: Determine if a fishable walleye population exists in Lee Lake.
Objective: Adult walleye population >2 fish per acre in next comprehensive survey.
Strategy: Conduct a comprehensive fishery survey on Lee Lake in 2028. If a fishable population exists, maintain 2-4 adult walleye per acre. Continue allowing Caz Branch Turkey Busters to stock privately funded walleye.

Goal: Maintain current bluegill population.
Objective: Maintain >96 fish per mile (simple riverine lake class median value) during SE2 surveys.
Strategy: Continue managing with statewide 25 fish daily bag limit.

Goal: Maintain a high-density largemouth bass population.
Objective: Maintain >38 fish per mile (simple riverine lake class 75th percentile value) during SE2 surveys.
Strategy: Continue managing with statewide 5 fish daily bag limit and minimum length limit of 14 inches.

ADDITONAL MANAGEMENT RECOMMENDATIONS

Assess bluegill and largemouth bass growth rates in Lee Lake. Conduct SE2 survey during spring of 2028 and collect aging structures for each species.

References

Anderson, R. O. and R. M. Neumann.1996. Length, weight and associated structural indices. Pages 447-482 *in* B. R. Murphy and D. W. Willis, editors. Fisheries Techniques, 2nd addition. American Fisheries Society. Bethesda, Maryland.

Simonson, T. 2015. Surveys and Investigations – Inland Fisheries Surveys. Fish Management Handbook Chapter 510, Wisconsin Department of Natural Resources internal publication. Madison, Wisconsin.

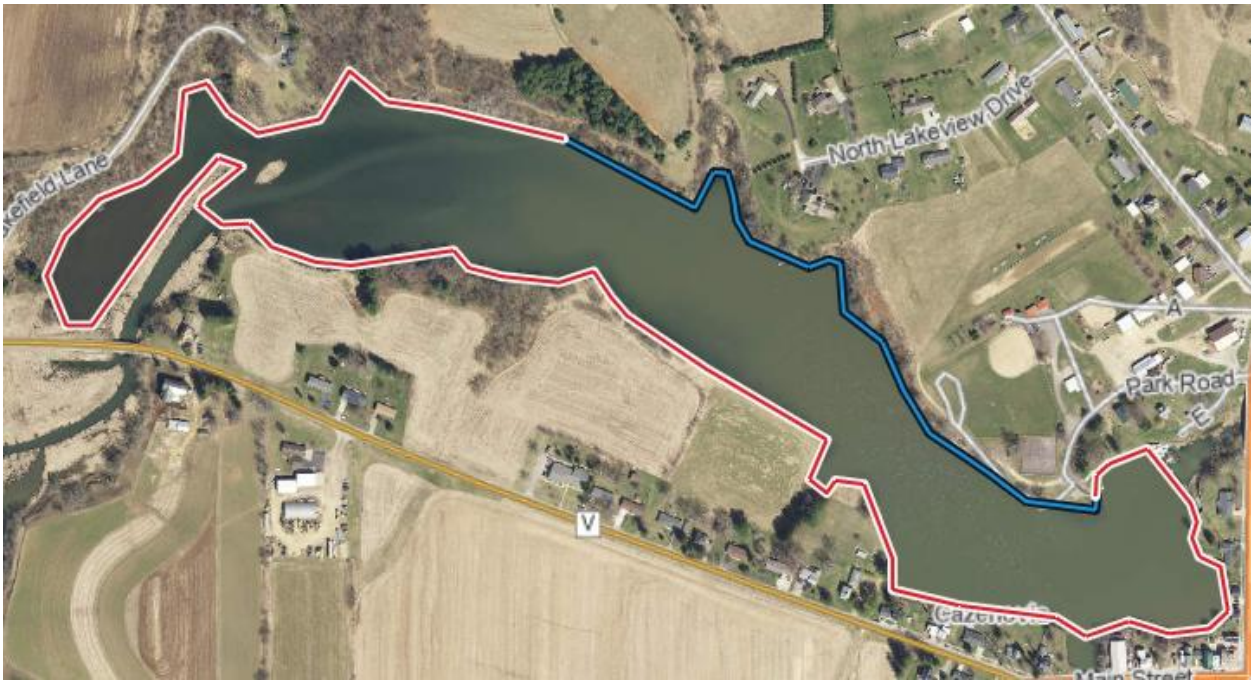

Figure 1. Spring electrofishing (SE2) survey stations sampled in 2019. The blue line refers to all-species stations, while the red line refers to an all-predatory gamefish stations.

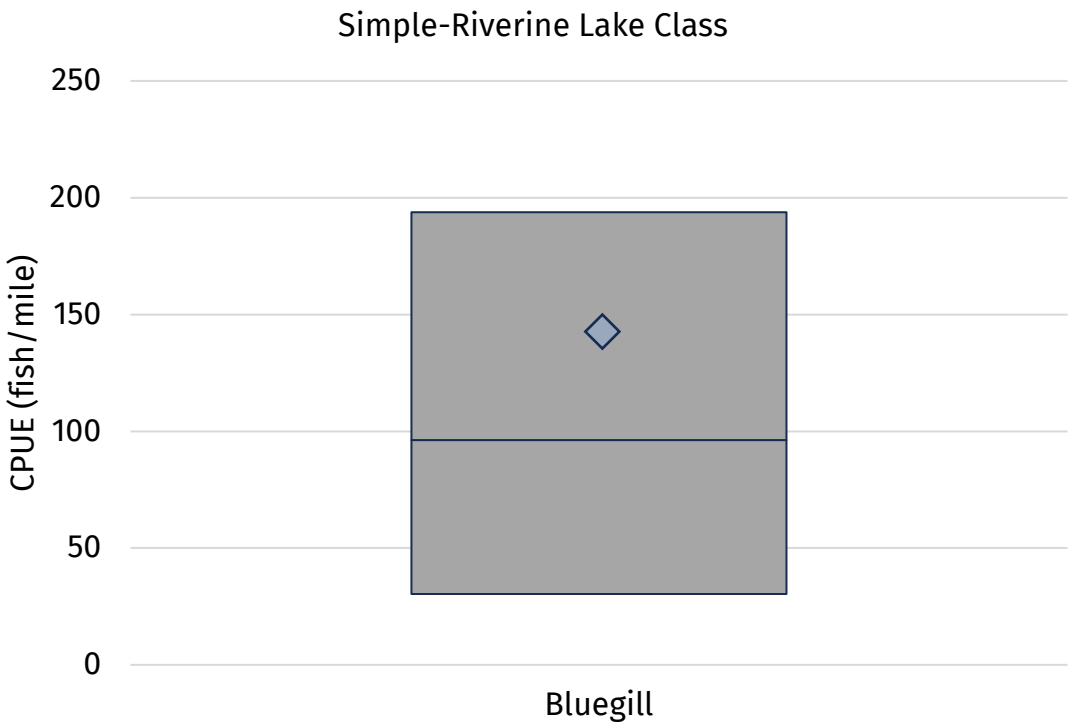

Figure 2. Catch per unit effort quartile values for bluegill electrofishing catch rates across all Wisconsin lakes in the simple-riverine classification. The Lee Lake value is shown as the blue diamond.

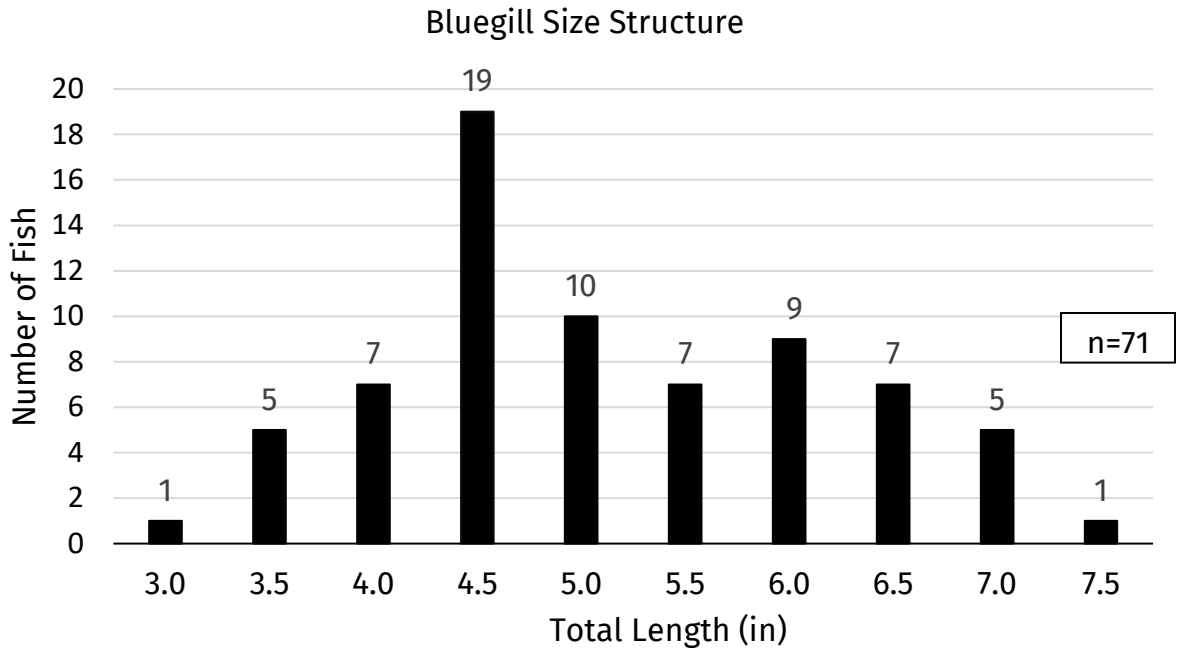

Figure 3. Bluegill size structure from individual fish captured during SE2.

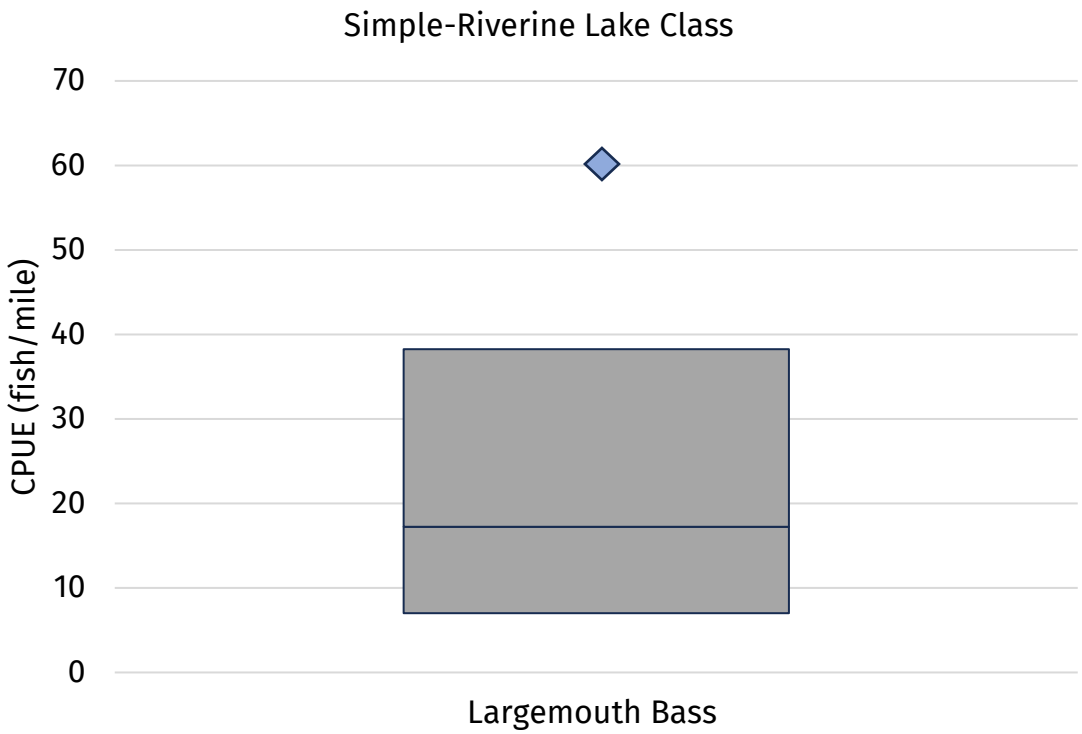

Figure 4. Catch per unit effort quartile values for largemouth bass electrofishing catch rates across all Wisconsin lakes in the simple-riverine classification. The Lee Lake value is shown as the blue diamond.

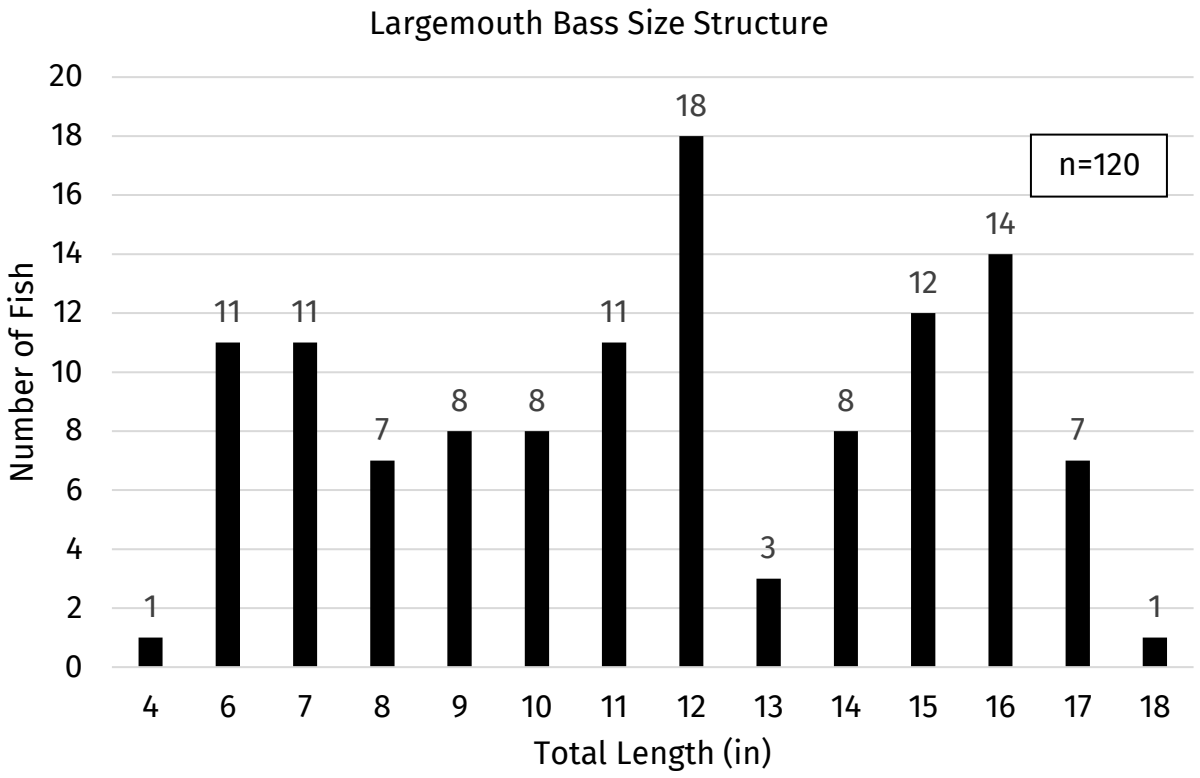

Figure 5. Largemouth bass size structure from individual fish captured during SE2.

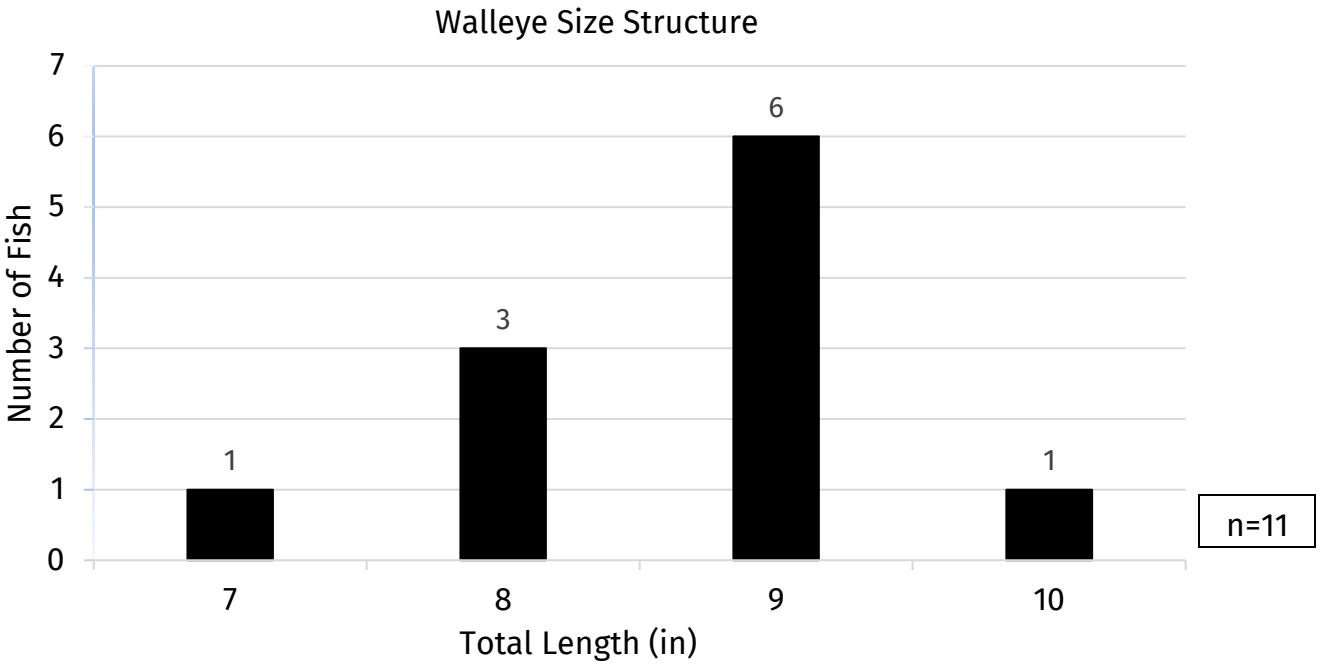

Figure 6. Walleye size structure from individual fish captured during SE2.

Table 1. Current hook and line fishing regulations for predatory gamefish and panfish on Lee Lake.

Species	Open Season	Daily Limit	Minimum Length
Largemouth bass	1st Saturday in May-1st Sunday in March	5	14 inches
Panfish	Open All Year	25	None
Walleye, sauger, hybrids	1st Saturday in May-1st Sunday in March	3	18 inches

Table 2. Fish stocking records for Lee Lake, Richland County, Wisconsin 2009-2025.

Year	Source	Species	Strain	Age Class	Number Stocked
2025	Private Hatchery	Walleye	Unspecified	Large Fingerlings	500
2024	Private Hatchery	Walleye	Unspecified	Large Fingerling	500
2021	Private Hatchery	Walleye	Unspecified	Large Fingerling	500
2020	Private Hatchery	Walleye	Unspecified	Large Fingerling	520
2019	Private Hatchery	Walleye	Unspecified	Large Fingerling	500
2018	Private Hatchery	Walleye	Unspecified	Large Fingerling	700
2017	Non-DNR Governmental	Yellow perch	Unspecified	Small Fingerling	4,000
2017	DNR	Largemouth bass	Unspecified	Large Fingerling	2,646
2011	Private Hatchery	Walleye	Unspecified	Large Fingerling	700
2009	Private Hatchery	Walleye	Unspecified	Large Fingerling	600