

WISCONSIN DEPARTMENT OF NATURAL RESOURCES 2025 Lake George Fisheries Survey Report

Waterbody Code 2059800



Photo Credit: Kasey Yallaly



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Executive Summary

Lake George or Spring Valley Reservoir is a small eutrophic impoundment located in Spring Valley, Wisconsin on the Eau Galle River. The lake is completely surrounded by a park owned by the U.S. Army Corp of Engineers which also provides public access to the lake. The lake contains multiple species of panfish and gamefish and is currently surveyed by the Wisconsin Department of Natural Resources (DNR) on an eight-year rotation. A comprehensive fisheries survey was conducted in the spring of 2025. Fyke nets and boat electrofishing gear were used to determine the current health and status of the fishery. Northern pike *Esox lucius* and bluegill *Lepomis macrochirus* were found in high abundance and largemouth bass *Micropterus salmoides* were present in moderate abundance. Both northern pike and largemouth bass exhibited excellent size structure with individuals approaching trophy sizes while bluegill size structure was limited. A reduction in panfish bag limits may help to improve size structure of bluegill. Current management of all other species is appropriate, but habitat is limited by poor water quality conditions due to upstream inputs.

Introduction

Lake George, also known as Spring Valley Reservoir, is a 126-acre eutrophic impoundment on the Eau Galle River in Spring Valley, Wisconsin. The lake has a maximum depth of approximately 29 feet and includes 3.4 miles of shoreline. The lake was created by the construction of a large bottom draw earthen dam in 1968 for the protection of the Village of Spring Valley from flooding as well as to enhance recreational opportunities in the area. The reservoir has three inlets including the Eau Galle River, Lousy Creek and Lohn Creek which are all classified trout streams. There is a single outlet, the Eau Galle River which exits through a morning glory outflow structure through the dam. The entire shoreline is owned and maintained as a park by the U.S. Army Corp of Engineers. There is a paved public boat launch and an ADA accessible fishing pier on the west side of the lake and an unimproved landing on the east side of the lake at the Lousy Creek access site. Restrictions limit boating to electric motors only. Water quality conditions in the lake are poor and classified as impaired because of high total phosphorus. The lake experiences frequent algal blooms, high turbidity levels and hard water.

Lake George is classified as a Simple Warm Dark Lake in Wisconsin's lakes classification system. Bluegill and largemouth bass were stocked in the lake after the reservoir was created. Black crappie *Pomoxis nigromaculatus*, pumpkinseed *Lepomis gibbosus* and green sunfish *Lepomis cyanellus* are present but were never stocked by the state. These panfish species and northern pike were likely stocked by anglers or escaped from private ponds in the headwaters of the Eau Galle River. Previous comprehensive fisheries surveys were conducted in 2017, 2009, 2003 and 1996 while several minor surveys have been conducted throughout the years since the first fisheries survey in 1973 targeting centrarchids. Gamefish species in the lake include northern pike, largemouth bass and brook trout *Salvelinus fontinalis* while panfish species present include black crappie, bluegill, pumpkinseed and yellow perch *Perca flavescens*. Common carp *Cyprinus carpio* were first documented in 1981 and the fishery was dominated by large fish during the 1996 survey. White suckers *Catostomus commersonii* are common and have been present since the first fisheries surveys. Northern pike were first documented in the lake in 1973 but

densities were considered low and the population was a minor component of the overall fishery. Brown trout *Salmo trutta* were found in the 1985 and 1995 surveys due to stocking in the river upstream of the lake.

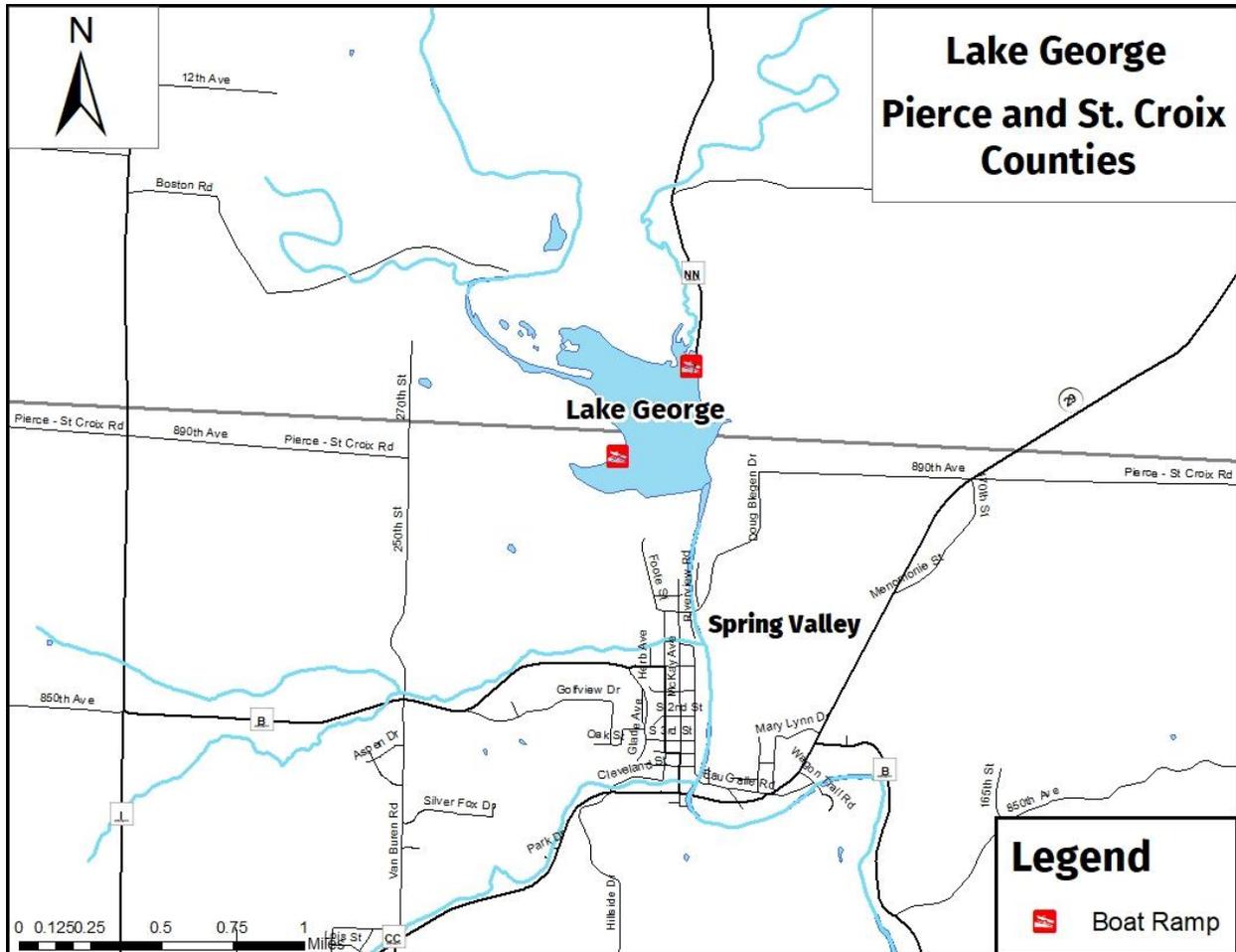


Figure 1. Map of Lake George with access points.

Methods

SURVEY EFFORT

Lake George was surveyed according to standard Spring Netting I and Spring Electrofishing II (SEII) protocols as outlined in DNR Fisheries Monitoring Protocols. The primary objective for the Spring Netting I survey was to estimate the size of the population and evaluate size structure of northern pike. A total of six fyke nets were set on March 31st and were ran until April 4th for a total of 24 net nights. Fyke nets were deployed in areas of the lake that contained spawning habitat or were likely travel areas for northern pike. All newly captured northern pike were given a partial fin clip. All gamefish, panfish and non-game species caught during this portion of the survey were counted, measured and weighed.

The Spring Electrofishing II survey was completed on May 14th in which two gamefish only stations and two all species stations were electrofished at night after water temperatures exceeded 70°F. Gamefish were collected and measured throughout, and panfish were

collected and measured within the two half-mile sub stations. Aging structures and weights were collected from a subsample of each species and were processed in a lab to estimate ages and obtain recruitment, growth and mortality of gamefish and panfish species.

ANALYSIS

Catch per unit effort (CPUE) is an index used to measure fish population relative abundance, which simply refers to the number of fish captured per unit of distance or time. For netting surveys, CPUE is quantified by the number and size of fish per net night. For electrofishing, CPUE is quantified as the number caught per mile of shoreline electrofished. CPUE indexes are compared to statewide data by percentiles and within lake trends. For example, if a CPUE is in the 90th percentile, it is higher than 90% of the other CPUEs in the state.

Proportional Stock Density (PSD) is an index used to describe the size structure of fish populations. It is calculated by dividing the number of quality size fish by the number of stock size fish for a given species. PSD values between 40 - 60 generally describe a balanced fish population.

Length frequency distribution is a graphical representation of the number or percentage of fish captured by half-inch or one-inch size intervals. Smaller fish (or younger age classes) may not always be represented in the length frequency due to different habitat usage or sampling gear limitations.

Mean length at age is an index used to assess fish growth. Calcified structures (e.g., otoliths, spines or scales) are collected from a subset of fish from each species. Mean age is compared to statewide data by percentile with growth characterized by the following benchmarks: slow (<33rd percentile); moderate (33rd to 66th percentile); and fast (>66th percentile).

Relative weight is an index used to assess the plumpness (i.e., condition) of fish. It is calculated by comparing the observed weight of a fish to the standard weight (i.e., predicted average weight) of that fish, given its length. A relative weight of 93 means it has average plumpness/weight compared to other fish of the same length. Relative weights above 93 mean it is plumper than average.

A population estimate was conducted for the northern pike population using the Schnabel method of population estimation with the formula $(\sum (Ct \times Mt))/R$.

Recruitment was evaluated through residual analysis where the sign and magnitude of residuals from a catch-curve regression indicate relative year-class strength. Larger, positive residuals indicate years of higher recruitment and zero or negative residuals indicate years of poorer recruitment.

Growth rates of northern pike were calculated using the von Bertalanffy growth model in Fishery Analysis and Modeling Simulator software (FAMS; Slipke and Maceina 2010) and mean length at age for each species was compared to the median mean length at age for lakes across the state within the same lakes classification (Simple Warm Dark).

Total annual mortality was estimated with the formula $1 - e^{-Z}$ and instantaneous mortality (Z) was calculated from the slope of the regression from the descending right limb of the age-frequency distribution.

Results

NORTHERN PIKE

Northern pike were present in high abundance with a catch rate of 9.0 fish per net night (95th percentile). Catch rates of northern pike have increased substantially since 2017 during which CPUE was 2.1 fish per net night (Figure 2). The size of the northern pike population was estimated to be 246 individuals or 1.9 fish per acre (95% C.L. 1.5 to 2.7 per acre; CV=14.7%). A total of 168 northern pike were captured in fyke nets and one was captured with electrofishing gear during the SEII survey. Within the fyke net survey, 43 females, 127 males were sampled. Lengths of northern pike ranged from 15.4 to 43.1 inches with a mean length of 25.1 inches (100th percentile; Figure 3). Female pike ranged in length from 17.9 to 43.1 inches while males ranged from 9.0 to 25.4 inches. PSD of northern pike was 67 and RSD-P was 35 and fourteen memorable size fish (> 34 inches) were sampled during the survey. Relative weight of pike was excellent with a mean W_r value of 110.

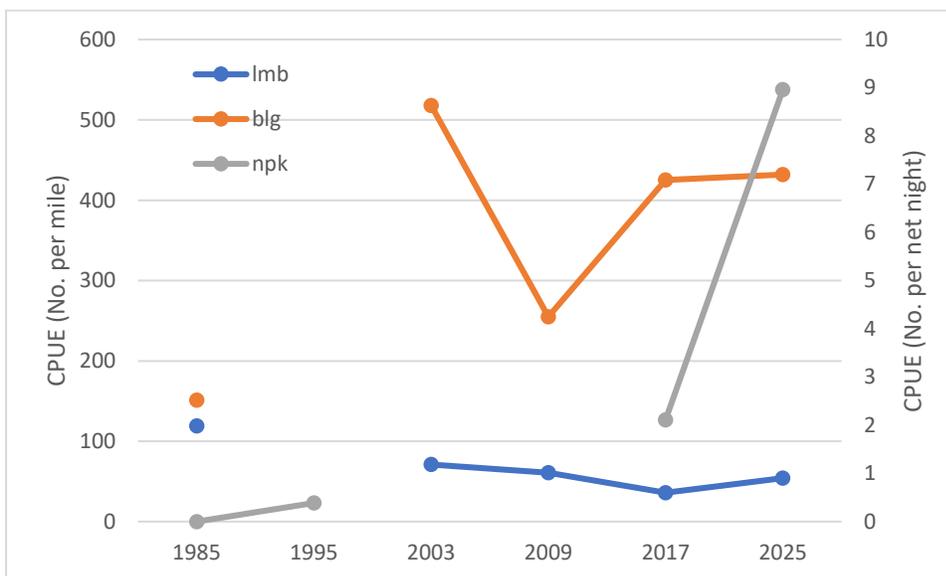


Figure 2. Fyke net catch rates (CPUE) of northern pike (npk) and electrofishing catch rates of largemouth bass (lmb) and bluegill (blg) from 1985 to 2025 in Lake George.

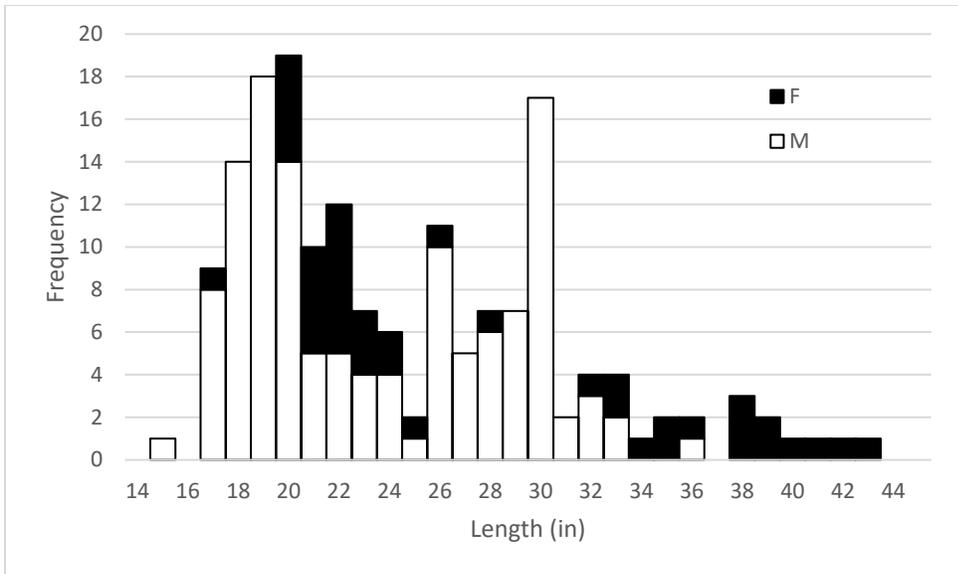


Figure 3. Length frequency distribution of male (M) and female (F) northern pike collected from Lake George, St. Croix and Pierce counties in 2025.

Recruitment of northern pike was inconsistent with several weak year classes in 2019, 2021 and 2022 and an exceptionally strong year class in 2023 and 2015 (Figure 4). Growth rates of northern pike were fast for younger fish (< 5 years of age) and then slowed when fish reached approximately 26 inches and were comparable to the statewide average growth rates of northern pike in similar lakes (Figure 5). On average, northern pike reached 20 inches in 2 years. Growth coefficients estimated by the von Bertalanffy growth model described mean length at age ($L_{inf}= 1094$, $K= 0.131$, $t_0=-1.38$, $n=167$, $P < 0.0001$, $r^2= 0.99$). Maximum age of northern pike was 14 years of age.

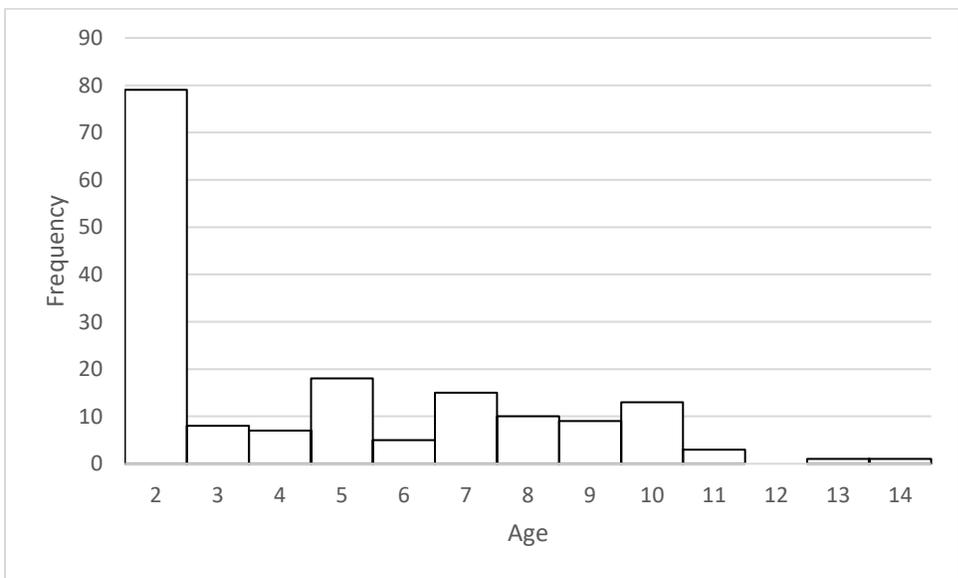


Figure 4. Age frequency distribution of northern pike collected from Lake George, St. Croix and Pierce counties in 2025.

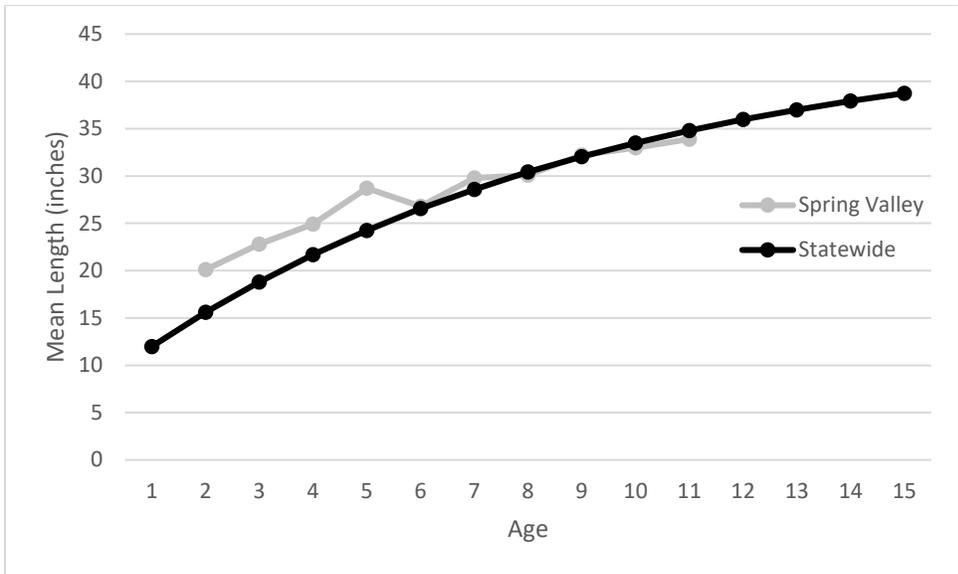


Figure 5. Mean length at age of northern pike collected from Lake George in Pierce and St. Croix counties in 2025 and median mean length at age of northern pike in Simple Warm Dark lakes across Wisconsin.

LARGEMOUTH BASS

A total of 196 largemouth bass were sampled throughout the surveys in 2025. A total of 181 fish were sampled during electrofishing surveys which resulted in CPUE of 54.0 fish per mile (50th percentile). The 2025 catch rate was similar to previous surveys and higher than the 2017 catch rate (Figure 2). Mean catch rates for all surveys since 2003 was 55.5 fish per mile. Lengths of largemouth bass ranged from 4.9 to 20.5 inches with a mean length of 13.9 inches (95th percentile; Figure 6). PSD of largemouth bass was 82 and RSD-P was 43. Three memorable size (> 20 inches) were present in the sample but no trophy size (> 25 inches) fish were sampled and 42% of fish were larger than 15 inches. Mean relative weight of largemouth bass was excellent at 111.

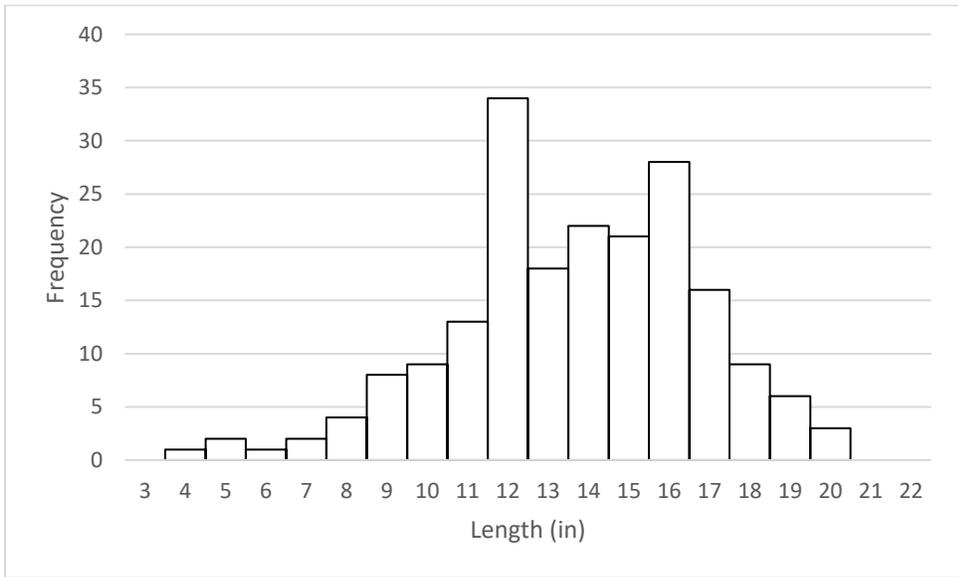


Figure 6. Length frequency distribution of largemouth bass collected from Lake George, St. Croix and Pierce counties in 2025.

Recruitment of largemouth bass was relatively consistent with slightly strong year classes in 2020, 2016 and 2015 (Figure 7). Growth rates of largemouth bass were comparable to the statewide average growth rates for largemouth bass in similar lakes (Figure 8). On average, largemouth bass reached harvestable length (14 inches) in 5.3 years. Growth coefficients estimated by the von Bertalanffy growth model described mean length at age ($L_{inf}= 453$, $K= 0.303$, $t_0=-0.735$, $n=191$, $P < 0.0001$, $r^2= 0.99$,). Maximum age of largemouth bass was 22 years of age. Total annual mortality of bass was 16.9% ($r^2=0.44$, $n=194$, $P=0.0001$).

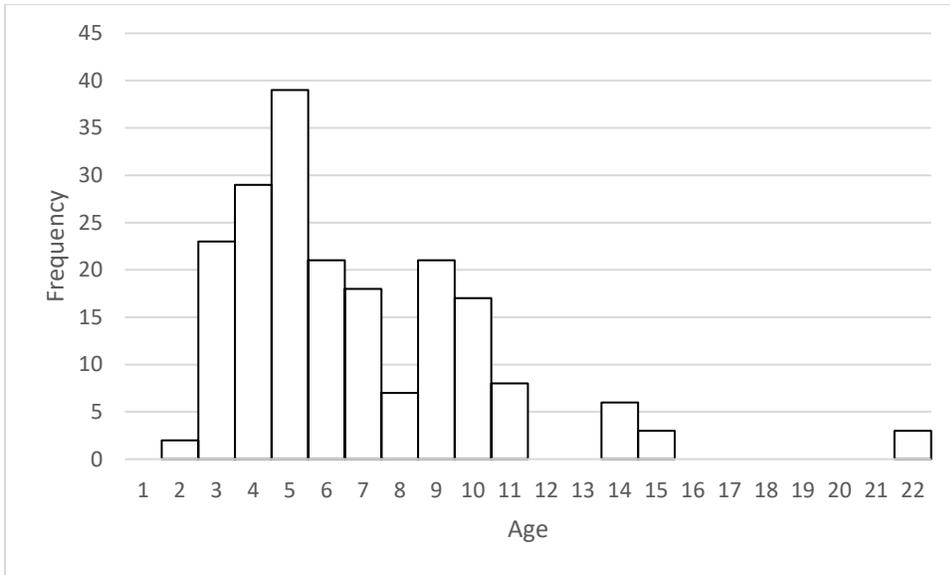


Figure 7. Age frequency distribution of largemouth bass collected from Lake George during spring 2025.

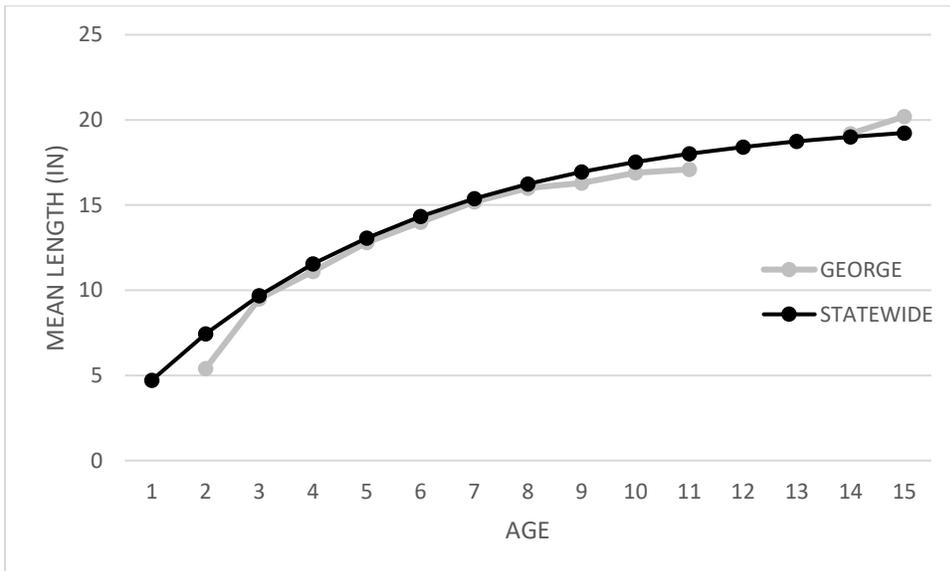


Figure 8. Mean length at age of largemouth bass collected from Lake George in Pierce and St. Croix counties in 2025 and median mean length at age of largemouth bass in Simple Warm Dark lakes across Wisconsin.

BLUEGILL

Bluegill were the most numerous panfish species sampled during 2025 with a total of 993 captured throughout surveys. The electrofishing catch rate of bluegill was 432 fish per mile (95th percentile) which was comparable to prior surveys (Figure 2). Size structure of bluegill was good with a mean length of 5.6 inches (99th percentile) and lengths ranging from 1.2 to 8.5 inches (Figure 9). Mean length of bluegill has declined from 6.7 inches in 2017 but was similar to mean length estimates during the panfish bag limit regulation evaluation survey in 2009 that resulted in a mean length of 5.4 inches. PSD was 43 and RSD-P was 1. A very small percentage of bluegill were larger than 8 inches (0.7%). Bluegill were in excellent condition with a mean relative weight of 109.

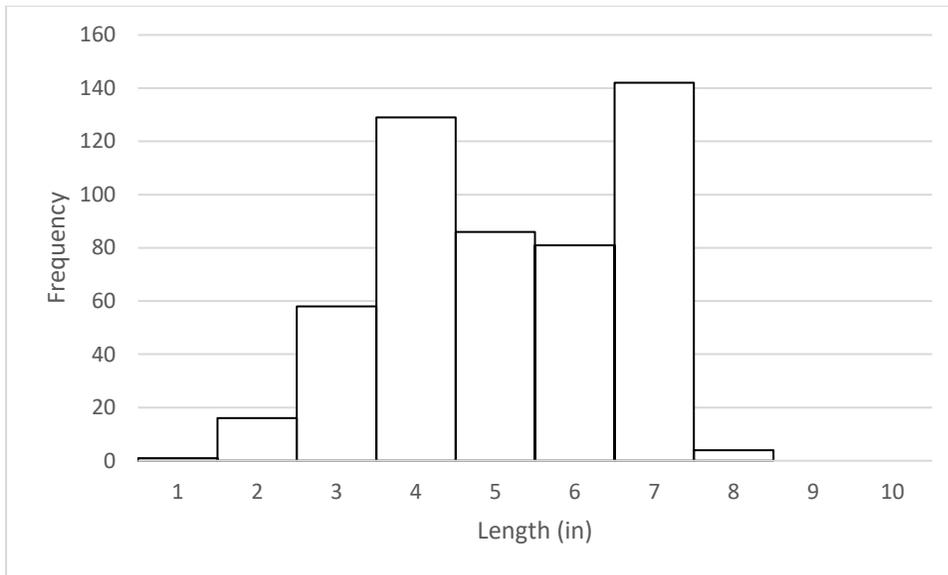


Figure 9. Length frequency distribution of bluegill collected from Lake George, St. Croix and Pierce Counties in 2025.

The age-6 and age-7-year classes of bluegill were missing within the sample indicating poor recruitment during those years (Figure 10). The age-3-year class was very strong from 2022. Growth rates of bluegill were comparable to growth rates in similar lakes across the state with fish reaching 6 inches in approximately 4 years (Figure 11).

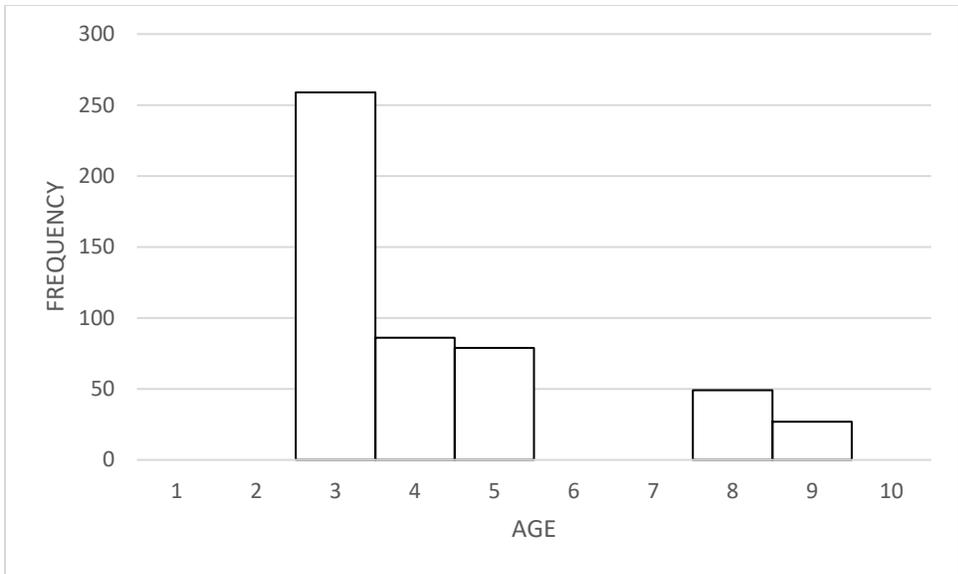


Figure 10. Age frequency distribution of bluegill collected from Lake George, St. Croix and Pierce Counties in 2025.

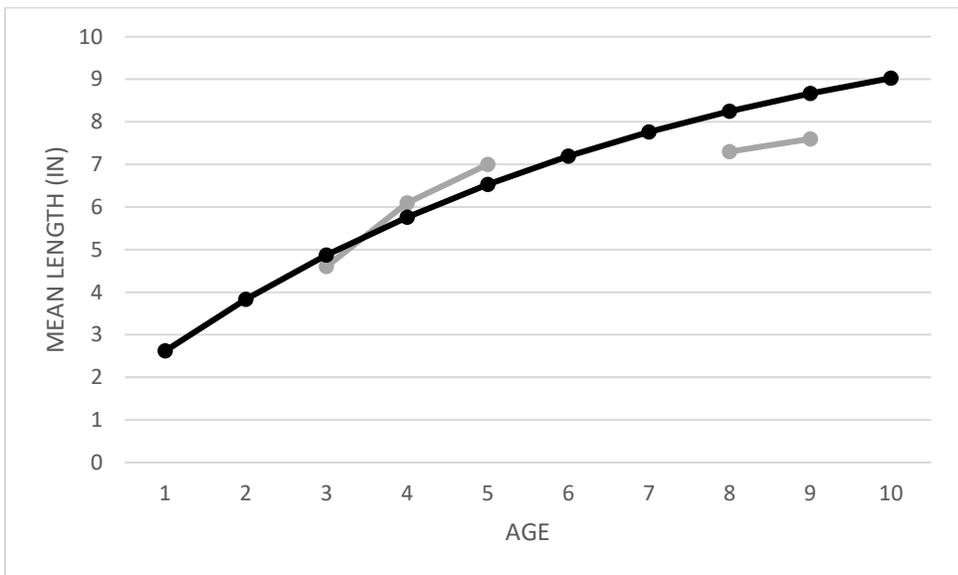


Figure 11. Mean length at age of bluegill collected from Lake George in Pierce and St. Croix counties in 2025 and median mean length at age of bluegill in Simple Warm Dark lakes across Wisconsin.

BLACK CRAPPIE

Black crappie were present in low abundance in the sample, however black crappie are difficult to survey and are underrepresented within this dataset. A total of 27 black crappie were collected throughout the 2025 survey and lengths ranged from 7.7 to 8.6 inches. Because of the low sample size, its difficult to infer accurate growth rates but of the black crappie that were aged, black crappie growth rates are considerably slower than the statewide average in similar lakes. On average, black crappie reached 8 inches in 6 years. Mean length at age for age-5 fish in Lake George was 7.7 inches while the statewide mean length at that age is 9.3 inches.

YELLOW PERCH

Yellow perch were also present in low abundance during the 2025 survey which is consistent with prior surveys. Only six were sampled in 2025 ranging in length from 4.8 to 7.4 inches. Similar to black crappie, it is difficult to infer accurate growth rates because of the low sample size but based on ages of yellow perch that were collected, growth rates are slow and below the average for similar lakes in the state. Mean length at age-3 for perch in Lake George was 5.4 inches while the statewide mean is 6.1 inches at this age.

OTHER SPECIES

A total of 30 brook trout were captured during the netting portion of the survey while eight were captured during the 2017 survey and none were captured in 2009. Catch rates of common carp were higher than during both of the two previous surveys as well. Green sunfish were present in 2025 but have not been detected since early surveys in the 1980s. Catch rates of white sucker were high in 2025 (75th percentile) which was also higher than in previous surveys.

Table 1. Species summaries of the 2025 comprehensive lake survey on Lake George, St. Croix and Pierce counties.

SPECIES	NUMBER CAPTURED	2025 CPUE (PERCENTILE)	SIZE RANGE (IN)	MEAN SIZE (IN)
Black Crappie	27	.	7.7-8.6	8.0
Bluegill	993	432 per mile (95 th)	1.2-8.5	5.6
Brook Trout	30	.	.	.
Common Carp	39	1.6 per net night (10 th)	.	.
Creek Chub	3	0.1 per net night	.	.
Golden Shiner	8	0.3 per net night	.	.
Green Sunfish	6	0.3 per net night	.	.
Largemouth Bass	196	54 per mile (50 th)	4.9-20.5	13.9
Northern Pike	169	9.0 per net night (95 th)	15.4-43.1	25.1
Pumpkinseed	14	.	3.6-6.8	5.4
White Sucker	80	3.3 per net night (75 th)	.	.
Yellow Perch	6	0.1 per net night	4.8-7.4	5.8

Discussion

Northern pike densities have increased substantially since the previous survey 9 years ago and the population is currently at its highest density throughout the history of the lake's surveys. Northern pike were present in low densities during the 2017 survey (Yallaly and Scott 2018). Despite high densities, northern pike exhibited excellent size structure and condition and growth rates were comparable to the statewide average of pike in similar lakes. Based on forage availability documented during the survey, the lake has the potential to produce trophy size northern pike if densities don't continue to increase. White sucker, creek chub, panfish species and brook trout provide an excellent forage base. Maximum age of northern pike indicated survival from 2011 and the age-2-year class was strong indicating good recruitment in 2023.

Largemouth bass recruitment was consistent and relative abundance was moderate which was similar to previous surveys. Mean length of largemouth bass has increased since 2017 by approximately 3 inches and is now above the 95th percentile for largemouth bass in

similar lakes across the state. Similar to northern pike, largemouth bass exhibited excellent size structure and condition and growth rates were average. Annual mortality of largemouth bass was low which is similar to most largemouth bass populations that are subject to catch and release practices by anglers (Allen et al., 2008; Isermann et al., 2013; Hansen et al., 2015). Although no trophy size largemouth bass were sampled, the lake likely has the ability to produce trophy largemouth bass given the population characteristics and abundant forage base.

The panfish community is dominated by bluegill that are present in high abundance. High relative abundance of bluegill has been documented in prior surveys as well. Mean length of bluegill was within the 99th percentile for mean length of bluegill in Simple Warm Dark lakes across the state but a very small percentage of bluegill were larger than 8 inches and mean length has declined from 2017 but was similar to the estimate from 2009. Additionally, catch rates of bluegill in the 7.0 to 7.9-inch range has declined from 181 per mile in 2017 to 146 per mile in 2025. Bluegill exhibited average growth rates when compared to the statewide average. The decline in size structure coupled with good growth rates may warrant a reduction in bag limits to aid in improvement of bluegill size structure. Reductions in bluegill bag limits from 25 to 10 per day has resulted in improvements in size structure of bluegill in nearby lakes and across the state, particularly in highly productive lakes (Rypel 2015). Water quality is another factor that may increase mortality of larger bluegills by causing diseases including fin rot and columnaris. In addition to a 10 fish bag limit, best management practices should be encouraged and implemented within the watershed as most of the upstream watershed is agricultural and runoff is prevalent.

Black crappie and yellow perch are present in the lake but were not effectively sampled during this survey; therefore, abundance cannot be inferred. Both species exhibited slow growth rates based on a sub sample of fish that were aged. Factors influencing growth of these species in Lake George are not fully understood but may be influenced by poor water quality conditions. Algal blooms occur frequently in the summer because of phosphorus inputs from upstream sources and the lake experiences high turbidity from suspended sediments and upstream erosion. High sediment loads from upstream sources has resulted in high rates of sedimentation within the lake which has reduced depths and impacted fish habitat.

Several brook trout were sampled and likely use the lake as overwintering habitat. Brook trout are stocked in the Upper Eau Galle River and are also present in Lousy and Lohn Creeks. Common carp and white suckers were abundant in 2025. Previous attempts to remove or reduce common carp densities following the construction of the dam were unsuccessful. Common carp are likely contributing to the high turbidity within the lake. Overall, the lake supports an excellent gamefish fishery in the form of northern pike and largemouth bass. These species' populations have excellent size structure and trophy potential is high. Because panfish opportunities rank highly among the majority of anglers in Wisconsin, improving bluegill size structure is a priority.

Recommendations

Fish species populations within Lake George are sustained naturally through reproduction and northern pike and largemouth bass populations provide excellent quality fisheries with trophy potential. However, because northern pike are present in high densities, angler harvest of small northern pike is encouraged to reduce or maintain densities and current size structure. To aid in improvement of bluegill size structure, a reduction in bag limits is recommended. The overall fishery would also benefit from improvements in water quality that could be achieved by use of best management practices within the watershed.

1. Explore implementation of a reduction in panfish bag limits from 25 to 10 per day to aid in improvement of bluegill size structure.
2. Encourage angler harvest of small (< 25 inches) northern pike to maintain size structure and reduce densities.
3. Encourage Best Management Practices in the watershed to aid in water quality improvements and reduce sedimentation.

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