WISCONSIN DEPARTMENT OF NATURAL RESOURCES

2023 Comprehensive Summary Report
Lake Puckaway, Green Lake County

Waterbody Code 158700

Introduction And Objectives

In 2023, the Wisconsin Department of Natural Resources (DNR) conducted a comprehensive fish survey of Lake Puckaway in order to provide insight and direction for the future fisheries management of this system. Comprehensive fish surveys include both spring fyke netting, spring electrofishing and fall electrofishing surveys. The primary sampling objectives of these surveys are to characterize species composition, relative abundance and size structure. The following report is a brief summary of the activities conducted, general status of fish populations and future management options for Lake Puckaway.

SURVEY INFORMATION

Site Location	Survey Dates	Water Temperature (°F)	Target Species	Gear	Effort
Lake Puckaway	3/22/2023 - 4/13/2023	38 - 58	Northern pike and walleye	Fyke Net	104 net nights
Lake Puckaway	3/22/2023 - 4/02/2023	38 - 40	Northern pike	Fyke Net	56 net nights
Lake Puckaway	4/03/2023 - 4/13/2023	39 - 58	Walleye	Fyke Net	48 net nights
Lake Puckaway	04/13/2023	58	Walleye	Boomshocker	8.1 miles
Lake Puckaway	5/17/2023	64	Bass/panfish	Boomshocker	7.9 miles
Lake Puckaway	10/11/2023	57	Walleye	Boomshocker	9.8 miles

Metric Descriptions

- **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, we typically quantify CPUE by the number and size of fish per net night. For electrofishing, we quantify CPUE as the number caught per mile of water 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 (LFD) 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 age at length is an index used to assess fish growth.** Calcified structures (e.g., otoliths, spines or scales) are collected from a specified length bin of interest (e.g., 7.0-7.5 inches for bluegill). 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 ABUNDANCE — CATCH PER UNIT EFFORT (CPUE)

Species	Protocol	Total Number Captured	CPUE	Units	Statewide Percentile	Lake Class Percentile
Northern pike	Spring Netting I (N.Pike Nets)	1,011	18.1	fish/net night	96th	100th
Walleye	Spring Netting I (Walleye Nets)	308	6.4	fish/net night	66th	90th
Channel catfish	Spring Netting I (Combined)	2,188	21	fish/net night	-	-
Black crappie	Spring Netting I (Combined)	77	0.7	fish/net night	23rd	10th
Yellow perch	Spring Netting I (Combined)	1,017	9.8	fish/net night	72nd	80th
Largemouth bass	Spring Electrofishing II	93	11.6	fish/mile	45th	69th
Bluegill	Spring Electrofishing II	897	359	fish/mile	94th	96th

DNR Contact

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Lake Information

Acres: 5,013
Max. Depth: 6 Feet
Shoreline Miles: 27.6
Public Access: 7 Boat Landing
Lake Class: Complex Riverine

Regulations

Statewide Regulations except special northern pike regulation of one bag limit but minimum size of 32 inches.

Survey Method

- Lake Puckaway was sampled according to spring netting I (SNI), spring electrofishing I (SEI), spring electrofishing II (SEII) and fall electrofishing protocols as outlined in DNR Fisheries Monitoring Protocols. The primary objective of the spring fyke netting I survey is to count and measure adult walleyes, northern pike, and mark adult walleyes to estimate walleye abundance. The primary objective of the SEI survey is to recap gamefish marked in SNI survey to determine a population estimate. The primary objective of the spring electrofishing II survey is to count and measure adult largemouth bass, smallmouth bass and panfish. The primary objective of the fall electrofishing is to assess the juvenile walleye population and hatchery contributions. Other species of fish may be sampled during each survey but are considered by-catch as part of that survey.
- Boom shockers were used to sample 8.4 miles in the SEI survey and sample 7.9 miles of shoreline in SEII. Gamefish were collected and measured throughout, and panfish were collected and counted along 2.5 miles of the SE II surveys shoreline.
- Fyke nets were deployed in areas of the lake that contained spawning habitat or were likely travel/spawning areas for northern pike and walleye. All newly captured individuals were marked with a fin clip and floy tag. Aging structures (spines/otoliths) were taken from a sample of northern pike, walleye, bluegill, black crappie and yellow perch for age and growth analyses.

Northern Pike

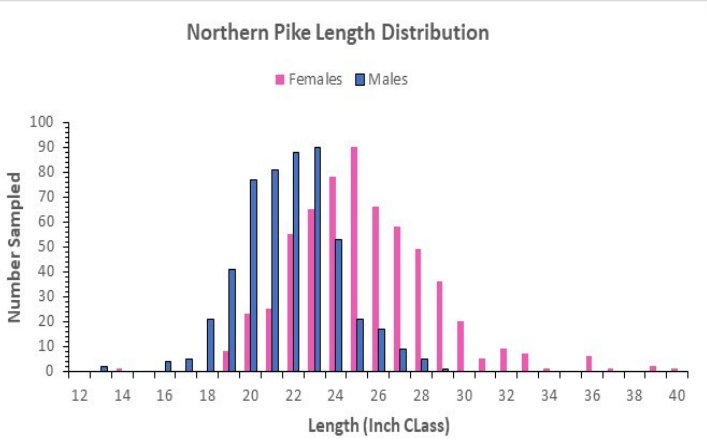
- Northern pike (*Esox lucius*) are a common predatory fish species found across many Wisconsin waterbodies. Northern pike spawn in areas of emergent vegetation at approximately 34-40°F water temperatures. Fyke netting is the preferred sampling gear for northern pike. All results presented for northern pike are from spring fyke netting surveys (numbers from northern pike and walleye combined survey).

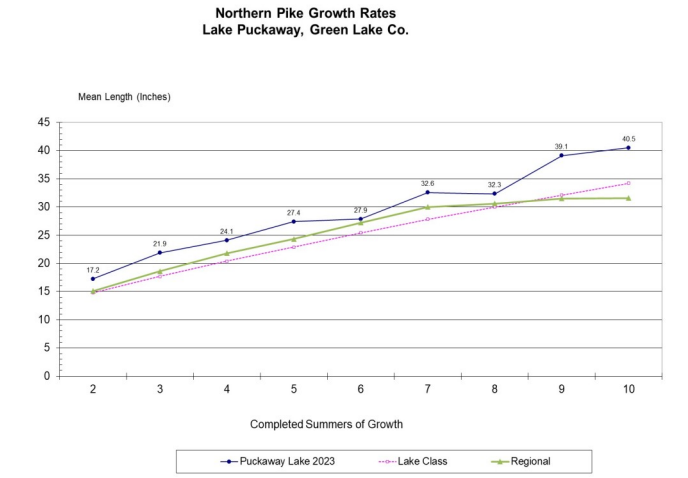
YEAR SIZE STRUCTURE METRICS								
Total Number Measured Northern pike	Average Length (inches)	Length Range (inches)	Stock and Quality Size (inches)	Stock Number	Quality Number	PSD	Percentile Rank	Size Rating
1,125	24.2	5.0 - 40.5	14.0 and 21.0	1,010	843	84	91st	High

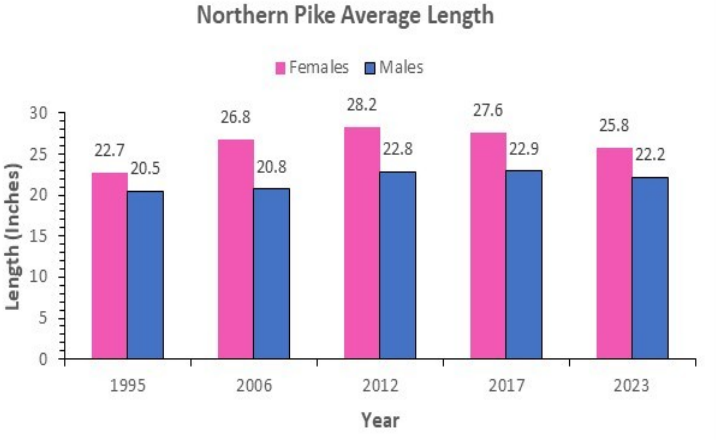
RELATIVE ABUNDANCE (CPUE = NUMBER PER NET NIGHT)									
Pike Survey Sampled 2023	1995	2006	2012	2017	2023	Historical Median	2023 Lake Class Rank	2023 Statewide Percentile Rank	2023 Abundance Rating
1,011	51.8	19.2	22.8	5	18.1	19.2	100th	96th	High

SIZE STRUCTURE (PSD) TRENDS							
PSD by Year					Historical Median	2023 Statewide Percentile Rank	2023 Size Structure Rating
1995	2006	2012	2017	2023			
60	78	87	87	84	84	91st	High

SIZE STRUCTURE (RSD32) TRENDS					
RSD32 by Year					Historical Median
1995	2006	2012	2017	2023	
0	2	5	6	2	2







Species Summary

- A 32-inch size limit and bag of one fish was put in place in 1995 as an attempt to protect the northern pike and allow more of them to reach a larger size. Fishing pressure and harvest were thought to limit the potential for a trophy fishery.
- Lake Puckaway supports a high density northern pike population with 2023 catch rates at 18.1 fish per net night. A catch rate of 18.1 per net night ranks in the 96th percentile when compared to northern pike catch rates statewide and in the 100th percentile when compared to the same lake class. Catch rates have tripled since the survey in 2017 but are still below the historical average of 23.5 and are increasing from a summer kill in 2012. Numbers are down since the 32-inch size limit was put in place in1995, which has been a good thing for the fishery.
- The size structure of northern pike in the 2023 survey was high with a PSD of 84 which ranks in the 91st percentile when compared to lakes statewide. The length ranges of male (5.0 - 29.7 inches) and female (14.8 - 40.5 inches) northern pike are within the ranges commonly found in some quality lakes statewide. The size structure has improved since the 32 inch size limit was put in place in 1995 but has stayed relatively unchanged for the last couple of surveys.

Walleye

- Walleye (*Sander vitreus*) are a predatory fish species found throughout many Wisconsin waterbodies. Typically walleye migrate to spawn in areas of rock or gravel substrate at approximately 40-50°F water temperatures. Fyke netting and electrofishing are both suitable gears for capturing walleye. However, electrofishing was not conducted during this survey, and all results presented for walleye are from fyke netting surveys.

YEAR SIZE STRUCTURE METRICS

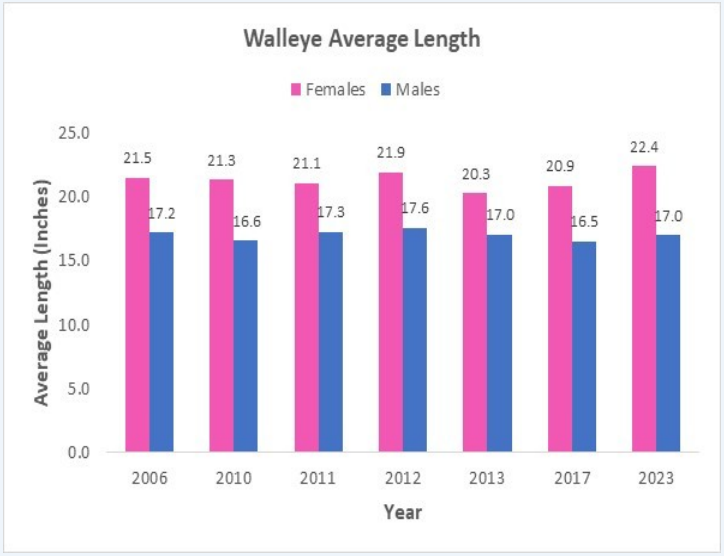
Total Number Measured NP & WE Surveys Combined	Average Length (inches)	Length Range (inches)	Stock and Quality Size (inches)	Stock Number	Quality Number	PSD	Percentile Rank	Size Rating
398	18.9	9.1 - 27.7	10.0 and 15.0	397	354	89	72nd	Moderate - High

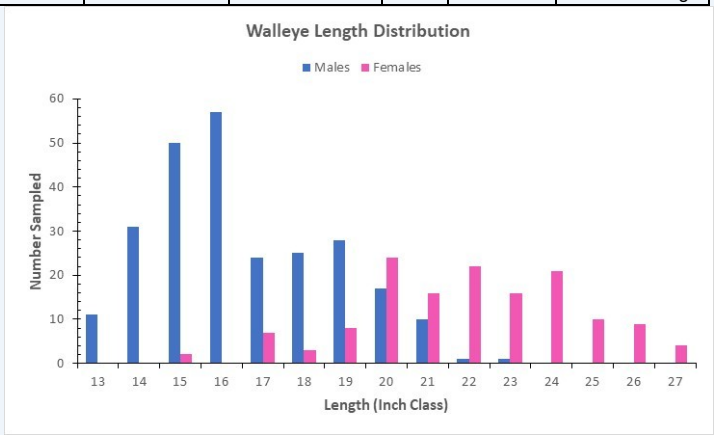
RELATIVE ABUNDANCE (CPUE = NUMBER PER NET NIGHT)

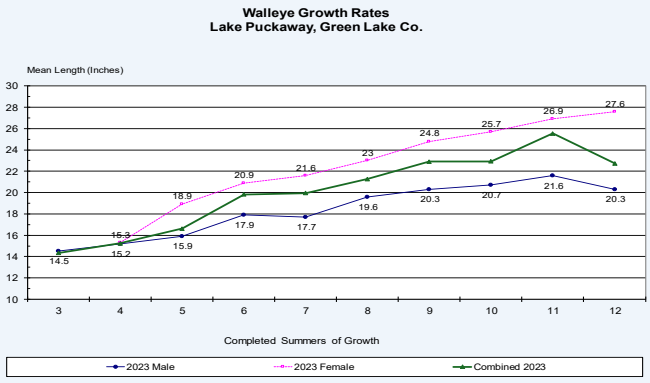
Walleye Survey Total	2006	2010	2011	2012	2013	2017	2023	Historical Median	2023 Statewide Percentile Rank	2023 Abundance Rating
308	20.2	55.6	36.3	3.7	17.3	19.1	6.4	19.1	66th	Moderate

SIZE STRUCTURE (PSD) TRENDS

PSD by Year							Historical Median
2006	2010	2011	2012	2013	2017	2023	
91	87	87	89	86	74	89	87







Species Summary

- Lake Puckaway supports a moderate-density walleye population when compared to the statewide average and a high population (90th percentile) when compared to the same lake class. Lake Puckaway is part of the open Winnebago system, with fish moving in and out likely dependent on conditions at time of spawning. Fish must pass the dam and fishway at Princeton Lock and Dam to reach Lake Puckaway. The 2023 catch rate of 6.4 per net night was lowest compared to recent surveys.
- The size structure of walleyes in the 2023 survey was moderately high, with a PSD of 89 which ranks in the 72nd percentile when compared to lakes statewide. The current walleye size structure found in Lake Puckaway is better than 2017 but very close to the historical median.
- Growth rates on Lake Puckaway are average when compared to regional and statewide averages for walleyes, with it taking four years to reach legal size of 15 inches. Growth rates are above average when compared to lakes in the same lake class.
- In fall of 2009, it was estimated that 2,000 walleyes were killed during a carp removal contract operation on Lake Puckaway. It was agreed to do a spring walleye assessment the next few years immediately following. Surprisingly, the catch per effort in 2010 was the highest we have seen since 2006.
- In 2022, the DNR started sonic tagging fish on the Upper Fox River as part of the Winnebago system walleye movement project. These fish are all marked with a large orange loop tag near the soft dorsal. If you catch and decide to harvest one of these fish, please contact the DNR and save the tag so we can potentially reuse it. A total of 85 fish were sonic tagged from 2022-23 with 31 being at the inlet, 14 at the outlet and 12 from the south shore of Lake Puckaway. Some very early preliminary results show that fish tagged in the spring and fall from in or near Lake Puckaway appear to be Puckaway/Fox River residents with spring movement up and downstream, and minimal movement to Winnebago. We are learning more and more about these Upper Fox River fish as time goes by, and this data will be beneficial for the future management.

Largemouth Bass

- Largemouth bass (*Micropterus salmoides*) are a common predatory fish species found in many Wisconsin waterbodies. Largemouth bass typically spawn in shallow nearshore areas consisting of sand/mud or gravel substrate at approximately 60-70°F water temperatures. Electrofishing is the preferred sampling gear for largemouth bass. All results presented for largemouth bass are from spring electrofishing surveys.

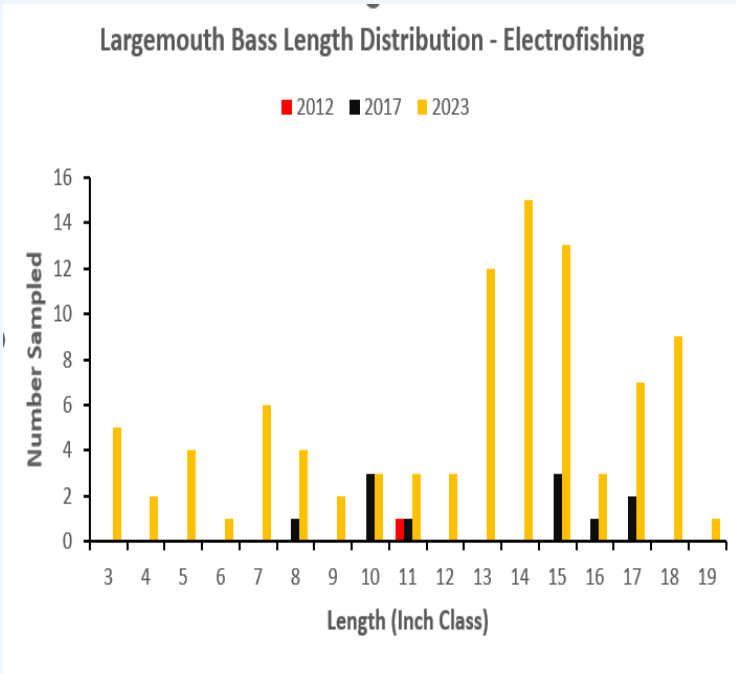
YEAR SIZE STRUCTURE METRICS								
Total Number Measured	Average Length (inches)	Length Range (inches)	Stock and Quality Size (inches)	Stock Number	Quality Number	PSD	Percentile Rank	Size Rating
93	12.8	3.2 - 19.1	8.0 and 12.0	75	63	84	87th	High

2023 RELATIVE ABUNDANCE (CPUE = NUMBER PER MILE)							
CPUE Total	Lake Class Percentile Rank	Statewide Percentile Rank	Overall Abundance Rating	Length Index	Length Index CPUE	Length Index Percentile Rank	Length Index Abundance Rating
11.6	69th	45th	Moderate	≥ 14.0 inches	6.0	72nd	Moderate - High

SIZE STRUCTURE (PSD) TRENDS			
PSD by Year			Historical Median
2012	2017	2023	
Too Few Fish	55	84	70

RELATIVE ABUNDANCE TRENDS (CPUE = NUMBER PER MILE)			
CPUE by Year			Historical Median
2012	2017	2023	
0.1	1.6	11.6	1.6

Photo credit: Scott Bunde



Species Summary

- Lake Puckaway supports a moderate largemouth bass population with a catch rate of around 12 per mile, which ranks in the 45th percentile compared to lakes statewide, but in the 69th percentile when compared to lakes in the same class. Relative abundance comparisons among years indicate that CPUE was up fairly significantly from previous surveys. Further, the CPUE of largemouth bass greater than 14 inches was moderate - high compared to statewide values.
- The size structure of largemouth bass in Lake Puckaway was high, with a PSD value of 84, which ranks in the 87th percentile when compared to statewide values. When compared to recent surveys on Lake Puckaway, largemouth bass PSD values are up from 55 in 2017, and not enough largemouth bass were sampled in 2012 to calculate PSD.
- The current status of the largemouth bass population on Lake Puckaway looks to be good. Moderate - high relative abundance and a high size structure result in angling opportunities to catch largemouth bass of all sizes including harvestable or target size classes. An increase in vegetation on Lake Puckaway in the last couple years will likely be very beneficial to the largemouth bass population.

Black Crappie

- Black crappie (*Pomoxis nigromaculatus*) are a common panfish species distributed widely across many Wisconsin waterbodies. Black crappies typically spawn in nearshore areas consisting of detritus, sand/mud or gravel substrate at water temperatures of approximately 58-68°F water temperatures. Electrofishing and fyke netting can be effective sampling gear for black crappies, and therefore, results from both gears are presented for black crappie.

2022 SIZE STRUCTURE METRICS

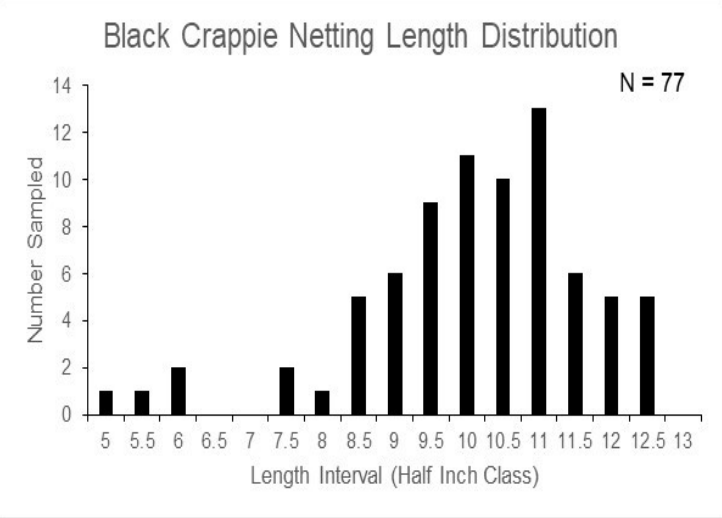
Gear	Number Measured	Average Length	Length Range	Stock and Quality Size	Stock	Quality	PSD	Percentile Rank	Size Rating
Fyke Netting	77	10.3	5.3 - 12.8	5.0 and 8.0	77	71	92	90th	High
Electrofishing	9	9.7	8.1 - 12.2	5.0 and 8.0	9	9	100	Too Few Fish	-

FYKE NETTING CPUE TRENDS (NUMBER PER NET NIGHT)

2023 Number Sampled	2012	2017	2023	Historical Median	2023 Lake Class Percentile Rank	2023 Statewide Percentile Rank	2023 Abundance Rating
77	0.7	4.2	0.7	0.7	10th	23rd	Low

SIZE STRUCTURE (PSD) TRENDS FYKE NETTING

PSD by Year			Historical Median
2012	2017	2023	
85	60	92	85



2023 GROWTH METRICS

Sample (n)	Length Bin (inches)	Sex	Mean Age	Age Range	Growth Rating
5	8.0 – 8.9	All	4.8	4.0 - 5.0	Below Average

ELECTROFISHING CPUE (NUMBER PER MILE)

CPUE Total	Percentile Rank	Overall Abundance Rating	Length Index	Length Index CPUE	Length Index Percentile Rank	Length Index Abundance Rating
3.6	37th	Low –Moderate	≥ 8.0 inches	3.6	58th	Moderate

Species Summary

- Lake Puckaway supports a low - moderate density black crappie population with catch rates of 0.7 fish per net night from the fyke netting survey and 3.6 fish per mile of electrofishing from the boom shocking survey. Catch rates of 0.7 per net night and 3.6 per mile rank in the 23rd and 37th percentiles, respectively, compared to statewide standards.
- The size structure of black crappies in Lake Puckaway were similar using both gear. In both surveys, most individuals captured ranged from 8.5 - 12.5 inches in length. Length data from the fyke netting survey resulted in a PSD value of 92, which is in the 82nd percentile when compared to fyke netting data statewide. The electrofishing survey resulted in too few fish sampled to validate a good PSD rating.
- Population trends from previous electrofishing surveys on Lake Puckaway indicate that size structure is typically good. Moreover, relative abundance estimates fluctuate up and down which is consistent with black crappie boom and bust populations.
- Growth metrics calculated from age estimates indicate that black crappies in Lake Puckaway have below average growth. The survey did not provide a large sample to age. Five fish fell in the 8-inch targeted range, their growth was slightly below the statewide and lake class averages.

Bluegill

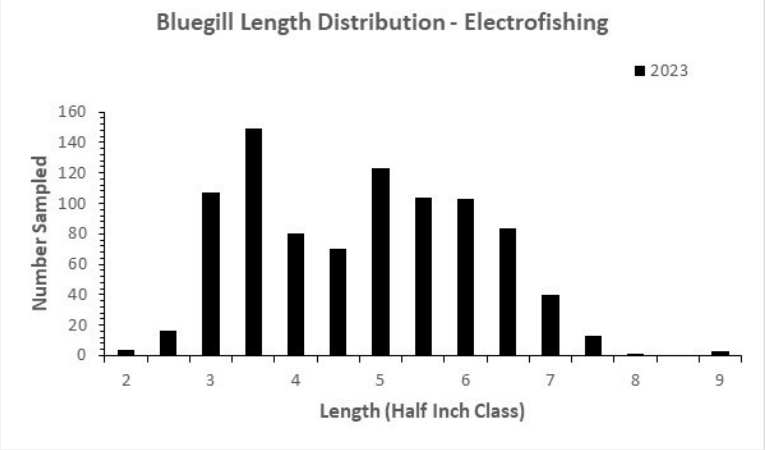
- Bluegills (*Lepomis macrochirus*) are a common panfish species distributed widely across many Wisconsin waterbodies. Bluegills typically spawn in nearshore areas consisting of sand/mud or gravel substrate at approximately 67-80°F water temperatures. Electrofishing and fyke netting can be effective sampling gear for bluegills, and therefore, results from both gears are presented for bluegill.

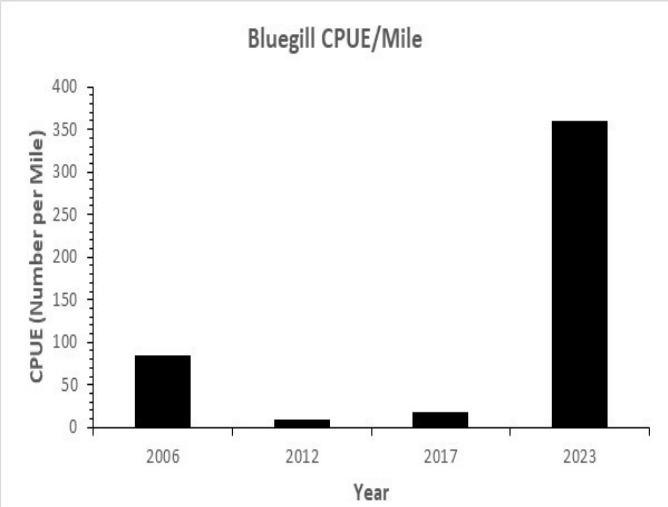
2023 SIZE STRUCTURE METRICS

Gear	Number Measured	Average Length	Length Range	Stock and Quality Size	Stock	Quality	PSD	Percentile Rank	Size Rating
Electrofishing	897	5.0	1.8 - 9.1	3.0 and 6.0	877	244	28	43rd	Moderate

AVERAGE BLUEGILL AGE AT 6 INCHES

Sex	Count	Average Age	Age Range	Lake Class Rating	Regional Rating
Male	8	3.6	3 –4	Above Average	Above Average
Female	4	4	4	Above Average	Above Average
All	12	3.7	3 - 4	Above Average	Above Average





ELECTROFISHING CPUE (NUMBER PER MILE)

CPUE Total	Percentile Rank	Lake Class Percentile Rank	Overall Abundance Rating	Length Index	Length Index CPUE	Length Index Percentile Rank	Length Index Abundance Rating
359	94th	96th	High	≥ 7.0 inches	23	81st	High

ELECTROFISHING TRENDS CPUE (NUMBER PER MILE)

CPUE by Year				Historical Median
2006	2012	2017	2023	
84	8.9	17.6	359	50.8

ELECTROFISHING SIZE STRUCTURE (PSD) TRENDS

PSD by Year				Historical Median
2006	2012	2017	2023	
48	17	36	28	32

Species Summary

- Lake Puckaway supports a high-density bluegill population, with catch rates of 359 fish per mile of electrofishing from the boom shocking survey. Catch rates rank in the 90+ percentile compared to statewide and lake class ratings. Catch rate of bluegill greater than 7 inches in the electrofishing survey was 23 per mile which ranks in the 81st percentile and is high when compared to lakes statewide.
- The size structure of bluegills in Lake Puckaway was characterized as moderate based on data from the electrofishing survey. Length data from the electrofishing survey resulted in a PSD value of 28, which is in the 43rd percentile when compared to bluegill electrofishing data statewide.
- Population trends from previous electrofishing surveys on Lake Puckaway indicate that size structure has generally remained similar over recent surveys, but relative abundance has increased 20-fold from the last survey completed in 2017 and nearly 40-fold from 2012. The likely reason for this increase is the dramatic increase in vegetation lakewide. This vegetation increase has been a nuisance for boaters and property owners, but very beneficial for many species of fish.
- Growth metrics calculated from age estimates indicate that bluegills in Lake Puckaway have above average growth when compared to growth rates from bluegill populations across the state in the same lake class.

Yellow Perch

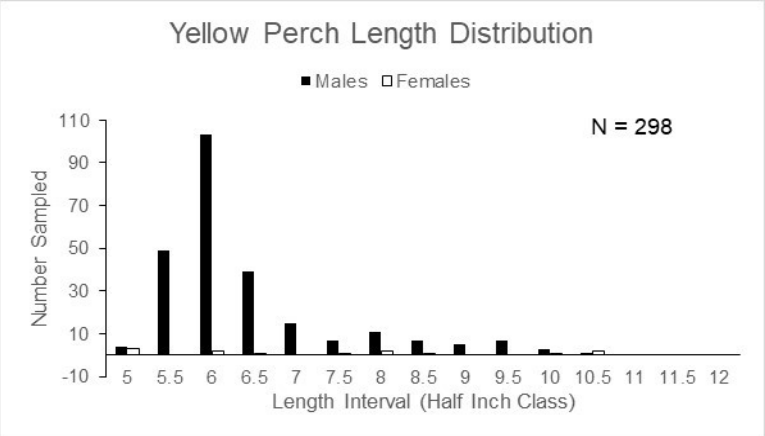
- Yellow perch (*Perca flavescens*) are a common panfish species found throughout many Wisconsin waterbodies. Typically, yellow perch spawn in areas of emergent or submergent vegetation or submerged brush at approximately 45-50°F water temperatures. Electrofishing and fyke netting can be effective sampling gear for yellow perch, and therefore, results from both gears are presented for yellow perch.

2023 SIZE STRUCTURE METRICS

Gear	Number Measured	Average Length (inches)	Length Range (inches)	Stock and Quality Size (inches)	Stock	Quality	PSD	Percentile Rank	Size Rating
Electrofishing	129	4.5	2.8 - 7.5	5.0 and 8.0	59	0	0	0	Low
Fyke Nets	298	6.7	5.1 - 10.7	5.0 and 8.0	298	44	15	50th	Moderate

AVERAGE YELLOW PERCH AGE AT 8 INCHES

Sex	Count	Average Age	Age Range	Lake Class Rating	Regional Rating
Male	6	4.5	4 - 5	Above Average	Above Average
Female	3	4.3	4 - 5	Above Average	Above Average
All	11	4.2	3 - 5	Above Average	Above Average



FYKE NETTING CPUE (NUMBER PER NET NIGHT)

CPUE Total	Lake Class Percentile Rank	Statewide Percentile Rank	Overall Abundance Rating
9.8	80th	72nd	High

FYKE NETTING TRENDS CPUE (NUMBER PER Net Night)

CPUE by Year				Historical Median
2006	2012	2017	2023	
1.1	1.1	0.6	9.8	1.1

FYKE NETTING SIZE STRUCTURE (PSD) TRENDS

PSD by Year				Historical Median
2006	2012	2017	2023	
Too Few Fish	Too Few Fish	8	15	11.5

ELECTROFISHING CPUE (NUMBER PER MILE)

CPUE Total	Percentile Rank	Overall Abundance Rating	Length Index	Length Index CPUE	Length Index Percentile Rank	Length Index Abundance Rating
52	89th	High	≥ 8.0 inches	0	-	Low

ELECTROFISHING TRENDS CPUE (NUMBER PER MILE)

CPUE by Year				Historical Median
2006	2012	2017	2022	
49.5	2.3	20.8	51.6	35.2

ELECTROFISHING SIZE STRUCTURE (PSD) TRENDS

PSD by Year				Historical Median
2006	2012	2017	2022	
8	17	8	0	8

Species Summary

- Lake Puckaway supports a high-density yellow perch population, with catch rates of 52 fish per mile of electrofishing from the boom shocking survey. Catch rates rank in the 89th percentile compared to statewide ratings. Catch rates of yellow perch greater than 8 inches in the electrofishing survey was zero per mile, which is poor.
- The size structure of yellow perch in Lake Puckaway was characterized as low in our electrofishing survey and moderate in our fyke netting survey. Length data from the electrofishing survey resulted in a PSD value of zero and was 15% in our fyke netting survey which is in the 50th percentile when compared to yellow perch netting data statewide.
- Population trends from previous surveys on Lake Puckaway indicate that the population is increasing with size structure increasing slightly but still remaining moderately poor. The relative abundance more than doubled from the 2017 survey, and the potential reason for this increase is the dramatic increase in vegetation lakewide.
- Growth metrics calculated from age estimates indicate that yellow perch in Lake Puckaway have above average growth when compared to growth rates from yellow perch populations across the state and same lake class.

Summary

Northern Pike

Lake Puckaway supports a high-density northern pike population, with high size structure. Fish up to 40 inches were captured, with the average size of a male = 22.2 inches and average size of a female = 25.8 inches. Growth rates for northern pike in Lake Puckaway are above average compared to regional, state and lake class criteria. Future surveys will determine what the impact of the increase in vegetation will have on northern pike growth rates. On one hand, the forage base is increasing, and on the other hand northern pike are site feeders and the vegetation has the potential to impact their feeding efficiency. The 32-inch size limit was put in place in 1995 to increase size structure, and it has improved in each survey since the rule was implemented. One drawback, the 32-inch size limit focuses harvest on the female population, since little to no males will ever reach 32 inches no matter how long they live. A new regulation to address this is being considered and will potentially appear on the spring hearings questionnaire in 2025. The new rule would allow for a two fish bag limit and northern pike between 25-35 must be released. The objective of this regulation is to allow some harvest of males and add some protection to the females allowing more fish to potentially reach larger sizes.

Walleye

Data from the 2022 Lake Puckaway survey showed a down year for fish spawning in the lake itself, but it still ranks in the 66th percentile compared to statewide and 90th percentile compared to lake class averages. The PSD value of 89 is similar to the historical average of 87 and continues to show a moderately-high size structure for fish in Lake Puckaway. Lake Puckaway is part of an open system connecting to the Winnebago system and conditions in the spring impact the number of fish migrating upstream into Lake Puckaway. In 2022-23, there were 85 walleyes tagged with a sonic tag at various locations on Lake Puckaway and upstream/downstream on the Fox River. These fish were marked with an orange reward loop tag (shown in picture below). We also floy tagged 584 walleyes with a white floy tag. If you catch a tagged walleye of legal size, you can choose to harvest or release the fish. Any tagged fish not meeting minimum length requirements should be immediately released once the tag information has been obtained. Please follow responsible catch-and-release practices and leave the tag intact for all released walleyes. For all colored tags, anglers should report the tag number, tag color, fish length, location caught, date caught and whether the fish was harvested. Additionally, for orange tags that read “REWARD $100” with a valid reward date listed, anglers must verify their tag to redeem the reward. This can be done by, If harvested, present the physical tag or email a picture of the tag that includes the three-digit tag number to the DNR. If released, take a close-up picture of the tag that includes the three-digit tag number and a picture of the angler holding the walleye with the attached tag visible. Information gathered from these tagged fish in the next few years will be invaluable to understanding and managing the walleye population in the Upper Fox River, including Lake Puckaway. The DNR is also working cooperatively with the Lake Puckaway Protection and Rehabilitation District to assess their portable hatcheries contribution to the walleye fishery. Genetic sampling determined 42% of young of year walleye sampled in the fall of 2022 came from the portable hatchery.

Photo credit: Scott Bunde
Sonic Tagged Orange Reward Loop Tagged Fish

Photo credit: Scott Bunde
White Floy Tagged Fish

Largemouth Bass

The Lake Puckaway largemouth bass population has increased substantially over the past couple surveys, going from 0.1 fish per mile of shoreline in 2012 to 1.6 fish per mile in 2017 to 11.6 fish per mile in 2023. Size structure has been in good over the years but improved from a PSD = 55 in 2017 to PSD = 84 in 2023, ranking Lake Puckaway in the 72nd percentile statewide. With the increase in vegetation, the future outlook for the largemouth bass fishery on Lake Puckaway is positive.

Smallmouth Bass

The smallmouth bass catch on Lake Puckaway has been limited in the last two surveys in 2012 and 2017. We sampled eight fish in our SEII survey in 2023. More fish have been noted while electrofishing in the Fox River inlet and outlet. These eight fish appeared very healthy and ranged from 15.1 - 19.1 inches. Habitat enhancements such as the new rock added to the mid lake break wall in 2023 will likely result in increased smallmouth bass in future surveys.

Full Summary

Black Crappie

The black crappie population in Lake Puckaway is boom and bust similar to most black crappie populations around the state. The 2023 survey results indicate that black crappie population levels were down from the 2017 survey and low when compared to populations statewide and by the same lake class. The size structure is high compared to lakes statewide, which is good but also indicates a population made up of mostly large fish with few small available to replace them. The increase in vegetation should be beneficial to the black crappie population, and hopefully, we will see some good year classes in the coming years.

Bluegill

Bluegill population characteristics quantified in the 2023 Lake Puckaway survey appear to have improved for the most part compared to past surveys. Relative abundance has increased 40 and 20 fold from surveys in 2012 and 2017, respectively. The 2023 bluegill abundance now places the bluegill fishery in the 94th percentile statewide and in the 96th percentile when compared to lakes in the same lake class. Bluegills in 2012 and 2017 ranked 12th and 18th compared to statewide averages and around the 25th percentile when compared to same lake class. The size structure is moderate with PSD = 28. This is down slightly from 2017 and ranks in the 43rd percentile compared to statewide ratings. Growth rates of bluegills on Lake Puckaway are above average, with fish in the 6-inch grouping being 3.7 years old on average. The increase in vegetation is likely responsible for the large surge in the bluegill population.

Yellow Perch

The yellow perch population is currently at a high-density with catch rates of 52 fish per mile of shoreline and 9.8 fish per net night. The relative abundance more than doubled from the survey in 2017, likely because of the increase in vegetation. The size structure was considered moderate in the fyke net survey compared to statewide averages, but slightly lower in our electrofishing survey with no fish sampled at or above the quality size of 8-inches. Growth rates for fish in the 8-inch category were slightly above average with it taking 4.2 years to reach the 8-inch category. Despite mixed survey results, the population is increasing and providing a fishery.

Channel Catfish

The channel catfish in Lake Puckaway are managed with the statewide regulation and was not a target, but there has been a noticeable increase in their abundance. We sampled 2,188 channel catfish in our nets while surveying other species in 2023. This equates to 21 per net night compared to 3.2 per net night in 2017 and 12.7 per net night in 2012. In 2023, fish ranged in size from 10.2 –28.8 inches and averaged 21.3 inches. They should continue to provide a nice addition to the fishery of the lake.

Summary and other species sampled in survey

Other species sampled included bigmouth buffalo (5), black bullhead (1), bowfin (515), brown bullhead (10), burbot (2), common carp (185), common shiner (2), flathead catfish (6), freshwater drum (613), golden shiner (1), green sunfish (1), pumpkinseed (80), quillback (6), rock bass (10), sauger (1), shorthead redhorse (9), spotfin shiner (1), spotted sucker (9), white bass (20), white sucker (2) and yellow bullhead (135).

The shallow nature of Lake Puckaway results in much of the lake being uninhabitable during the winter months. Many of the fish that don't leave the lake likely concentrate in the deeper, more inhabitable areas. This concentration of fish potentially makes them more susceptible to angling harvest. If we fail to see an increase in abundance of larger bluegill and yellow perch over the coming years, a reduced bag limit on panfish may want to be considered. The increase in vegetation has shown to be currently beneficial to most species we sampled during the 2023 fish survey on Lake Puckaway. There is always potential for vegetation to become dense to the point of being a negative to a fishery. There are lots of changes and good things currently happening with Lake Puckaway and the Fox River fisheries. It will be very interesting to see what is learned from these changes and studies. Lake Puckaway is currently on a 5-year rotation, and the next survey is planned for 2028.

Photo Credit : Scott Bunde

Tank full of northern pike sampled during SNI Survey.