WISCONSIN DEPARTMENT OF NATURAL RESOURCES

2022 Electrofishing Summary Report
Pigeon Lake, Waupaca County
293300

Introduction And Objectives

In 2022, the Wisconsin Department of Natural Resources (DNR) conducted a one night electrofishing survey of Pigeon Lake in order to provide insight and direction for the future fisheries management of this water body. Primary sampling objectives of this survey were to characterize species composition, relative abundance, and size structure of bass and panfish species. Along with checking the status of the common carp population following several removals. The following report is a brief summary of that survey including the general status of the fish populations, and future management options for Pigeon Lake.

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Lake Information
Acres: 173
Max. Depth: 12 feet
Shoreline Miles: 7.0 miles
Public Access: 5 boat landings
Lake Class: Simple - Riverine

Regulations
Statewide default regulations

SURVEY INFORMATION							
Site Location	**Survey Dates**	**Water Temperature (°F)**	**Target Species**	**Total Miles Shocked**	**Number of Stations**	**Gear**	**Number of Netters**
Pigeon Lake	5/23/2022	59	All	1.5	3	Boomshocker	2

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).

Survey Method

- Pigeon Lake was sampled according to Spring Electrofishing II protocols as outlined in DNR Fisheries Monitoring Protocols. The primary objective for these sampling periods is to count and measure bass and panfish. Other gamefish/ panfish may be sampled but are considered by-catch as part of this survey.
- Boom shockers were used to electrofish 1.5 miles of shoreline. Gamefish were collected and measured throughout, and panfish were collected and counted along 1.5 miles as well.

RELATIVE ABUNDANCE - CATCH PER UNIT EFFORT (CPUE)								
Species	**Total Number Captured**	**CPUE Total (number per mile)**	**Statewide Percentile**	**Overall Abundance Rating**	**Length Index**	**Length Index CPUE**	**Length Index Statewide Percentile**	**Length Index Abundance Rating**
Black crappie	7	11.3	67th	Moderate - High	> 8.0 inches	8.7	79th	Moderate - High
Bluegill	101	67.3	43rd	Moderate	>7.0 inches	2.0	33rd	Low
Largemouth bass	35	23.3	65th	Moderate	>14.0 inches	1.3	32nd	Low
Pumpkinseed	6	4.0	36th	Moderate	>7.0 inches	0	-	Low
Northern pike	9	6.0	89th	Moderate - High	>21.0 inches	2.7	94th	High

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

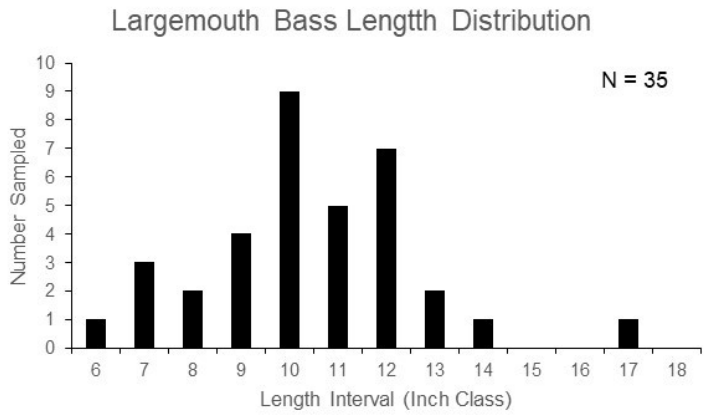
Total Number Measured	Average Length (inches)	Length Range (inches)	Stock and Quality Size (inches)	Stock Number	Quality Number	PSD	Percentile Rank	Size Rating
35	10.9	6.1 - 17.5	8.0 and 12.0 inches	31	11	35	18th	Low

RELATIVE ABUNDANCE (CPUE = NUMBER PER MILE)

Total Sampled	2013	2019	2021	2022	Historical Median	2022 Statewide Percentile Rank	2022 Abundance Rating
35	32.0	7.9	17.3	23.3	20.3	65th	Moderate

SIZE STRUCTURE (PSD) TRENDS

PSD by Year				Historical Median
2013	2019	2021	2022	
84	0	6	35	21



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, in this case electrofishing results are being used.

YEAR SIZE STRUCTURE METRICS

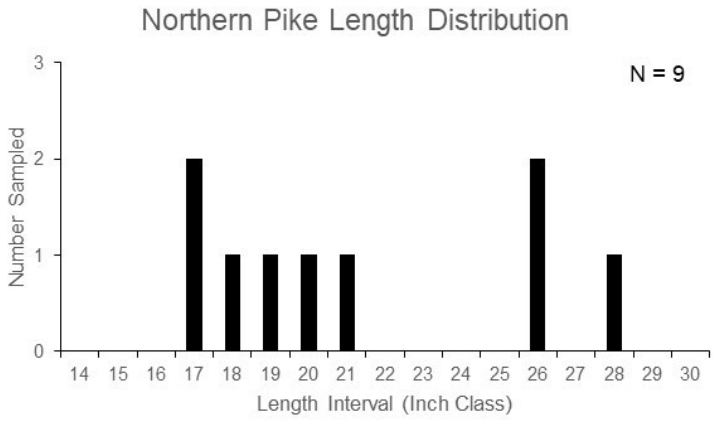
Total Number Measured	Average Length (inches)	Length Range (inches)	Stock and Quality Size (inches)	Stock Number	Quality Number	PSD	Percentile Rank	Size Rating
9	21.8	17.5 - 28.5	14.0 and 21.0	9	4	44	76th	Moderate - High

RELATIVE ABUNDANCE (CPUE = NUMBER PER MILE)

Total Sampled	2013	2019	2021	2022	Historical Median	2022 Statewide Percentile Rank	2022 Abundance Rating
9	5.0	2.9	2.0	6.0	4.0	89th	Moderate - High

SIZE STRUCTURE (PSD) TRENDS

PSD by Year				Historical Median
2013	2019	2021	2022	
40	25	33	44	37



Bluegill

- Bluegill (*Lepomis macrochirus*) are a very common panfish species distributed widely across many Wisconsin waterbodies. Bluegill 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 bluegill and therefore, results from both gears are presented for bluegill

2022 SIZE STRUCTURE METRICS

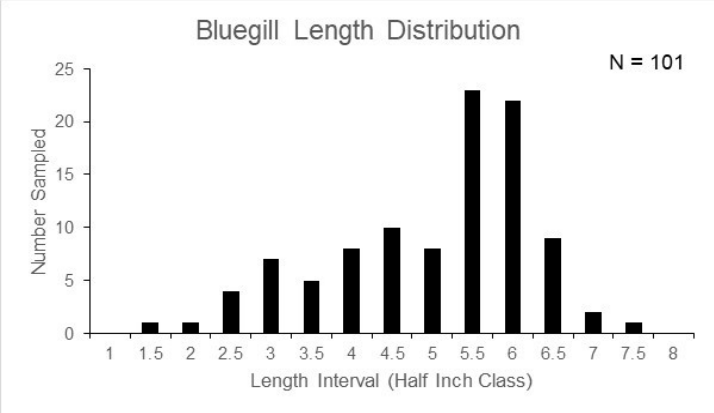
Total Number Measured	Average Length (inches)	Length Range (inches)	Stock and Quality Size (inches)	Stock Number	Quality Number	PSD	Percentile Rank	Size Rating
101	5.2	1.8 - 7.6	3.0 an 6.0	95	34	36	53rd	Moderate

RELATIVE ABUNDANCE (CPUE = NUMBER PER MILE)

Total Sampled	2013	2019	2021	2022	Historical Median	2022 Statewide Percentile Rank	2022 Abundance Rating
101	357.0	11.6	119.3	67.3	93.3	43rd	Moderate

SIZE STRUCTURE (PSD) TRENDS

PSD by Year				Historical Median
2013	2019	2021	2022	
18	25	25	36	25



Black Crappie

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

2022 SIZE STRUCTURE METRICS

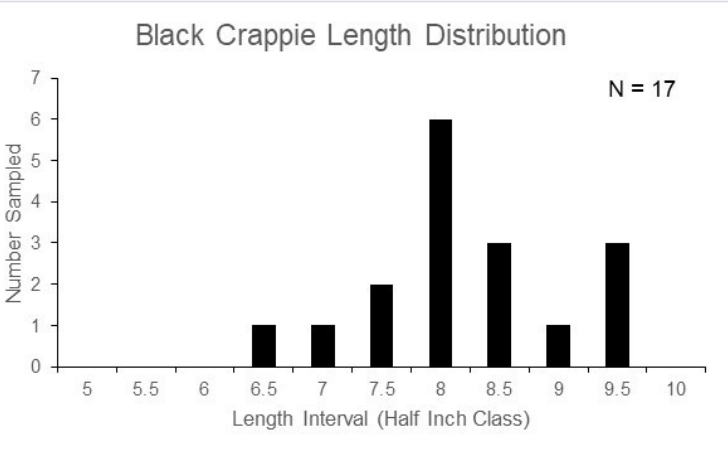
Total Number Measured	Average Length (inches)	Length Range (inches)	Stock and Quality Size (inches)	Stock Number	Quality Number	PSD	Percentile Rank	Size Rating
17	8.5	6.6 - 9.8	3.0 and 6.0	17	13	76	78th	Moderate - High

RELATIVE ABUNDANCE (CPUE = NUMBER PER MILE)

Total Sampled	2013	2019	2021	2022	Historical Median	2022 Statewide Percentile Rank	2022 Abundance Rating
17	1.0	2.2	0	11.3	1.6	67th	Moderate - High

SIZE STRUCTURE (PSD) TRENDS

PSD by Year				Historical Median
2013	2019	2021	2022	
-	0	-	76	42



Pumpkinseed

- Pumpkinseed (*Lepomis gibbosus*) are a common panfish species distributed widely across many Wisconsin waterbodies. Pumpkinseed typically spawn in nearshore areas consisting of sand or gravel substrate at approximately 60-70°F water temperatures. Electrofishing and fyke netting can be effective sampling gear for pumpkinseed and therefore, results from both gears are presented for pumpkinseed.

2022 SIZE STRUCTURE METRICS

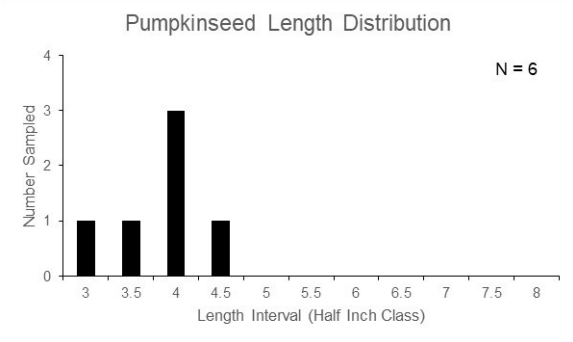
Total Number Measured	Average Length (inches)	Length Range (inches)	Stock and Quality Size (inches)	Stock Number	Quality Number	PSD	Percentile Rank	Size Rating
6	4.0	3.4 - 4.6	3.0 and 6.0	6	0	0	-	Low

RELATIVE ABUNDANCE (CPUE = NUMBER PER MILE)

Total Sampled	2013	2019	2021	2022	Historical Median	2022 Statewide Percentile Rank	2022 Abundance Rating
6	40.0	3.2	16.0	4.0	10.0	36th	Moderate

SIZE STRUCTURE (PSD) TRENDS

PSD by Year				Historical Median
2013	2019	2021	2022	
53	0	10	0	5



Full Summary

Largemouth Bass

Pigeon Lake supports a moderate density largemouth bass population with a catch rate of 23.3 per mile of electrofishing. A catch rate of 23.3 per mile ranks in the 65th percentile when compared to other lakes statewide. Relative abundance comparisons from the past survey indicate that density has rebounded to near historical levels since the drawdown in 2018. At present the population is mostly protected by the statewide regulation. As the population matures it will be critical in maintaining a balanced fishery between the bluegill and largemouth bass, with bluegills being a main prey species in the lake. One complicating factor may be the abundance of common carp at small sizes also provides an excellent food source for largemouth bass.

Northern Pike

Northern pike densities are at moderate to high levels with sampling of 6.0 northern pike per mile of electrofishing, which ranks in the 89th percentile statewide. However, northern pike are typically sampled using fyke netting gear. In the future a fyke netting survey should be conducted to determine the recovery of the northern pike fishery in Pigeon Lake. Northern pike will predate on the abundance of small common carp in Pigeon Lake.

Bluegill

Pigeon Lake supports a moderate density bluegill population with catch rates of 67.3 bluegill per mile of electrofishing from the boomshocker survey. A catch rate of 67.3 per mile ranks in the 43rd percentile when compared to catch rates statewide. Catch rates of bluegill greater than 7.0 inches was 2.0 per mile which ranks in the 33rd percentile and below average when compared to other lakes statewide. Size structure of bluegill in Pigeon Lake was characterized as moderate. Length data which resulted in a PSD value of 36 is ranked in the 53rd percentile when compared to others lakes throughout the state. Population trends from the previous surveys indicate that densities of bluegill in Pigeon Lake have begun to rebound since the fish kill the drawdown in 2018. However the size structure is higher than historical values observed prior to the drawdown. This is positive for the lake which previously supported a high density and low size structure. If predators continue to increase in Pigeon Lake this may give the bluegills a chance to grow to larger sizes if densities remain in check.

Pumpkinseed

The lake supports a moderate density pumpkinseed population with a catch rate of 4.0 per mile of electrofishing, which ranks in 36th percentile when compared to other lakes in the state. Furthermore catch rates of pumpkinseed greater than 7.0 inches is 0 per mile of electrofishing. Abundance levels of pumpkinseed have not rebounded to pre-drawdown densities in 2018. Size structure metrics indicate a PSD value of 0, which indicates lack of larger sized pumpkinseed in Pigeon Lake. In a few years many of these fish will grow into larger harvestable size pumpkinseed.

Black Crappie

Pigeon Lake supports a moderate to high density black crappie population with catch rates of 11.3 black crappie per mile of electrofishing from the boomshocker survey. A catch rate of 11.3 per mile ranks in the 67th percentile when compared to catch rates statewide. Size structure of black crappie in Pigeon Lake is considered moderate to high with a PSD value of 76, which ranks 78th when compared to statewide data.

Common Carp

Common carp have become very abundant since the water levels have been brought back up in the spring of 2019. DNR along with volunteers have taken out at least 1,000 of 10 - 14 inch carp over the last several years. Management actions continue to be needed to control common carp populations. Protection of predator species such as largemouth bass and northern pike should be encouraged to help keep carp abundance levels under control.