WISCONSIN DEPARTMENT OF NATURAL RESOURCES

SEII Summary Report

Big Twin Lake, Green Lake County

WBIC: 146500

Introduction And Objectives

In 2023, the Wisconsin Department of Natural Resources (DNR) conducted a one night electrofishing survey of Big Twin 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. The following report is a brief summary of that survey including the general status of the fish populations and future management options for Big Twin Lake.

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Lake Information

Acres: 78
Max. Depth: 46 ft
Shoreline Miles: 1.4+
Public Access: 1
Lake Class: Simple Warm Dark

Regulations:
Minimum length, Bag

Panfish: no minimum, 25 bag
Largemouth Bass: 14 inch, 5 bag
Northern Pike: 26 inch, 2 bag

SURVEY INFORMATION				
Site Location	**Survey Dates**	**Water Temperature (°F)**	**Target Species**	**Gear**
Big Twin Lake	05/23/2023	70	Bass and Panfish	Electroshocking

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.
- **Total abundance is a metric that describes population size and is estimated by mark and recapture.** In our study, all captured (insert species) were given a partial caudal fin (i.e., tail fin) clip and released. Each time the nets were checked, all (insert species) were examined for a partial caudal fin clip. The number of previously captured individuals (i.e., fin clipped) was recorded, and proportions of marked individuals to unmarked individuals were used to estimate the total abundance of the (insert species) population.
- **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 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 more plump than average.

Survey Method

- Big Twin Lake was sampled according to spring electroshocking (SEII) protocols as outlined in DNR Fisheries Monitoring Protocols. The primary objective for these sampling periods is to count and measure adult 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 1.4 miles of shoreline. Gamefish were collected and measured throughout, and panfish were collected and counted along 0.9 mile.

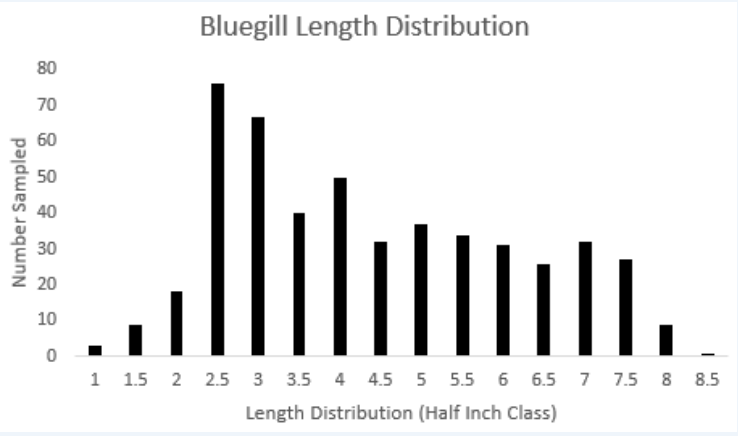
RELATIVE ABUNDANCE — CATCH PER UNIT EFFORT (CPUE)							
Species	**Total Number Captured**	**Average Length (Inches)**	**Length Range (inches)**	**CPUE/Mile**	**Statewide Percentile**	**Lake Class Percentile**	**Overall Abundance Rating**
Bluegill	492	4.58	1.2 - 8.5	546.67	97th	99th	High
Pumpkinseed	74	5.14	2.7 - 7.5	82.22	96th	95th	High
Yellow perch	5	7.74	4.6 - 9.5	5.56	35th	-	-
Largemouth bass	122	11.3	3.4 - 21	87.14	90th	75th	High
Northern pike	5	16.82	8.5 - 24.5	3.57	74th	-	-

Big Twin Lake Bluegill

YEAR SIZE STRUCTURE METRICS								
Total Number Measured	Average Length (inches)	Length Range (inches)	Stock and Quality Size (inches)	Stock Number	Quality Number	PSD	2014 PSD	Percentile Rank	Size Rating
492	4.58	1.2 - 8.5	3 and 6	386	126	33	17	50th	Moderate

RELATIVE ABUNDANCE (CPUE = NUMBER PER MILE)					
2014	2023	Historical Median	2023 Lake Class Percentile Rank	2023 Statewide Percentile Rank	2023 Abundance Rating
130	547	339	99th	97th	High

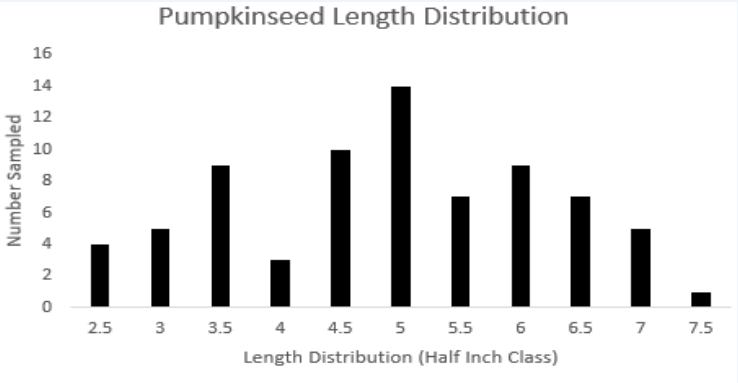
AVERAGE BLUEGILL AGE AT 6 INCHES					
Sex	Count	Average Age	Age Range	Lake Class-Rating	Regional Rating
Male	6	5.1	4 - 6	Average	Average
Female	4	5	5	Average	Average
All	10	5.1	4 - 6	Average	Average



Big Twin Lake Pumpkinseed

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
74	5.14	2.7 - 7.5	3 and 6	70	22	31	47th	Moderate

RELATIVE ABUNDANCE (CPUE = NUMBER PER MILE)					
2014	2023	Historical Median	2023 Lake Class Percentile Rank	2023 Statewide Percentile Rank	2023 Abundance Rating
17	82.2	49.6	96th	96th	High



Big Twin Lake Yellow Perch

SIZE STRUCTURE METRICS		
Total Number Measured	Average Length (inches)	Length Range (inches)
5	7.74	4.6 - 9.5

RELATIVE ABUNDANCE (CPUE = NUMBER PER MILE)				
2014	2023	Historical Median	2023 Statewide Percentile Rank	2023 Abundance Rating
1	5.6	3.3	35th	Low

AVERAGE YELLOW PERCH AGE AT 8 INCHES					
Sex	Count	Average Age	Age Range	Lake Class-Rating	Regional Rating
All	1	5	5	Average	Average

Big Twin Lake Black Crappie

SIZE STRUCTURE METRICS		
Total Number Measured	Average Length (inches)	Length Range (inches)
5	8.86	8.2 - 9.7

RELATIVE ABUNDANCE (CPUE = NUMBER PER MILE)				
2014	2023	Historical Median	2023 Statewide Percentile Rank	2023 Abundance Rating
4	5.6	4.8	47th	Moderate

AVERAGE BLACK CRAPPIE AGE AT 8 INCHES					
Sex	Count	Average Age	Age Range	Lake ClassRating	Regional Rating
Male	2	3	3	Average	Average
Female	1	4	4	Average	Average
All	3	3.33	3 - 4	Average	Average

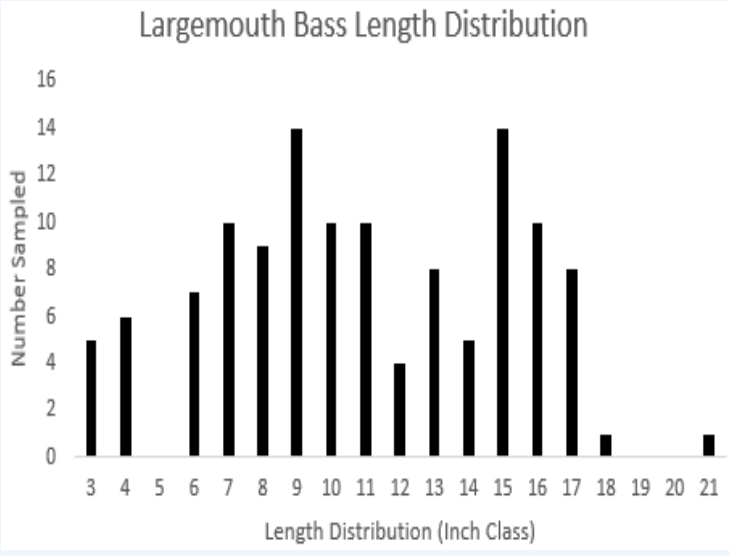
Big Twin Lake Largemouth Bass

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
122	11.3	3.4 - 21	8 and 12	94	51	54	42nd	Moderate

RELATIVE ABUNDANCE (CPUE = NUMBER PER MILE)					
2014	2023	Historical Median	Lake Class Percentile Rank	2023 Statewide Percentile Rank	2023 Abundance Rating
46	87.1	66.6	90th	95th	High

SIZE STRUCTURE (PSD) TRENDS				
PSD by Year		Historical Median	2023 Statewide Percentile Rank	2023 Size Structure Rating
2014	2023			
58	54	56	42nd	Moderate

AVERAGE LARGEMOUTH BASS AGE AT 12 INCHES					
Sex	Count	Average Age	Age Range	Lake Class-Rating	Regional Rating
All	4	3.75	3 - 4	Average	Average



Big Twin Lake Northern Pike

RELATIVE ABUNDANCE (CPUE = NUMBER PER MILE)				
2014	2023	Historical Median	2023 Statewide Percentile Rank	2023 Abundance Rating
8	3.6	5.8	74th	Moderate

YEAR SIZE STRUCTURE METRICS			
Total Number Measured	2014 Average Length (inches)	2023 Average Length (inches)	Length Range (inches)
5	17.9	16.8	8.5 - 24.5

Summary

Bluegill

Abundance is up significantly since the 2014 survey. At 547 per mile it ranks in the 97th percentile statewide and 99th in similar lake classes. Size structure has increased from the 2014 survey (PSD=33) but is on the lower end of what we would like to see and ranks in the 50th percentile statewide. Age structures show average growth with fish averaging 5.1 years old in the 6 inch category. Management should explore options to slightly decrease the abundance closer to 300/mile and increase size structure to (PSD=50).

Pumpkinseed

Abundance has increased significantly since 2014 from 17/mile to 82/mile ranking in the 96th percentile both statewide and by lake class. Size structure is moderate with 31% of fish larger than 3 inches also larger than 6 inches.(47th percentile).

Black Crappie

This survey method does not do a great job assessing the black crappie population occurring at a time of year after crappies have moved out from the shallow water. Abundance of black crappies is at a moderate level ranking in the 47th percentile compared to other lakes in the state. The number collected was similar to the 2014 survey and again we did not get enough fish to rank size structure, but fish ranged from 8.2-9.7 inches.

Yellow Perch

There were 5 yellow perch sampled compared to only 1 in 2014. This puts Big Twin in the 35th percentile compared to other lakes using the spring electrofishing 2 protocol. Lengths ranged from 4.6—9.5 inches.

Shocking Boat Used In Our SE2 Surveys
Photo by DNR

Largemouth Bass

Abundance increased to 87 per mile and has nearly doubled when compared to the previous survey (46/mile). It is now at the 95th percentile statewide and 90th percentile when compared to lakes in the same lake class. Size structure was PSD=54 and is moderate remaining relatively unchanged compared to survey in 2014 (PSD=58) ranking at the 42nd percentile compared to statewide averages. An ideal management goal would be to decrease abundance slightly to around 70/mile and increase the size structure slightly to PSD≥60%. At this time management will be to promote nearshore woody habitat and assess the status of the largemouth bass population in our next survey tentatively scheduled in 2033.

Northern Pike

This type of survey is not meant to assess the northern pike population, but at 3.6/mile the abundance has decreased from 8.0/mile in 2014.

Other Species

These included yellow bullhead(1), black bullhead(1), goldens shiners 15 and adult common carp(2).