



WISCONSIN DEPARTMENT OF NATURAL RESOURCES

SEII Summary Report Marl Lake, Waushara County WBIC: 105800

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Introduction And Objectives

In 2023, the Wisconsin Department of Natural Resources (DNR) conducted a one night electrofishing survey of Marl 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 Marl Lake.

SURVEY INFORMATION

Site Location	Survey Dates	Water Temperature (°F)	Target Species	Gear
Marl Lake	05/26/2023	65	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.

DNR Contact

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Lake Information

Acres: 41
Max. Depth: 34 ft
Shoreline Miles: 1.3+
Public Access: 1
Lake Class: Simple Warm Clear
Lake information changes with water levels.

Regulations:

Minimum length, Bag

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

Survey Method

- Marl 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 shocker was used to electrofish 1.3 miles of shoreline. Gamefish and panfish were collected and measured throughout.

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	521	5.7	2.4 – 9.1	401	95th	93rd	High
Pumpkinseed	18	7.0	5.5 – 8.6	14	66th	66th	Moderate
Black crappie	14	9.9	9.1 – 13.0	10.8	66th	-	Moderate
Yellow perch	15	5.4	2.9 – 7.7	11.5	56th	-	Moderate
Largemouth bass	131	11.6	6.4 – 18.1	101	97th	93rd	High
Northern pike	3	19.4	15.0 – 22.5	2.3	60th	-	Moderate



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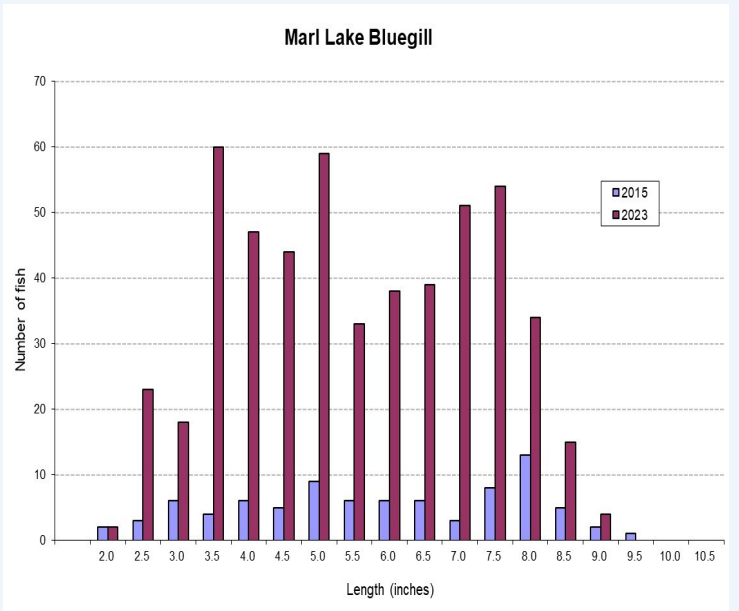
Marl Lake Bluegill

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
521	5.7	2.4 – 9.1	3 and 6	496	235	47	66th	Moderate

RELATIVE ABUNDANCE (CPUE = NUMBER PER MILE)						
2006	2015	2023	Historical Median	2023 Lake Class Ranking	2023 Statewide Percentile Rank	2023 Abundance Rating
76	85	401	187	93rd	95th	High

SIZE STRUCTURE (PSD) TRENDS				
PSD by Year			Historical Median	
2006	2015	2023		
34	55	47	45	

AVERAGE BLUEGILL AGE AT 6 INCHES					
Sex	Count	Average Age	Age Range	Lake Class-Rating	Regional Rating
Male	5	4.6	4 – 5	Average	Average
Female	5	5.0	5	Average	Average
All	10	4.8	4 - 5	Average	Average

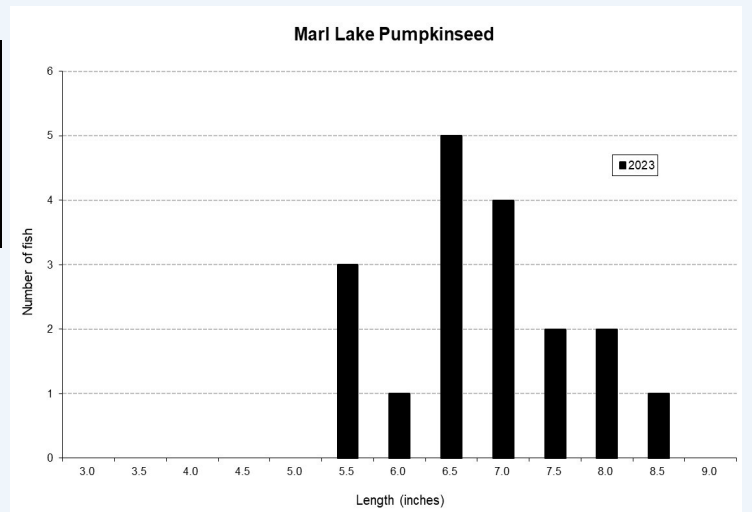


Marl Lake Pumpkinseed

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
18	7.0	5.5 – 8.6	3 and 6	18	15	83	95th	High

RELATIVE ABUNDANCE (CPUE = NUMBER PER MILE)					
2006	2015	2023	Historical Median	2023 Statewide Percentile Rank	2023 Abundance Rating
1	0	14	5	66th	Moderate

SIZE STRUCTURE (PSD) TRENDS				
PSD by Year			Historical Median	
2006	2015	2022		
Too Few Fish	No Fish	83	-	





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Marl Lake Black Crappie

SIZE STRUCTURE METRICS			RELATIVE ABUNDANCE (CPUE = NUMBER PER MILE)					
Total Number Measured	Average Length (inches)	Length Range (inches)	2006	2015	2023	Historical Median	2023Statewide Percentile Rank	2023 Abundance Rating
14	9.9	9.1 – 13.0	1	0	10.8	3.9	38th	Low

Marl Lake Yellow Perch

SIZE STRUCTURE METRICS			RELATIVE ABUNDANCE (CPUE = NUMBER PER MILE)					
Total Number Measured	Average Length (inches)	Length Range (inches)	2006	2015	2023	Historical Median	2023 Statewide Percentile Rank	2023 Abundance Rating
15	5.4	2.9 – 7.7	3	3	11.5	5.8	36th	Low

Marl Lake Largemouth Bass

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
131	11.6	6.4 – 18.1	8 and 12	120	56	47	31st	Low

RELATIVE ABUNDANCE (CPUE = NUMBER PER MILE)						
2006	2015	2023	Historical Median	2023 Lake Class Ranking	2023 Statewide Percentile Rank	2023 Abundance Rating
225	95	101	140	93rd	98th	High

SIZE STRUCTURE (PSD) TRENDS						AVERAGE LMB AGE AT 12 INCHES					
PSD by Year			Historical Median	2023 Statewide Percentile Rank	2023 Abundance Rating	Sex	Count	Average Age	Age Range	Lake Class Rating	Regional Rating
2006	2015	2023									
53	45	47	48.3	33rd	Low	All	6	3.5	3 - 4	Above Average	Above Average

Marl Lake Northern Pike

SIZE STRUCTURE METRICS		
Total Number Measured	Average Length (inches)	Length Range (inches)
3	19.4	15.0 – 22.5

RELATIVE ABUNDANCE (CPUE = NUMBER PER MILE)					
2006	2015	2023	Historical Median	2023 Statewide Percentile Rank	2023 Abundance Rating
7	4	2.3	4.1	77th	High



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Summary

Bluegill

- Abundance has increased substantially since the 2006 and 2015 surveys. At 401 per mile it ranks in the 95th percentile statewide and 93rd compared to lakes in same lake class. Size structure is near historical median at PSD = 47% and ranks in the 66th percentile. Age structures show average growth with average age at 6 inches = 4.8 years.
- Management goals would be to maintain the abundance from 200-400 fish per mile and maintain size structure between PSD 40-60%. Growth rates could potentially be a concern with abundance levels high. Maintain growth rates and upon re-survey include age and growth.

Pumpkinseed

- Abundance has increased significantly since 2015 from 0/mile to 14/mile ranking in the 66th percentile. Size structure is high with 83% of fish larger than 3 inches also larger than 6 inches (95th percentile). An ideal management goal would be to maintain abundance and size structure.

Black Crappie

- Abundance has increased significantly since 2015 from 0/mile to 10.8/mile ranking in the 38th percentile and still considered low compared to lakes statewide.

Yellow Perch

- Abundance has increased significantly since 2015 from 3/mile to 11.5/mile ranking in the 36th percentile and still considered low compared to lakes statewide

Largemouth Bass

- Abundance of 101 per mile has remained relatively unchanged since 2015 (93rd percentile). Size structure of PSD = 47 is in the low level and unchanged over the last 2 surveys, ranking in the 33rd percentile.
- An ideal management option would be to maintain or slightly decrease abundance closer to 50/mile and increase the size structure near PSD \geq 60%. Maintain growth rates which are above average.

Northern Pike

- This type of survey is not meant to assess the northern pike population, but at 2.3/mile is considered moderately high. This abundance is down over the years still ranking in the 77th percentile.
- There has been no concerns from the public on the northern pike fishery in Marl Lake.

Habitat

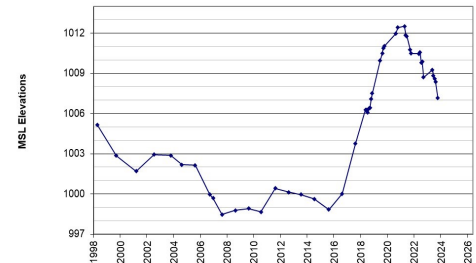
Habitat is many times a limiting factor on local lakes, water levels fluctuate in the central sands portion of the state, perhaps more so than other areas. Water levels have been up on all of the lakes in our area recently and with the higher water levels over the years, Marl Lake has had some suitable habitat flooded such as areas of woody vegetation and trees. As the water recedes, much of this habitat will be on dry land. Trees that have died are good habitat if left to naturally fall or are used in permissible fish sticks projects. Anyone wanting to improve habitat is referred to the following link for some ideas and information [Fish sticks](#).

[Improving lake habitat | Fishing Wisconsin | Wisconsin DNR](#)

History

Marl Lake is a 41 acre clear water seepage lake with a maximum depth of 34 feet. Marl Lake experiences large fluctuations in water level due to its location in the watershed. A county park on the NE end of the lake provides a swimming, picnic and boat launch area. Marl Lake has a history of having an overabundant stunted panfish fishery. Seine hauls in 1955 and 1956 revealed a good largemouth bass population and overabundant slow growing panfish population. Walleye fingerlings were stocked in 1956 as an attempt to control the bluegill population. A seine haul in 1959 showed an increase in panfish numbers and a decrease in largemouth bass numbers. No walleyes were sampled. A new 3 phase management plan was then approved by the local fisheries biologist Mike Primising. Phase 1 was to seine the lake in spring of 1960 to remove any gamefish or other desirable fish and stock in local waters. Phase 2 was to apply a chemical to eradicate the remaining fish population and initiated a controlled stocking program. After a successful chemical treatment in 1960 it was decided to manage Marl Lake as a trout/largemouth bass fishery. With limited competition, the trout fishery was an instant success. Boomshocker surveys done in September 1961 and 1962 indicated the 1961 largemouth bass reintroduction was very successful. No trout were sampled, but trout fishing was very good from opening day in May to mid July. In March of 1963 a gill net/fyke net survey was done to evaluate the trout fishery. It was determined that trout would carry over in Marl Lake. Many anglers participated and were very pleased with this new fishery. Trout fishing success started declining in 1965 coinciding with the steady increase in bluegill and yellow perch. Bluegill went from 1 fish in 1965 seine haul to over 3,000 in the 1968 seine haul. In 1968 the decision was made to no longer stock or manage Marl Lake for trout. By the early 1970's panfish were again overabundant. Seine haul panfish removals were done in 1971, 1973, 1977 and 1985. The panfish were used to supplement other area lakes and restock freeze out lakes. A fall boomshocker run was done October 11, 1998 on Marl Lake. Largemouth bass and northern pike were the only gamefish species sampled. The largemouth bass population appeared to be in good shape with a CPE = 126 fish/hr > 8 inches, a PSD12 = 67 and RSD14 = 31 with fish from 2.2-17.0 inches. There were 9 northern pike sampled from 10.7-21.4 inches. Bluegills were the most abundant fish sampled with a CPE = 686 fish/hr. Size structure was poor with a PSD6=18 and RSD7 = 3. The 2006 boomshocking survey seems to show a reversal in the predator/prey balance in Marl Lake. One reason for this could be the very low water levels. With water levels down, nearshore habitat/cover for bluegills is limited. With water levels still extremely low in 2015 the spring electrofishing survey results showed a better balanced bass population, but the bluegill population remained low, similar to 2006.

Marl Lake Elevations



Water level Marl Lake 2018



Water level Marl Lake 2021