

Marshall Lake

Allegheny County

April 2023 Night Boat Electrofishing and Trap Net Survey

Marshall Lake is a 14.3-acre impoundment fed by North Fork Pine Creek in Allegheny County northwest of Pittsburgh, PA. The lake resides within North Park, which belongs to the Allegheny County Parks system, and is just upstream of the larger, neighboring North Park Lake. Marshall Lake is relatively shallow, with an average depth of approximately 4.5 ft and a maximum depth of approximately 9 ft. The lake contains numerous laydowns along its west bank that serve as habitat for its resident fish populations. Boating is not permitted on the lake. However, the small lake is easily accessible across a majority of its shoreline and features two small islands, one of which, named Marshall Island, that can be reached by a small walking bridge, and offers handicap accessibility (Figure 1). Additionally, ice fishing is permitted on Marshall Lake. [Big Bass Program Regulations](#) were implemented on Marshall Lake in 2016 to manage the bass population. All other fish species in the lake are regulated by [Commonwealth Inland Waters Regulations](#). To date, the Pennsylvania Fish and Boat Commission (PFBC) does not currently stock Marshall Lake.



Figure 1: Aerial Map of Marshall Lake, Allegheny County

Marshall Lake was previously surveyed in 2013, and the primary purpose of the 2023 survey was to reassess the size structure, abundance, and quality of the lake's resident gamefish and panfish populations. The results

of the survey will be used to update the PFBC management plan for the impoundment. Three Pennsylvania style trap nets and two, night electrofishing runs were utilized to sample the lake’s fish populations. A total of 10 species were captured from the three trap nets set in 2023 (Table 1).

Table 1. Number and size range of fish species captured from trap nets at Marshall Lake in April 2023.

Fish Species	Frequency	Size (Inches)	Comments
White Crappie	82	2 - 11	3% ≥ 9 inches
Black Crappie	50	3 - 8	No fish over 9 inches
Bluegill	73	3 - 7	4% ≥ 7 inches
Pumpkinseed	35	4 - 7	6% ≥ 7 inches
Channel Catfish	5	19 - 25	All quality fish
Brown Bullhead	5	12 - 15	
Yellow Bullhead	1	8	
Common Carp	6	Not Measured	
White Sucker	20	Not Measured	
Gizzard Shad	86	Not Measured	

Crappies were the most abundant fish captured with 132 combined individuals of White Crappie and Black Crappie. The total catch per unit effort (CPUE) for White Crappie and Black Crappie combined was 2.5 fish/hr, a considerable decrease from the 2013 survey where a total of 524 individuals were captured for a total CPUE of 14.28/hr (Figure 2). As for quality-sized crappie (≥ 9 inches), only 3% of White Crappies were ≥ 9 inches and no Black Crappies were ≥ 9 inches. The combined CPUE for White Crappies and Black Crappies ≥ 9 inches was 0.05/hr. This falls below both the 2013 CPUE for quality-sized crappie (0.15/hr) and the statewide Panfish Guidelines CPUE of 0.25 crappie ≥ 9 inches/hr. Therefore, Marshall Lake does not currently possess a high-quality crappie fishery.

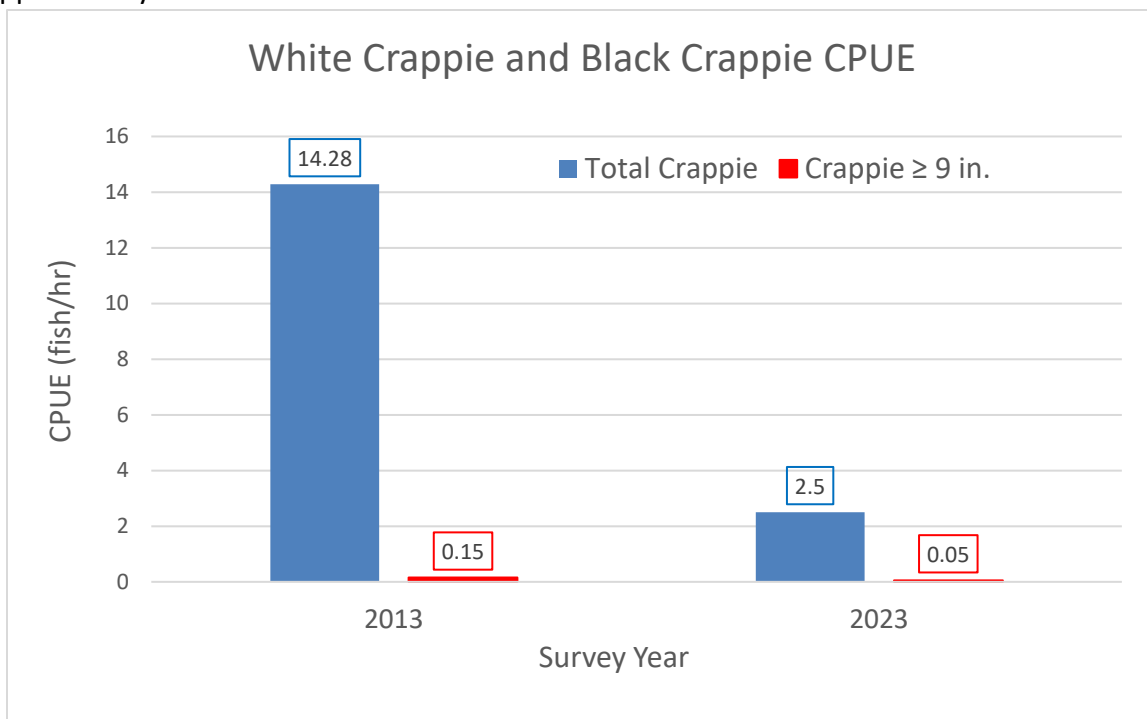


Figure 2. Trap net catch rate of total crappie and crappie ≥ 9 inches in length from Marshall Lake in 2013 and 2023.

Bluegill and Pumpkinseed abundance also saw a decrease from our 2013 survey to our 2023 survey (Figure 3). In 2023, 73 Bluegills and 35 Pumpkinseed were captured for a combined total sunfish CPUE of 2.08 fish/hr, which was less than 6.42 fish/hr in 2013. The same declining trend occurred with quality-sized sunfish (≥ 7 inches), as the combined CPUE dropped from 0.31 fish/hr in 2013 to 0.10 fish/hr in 2023. The recent low catch rates and size distribution of the sunfish in Marshall Lake can most likely be attributed to the presence of Gizzard Shad, which heavily compete with sunfish.

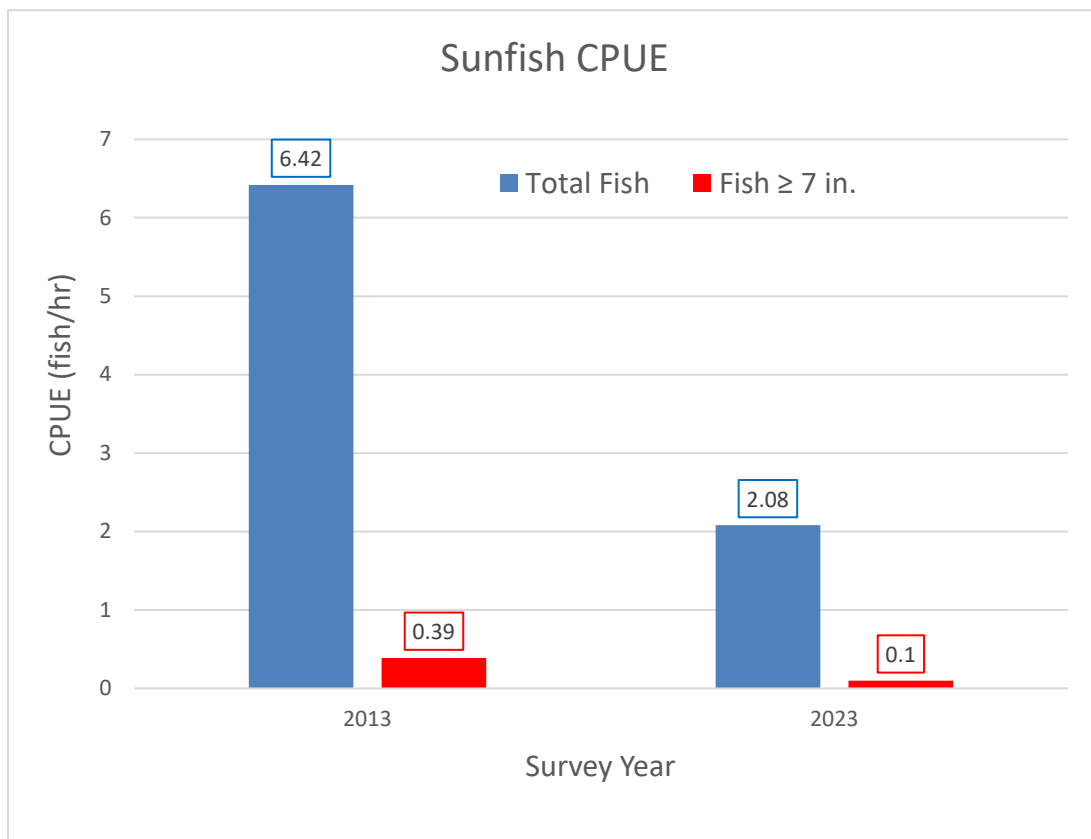


Figure 3. Trap net catch rate of total sunfish and sunfish ≥ 9 inches in length from Marshall Lake in 2013 and 2023.

While the crappie and sunfish populations of Marshall Lake are less than desirable, the Channel Catfish population appears to be improving with the presence of Gizzard Shad as a major food source. In the 2013 survey, only one 10-inch Channel Catfish was captured. However, in our 2023 survey, five Channel Catfish were captured with the smallest being 19 inches and the largest being 25 inches, all quality-sized fish (≥ 16 inches). The total CPUE and the CPUE for quality-sized Channel Catfish for the 2023 survey were both 0.09 fish/hr. This is an improvement from the total CPUE and CPUE for quality-sized channel catfish from 2013, which were 0.02 fish/hr and 0 fish/hr (Figure 4). Therefore, anglers at Marshall Lake have opportunity to target a developing population of quality-sized Channel Catfish.



Area 8 Fisheries Biologist Aides Darby Byington and Rhett Pletcher with two nice Channel Catfish.

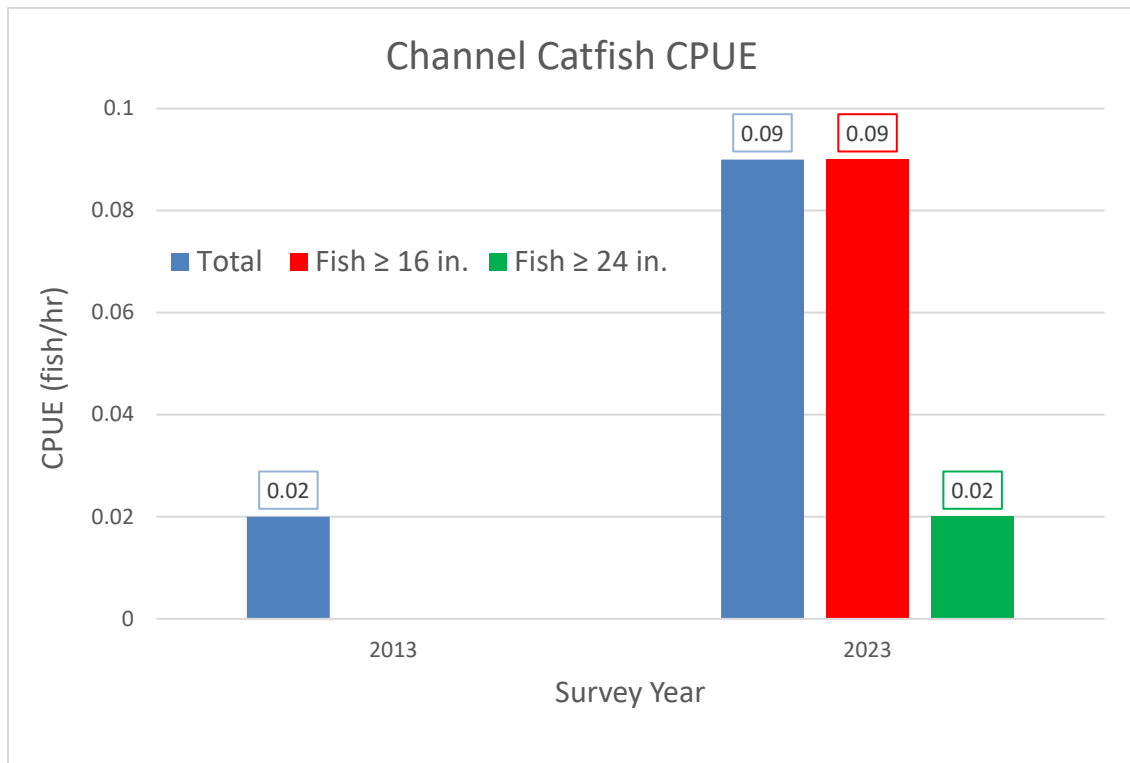


Figure 4. Trap net catch rate of total Channel Catfish and Channel Catfish ≥ 16 inches and ≥ 24 inches in length from Marshall Lake in 2013 and 2023.

Two-night electrofishing runs were performed to survey the Largemouth Bass population of Marshall Lake. The two runs of the 2023 survey produced a total of 81 individuals ranging in sizes from 4 inches to 16 inches

(Table 2). The mean total CPUE for the 2023 survey was 103.65 fish/hr, an increase from the 2013 mean total CPUE of 43.07/hr. The CPUE of quality-sized bass (≥ 12 inches) was also greater in the 2023 survey at 16.63 fish/hr compared to 14.26 fish/hr in 2013. The 2023 survey yielded a decrease in CPUE of bass 15 inches or greater from 2013, with the CPUE dropping from 6.35 fish/hr to 2.61 fish/hr. Despite a lower catch rate of this size class, all calculated CPUE's from the 2023 survey exceeded Big Bass Guidelines (Figure 5).

Table 2. Total catch of Largemouth Bass from night electrofishing at Marshall Lake in 2023.

Species	Frequency	Size (Inches)	Comments
Largemouth Bass	81	4 – 16	16% ≥ 12 inches 2% ≥ 15 inches

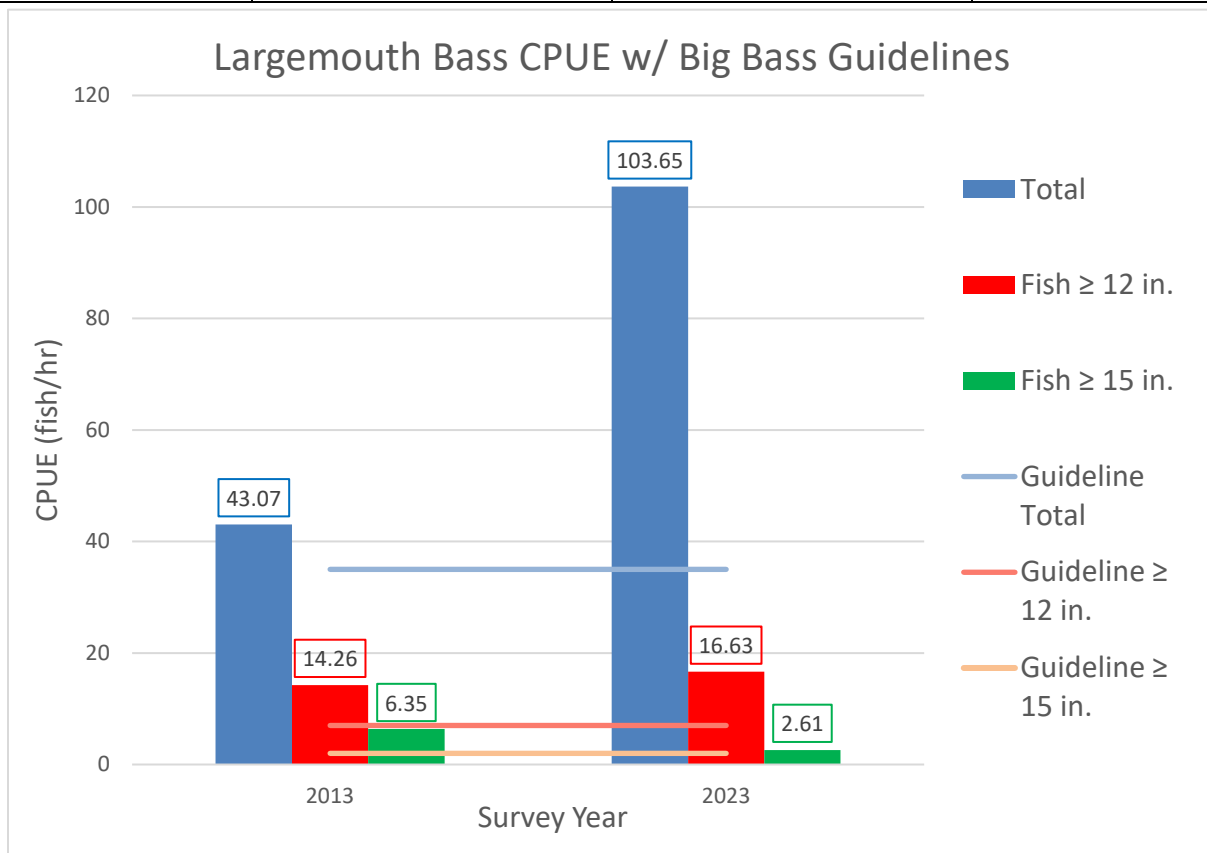


Figure 5. Largemouth Bass collected per hour during night electrofishing at Marshall Lake in 2013 and 2023 with comparison to Big Bass Guidelines.

Overall, Marshall Lake offers accessible recreational fishing in Allegheny County in a smaller setting compared to that of its larger neighbor, North Park Lake. The lake's crappie and sunfish populations are lacking in abundance and quality-sized fish due to the presence of Gizzard Shad in the lake, which are potentially inducing slow growth and reduced survival of resident panfish. However, Gizzard Shad provide forage for Largemouth Bass and a developing Channel Catfish population with large individuals present. Largemouth Bass are rather abundant in the lake; however, only a few legal (≥ 15 inches) fish were collected during the 2023 survey.

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