

# **Francis E. Walter Reservoir**

## **Luzerne/Carbon Counties**

### **2023 Fish Population Evaluation: Night-boat Electrofishing Survey**

Francis E. Walter Reservoir (F.E. Walter) is an impoundment in Luzerne and Carbon counties located at the confluence of the Lehigh River and Bear Creek. The F.E. Walter Reservoir is owned and operated by the U. S. Army Corps of Engineers (USACE) as a flood control facility and secondarily for supporting water-based recreation. Lake levels vary seasonally, from the wintertime base pool of 1,300 feet (80 acres) to the late spring target pool elevation of 1,370 feet (480 acres) as per the annual Recreation Operations Plan. A popular location for fishing, kayaking, and boating, there are two separate launch points into the lake. A kayak ramp on the western shore (GPS: 41.114821, -75.721863), and a motorboat ramp on the east bank (GPS: 41.113035, -75.717357), both located near the dam breast. Boat motors are limited to 10 horsepower. Populations of Smallmouth Bass, Yellow Perch, Black Crappie, and Bluegill inhabit the reservoir. The reservoir is managed as a Stocked Trout Water under Commonwealth Inland Water regulations within the Open to Year-round fishing program. Trout may be harvested during the regular season (opening day of trout season through Labor Day), and the extended season (Labor Day through 3<sup>rd</sup> week of February), being catch-and-immediate-release for trout all other dates in the calendar year. A mix of Brook Trout and Rainbow Trout are stocked preseason with only Rainbow Trout being stocked during in-season stockings.

Pennsylvania Fish and Boat Commission (Commission) Area 5 biologists completed 12 single-pass, night-boat electrofishing surveys in 2023 to evaluate game fish populations. At each 10-minute site (approximately 1,150 feet), all species were collected from shoreline habitats. In total, sampling encompassed 2.6 miles of the shoreline. After capture, all fish were enumerated by species, total length measured, and released.

A total of 391 fish representing 12 different species were captured during June 20-21, 2023. The most frequently captured species were Smallmouth Bass (N = 167), Yellow Perch (N = 70), Bluegill (N = 61), and Rock Bass (N = 44). Black Crappie, Brown Bullhead, Yellow Bullhead, Largemouth Bass, Common Carp, White Sucker, Redbreast Sunfish, and Chain Pickerel were also observed infrequently (N < 30).

Total lengths (inches) were recorded to characterize species-specific size distributions (Table 2). Seventy-eight percent (78%) of Smallmouth Bass fell into the 4-inch to 8-inch length groups with only one fish (17-inches) (<1%) was of preferred size ( $\geq 12$ -inches). All (N = 61; 100%) Bluegills were less than or equal to 6-inches long. The most common length of Black Crappies was 2 inches (13%), 6 inches (34%), and 7 inches (13%) with thirteen percent (13%) of the Black Crappies being 8 inches or longer. Yellow Perch ranged from 2 - 9 inches with the most common length groups being 4 inches (21%) and 7 inches (21%). Fourteen percent were 8 inches long or longer.

### **Comparison to Historical Surveys**

A limited number of historical surveys are available for comparative purposes. Previous night-boat electrofishing surveys were completed in 1981, 2007, and 2022; however, due to differences in methodology the only directly comparable surveys are the summer night-boat electrofishing surveys conducted in 2007 and 2022. The 2023 report will enhance our knowledge of in-lake fishes, but with only two other surveys for comparison, conclusive statements about population trends would be spurious. Nevertheless, comparison to the 2007 and 2022 spring-time collections may offer some insight to the general state of the present-day fish populations.

Calculating the mean of catch-per-unit-effort (CPUE; fish/h) allows comparability between night-boat electrofishing surveys (Figure 1). Excessively low capture of Largemouth Bass precludes inferences about the structure of the population present in F.E. Walter. Smallmouth Bass catch rates in 2023 (85.1 fish/h) were higher than in 2022 (80.8 fish/h), and 2007 (11.0 fish/h). Yet, broadly overlapping confidence intervals are not suggestive of an increasing trend. The CPUE of Black Crappies in 2023 (16.8 fish/h) was lower than 2022 (52.5 fish/h); however it was higher than observed in 2007 (7.5 fish/h). Catches of Pumpkinseeds (2007: 11.3 fish/h; 2022: 0.0 fish/h; 2023: 0.0 fish/h), Bluegills (2007: 66.0 fish/h; 2022: 42.6 fish/h; 2023: 30.5 fish/h) and Yellow Perch (2007: 148.7 fish/h; 2022: 54.0 fish/h; 2023: 45.2 fish/h) were all less frequent in 2023 than observed in 2007 and 2022. The lack of Pumpkinseeds in both the 2022 and 2023 catches is interesting. Presumably, their occurrence in the 2007 survey was indicative of an established population, but at a relatively low abundance. Thus, their absence in recent years may be reflective of detectability and/or under sampling of the shallow littoral habitat type characteristic of up-lake habitats.

Comparison of length distributions across the 2007, 2022 and 2023 collections were suggestive of multiple year classes; composed of both juvenile and adult life stages (Figure 2). The variability in length distributions over the years may reflect the influence of successful recruitment of juvenile fish into adulthood. Relatively high catch rates and wide ranges of length-classes indicate F.E. Walter is supportive of self-sustaining fish populations, where larger individuals tend to be infrequently observed. However, the observed disparity in length distributions is perhaps a result of catchability, as larger, adult fishes tend to inhabit the deeper waters of the reservoir beyond the influence of the electrofishing gear.

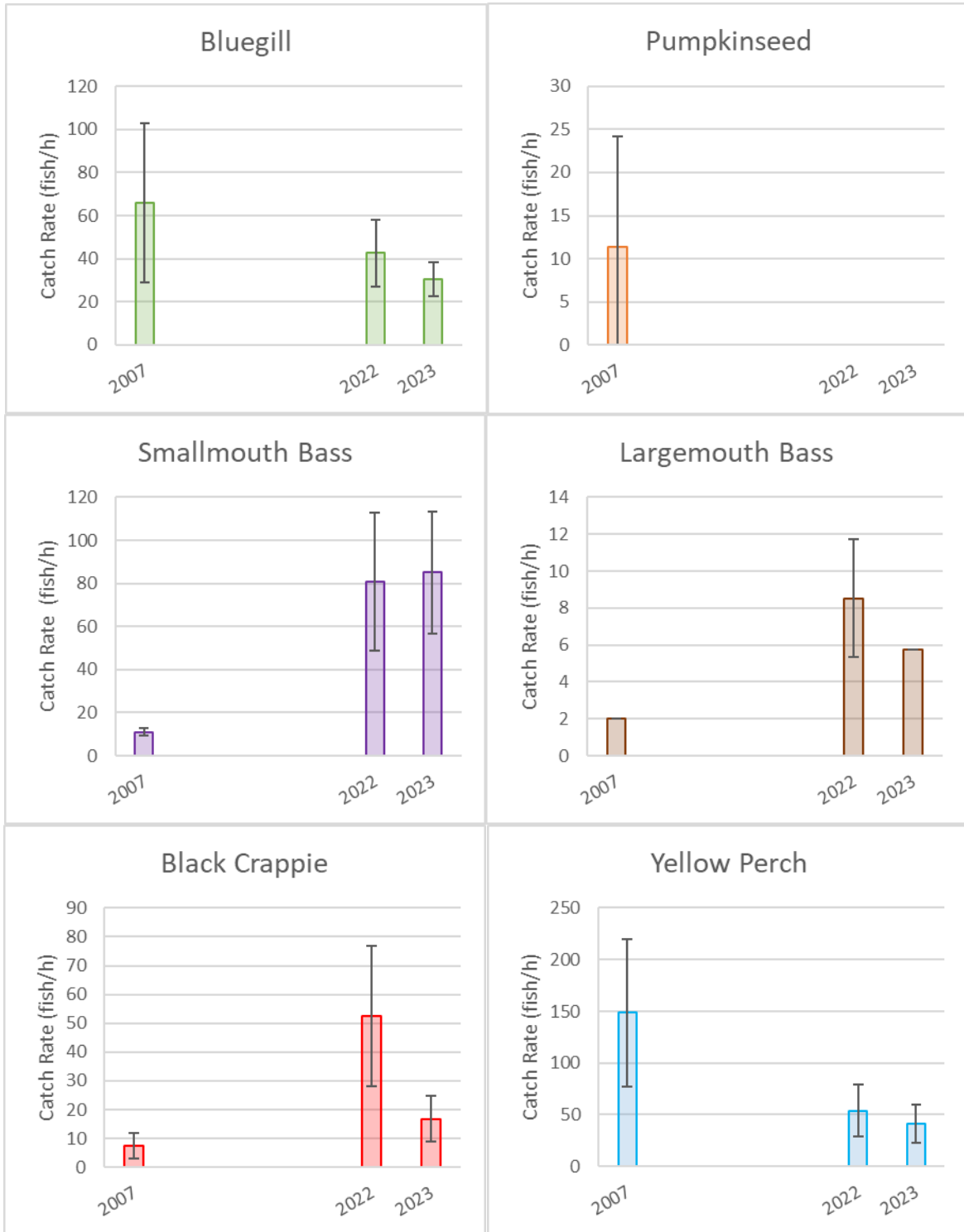
## **Conclusions**

The black bass and panfish populations in F.E. Walter remain supportive of angling opportunities. The continued presence of young-of-year and yearling fishes is indicative of natural reproduction, and, in time, these smaller fish will integrate into the larger length-classes, which anglers can look forward to landing. The Commissions anticipates population monitoring will continue into the foreseeable future.

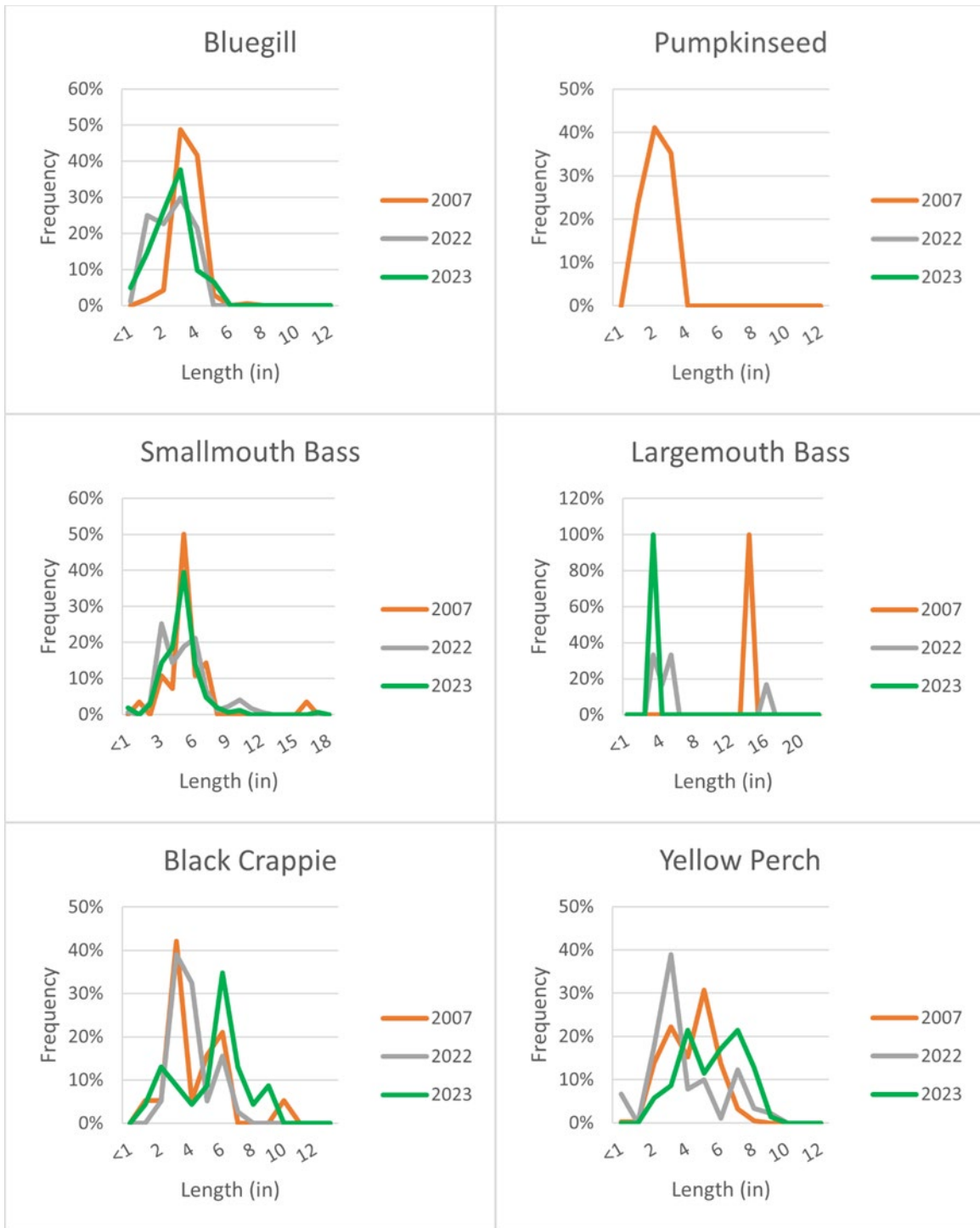
**Table 1. Length frequency (inches) of gamefish species caught during night electrofishing surveys at Francis E. Walter Reservoir, June 2023**

Length (in)	Species								
	Yellow Bullhead	Brown Bullhead	Chain Pickerel	Rock Bass	Bluegill	Smallmouth Bass	Largemouth Bass	Black Crappie	Yellow Perch
0	0	0	0	0	3	3	0	0	0
1	0	0	0	2	9	0	0	0	0
2	0	0	0	9	16	5	0	1	4
3	0	0	0	12	23	24	1	3	6
4	0	0	0	10	6	31	0	2	15
5	1	0	0	5	4	66	0	1	8
6	3	0	0	3	0	23	0	2	12
7	3	1	0	2	0	8	0	8	15
8	3	1	0	1	0	3	0	3	9
9	2	2	0	0	0	1	0	1	1
10	0	0	0	0	0	2	0	2	0
11	0	0	1	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	1	0	0	0
18	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0
Total	12	4	1	44	61	167	1	23	70

**Figure 1. Annual mean catch per unit effort (CPUE; fish/h) and associated 95% confidence intervals for selected species captured in night-boat electrofishing surveys on Francis E. Walter Reservoir, 2007 to 2023.**



**Figure 2. Length-frequency distributions (total length; inches) of selected species captured during night-boat electrofishing surveys on Francis E. Walter Reservoir, 2007 to 2023.**



***Elliot Hoogerland***  
***Area 5 Fisheries Biologist Aide***

***Paul Kameen***  
***Area 5 Fisheries Biologist Aide***

***Daryl Pierce***  
***Area 5 Fisheries Manager***