

# Prompton Lake

## Wayne County

### **2021 Fish Population Evaluation: Trap netting and Night Electrofishing Surveys**

Prompton Lake is a 290-acre impoundment located in Wayne County, within [Prompton State Park](#). The [U.S. Army Corps of Engineers](#) operate the lake as a multi-purpose project (i.e., flood control and recreation). The only boat launch is located on the west shore off State Route 170. Boaters are limited to a maximum of 10 horsepower. The lake supports self-sustaining, naturally reproducing populations of panfishes and black bass. Muskellunge yearling are stocked biennially (~ 400 fish), as guided by the statewide [Muskellunge Plan](#) and [2017 update](#). Fish habitat structures (i.e., porcupine cribs and vertical planks) have been placed in the lake to provide aquatic species with improved habitats. The lake is currently managed under [Commonwealth Inland Waters regulation program](#). Prompton Lake is also managed under the [Brood Stock Lakes Program](#) to aid hatchery culture operations for Muskellunge and pickerels. From April 1 through May 31 fishing for Muskellunge, Tiger Muskellunge, Northern Pike and pickerel is permitted on a catch and release/no harvest basis, only.

Biologists from Area 5, Area 4, and Pleasant Mount Hatchery completed evaluation of Prompton Lake fish populations using two different capture methodologies. Twelve overnight trap nets were set, April 26 to April 30, 2021. Net leads were deployed perpendicular to shore, directing fish to the pot, which were in water depths of 1.6 to 12.4 feet. A total of seven, single-pass, night-boat electrofishing sites were accomplished on June 14, 2021 along the lake shoreline. Electrofishing transects were each 20-minutes in duration, cumulatively encompassing approximately 3.0-miles of shoreline. In both surveys, all fish species captured were enumerated and measured for total length.

#### **2021 Trap Netting**

Trap netting captured a total of 656 fish representing 15 different species (Table 1). Bluegill (N = 234) and Black Crappie (N = 163) were the most abundant fish captured. They were followed by Yellow Bullhead (N = 51), Pumpkinseed (N = 46), White Sucker (N = 33), Smallmouth Bass (N = 32) and Yellow Perch (N = 32). Other species, such as Brown Bullhead, Chain Pickerel, Largemouth Bass, Muskellunge, Rock Bass, and Walleye were infrequently (N < 30 individuals) captured. The low catches of bass were anticipated as trap nets are not effective for capturing these species.

Total lengths of captured fish during the 2021 survey were tabulated to gain insight to population size distributions (Table 2). Observed size frequency for panfishes varied with peak abundance of Black Crappie, Bluegill, Pumpkinseed, and Yellow Perch occurring at 9-in., 8-in., 7-in., and 5-in., respectively. Size distributions for Black Crappie, Bluegill and Pumpkinseed were all indicative of quality-sized ( $\geq 8$ -in.,  $\geq 6$ -in., and  $\geq 6$ -in. respectively) fishes within their respective populations. Whereas, few quality-sized ( $\geq 8$ -in.) Yellow Perch were captured. Occurrence of trophy-sized panfish were not regularly observed, excepting for a single 17-inch Black Crappie. The few Largemouth Bass (N = 2) and Smallmouth Bass captured in trap nets, were of quality-size ( $> 12$ -in.).

**Table 1. Total catch (N) of fishes from Prompton Lake using trap nets during April 2021.**

<b>Species</b>	<b>Site 4</b>	<b>Site 5</b>	<b>Site 6</b>	<b>Site 7</b>	<b>Site 8</b>	<b>Site 9</b>	<b>Site 10</b>	<b>Site 11</b>	<b>Site 14</b>	<b>Site 15</b>	<b>Site 16</b>	<b>Site 20</b>	<b>Total</b>
Black Crappie	23	2	61	10	13	10	16	10	11	5	1	1	163
Bluegill	32	5	11	17	43	28	5	26	21	15	28	3	234
Brown Bullhead	3	1		4		2	1					1	12
Chain Pickerel					1					1			2
Golden Shiner	1				6					1	1		9
Largemouth Bass			1			1							2
Muskellunge					1				1				2
Pumpkinseed		1	1	1	6	4	3	8	4	12	3	3	46
Rock Bass	1	3	3	2		4	1				2		16
Smallmouth Bass	4	4	10	2		3			4		1	4	32
Sunfish Hybrid	1		1					1					3
Walleye	13			3		1	1		1				19
White Sucker			1		5	4	8	2	9		4		33
Yellow Bullhead		8	5	14		3	4		9		4	4	51
Yellow Perch			3	2	11	3	1		1	11			32
<b>Total</b>	<b>78</b>	<b>24</b>	<b>97</b>	<b>55</b>	<b>86</b>	<b>63</b>	<b>40</b>	<b>47</b>	<b>61</b>	<b>45</b>	<b>44</b>	<b>16</b>	<b>656</b>
Effort (hrs.)	23.6	22.9	25.0	22.6	23.3	23.2	20.6	24.2	21.4	24.6	24.4	21.7	

**Table 2. Size (i.e., total length) frequency distribution of fishes from Prompton Lake captured using trap nets during April 2021.**

Size (in.)	Black Crappie	Bluegill	Brown Bullhead	Chain Pickerel	Golden Shiner	Largemouth Bass	Muskellunge	Pumpkinseed	Rock Bass	Smallmouth Bass	Sunfish Hybrid	Walleye	White Sucker	Yellow Bullhead	Yellow Perch
2		1													
3	12	14													2
4		16						1							
5	4	17						1			1				10
6	1	19						6	1		2				9
7	1	52			1			29	4				1		3
8	20	103			3			9	10	1				1	3
9	88	12			2				1	3				7	4
10	21		1		3							4		14	
11	11		3									7		11	1
12	4		2							4		2		12	
13			1							5				5	
14			3			1				12			1	1	
15			2							1			1		
16										1					
17	1			1		1				5			5		
18				1								1	7		
19							2						10		
20												2	5		
21												1	3		
23												1			
24															
25															
26															
27												1			

## 2021 Night-boat Electrofishing

Night-boat electrofishing captured a total of 1,193 fish representing 11 different species (Table 3). Bluegill (N = 494), Pumpkinseed (N = 243), and Yellow Perch (N = 215) were the most abundant fish captured. They were followed by Redbreast Sunfish (N = 104), Smallmouth Bass (N = 44), and Largemouth Bass (N = 37). Other species, such as Black Crappie, Green Sunfish, Rock Bass, Sunfish hybrids, and Walleye were infrequently (N < 30 individuals) captured. Catches of Largemouth Bass and Smallmouth Bass were improved over trap net gear, given bass are susceptible to night-boat electrofishing as adults move into the shallow shorelines to feed during the early nighttime. In contrast, the low catches of adult Black Crappie were anticipated as they tend to congregate on deeper water structures by early summer, which is beyond the sampling capability of the electrofishing gear.

Length frequency distributions of fishes captured by electrofishing (Table 4) were similar to size distributions derived from trap net gear (Table 2). The most abundant sizes of Black Crappie, Pumpkinseed, and Yellow Perch were 9-in, 7-in, and 5-in, respectively. The 4-in. size class represented the most abundant captured size class of Bluegill during electrofishing surveys, yet, the 7-in. and 8-in. sized Bluegill were also well-represented. Observations of bimodal size distributions (i.e., multiple peak sizes) in a fish population are highly encouraging. Size distributions of Largemouth Bass and Smallmouth Bass from electrofishing collections re-confirmed the quality-sized populations of bass.

**Table 3. Total catch (N) of fishes from Prompton Lake during the night-boat electrofishing survey in April 2021.**

Species	Site 1	Site 2	Site 5	Site 6	Site 8	Site 11	Site 12	Total
Black Crappie	2	1	2		10	5	1	21
Bluegill	11	46	54	39	181	124	39	494
Green Sunfish				1			2	3
Largemouth Bass	2	4	3	1	12	15		37
Pumpkinseed	8	22	9	16	97	80	11	243
Redbreast Sunfish	4	7	8	6	35	24	20	104
Rock Bass		6	5	5			7	23
Smallmouth Bass	1	3	3	2	14	15	6	44
Sunfish Hybrid						7		7
Walleye		2						2
Yellow Perch	11	5		6	79	101	13	215
Total	39	96	84	76	428	371	99	1193
Effort (hrs.)	0.4	0.3	0.3	0.3	0.4	0.5	0.3	

**Table 4. Size (i.e., total length) frequency distribution of fishes from Prompton Lake captured during the night-boat electrofishing survey in April 2021.**

Size (in.)	Black Crappie	Bluegill	Green Sunfish	Largemouth Bass	Pumpkinseed	Redbreast Sunfish	Rock Bass	Smallmouth Bass	Sunfish Hybrid	Walleye	Yellow Perch
1		2									
2		31			5	2	2				
3	3	45	1		16	11		7			12
4		153	2	1	63	18		10			30
5	1	58		2	24	36	1	4		1	81
6		65		3	51	27	7	6			71
7	1	74			77	8	8	7	4		15
8	2	66		4	7	2	4	3	3		5
9	13			3			1	4			1
10				3				2			
11	1							1			
12				3							
13				3							
14				5							
15				5							
16				2							
17				1							
18				2							
19											
20											
21											
22											
23											
24											
25											
26										1	

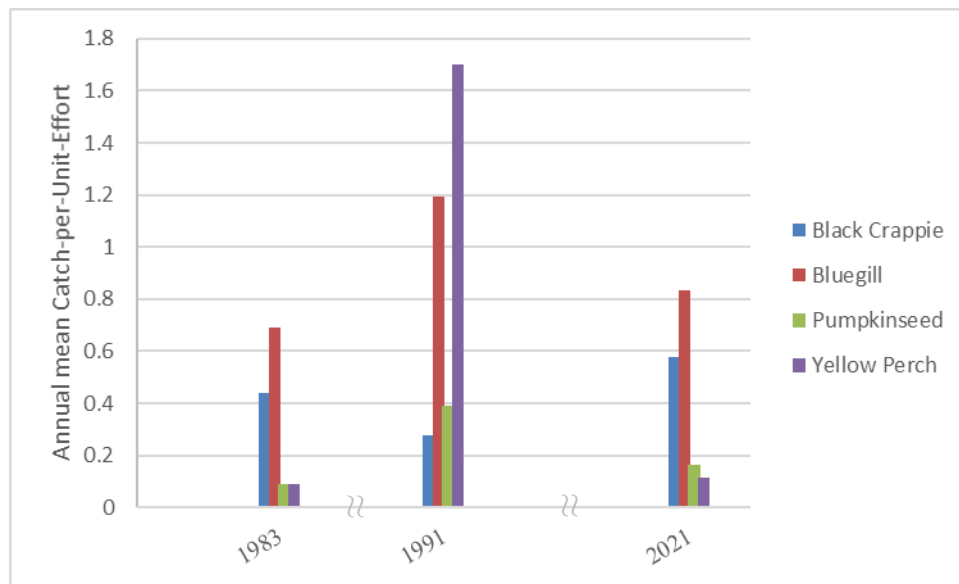
**Comparison to Historical Time-series**

Limited historical time-series data are available for comparative purposes. Previous trap net and night-boat electrofishing surveys occurred in 1983 and 1991. These surveys represent a considerable lapse in time (i.e., > 30 years) between surveys. The lack of routine assessments precludes conclusive statements on population trends (i.e., increasing or decreasing) as influences of juvenile production, natural mortality, and/or angler harvest cannot be quantified. Yet, comparisons to the historical surveys do offer some understanding as to the general state of present-day fish populations by broadly characterizing the extent of similarity among the three synoptic assessments.

Conversion of total catch into catch-per-unit-effort (CPUE; N fish/hrs.) as the annual mean of all sites sampled allows comparability to historical trap net surveys accomplished in 1983 and

1991. Catch rates from the 2021 survey for desirable panfishes including Black Crappie, Bluegill, Pumpkinseed, and Yellow Perch, were generally similar to catch rates for these species from the 1983 or 1991 trap net surveys (Figure 1). Black Crappie mean catch rate in 2021 (CPUE = 0.578 fish/hr.) was higher than observations in either 1983 (CPUE = 0.446 fish/hr.) or 1991 (CPUE = 0.276 fish/hr.). Whereas, highest observed mean catch rates for Bluegill (CPUE = 1.194 fish/h.), Pumpkinseed (CPUE = 0.392 fish/hr.) and Yellow Perch (CPUE = 1.700 fish/hr.) were observed in 1991, but the 2021 mean catch rates for these fishes approximated mean catch rates observed in 1983.

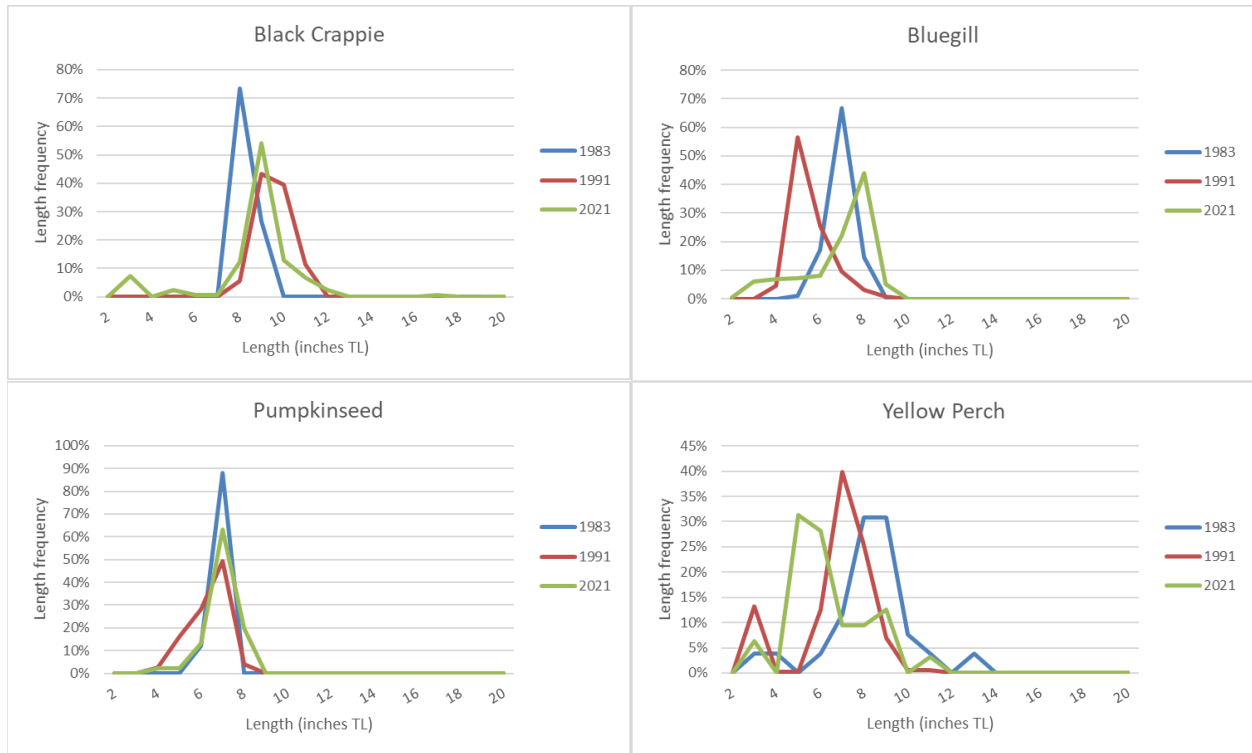
**Figure 1. Annual mean catch-per-unit-of-effort (N fish/hrs.) for selected panfishes captured in 1983, 1991, and 2021 trap net surveys.**



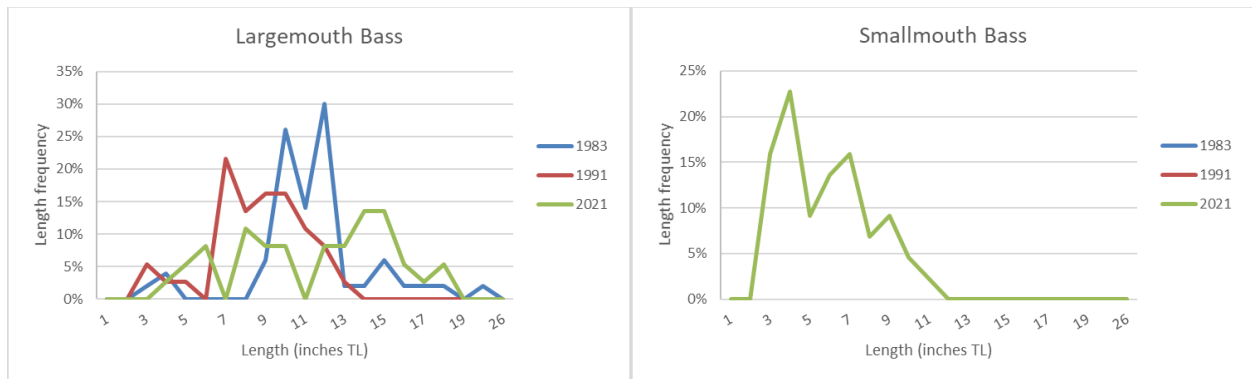
Comparison of panfishes size distributions to the historical trap net time-series is interesting (Figure 2). Peak abundant sized Pumpkinseed were consistently observed at 7-inches in all three years. Whereas, peak abundant sized Bluegill observed in 2021 (8-in.) was larger than in either 1991 (5-in.) or 1983 (7-in.). Thus, the high catch rate observed for Bluegill in 1991, was principally based on these smaller-sized fishes. In contrast, the observed size distribution for Yellow Perch captured in the 2021 trap net surveys, was composed of mostly smaller, younger fishes. Whereas, larger, older perch were captured in the previous years' assessments.

Results from the black bass night-boat electrofishing surveys is a bit perplexing (Figure 3). Given electrofishing gear is best suited for sampling black basses, the low catch of Smallmouth Bass captured during the 1983 (N = 0; CPUE = 0.0 fish/hr.) and 1991 (N = 5; CPUE = 4.5 fish/hr.) surveys would suggest the population was non-existent or exceptionally poor within the lake. Yet, the 2021 electrofishing catches of Smallmouth Bass (N = 44; CPUE = 15.3 fish/hr.) was suggestive of a well-established, naturally reproducing population. Largemouth Bass captured by night-boat electrofishing in 1983 (N = 50; CPUE = 45.4 fish/hr.), 1991 (N = 37; CPUE = 33.6 fish/hr.) and 2021 (N = 37; CPUE = 12.4 fish/hr.) surveys were also suggestive of a sustainable and stable, naturally reproducing population. While the 2021 CPUE for Largemouth Bass was the lowest value, it is encouraging that multiple and broadly distributed size-classes were represented in the population.

**Figure 2. Size distribution (i.e., total length) of selected panfishes captured in 1983, 1991, and 2021 trap net surveys.**



**Figure 3. Size distribution (i.e., total length) of bass captured in 1983, 1991, and 2021 surveys using night-boat electrofishing gear-type. Smallmouth Bass data from the 1983 (N = 0) and 1991 (N = 5) are not presented because fish were not measured during those surveys.**



### Muskellunge Stocking Efficacy

Predefined management benchmark criterion, set forth in the Muskellunge Plan, has been described for characterizing the success of Muskellunge stockings. Comparison of the 2021 Muskellunge trap net mean catch rate (CPUE = 0.007 fish/hr.) failed to achieve management criterion (CPUE = 0.01 fish/ hr.).

## **Conclusions**

Overall, the 2021 trap net and night-boat electrofishing surveys have demonstrated quality-sized panfishes and black bass populations persisting in Prompton Lake. The observed multiple size classes of fishes suggest regular and stable production of young is occurring and populations are self-sustaining. Abundance of any given size class, however, can be strongly influenced by juvenile production (as they mature into adult sizes), natural mortality, and/or preferential angler harvest of larger-sized adults. The high Bluegill and Yellow Perch catch rates observed in 1991 likely represent exceptional juvenile production. Furthermore, the observed abundance of small Yellow Perch from the 2021 survey are anticipated to grow into larger, desirable sizes and enter the fishery in subsequent years as those fish mature.

Without routine, periodic fish population assessments and angler use surveys it remains unknown if the observed panfish populations represent typical abundance and size distributions or if abundance and size structure is being influenced by angler harvest. The lack of trophy-sized panfishes in Prompton Lake populations is curious. Waters located in Pennsylvania's upper tier characteristically tend to be low productivity, usually influenced by tannic glacial bog inputs. The observed size-distributions might reflect the lake's inherent inability to produce an abundance of trophy-sized fishes. Agriculture influence above Prompton Lake, to some extent, likely bolsters the lake's productivity capacity. Yet, the size distribution should demonstrate more of a "bell" type curve for adult fishes, with at least a few of the larger-sized, older fishes representing an extended tail-out of the bell curve.

The general presumption persists that the highest angler harvest rates, particularly for panfishes, occurs during ice season when anglers tend towards preferentially taking larger-sized fishes. We have received anecdotal angler reports indicating a perceived increase of angler harvest over the 2020/21 extended ice season. Potentially, that perceived increased harvest, might also be accountable for the relatively low abundances of quality-sized Yellow Perch observed in the 2021 survey or trophy-sized panfishes in any of the surveys (i.e., 1983, 1991, and 2021). Comparatively, fish abundances and size distributions from 2021 were not exceptionally disparate from historic surveys, when angler behaviors were likely more attuned to harvest-oriented behaviors. Yet, the observed size distributions did not clearly demonstrate size truncation typical of intense cropping of larger-sized panfishes.

Angler expectations for Prompton Lake panfish and black bass fisheries have not been formally quantified. The few received anecdotal angler reports, however, have indicated a desire for trophy-sized panfish populations, which may, or not, represent expectations of the entire angling community that fish Prompton Lake. Moreover, the single recent fisheries survey (i.e., 2021 assessment) is inconclusive as it is unknown if Prompton Lake can consistently produce trophy-sized fishes. Without quantified understanding of angler use and expectations for the fishery and improved characterization of the lakes potential for supporting trophy-sized fishes, pursuit of any management regulation action would be premature. The most encouraging finding from the 2021 survey: the present-day panfish and black bass populations appear to maintain consistent angling opportunities relative to historic levels. Anglers should expect the opportunity to catch quality-sized fishes to continue in 2022.

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

***Lourdes Gierlich***  
***Fisheries Biologist Aide***