

Lake Wallenpaupack

Pike-Wayne Counties

2021 Striped Bass, Walleye and Brown Trout Population Evaluation: Gill Net Surveys

[Lake Wallenpaupack](#) is a 5,700-acre impoundment located in Pike and Wayne counties. The lake is owned and operated by Brookfield Renewable as an auxiliary electric generating facility. A public fishing and boating access is available located at [Mangan Cove](#). The Pennsylvania Fish and Boat Commission (PFBC) manage the lake’s fisheries. Striped Bass, black bass, and Walleye, represent highly desirable destination fisheries. Panfish are also commonly targeted by anglers. The lake is currently managed under [Commonwealth Inland Waters regulation program](#).

Sportfish populations within the lake are primarily maintained as self-sustaining. The PFBC, however, stocks sport fishes into Lake Wallenpaupack to enhance fishing opportunities (Table 1). Striped Bass and Striped Bass - hybrid (cross between Striped Bass and White Bass) have been stocked. Hybrid Striped Bass stocking was discontinued in 2022 to eliminate potential resource competition and ensure integrity of the Atlantic coastal wild Striped Bass population. Stockings of Striped Bass rely on their *gratis* availability from other Atlantic coastal state hatcheries. Lake Wallenpaupack serves as a brood-stock source for PFBC’s hatchery Walleye production program. As such, a portion of fingerlings derived from adults that are spawned for the hatchery program are annually stocked back into Lake Wallenpaupack, along with all captured adult brood fish. Annual fingerling stockings of Channel Catfish occurred from 1995 – 2000 but were discontinued in 2001, in favor of maintaining populations through natural reproduction. A singular occurrence (N = 13,650) of a Channel Catfish stocking occurred in 2011. Trout fishing remains a popular fishery within the Commonwealth of Pennsylvania, yet Lake Wallenpaupack is simply too large to adequately stock with hatchery-raised adult trout. Rather, fingerlings are utilized for a put-and-grow fishery.

Table 1. Historical Pennsylvania Fish and Boat Commission stocking of fishes into Lake Wallenpaupack.

	Brown Trout	Striped Bass		Striped Bass - hybrid	Walleye
Year	Fingerling	Fry	Fingerling	Fingerling	Fingerling
2000			78,755	9,000	144,336
2001			71,384		118,771
2002					57,000
2003	175,000	5,700,000	241,426		115,065
2004	125,000	6,700,000			142,497
2005	125,000	5,699,999	95,653		114,000
2006	175,000	5,700,000	147,300		229,000
2007	125,000	5,700,000	68,400		171,000
2008	310,000	850,000	205,200		114,000

2009	185,000	5,000,000	117,775		171,000
2010	250,000	5,700,000	59,504		141,190
2011	250,000		83,850		150,975
2012	250,000	1,720,000	123,074		114,000
2013	250,000	1,966,763	136,800		277,912
2014	250,000		68,400		227,920
2015	92,500		136,800	50,000	227,920
2016	92,500		68,400	74,000	227,920
2017	92,500		152,300	35,229	115,127
2018	92,500			7,794	114,000
2019	92,500		136,800	50,000	341,870
2020	92,500				142,500
2021	92,500		85,886	10,000	228,000

Biologists from Area 5 and 4 and Northeast Bureau of Law Enforcement completed evaluation of Lake Wallenpaupack Striped Bass, Striped bass – hybrid, Walleye and Brown Trout populations. The intent was to determine if present-day gill net catch rates were being maintained compared to historical values to ensure stocking rates remain appropriate. Two gill net types, a sinking, six-panel experimental gill net and a sinking constant 8-in stretch mesh gill net were employed. Gill nets are selective for fish sizes, dependent on the girth of a fish relative to stretch mesh of a gill net. For example, large stretch mesh, enables capture of larger sized fishes (i.e., deeper bodied) to the exclusion of smaller sized fishes and *vice-versa*. Experimental gill nets are composed of a variety of gill net panels that differ in stretch mesh size. Thus, use of experimental gill net seeks to capture a wide size range of fishes, whereas the constant 8-in gill net specifically targets large-sized adults.



Waterways Conservation Officer, Sergeant Walter Buckman and Area 4 Fisheries Manager, Aaron Frey holding Striped Bass (A) and Channel Catfish (B) captured from the constant 8-in. stretch mesh gill net near Wilsonville campground, Lake Wallenpaupack, April 2021.

Ten experimental (variable mesh size) and four constant mesh (8-in stretch mesh) gill net sites were fished at various fixed-sites throughout the lake, April 5 – 9, 2021. A total of 419 fish were captured from the experimental gill nets (Table 2). Walleye (N = 189) and Yellow Perch (N =

128) represented the most abundant fishes caught in the experimental gill nets. Thirteen Striped Bass, four Striped Bass – hybrid and three Brown Trout were also captured within the experimental gill nets, along with a variety of other species. Few fishes, 38 in total, were captured in the 8-in. stretch mesh gill nets (Table 3). Catch was principally Common Carp (N = 20) and Striped Bass (N = 10). Two Striped Bass – hybrids and two Brown Trout were also caught within the 8-in. stretch mesh gill nets. The low total catch of fishes from the 8-in. stretch mesh gill nets were due to their exceptionally large mesh size, which effectively excludes most other fishes within the lake. They simply swim through the net and are not captured, including the large-sized Walleye observed in the experimental gill nets.



Waterways Conservation Officer, Sergeant Walter Buckman holding Brown Trout (A) and Walleye (B) captured from experiment gill nets near Spinnler Point, Lake Wallenpaupack, April, 2021.

Total lengths of captured fish during the 2021 survey were tabulated to gain insight to population size distributions (Tables 4 – 5). Multiple sizes of captured Walleye were well represented in the experimental gill net collections, varying from 9-in. to 28-in. The 20-in. to 24-in. size classes of Walleye represent the size classes most frequently captured. Sizes of Striped Bass were all larger than 24-inches, which exceeds the legal minimum size limit (i.e., 20-inches) for landlock populations within Pennsylvania. Two of the four captured Striped Bass – hybrids were of legal size (i.e., 22-in. and 24-in.). The lower catch of smaller-sized Brown Trout and Striped Bass is interesting, given experimental gill nets, were used with intent to capture smaller sized fishes. Yet, the limited sampling effort in the lake may have also contributed to low capture frequency.

Table 2. Total catch (N) of fishes from Lake Wallenpaupack captured using experimental gill nets, April 5 - 9, 2021.

Species	EXP - 4	EXP - 6	EXP- 11	EXP - 15	EXP - 18	EXP - 31	EXP - 38	Exp - 39	EXP- 40	EXP- 44	Total (N)
Black Crappie	4	1					1				6
Bluegill								1	2	1	4
Brown Bullhead								1			1
Brown Trout	1					2					3
Channel Catfish	1					1					2
Chain Pickerel	1	1				5	3	6	3	2	21
Common Carp											0
Largemouth Bass		1									1
Northern Pike	2	4									6
Rock Bass						3	3	4		1	11
Rainbow Trout - Hatchery										1	1
Smallmouth Bass	1					4	9	1	12	1	28
Striped Bass	1			4		1	2	3	2		13
Striped Bass - Hybrid	1			1				1	1		4
Walleye	16	10	10	20	5	21	29	18	27	33	189
Yellow Bullhead										1	1
Yellow Perch	4	17	18	24	3	15	9	20	13	5	128
Total (N)	32	34	28	49	8	52	56	55	60	45	419
Effort (hrs.)	20.3	20.3	20.8	22.1	23.1	23.9	27.2	26.2	26.8	24.5	

Table 3. Total catch (N) of fishes from Lake Wallenpaupack captured using constant stretch mesh 8-in., sinking gill nets, April 5 - 9, 2021.

Species	SGN 8-2	SGN 8-9B	SGN 8-6	SGN 8-8	Total (N)
Brown Trout				2	2
Channel Catfish	2			2	4
Common Carp	20				20
Striped Bass	3	6		1	10
Striped Bass - hybrid		1		1	2
Total (N)	25	7	0	6	38
Effort (hrs.)	21.5	22.7	23.9	25.0	

Conversion of gill net total catches observed in 2021 into catch-per-unit-of-effort (CPUE) enabled comparison to historical springtime gill net surveys (Figure 1). Historical sampling, however, was limited to past synoptic assessments with considerable time lapses between assessments, precluding conclusive statements about population trends. Yet, comparisons to historical surveys offers some understanding as to the general state of the present-day fish population by broadly characterizing the level of similarity among surveys.

Experimental gill nets were only previously utilized during the springtime months in 2016 (Figure 1). Walleye were well-represented in both 2016 and 2021 experimental gill net surveys, but with considerably higher catch rate of Walleye from the 2016 survey. Similarly, catch rates of Channel Catfish were less than half in 2021 surveys compared to the 2016 surveys. Conversely, Brown Trout, Striped Bass and Striped Bass – hybrids observed catch rates were higher in the 2021 surveys than 2016.

Historically, constant stretch mesh gill nets were utilized in three different sizes, 4.0-in (i.e., 1992 and 2014), 6.0-in (i.e., 1992, 1998, and 2014) and 8.0-in (i.e., 1992, 1998, 2014, 2021) during the springtime months (Figure 1). Neither the 4.0-in or 6.0-in constant stretch mesh gill net sizes were employed during the 2021 surveys precluding comparisons to the present-day population. Focusing on the constant 8.0-in stretch mesh gill net surveys, catch rates of Striped Bass and Brown Trout were consistent among survey years, except during 1998 surveys. These findings suggest large-sized Striped Bass persist within the lake’s population. In contrast, Channel Catfish and Striped Bass – hybrids catch rates were lowest in the 2021 survey. It is unknown if low sample size of constant 8.0-in stretch mesh gill nets during the 2021 surveys inadequately represented occurrences of large-sized Channel Catfish or Striped Bass – hybrids or these fishes are not as abundant as observed in past years. The occurrences of Walleye in the constant 8.0-in stretch mesh gill nets were likely related to their poor catchability in large stretch mesh sizes (i.e., small girth relative to large mesh size), rather than a reflection of large-sized walleye occurrences in the population.

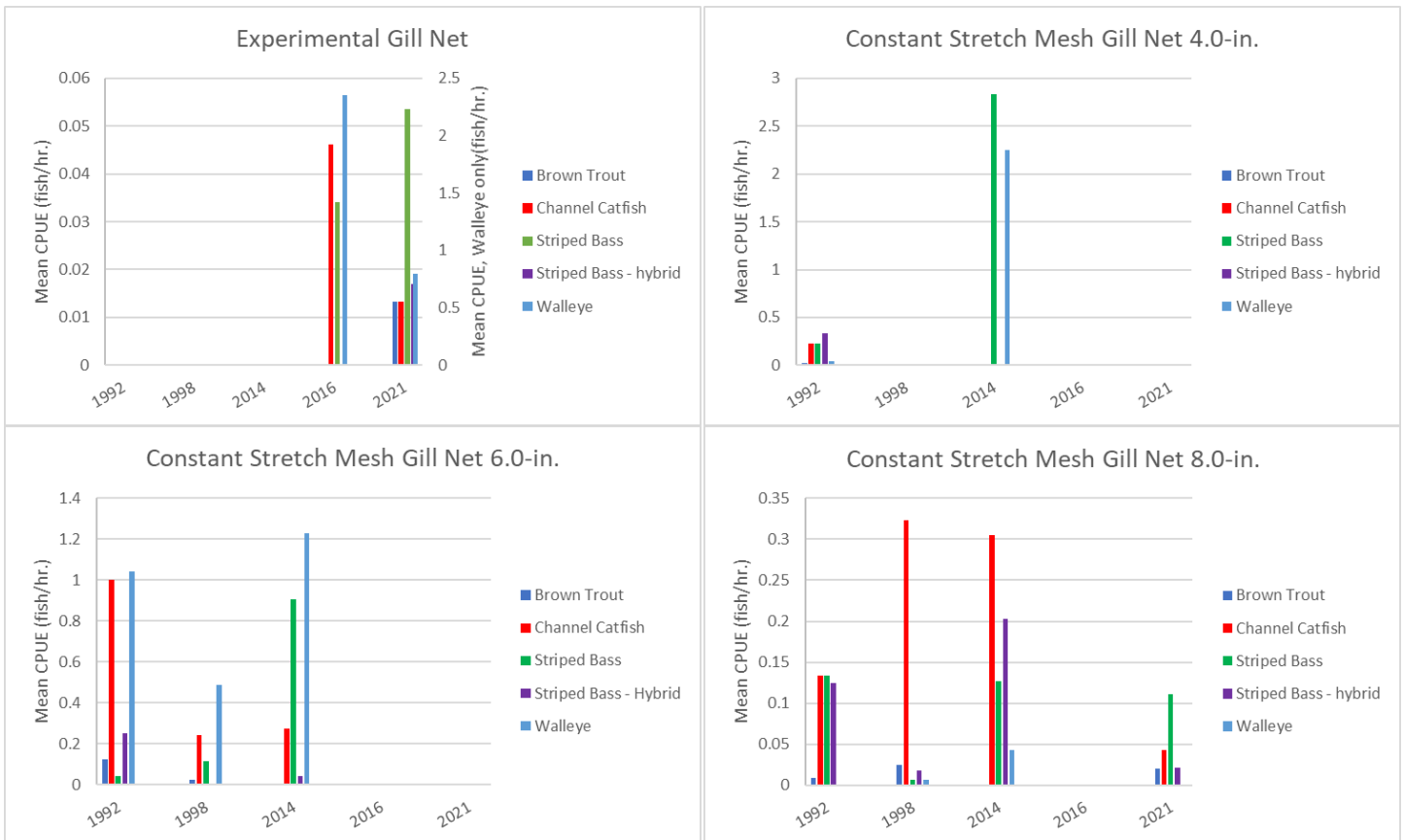
Table 4. Size (total length in inches) frequency distribution of fishes from Lake Wallenpaupack captured using experimental gill nets, April 5 - 9, 2021.

Size Class (in.)	Black Crappie	Bluegill	Brown Bullhead	Brown Trout	Chain Pickerel	Channel Catfish	Largemouth Bass	Northern Pike	Rainbow Trout - Hatchery	Rock Bass	Smallmouth Bass	Striped Bass	Striped Bass - Hybrid	Walleye	Yellow Perch
4															3
5										3					2
6										1					2
7		2			1										33
8		1			1					3					39
9		1								4				1	8
10	2														14
11	1													1	15
12	1										3				3
13															2
14	2										3			5	1
15					1						8			5	
16			1				1		1		3			8	
17					3						5				
18					3						3		1	5	
19					2						1		1	11	
20						1					2			27	
21					1	1								34	
22					3								1	33	
23					4									27	
24				2	2							1	1	10	
25				1								2		4	
26								2						13	
27						1		1						6	
28												1		2	
29								1							
30												1			
31												5			
32												3			
33								1							
33								1							
34															
Total (N)	6	4	1	3	21	3	1	6	1	11	28	13	4	192	128

Table 5. Size (total length in inches) frequency distribution of fishes from Lake Wallenpaupack captured using constant stretch mesh 8-in., sinking gill nets, April 5 - 9, 2021.

Size Class (in.)	Brown Trout	Channel Catfish	Striped Bass	Striped Bass - hybrid
26				1
27	2	1		
28				
29				
30		1		
31		1		
32		1	3	
33			3	1
33			2	
34			2	
Total (N)	2	4	10	2

Figure 1. Annual mean catch-per-unit-of-effort (N fish/hr.) for Brown Trout, Channel Catfish, Striped bass, Striped Bass – hybrid, and Walleye from various gill net gear types employed during springtime surveys.



We are pleased with the findings of the 2021 gill net surveys. Catches of Walleye, Striped Bass, and Brown Trout appear to continue supporting large-sized fishes so popular among the sought-after destination fisheries in Lake Wallenpaupack. The low catch rate of Channel Catfish is interesting; however, a follow up assessment with increased sampling may provide better insight into their occurrence in the lake. Anglers should expect the opportunity to catch quality-sized fishes to continue in 2022.

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