

Bradys Lake - Update

Monroe County

Spring Trap Net and Nightboat Electrofishing Evaluations: 2018 and 2015

Bradys Lake is a 229-acre manmade public impoundment located 2.8 miles north of State Route (SR) 0940 on Pennsylvania Game Commission's [State Game Lands No. 127](#) in Coolbaugh Township, Monroe County. The lake is managed for waterfowl propagation and angling. Anglers and boaters (e.g. canoe, kayak, or electric motor only) can access the lake via a 3.3-mile gravel road in SGL 127 off SR0940 near Pocono Lake Preserve. The lake was almost completely drawn down in 2003 to repair the dam, however two remnant pools remained which held resident fish species of various ages and sizes. Since refilling in 2008, the PFBC has managed fish harvest under [Commonwealth Inland Waters regulations](#) for most all fish species; except for Yellow Perch, Black Crappie, and Bluegill/Pumpkinseed which are managed with [Panfish Enhancement rules](#), and Largemouth Bass which are managed via the [Big Bass](#) special regulation program. These special regulation programs were implemented in addition to Commonwealth Inland Waters regulations in 2009 to facilitate rebuilding fish populations which were also aided by a five-year warm/cool water species stocking program, initiated in 2008.

Historically, the lake's low productivity, acidic nature, and proliferation of aquatic vegetation had negatively impacted fish populations as evidenced by species exhibiting poor recruitment, slow growth rates, and highly variable population size structures. Total Alkalinity (TA) values during the summer period ranged from 1-4 mg/l and 13 mg/l above the thermocline and from 2-5 mg/l and 18 mg/l below the thermocline region during summer sampling in 1987, 1981, 1977, and 1968; with 1968 posting the highest values. The specific conductance values reported in 1981 and 1977 were 29 and 30 *umhos*; which is also indicative of low calcium carbonate availability reflected by the TA values, respectively.

The water quality of Trout Creek at RM 4.55 (outflow of Bradys Lake) was monitored from 1988 through 1996 and 2004 during late winter/early spring period run-off period for pH (s.u.) and TA (mg/l). This location is reflective of the lake's water chemistry and character. Table 1 shows the acidic conditions present as well as the low buffering capacity of the system. The acidic nature of the lake water is further characterized by its natural dark tannic colored water. The long history of infertility noted above is reflected by the low specific conductivity values in 2018 (21 and 30 *umhos*) and the associated acidic conditions. Acidic conditions derive from the basin's vegetative landscape, geological character, and atmospheric deposition input, which cumulatively continue to describe those factors that most influence and limit fish populations.

Table 1. Early Spring water quality analysis of Trout Creek 02A (RM 4.55) at the outlet of Bradys Lake.

Trout Creek 02A RM 4.55 - Outlet of Bradys Lake								
Date	pH (s.u.)	Total Alkalinity (mg/l)	Date	pH (s.u.)	Total Alkalinity (mg/l)	Date	pH (s.u.)	Total Alkalinity (mg/l)
2/05/2004	5.9	4.0	5/06/1993	5.7	1.0	5/01/1990	5.9	1.0
5/16/1996	5.4	...	4/01/1993	5.1	...	4/09/1990	5.8	1.0
3/21/1996	5.2	...	2/25/1993	6.1	1.0	3/01/1990	5.1	...
2/29/1996	5.1	...	1/21/1993	5.7	1.0	2/01/1990	4.9	...
2/01/1996	4.7	...	4/28/1992	5.7	1.0	4/26/1989	5.7	1.0
3/30/1995	5.7	1.0	3/25/1992	5.7	1.0	3/29/1989	5.5	1.0
3/02/1995	5.1	1.0	2/27/1992	5.5	1.0	3/01/1989	5.5	1.0
1/26/1995	5.5	1.0	1/29/1992	5.1	...	2/26/1989	5.7	1.0
5/06/1994	5.0	...	5/01/1991	5.7	1.0	3/25/1988	5.1	...
3/31/1994	5.1	...	3/27/1991	5.7	1.0	2/25/1988	5.3	...
3/01/1994	4.7	...	2/27/1991	5.5	1.0	1/28/1988	5.5	...
2/03/1994	6.0	...	1/30/1991	5.1

To evaluate progress in restoring fish abundance following de-watering and refilling, Biologists from Fisheries Management Area 5 conducted the first of three annual surveys starting in 2012, refer to the [2012 Bradys Lake Spring Trap Netting and June Night Electrofishing web report](#) for catch results. The follow-up surveys noted in the 2012 web report were tentatively listed to occur in 2014 and 2016; but were rescheduled for 2015 and 2018 due to operational priorities.

Springtime Trap Net Assessment: 2018 and 2015

Bradys Lake was surveyed between April 9 – 11, 2018 and April 14 – 16, 2015. A total of 8 overnight trap nets sets fished for 191.4 hours in 2018 and 186.7 hours in 2015. All fish species sizes were enumerated by 25 mm length group (approximately 1 inch) throughout the survey period. In 2018, Area 5 Staff was assisted by PGC employee David Brundage. A summary of the fish species collected and measured is presented in Table 2.

The lake supported highly variable Yellow Perch and Bluegill populations, with consistent abundance of Black Crappie documented throughout the three-year monitoring period (Table 2). All three of these species, in our view, provide a marginal to good quality fishing experience, and at times a very good fishing experience (Yellow Perch and Bluegill in 2015). In the 2018 assessment, 71 percent of the Yellow Perch and 70 percent of the Black Crappie catch was greater than or equal to 9 inches, and 84 percent of the Bluegill catch was greater than or equal to 7 inches.

In 2018, the catch of Yellow Perch and Bluegill dramatically declined from the 2015 survey; decreasing from 687 to 132 for Yellow Perch, and 225 to 62 for Bluegill. More importantly, from an angler's perspective, was the decrease in the quality size component of these populations: Yellow Perch greater than or equal to 9 inches decreased nearly 2-fold from 276 in 2015 to 94 in 2018, and Bluegill greater than or equal to 7 inches decreased 2-fold from 176 in 2015 to 52 in 2018. In 2015, 52 percent (N=357) of the 687 Yellow Perch caught ranged in size from 3 to 4 inches, suggestive of very abundant year classes in previous years.

The above decreases follows a dramatic rise in catch documented in the 2015 surveys as compared to the initial survey in 2012 for both species. For Yellow Perch and Bluegill catches rose from 49 to 687, and 32 to 225, respectively. This shift is suggestive of an abundant year natural year class and shift from the historic community structure. It should be noted that our restocking of Bluegill fingerling occurred only 2012, and after the 2012 trap net survey. Thus, their presence in 2012 was derived from progeny of adults within the two remnant pools left during the drawdown and refilling phases, similar to that observed in Gouldsboro Lake; [Gouldsboro Lake – Update: Early Spring Trap Net Evaluations 2018 and 2015](#) (2015: N=428 and N=124; 2012: N=50) . However, that is where the similarity ends between water bodies located only 6.5 miles from outlet to outlet the way the Kingfisher flies. Total Alkalinity and Specific Conductivity at Gouldsboro Lake ranges from 8 to 9 mg/l and 90 to 110 umhos, respectively; indicating that Gouldsboro Lake is more fertile and is home to more abundant fish populations.

Our delay in stocking Bluegill was required due to the natural proliferation of this species and was designed to minimize nest, egg, and fry predation upon other species. Later stocking is purposefully scheduled to ensure species, such as Largemouth Bass have a head start in producing young and insures they experience limited nest predation. Black Crappie (2018: N=124; 2015: N=143 and 2012: N=90) and Bluegill (2018: N=62; 2015: N=225; and 2012: N=32) populations changed through survey examination as our time series suggests; collectively providing anglers with opportunity for a diverse fishing experience, despite the greater variability exhibited in the Bradys Lake Bluegill population compared to Gouldsboro Lakes progressively increasing population Bluegill population; (2018: N=319; 2015: N=150; and 2012: N=50).

Bradys Lake provides diverse fishing opportunities for all game species; however, the dominate game fishes are highly variable from year to year. The highly variable nature of the Yellow Perch and Bluegill/Pumpkinseed populations is influenced by the infertility and acidic character of the basin's water more so than the influence of Panfish Enhancement (PE) rules.

A review of the annual assessment catch for those fish below the minimum PE size length (<9 inches for Yellow Perch and Black Crappie, and <6 inches Bluegill/Pumpkinseed; Table 3) suggest that poor recruitment continues to be the limiting factor, documented during both pre and post refill periods. Thus, based on these results, the supportive values necessary for the continuation of the Panfish Enhancement rules while appear to be met for some values they do not meet the spirit and intent of the PE program. Remember, Bradys Lake was placed into this program to provide more protection for the developing fish populations and our stocking initiatives, and the population redevelopment period is over, as it has been 11 years since refill and the initiation of the 5-year stocking program.

Bradys Lake offers a very scenic and rewarding experience, and at times can provide a very memorable fishing experience when the abundance of targeted game fish is high. Anglers should note that Bradys Lake water color is naturally dark tea colored, so anglers may want to keep this in mind when selecting the color of their terminal tackle.

Table 2. Fish caught during the 2018 and 2015 Bradys Lake trap net survey.

Early Spring Trap Netting						
Game Species						
Fish Species	April 9-11, 2018			April 14-16, 2015		
	Number Caught	Size Range (inches)	Additional Comments	Number Caught	Size Range (inches)	Additional Comments
Yellow Perch	132	3 - 14	71% \geq 9 inches	687	3 - 13	40% \geq 9 inches
Black Crappie	124	6 - 11	70% \geq 9 inches	143	2 - 14	80% \geq 9 inches
Bluegill	62	5 - 8	84% \geq 7 inches	225	4 - 9	78% \geq 7 inches
Pumpkinseed	14	5 - 9	21% \geq 7 inches	7	3 - 7	14% \geq 7 inches
Largemouth Bass	8	13 - 17	88% \geq 15 inches	23	5 - 23	78% \geq 15 inches
Chain Pickerel	20	13 - 19	15% \geq 18 inches	49	12 - 25	6% \geq 18 inches
Redfin Pickerel	0	---	---	1	13	NA
Brown Bullhead	9	10	100% \geq 10 inches	45	7 - 11	84% \geq 10 inches
Yellow Bullhead	4	10	100% \geq 10 inches	74	7 - 12	61% \geq 10 inches
Forage Species						
Golden Shiner	47	3 - 9	N/A	94	4 - 10	N/A
Creek Chubsucker	120	9 - 17	N/A	375	8 - 15	N/A

Table 3. Pennsylvania Trap Net catch-per-unit effort (CPUE), expressed in catch per hour, for Yellow Perch, Black Crappie, and Bluegill/Pumpkinseed as compared to the Panfish Enhancement (PE) guidelines.

Bradys Lake					
Yellow Perch					
Length Group	Post 2008 Refill			PE Catch Guidelines	Pre-2003 Drawdown 1981
	2018	2015	2012		
Total Catch (All Sizes)	0.71	3.69	0.27	NA	3.28
\leq 200 mm (\geq ~8 inches)	0.18	2.11	0.03	NA	2.69
\geq 200 mm (\geq ~8 inches)	0.53	1.58	0.24	0.43	0.59
\geq 225 mm (\geq ~9 inches)	0.50	1.48	0.22	0.19	0.49
\geq 250 mm (\geq ~10 inches)	0.40	1.21	0.19	0.07	0.43
Black Crappie					
Total Catch (All Sizes)	0.65	0.77	0.50	NA	0.02
\leq 200 mm (\geq ~8 inches)	0.09	0.13	0.13	NA	0.01
\geq 200 mm (\geq ~8 inches)	0.56	0.64	0.37	0.63	0.01
\geq 225 mm (\geq ~9 inches)	0.46	0.62	0.21	0.25	0.01
\geq 250 mm (\geq ~10 inches)	0.25	0.38	0.16	0.09	0.01
Sunfish – Bluegill/Pumpkinseed					
Total Catch (All Sizes)	0.39	1.21	0.20	NA	0.64
\leq 150 mm (\geq ~6 inches)	0.02	0.13	0.01	NA	0.34

≥150 mm (≥~6 inches)	0.37	1.08	0.19	1.15	0.30
≥175 mm (≥~7 inches)	0.29	0.93	0.18	0.51	0.20
≥200 mm (≥~8 inches)	0.22	0.59	0.09	0.08	0.02

Largemouth Bass Nightboat Electrofishing Assessment: 2018 and 2015

Nightboat Electrofishing surveys were conducted to assess the Largemouth Bass population on June 6, 2018 and May 26, 2015. The lake shoreline was electrofished for 1.88 hours in 2018 and 2.59 hours in 2015. All bass sizes were enumerated by 25 mm length group (approximately 1 inch) throughout the survey period. The size of the Largemouth Bass based on 25 mm length groups in 2018 and 2015 ranged from 5.9 to 19.4 inches long and 8.9 to 17.7 inches long, respectively.

Post-2008 Refill catch-per-unit-effort values expressed in bass catch per hour met nearly all criteria values set for the Big Bass Program; except for Total Catch (all survey years), and for bass greater than or equal to 12 inches (2018; Table 4). The highest Post-2008 Refill total catch value was in 2018 at 15.94 bass per hour which is only 53 percent of the required minimum value (≥30 bass/hr.). In most survey years for both the Pre-2003 Drawdown and Post-2008 Refill periods, the total catch was primarily comprised of bass greater than or equal to 12 inches, suggesting poor recruitment limits abundance of older size classes, and was noted to be a limiting factor during the Pre-2003 Drawdown period (September 2002*, July 1987, and June 1981). The 2002 survey occurred prior to the 2003 drawdown and all fish species caught were transferred to another public water body. This seasonally different survey was conducted for another management purpose and did not solely a target Largemouth Bass as was the case in the other years listed in Table 4. The low fertility and acidic nature of the lake's environment that contribute to low primary productivity limit survival and abundance of young Largemouth Bass.

This is not to say that Bradys Lake anglers will not catch bass greater than or equal to 15 inches, as the catch per hour does fall within the Big Bass program range in some years (2015 and 2012). But the general trend is that this fishery will continue to fall in and out of these catch value range(s). Most concerning is the high variability of the catch of bass less than 12 inches noted during both the Pre-2003 Drawdown and Post-2008 Refill surveys. The lower recruitment values cannot support consistent sustained abundance of larger size bass into the fishery; a key component for its continuation in the Big Bass program. Remember, Bradys Lake was placed into the Big Bass program to provide more protection for the developing fishery and our stocking initiatives, and the fish population development period is over as it has been 11 years since refill and the initiation of the 5-year stocking program.

Table 4. Nightboat electrofishing catch-per-unit effort (CPUE), expressed in catch per hour, for Largemouth Bass at Bradys Lake compared to Big Bass Program guidelines.

Bradys Lake							
Largemouth Bass							
Length Group	Post-2008 Refill			Big Bass Guidelines	Pre-2003 Drawdown		
	6/2018	5/2015	6/2012		9/2002*	7/1987	6/1981
Total Catch	15.94	11.58	13.35	≥30	21.33	0	8.14
≤ 12 inches	11.16	0.78	1.92	NA	15.11	0	4.38

>12 inches	4.78	10.80	11.43	8 – 12	6.22	0	3.76
>15 inches	3.19	6.17	5.71	2 – 5	1.55	0	3.13
>18 inches	0.53	0	0.95	NA	0	0	0
Electrofishing Time (hr.)	1.88	2.59	2.10		4.50	0.75	1.60
*Sampled prior to drawdown in 2003							

David Arnold
Area 5 Fisheries Manager