

Canadarago Lake (SR-204-P392), Spring 2022 BPI Survey

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Canadarago Lake is a popular fishing destination of 1,944- acres located in northern Otsego County within the Susquehanna River Watershed. A state-owned boat launch accommodates angler access on the western shore. This lake contains a multitude of sportfish including largemouth bass, smallmouth bass, chain pickerel, walleye, and tiger muskellunge. Canadarago Lake has been managed for percids (walleye and yellow perch) since invasive alewife populations exploded in 2006. Alewife have impacted walleye recruitment adversely through predation of fry in the pelagic zone (Brooking et. al, 2016). This has been combatted through annual walleye stocking and special fishing regulations on percids.

This study was the second year of baseline data collection for the Big Panfish Initiative (BPI). Special fishing regulations for sunfish were enacted on April 1, 2022, allowing anglers to keep 15 sunfish (pumpkinseed and bluegill) at least 8 inches in total length daily. The current population was not expected to be affected by the new regulations at the time of the survey. BPI study plan objectives include the fish to be in good condition, represented by a mean relative weight (W_r) of ≥ 100 . The second objective is to achieve sunfish size structure within the lake where all sunfish that are at least 3 inches long: PSD will be at least 70, RSD_8 will be at least 30, and RSD_{10} will be at least 5 (NYSDEC, 2021). A third BPI objective maintaining a growth rate of which sunfish reach 7" by age 5.

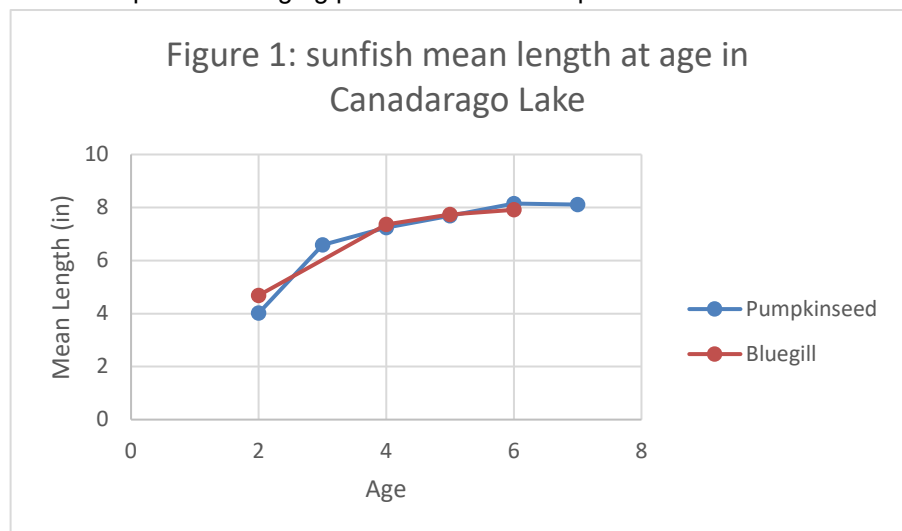
Sampling was conducted at 3 sites. Oneida trap nets were set near visible sunfish spawning activity. Traps were pulled and reset each day from May 23, 2022, to May 25, 2022, totaling 9 net nights. Scales were taken for aging purposes along with a subsample of otoliths to help increase aging precision as otoliths present annuli that are more prominent than those of scales.

A total of 1,827 fish consisting of 16 species were collected throughout the survey. The catch was dominated by an overwhelming number of invasive rudd ($n=1134$) making up ~ 62% of the total catch. Sunfish were present in high numbers with pumpkinseed (195) and bluegill (60) making up 10% and 3% respectively. Alewife (143), rock bass (114), brown bullhead (63) and yellow perch (75) were also common in the traps (Table 1). On average both species reached 7.7" by age 5 (Figure 1).

The W_r of pumpkinseed was above the BPI target (≥ 100) at 103 with the

W_r of bluegill just below the target at 98. Pumpkinseed PSD and RSD_8 were 87 and 22, respectively while the PSD and RSD_8 of bluegill was 85 and 10 (Table 2). No sunfish ≥ 9 inches were collected.

There were some difficulties present in the survey. The trap placed at north end of the lake was found with holes each day, this caused it to not fish effectively throughout the sampling period. All fish captured in the north end trap were target species and were included in the assessment for aging purposes. An unprecedented number of rudd were collected in the remaining nets throughout this survey. Despite the frequency in which Canadarago Lake is sampled through other methods, rudd have never been caught at this rate. It is unknown as to how they have affected the lake and the BPI survey. The high density of rudd caught in the nets could have altered the sunfish catch through the blocking of the trap entry. This added competition could also impact several native species in the Lake. Rudd are generalist known to change their dietary habits throughout the year based on food availability (Guinan et al. 2015). DEC will continue to remove rudd from the lake as they are collected in future surveys.



Data from this survey suggest that the sunfish population has the potential to improve. W_r was satisfactory for pumpkinseed but slightly below target levels for bluegill, size structure was below target levels for both species. The sunfish population is dominated by pumpkinseed which is generally the smaller of the *Lepomis* species in most waters. The new sunfish fishing regulations may not produce the intended result of $RSD_{10} (\geq 5)$, but they could still improve the size structure of the population. Annual sunfish monitoring following the BPI study plan will help determine the effectiveness of the associated regulations.

Table 1. Number of fish collected and catch rates for all species trap netted in Canadarago Lake, May 2022

Species	Number Collected	Catch rate (fish/net)
Rudd	1134	126.0
Pumpkinseed	195	21.7
Alewife	143	15.9
Rock Bass	114	12.7
Yellow Perch	75	8.3
Brown Bullhead	63	7.0
Bluegill	60	6.7
Golden Shiner	20	2.2
Walleye	4	0.4
Black Crappie	3	0.3
White Sucker	3	0.3
Bluntnose Minnow	2	0.2
Common Carp	2	0.2
Chain Pickerel	1	0.1
Largemouth Bass	1	0.1

Table 2: Proportional size distributions and total numbers collected for length categories of sunfish collected from 9 overnight trap net sets in Canadarago Lake on the last week of May 2022.

Species	PSD	RSD8	RSD10	Number Collected	≥ 3 inches (stock size)	≥ 6 inches (quality size)	≥ 8 inches (preferred size)	≥ 10 inches (Memorable size)
Pumpkinseed	87	22	0	195	194	169	42	0
Bluegill	85	10	0	60	60	51	6	0

Literature Cited

Brooking, T. E., J. R. Jackson, L. G. Rudstam, and A. J. VanDeValk. 2016. Fisheries surveys of Canadarago Lake, NY 1972-2014. New York Federal Aid in Sport Fish Restoration Grants F-56-R, Job 1-2 and F-61-R, Study 2, Job 2-6. Cornell University Warmwater Fisheries Program. Bridgeport, NY. 101 pp.

Guinan, M.E., K.L. Kapuscinski, and M.A. Teece. 2015. Seasonal diet shifts and trophic position of an invasive cyprinid, the rudd (*Scardinius erythrophthalmus*) (Linnaeus 1758), in upper Niagara River. *Aquatic Invasions*. Volume 10, Issue 2: 217-225.

NYSDEC. 2021. Big Panfish Initiative study plan. New York State Department of Environmental Conservation, Bureau of Fisheries, Albany, New York.