

Upper Yaphank Lake Pre-dredge and Post-dredge Evaluation Chart Guthrie, Region 1 Fisheries

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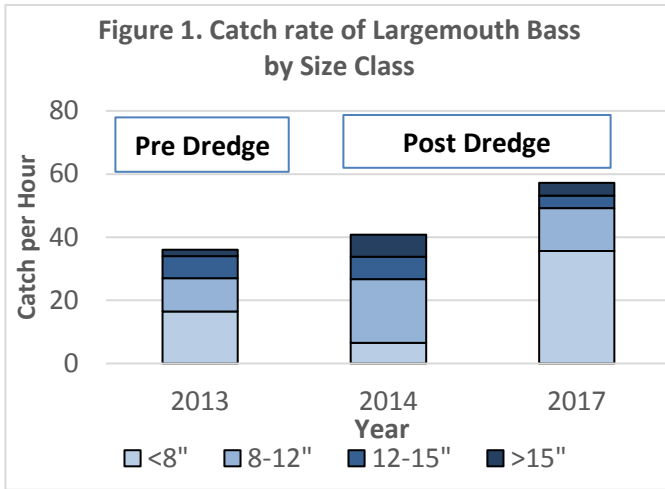
Upper Yaphank Lake is a 19-acre impoundment on the Carmans River that was originally formed by a mill dam. The primary use of the lake now is for recreation. The Town of Brookhaven owns the dam and the adjacent Town Park on the east side of the lake. There was a bathing beach at the Town Park, but it was closed in the 1990's due to high coliform bacteria levels. There is a privately owned restaurant adjacent to the dam on the west side of the lake. Public access to the lake is from the Town Park and from the dam. In 2017, the Town installed a Denil-style fish ladder in the dam for upstream passage of alewife and trout. The DEC stocks the lake with trout in the spring and fall to maintain a seasonal put and take fishery. In the spring, 650 brown trout (400 yearling and 250 two-year olds), and 800 yearling rainbow trout are stocked in three increments. Each fall, the lake is stocked with 850 fall-yearling brown trout in two increments. In recent years the lake experienced an overgrowth of aquatic vegetation, primarily fanwort (*Cabomba carolinia*). To address the overgrowth, the Town of Brookhaven hydraulically dredged the lake between July 1 and September 30, 2013. To document effects of the dredging on the fish community, the DEC surveyed the lake before it was dredged in 2013 (113007), the year after the dredging, in 2014 (114010), and four years later, in 2017 (117007).

All three surveys were conducted in the spring. Electrofishing effort included four all-fish runs totaling one hour in each survey, and two to four gamefish runs totaling from 1.0 to 1.5 hours. All accessible shoreline area was covered. Fyke nets were set at the same three locations in all three surveys. Fyke nets were set for two nights per location in 2013 and 2017, and one night per location in 2014. The fyke nets used were as described in the Bureau of Fisheries Community Survey Protocol. Additionally, a seine net as described in the Bureau of Fisheries Community Survey Protocol was pulled at the three locations suitable for pulling a seine in 2013 and 2017, but not in 2014.

In 2014 and 2017 the south end of the lake where dredging occurred had less vegetation and deeper water near shore than before the dredging. Most of the vegetated shallows were gone. By 2017 some patches of yellow water lily, white water lily, and Potamogeton had returned. No fanwort was observed in 2014 or 2017. In 2014, most of the quality fish habitat in this area was large woody debris immediately adjacent to the shoreline. By 2017, vegetation was providing fish habitat in some areas.

In 2013, a total of 658 fish were caught in all gears representing 14 species. Pumpkinseed dominated the catch representing more than half of the total number of individuals caught. Largemouth bass, bluegill and golden shiner were also common with more than 50 individuals caught for each species. Brown bullhead and American eel each were represented by 20 or more individuals. The remaining eight species were represented by less than ten individuals. All of the species with more than ten individuals caught in the pre-dredging survey were also caught in both post-dredging surveys (2014 and 2017). Stocked brown and rainbow trout were caught in the pre-dredge and both post-dredging surveys. Five species were caught in the pre-dredge survey that were not caught in either post-dredge survey, including yellow perch, goldfish, eastern mudminnow, pirate perch and redbfin pickerel. Of those only one individual each of yellow perch and goldfish were caught pre-dredge. Eastern mudminnow, pirate perch and redbfin pickerel were uncommon in Upper Lake pre-dredge, but are generally more common in the vegetated riverine stretches of the Carmans River. They were likely displaced by the lack of vegetated habitat post-dredge.





One common carp was caught in 2014, but none in 2013 or 2017. The only species not caught via electrofishing, but caught in other gear was banded killifish. These were caught by seine in 2013 and 2017, but not in 2014, most likely because a seine was not used that year.

From 2013 to 2014 the catch rates for largemouth bass, brown bullhead and American eel increased, while the catch rates for bluegill, pumpkinseed and golden shiner decreased. In 2017, bluegill, pumpkinseed and golden shiner catch rates increased to higher than the pre-dredge levels, and largemouth bass and brown bullhead catch rates also increased. PSDⁱ and RSD_p indices for largemouth bass changed very little, and were very

close to the desired range in all three surveys (Table 1). The catch rate for bass <8 in increased substantially in 2017 (Figure 1) indicating at least one strong year class since the dredging. Bluegill and pumpkinseed shifted toward smaller fish, with the PSD for both species dropping substantially in 2017. This coupled with the substantial increase in catch rates, primarily indicates strong year classes since the dredging.

In conclusion, there do not appear to be any adverse impacts to the fish community from the dredging.

Table 1. Catch per Unit Effort (CPUE^a) and size indices of sportfish and panfish from pre and post dredge boat electrofishing surveys on Upper Yaphank Lake.

Species	2013 Pre Dredge			2014 Post Dredge			2017		
	CPUE	PSD	RSD _p	CPUE	PSD	RSD _p	CPUE	PSD	RSD _p
Largemouth bass	36.0	46	10	40.8	41	21	57.2	37	19
Bluegill	61.0	22	11	12.0	60	50	255.0	8	0
Pumpkinseed	140.0	63	0	67.0	59	0	288.0	2	0

^aCPUE is the catch rate (number of fish caught per hour)

ⁱ PSD (Proportional Stock Density) and RSD (Relative Stock Density) are indices that allow for standardized comparisons of size classes of fish and provide measures of fish population balance. PSD is the percent of the stock sized population that are quality size, and RSD_p is the percent of the stock sized population that are preferred size. Populations of bass that are well-balanced (i.e., have good size distributions) have PSDs of 40-70 and RSD_ps of 10-25. Balanced panfish populations have PSDs of 30-60 and RSD_ps of 8-15.

Length categories for size structure indices for sportfish and panfish in Upper Yaphank Lake.

	Largemouth Bass	Bluegill & Pumpkinseed
Stock	≥8 in	≥3 in
Quality	≥12 in	≥6 in
Preferred	≥15 in	≥8 in