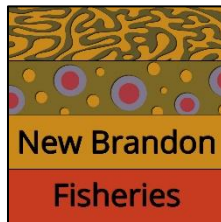
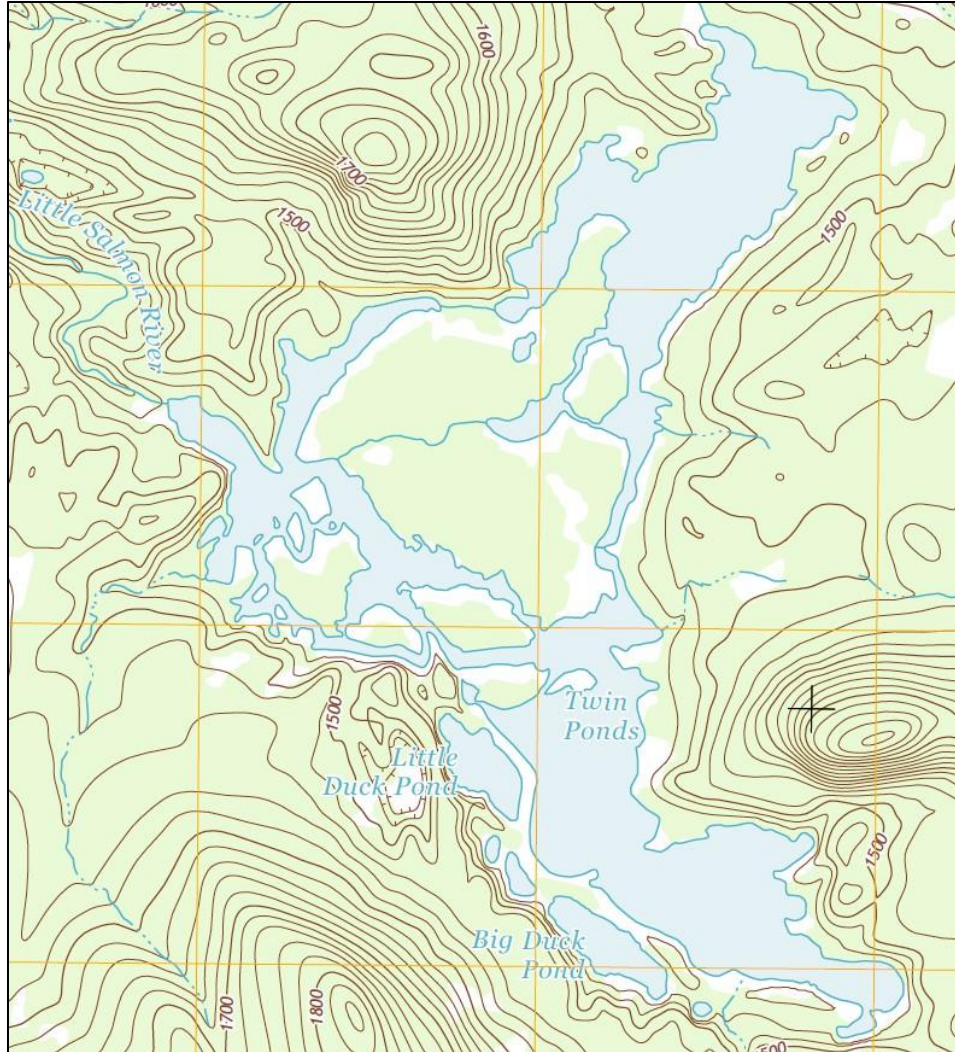


Twin Ponds Preserve

Fisheries Management Recommendations & Summer 2023 Water Chemistry



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I. Introduction

Twin Ponds was created in 1980 when a concrete dam was constructed on the headwaters of the Little Salmon River. Prior to flooding, the area contained 4 separate bodies of water, Spring Pond, Upper Twin Pond, Lower Twin Pond, and a 500-acre system of sphagnum bog interlaced with channels and numerous small unnamed ponds. Following flooding, the impoundment was reclaimed with Rotenone to eliminate yellow perch, white sucker, brown bullhead and various minnow species. Upper Twin Pond contained a self-sustaining lake trout fishery that was also eliminated, with fish measuring greater than 16.0 pounds being noted during the reclamation.

II. Historical Fisheries Management (1982-2009)

A stocking program was initiated in 1982, with the planting of 11,700 yearling and 13,900 fingerling Temiscamie strain brook trout. This particular strain originates from the Temiscamie River, a large inlet of Lake Albanel, 300 miles north of Quebec City in Canada. It was one of the primary strains Cornell University's Adirondack Fish Research Program looked at during their 26-year analysis of survival, growth and production between domestic and wild strains of brook trout. A 1983 survey of Twin Ponds carried out by Brandon Fisheries noted young-of-year brook trout along the shoreline, most likely the result of natural reproduction in the pond. Unfortunately, the survey also turned up 32.0 pounds of brown bullhead. A removal plan was created wherein Brandon Fisheries conducted annual spring and fall removal nettings. Trap nets were also sold to Twin Ponds staff, who carried out removal nettings of their own. Survey netting results for 1984 and 1985 suggested brook trout condition to be less than optimal. In 1986, 6,358 pounds of brown bullhead were removed from the pond. It was speculated at the time Twin Ponds was one of only two bodies of water in the entire Adirondacks (Arbutus Lake in Newcomb being the other) where bullhead densities were so high as to be the primary factor in creating poor brook trout growth and survival.

Between 1983 and 1990, the fisheries management plan focused on continued bullhead removal and annual fall stocking of 1,000 to 4,000 fingerling size Temiscamie strain brook trout. In 1990, white sucker began to show up in the netting surveys, with 300.00 pounds being removed that year alone. The brook trout stocking plan was altered and began focusing on the use of Temiscamie x Domestic hybrid strain brook trout, as it was thought they would have higher survival rates and provide better angling opportunities. This hybrid strain represented the culmination of the Adirondack Fish Research Program's attempt to develop a better strain of brook trout for fisheries management purposes. Brandon Fisheries involvement in the management of Twin Ponds was abruptly suspended in 1993, stemming from issues of non-payment for services rendered. While it was reported the bullhead removal program continued to be carried out by Twin Ponds staff, no further netting surveys were conducted by Brandon Fisheries after 1993. It remains unclear what the results of any Twin Ponds staff conducted removal nettings were.

A stocking program was reestablished in 1998, with 1,238 Temiscamie x Domestic hybrid strain and 418 Assinica x Domestic hybrid strain brook trout (Assinica strain are another Canadian strain used in Cornell’s research with similar characteristics to the Temiscamie strain) being planted in the fall of that year. In 1999, 3,000 Temiscamie x Domestic hybrids were stocked with a repeat plan for 2000, which was cancelled at the last minute, resulting in no brook trout being stocked. A late season request for stocking in fall 2021 saw 690 Temiscamie, 1,000 Little Tupper (Adirondack Heritage strain), and 85 Temiscamie x Domestic hybrid strains being planted. Stocking was a little more stable from 2003 through 2009, with 2,000 Temiscamie x Domestic hybrids being planted every other year. There is no further record of stocking activities after 2009.

III. Summer 2023 Water Chemistry

New Brandon Fisheries carried out water chemistry sampling in two separate sites at Twin Ponds Preserve on August 28, 2023. The first site was at the area of maximum depth in what was historically known as Upper Twin Pond. At 72 feet, this is the deepest spot in the entirety of Twin Ponds. The second site was in the bog mats between Lower Twin Pond and the dam. On-site measurements for dissolved oxygen and temperature were made at 5-foot intervals in Upper Twin and 2-foot intervals at the Bog site.

Dissolved oxygen is an important component of any lake ecosystem. It is measured in the field and reported in parts per million (ppm). Dissolved oxygen is often dependent on water temperature because cold water tends to hold more oxygen. Temperature is measured in the field and reported in degrees Fahrenheit. The New York State Department of Environmental Conservation (NYS DEC) dissolved oxygen standards for trout waters are a minimum daily average not less than 6.0 ppm, and at no time less than 5.0 ppm. Trout prefer water temperatures to be less than 70° F.

At the Upper Twin site, there was a thermocline (area of greatest temperature change) located around a depth of 15 feet. This is fairly normal in a body of water this size, as wave action and daylight heating warm the upper layers, while the lower layers remain cool. Temperature ranged from 66.7°F at the surface to 39.2°F at the bottom of the water column. Observed water temperatures on the day of the survey should be considered optimal for brook trout as they prefer an average daily water temperature of 70°F or less. There was ample dissolved oxygen (5.0 ppm or greater) for salmonids through the 35-foot depth. Table 1 presents the temperature and dissolved oxygen data from the Upper Twin survey site.

Depth (Feet)	Temp (Deg F)	Dissolved Oxygen (PPM)
Surface	66.7	8.8
5	66.7	9.1
10	66.2	8.5
15	59.0	8.4
20	49.1	8.4
25	43.7	8.2
30	41.4	8.2
35	41.0	6.3
40	40.1	4.5
45	39.7	3.5
50	39.7	3.1
55	39.2	2.7
60	39.2	2.4
65	39.2	2.3
70	39.2	2.0
72	39.2	1.7

Table 1 – Twin Ponds, Upper Twin Site, Temperature and Dissolved Oxygen, 08/28/2023

The Bog site demonstrated more uniform heating throughout the water column, as would be expected considering the decrease in overall depth when compare to the Upper Twin site. Conditions continued to be optimal for brook trout; temperatures ranged from 68.0°F at the surface

to 60.8°F at the bottom. There was ample dissolved oxygen through a depth of 8 feet, falling to 4.3 ppm at the 10-foot depth. Table 2 provides temperature and dissolved oxygen data from the Bog site.

Depth (Feet)	Temp (Deg F)	Dissolved Oxygen (PPM)
Surface	68.0	7.6
2	68.0	7.6
4	67.6	8.2
6	67.1	8.0
8	67.1	8.0
10	64.4	4.3
12	61.3	2.4
13	60.8	1.6

Table 2 – Twin Ponds, Bog Site, Temperature and Dissolved Oxygen, 08/28/2023

Water samples were drawn at depths of 5 and 25 feet in Upper Twin and 3 and 9 feet at the Bog site for pH and alkalinity analysis at our lab. Lab pH is simply a measurement of pH taken at the lab. The value is expressed in pH units. Many species of fish and amphibians have difficulty with growth and reproduction when pH falls below 5.5 pH units. Air-equilibrated pH is the same measurement as lab pH, taken after the CO₂ is driven off. It is thought to be a little more useful for comparisons because it is more resistant to short-term chemical changes that may mask the “true” pH. It is also expressed in pH units. Acid neutralizing capacity (ANC) and alkalinity are both measures of the buffering capacity of water. As a result of the underlying bedrock geology, most lakes in the Adirondacks do not have high buffering capacities and are therefore susceptible to acidic inputs. ANC is measured in micro-equivalents per liter (µeq/L) and alkalinity is measured in ppm. Alkalinity and ANC may be positive, negative or zero. A negative value means there is an abundance of hydrogen ions, typically due to some amount of mineral acidity in the water, while positive values indicate a deficiency of hydrogen ions.

Both measures of pH, and alkalinity, across all sample sites and depths, were found to be at excellent levels for brook trout production, growth and survival. Table 3 presents the pH and alkalinity data from the summer 2023 survey of Twin Ponds.

Station	Depth	Lab pH	Air Eq. pH	ANC (µeq/L)	Alkalinity (ppm)
Upper Twin	5	7.34	7.47	443.46	22.17
Upper Twin	25	7.01	7.55	633.82	31.69
Bog	3	6.84	7.30	435.51	21.78
Bog	12	6.80	7.29	408.74	20.44

Table 3 – Twin Ponds, pH and Alkalinity, 08/28/2023

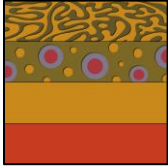
IV. Fisheries Management Recommendations

Water chemistry results from the summer 2023 survey suggest optimal conditions for brook trout production, growth and survival. However, there is nothing in the chemistry results that precludes the ability of non-salmonid species to thrive as well. Looking at the available historical information, it should be assumed there is indeed a population of non-salmonid species still residing in the pond. If the species assemblage continues to be composed of brown bullhead, white sucker and brook trout, the suggestion for future management efforts will look similar to those carried out in the past. Annual removal netting of all non-salmonid species is crucial for reducing competition pressure on the resident brook trout population. Annual fall stocking of brook trout provides a healthy year class, as well as insuring against future losses from predation and variable environmental conditions.

If the assemblage has shifted, things may be more problematic. Initial post-reclamation surveys suggested the elimination of all fish from the system, eventually proven not to be the case when brown bullhead were captured in 1983. This species is notoriously hard to eradicate through reclamation. It is likely they found an area of refuge in the pond and their population rebounded once the pond was flooded. White sucker on the other hand are more easily eradicated, so their reappearance in 1990 may be indicative of introduction from outside the Twin Ponds system. If this is the case, then the possibility exists other species may have gotten into the pond since the last survey in 1993.

Either way, a netting survey should be conducted in spring 2024. Given the size of Twin Ponds, a total of 4 trap nets should be set, with a net being set within each of the 4 “historical” water bodies; Spring Pond, Lower Twin Pond, Upper Twin Pond and the sphagnum bog area where the dam now sits. Once the results are known, the sites can be reevaluated and future management plans can be formulated. Currently, New Brandon Fisheries has availability to schedule a netting survey in the spring of 2024, but there is no availability for the fall. A cost estimate for a spring 2024 survey netting and non-salmonid removal is included at the end of this report.

Without current survey data it is hard to give stocking recommendations. That being said, netting surveys from 1990 through 1993 suggested a large percentage of the net sample from each year was made up of stocked fish. The net catch from the 1993 survey was made up of 66 percent stocked fish (as indicated by the presence of clipped fins). An estimated stocking total of 2,000 Temiscamie x Domestic hybrid strain brook trout in the fall seems reasonable given the immense size of the Twin Ponds system. Actual plans should be adjusted depending on survey results. Currently, New Brandon Fisheries has availability for fall 2024 stocking, but numbers are limited and fish are sold on a first come, first serve basis. A cost estimate for stocking has been included at the end of this report.



New Brandon Fisheries

29 Brandon Road • Paul Smiths, NY • 12970

(518) 327-3534 • newbranfish@gmail.com

www.newbrandonfisheries.com

11/21/2023

Bill to:

Twin Ponds Preserve

Bill for:

Trap Net Survey, 4 nets, 5 days (Mon-Fri) \$5,325.00

Sub-Total \$5,325.00

New York State Sales Tax (Franklin County, 8.0%) \$ 426.00

Total \$5,751.00

Checks should be made out to:

New Brandon LLC

If sending payment through the mail, please address as follows:

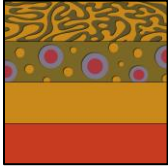
Scott Carlson

New Brandon Fisheries

29 Brandon Road

Paul Smiths, NY 12970

We accept cash or checks as payment, no credit or debit cards please.
Accounts not paid within 30 days are subject to a 1.33% monthly finance charge.



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11/21/2023

Bill to:

Twin Ponds Preserve

Bill for:

2,000 Temiscamie x Domestic hybrid strain brook trout	\$2,000.00
Delivery (30 miles)	\$ 60.00

Sub-Total	\$2,060.00
New York State Sales Tax (Franklin County, 8.0%)	\$ 164.80

Total \$2,224.80

Checks should be made out to:

New Brandon LLC

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