Northeast Aquatic Research

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REVISED March 14, 2025
SECOND REVISION April 10, 2025

TO: Crystal Pond Association

ATTN: Elizabeth Murphy & Rick Bray

Re: Crystal Pond 2024 aquatic plant and water quality results and analysis of long-term water quality data.

BACKGROUND

This report analyzes water quality data collected by Crystal Pond Association volunteers from April through October 2024 and aquatic plant data collected during a comprehensive survey conducted by Northeast Aquatic Research in October 2024. We have also included an analysis of Crystal Pond's long-term water quality data set. Beginning in 1990, water quality data was collected once per season in late July or early August. The frequency of monitoring increased in 2016 and further increased in 2020. Our historical analysis focuses on the late July/early August data points to assess change over time.

The Crystal Pond Association volunteers collected in-situ water quality data from the Station 1 (site of deepest water), weekly from April through October. The volunteers also collected water samples from the top, middle, and bottom at Station 1, once per month for nutrient analysis. In addition, water samples were collected from four of the lake's inlets (Inlets 4, 7, 8, and 9) during two rain events in April and May.

The water quality parameters included in this report are primarily assessed using the CT DEEP's categorization of Connecticut lakes (**Table 1**). The goal for Crystal Pond is to remain in the oligo-mesotrophic range.

Table 1. Connecticut DEEP Trophic Categories and Ranges of Indicator Parameters.

Category	T. Phosphorus (ppb)	T. Nitrogen (ppb)	Secchi Depth (m)	Chlorophyll *a* (ppb)
Oligotrophic	0 -- 10	2 – 200	6 +	0 -- 2
Oligo-mesotrophic	10 -- 15	200 – 300	4 -- 6	2 -- 5
Mesotrophic	15 -- 25	300 – 500	3 -- 4	5 -- 10
Meso-eutrophic	25 -- 30	500 – 600	2 -- 3	10 -- 15
Eutrophic	30 -- 50	600 – 1000	1 -- 2	15 -- 30
Highly Eutrophic	50 +	1000 +	0 -- 1	30 +

2024 Water Quality Results

Water Clarity

The water clarity (Secchi disk depth) was both very good and poor in the 2024 season. Water clarity was excellent from April through early June, with values ranging from ~7.0 to 8.5 meters-nearly to the bottom (**Figure 1**). In fact, the April 26th, May 4th, May 20th, and June 7th, 2024, measurements are the four best clarity readings on record for Crystal Pond. Clarity decreased to 4.6 meters by late June and further decreased to 2.7 meters by early August. The August 4th Secchi depth of 2.7 meters is the third worst clarity reading on record, exceeded only by worse clarity in July 1991—2.4m, and July 1995—2.1m.

Following the period of poor clarity in August, clarity improved through late September, experienced a short period of decreased clarity during fall overturn in early October, and then improved again by mid-late- October. Water clarity readings made in September were much better than in the last three years. There is a possible repeating seasonal trend in the clarity data with good to excellent values in the spring months of April and May, followed by declining clarity through June, July, and August. The clarity stabilizes at ~4m during this time and then tends to remain ~4m for the rest of the season. In 2024, the clarity followed much the same trend but was much better in the spring, much poorer in August, and much better in the fall.

Despite some particularly poor clarity readings in August 2024, the late July/early August water clarity has improved over the years 1990-2024. Based on a linear regression model of the late July/early August Secchi disk depth as the outcome and year as the only predictor, for each year there is a 0.06 improvement in Secchi, or, over 10 years Secchi has improved by 0.6m, on average (**Figure 2**). The August 4th, 2024 measurement is a notable outlier compared to recent years. Water clarity should continue to be closely monitored to determine whether the trajectory is shifting.

Figure 1. Secchi disk depths (m) measured in Crystal Pond between April and October 2024 are shown by a red line, gray lines show 2021, 2022, and 2023.

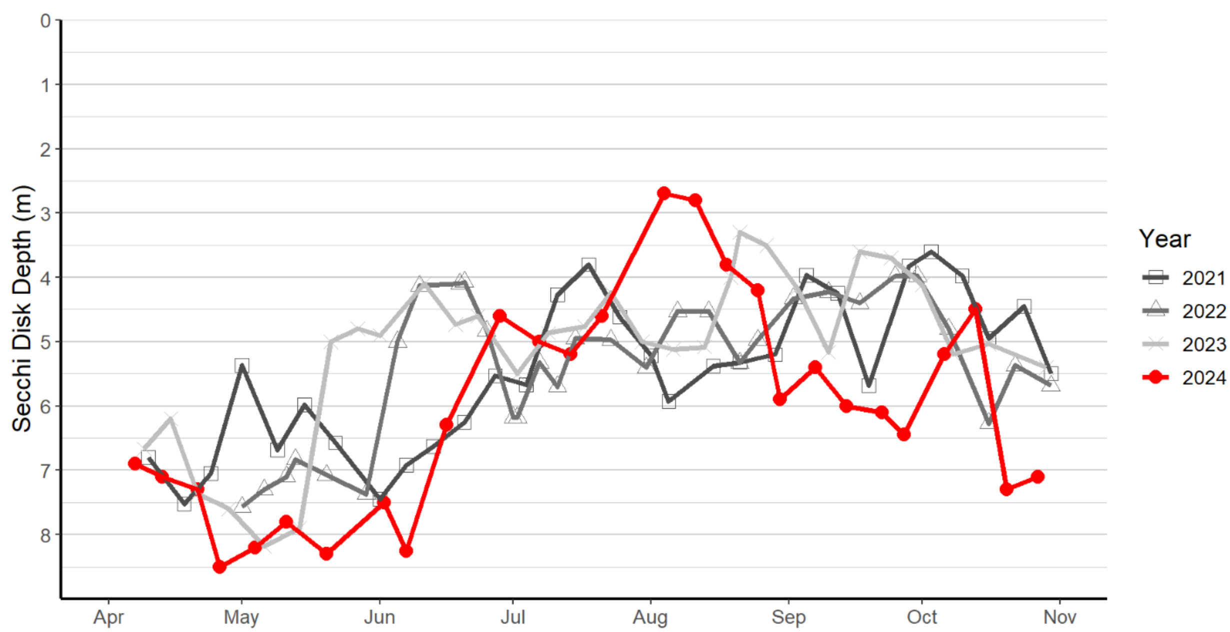
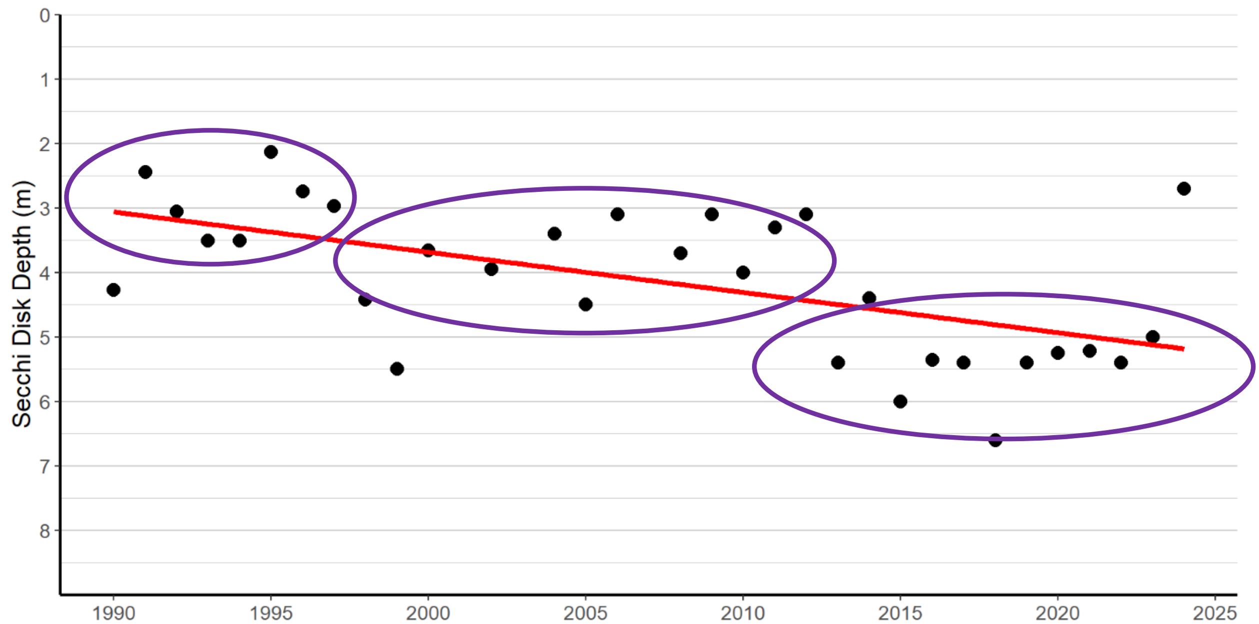


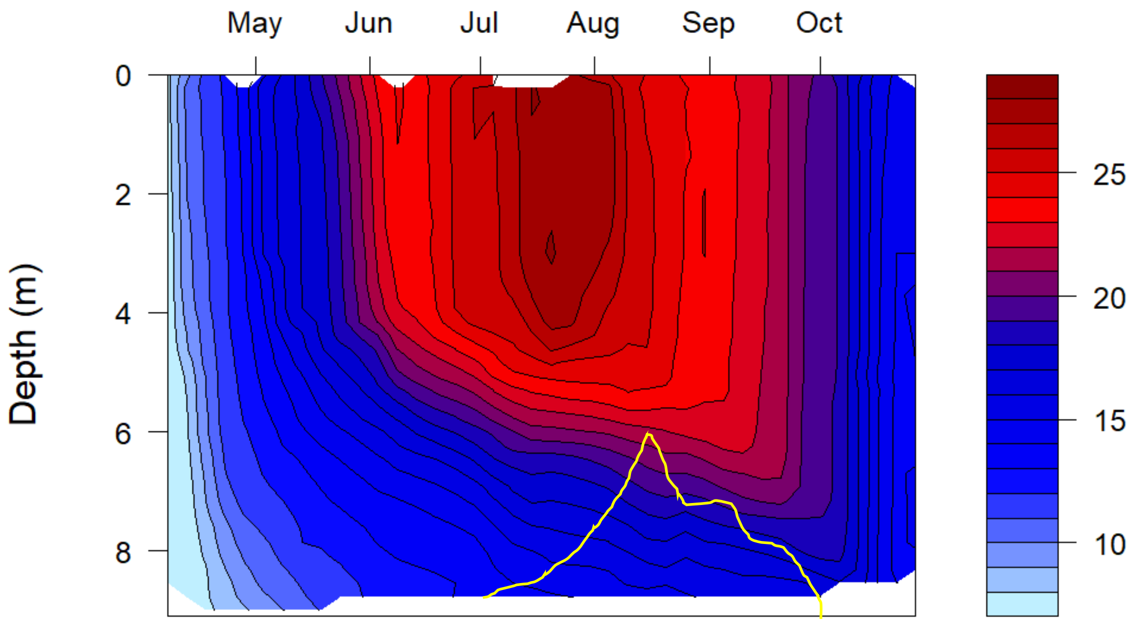
Figure 2. Annual late July/early August Secchi disk depth, 1990-2024.Red line indicates linear regression.



Water Temperature and Dissolved Oxygen

The water column at Station 1 was fully mixed in early April, that is, both water temperature and dissolved oxygen were the same from top to bottom (**Figure 3, Figure 4**). The upper 4 meters show uniform warming until maximum temperatures in mid-July of ~28°C. The upper 4 meters remained at that temperature until early August, then uniformly cooled until the end of sampling season when the lake was a constant 17°C from top to bottom. Water deeper than 4 meters warmed slower with depth but didn't form a true deep cold layer (Hypolimnion) since the bottom water temperature steadily increased through the season going from 7°C in April to 17°C in October when the lake finally mixed to the bottom. Although a true Hypolimnion didn't form, there was still very strong stratification, beginning in June and remaining strong until September. The thermocline started at about 5 meters in June then slowly deepened to 7 meters by mid-September. The location of the thermocline is found where the color transitions from red to blue in **Figure 3**.

Figure 3. 2024 water temperature (°C). Yellow line denotes the location of the anoxic boundary



Dissolved oxygen (DO) concentration of the water column at Station 1 is shown in **Figure 4**. The lake had uniformly high DO in April when sampling began. The upper 4 meters remained fully saturated with DO, sometimes becoming super saturated, for the entire season. Water below 4 meters showed various rates of DO loss, with all water deeper than 6 meters becoming anoxic (dissolved oxygen <1mg/L) in early August. The anoxic boundary reached a maximum height of 5.44 meters (as measured down from the surface) in mid-August. This is the worst (highest in the water column) anoxic boundary on record, with the next five highest readings all occurring in the 1990s (**Figure 5**). However, mid- to late-August monitoring only began in 2018. Before then, a single mid-season event was conducted on or around July 31st. The anoxic boundary often reaches a maximum height in mid- to late-August, so it is possible that the anoxic boundary reached higher in early years but was simply not recorded.

Oxygen is returned to the bottom water by the downward forcing of the thermocline in later August and all through September. At one point in mid-August, the anoxic boundary crossed into the thermocline briefly (yellow line in **Figure 3**). After that, the anoxic boundary was directly below the thermocline for the rest of the season.

The location of the anoxic boundary on July 31st is shown in **Figure 6.** The anoxic boundary during the period 1990-2000 was somewhat erratic early, but with several years of constant anoxic boundary at 5.7m. Increasing water clarity is mostly responsible for the deepening of the anoxic boundary after around 2000, when the anoxic boundary remained deeper than 6.5 meters and often below 7.0 meters. In the last 10 years, there have been a few years with very low anoxia, ~8 meters, and one year when it was not detected at the end of July.

Figure 4. Distribution of dissolved oxygen (mg/L) in Crystal Pond during 2024. Bracket shows period of anoxia, mid-June through Oct 1st.

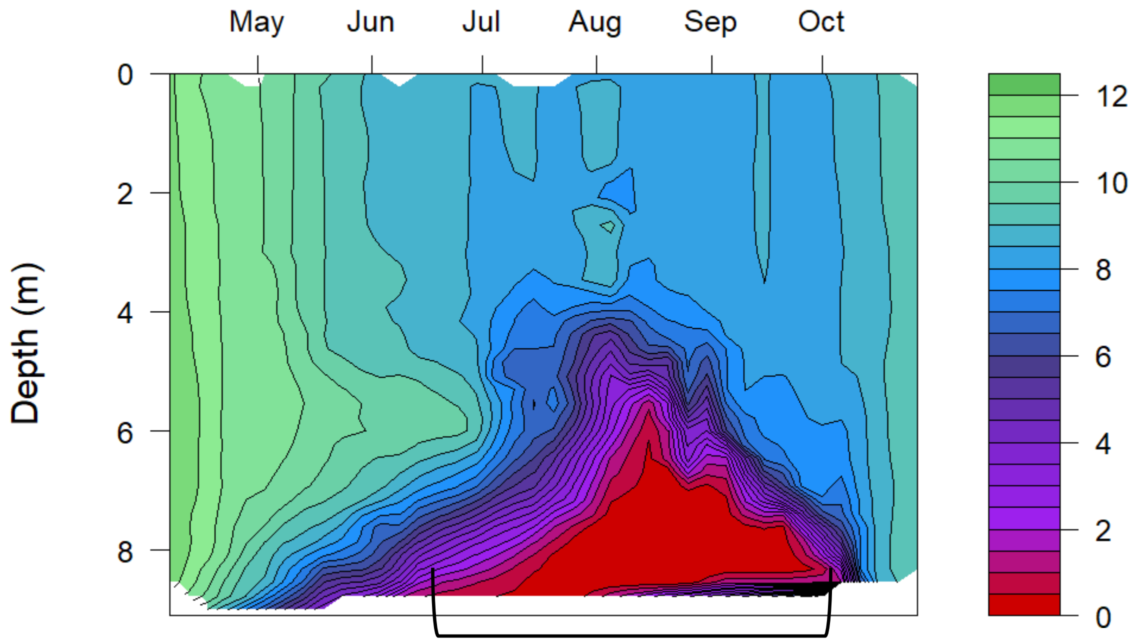


Figure 5. July through September anoxic boundary locations, 1990 – 2024. Square indicates 8/18/24 anoxic boundary. Note that earlier years lack mid-August to September data.

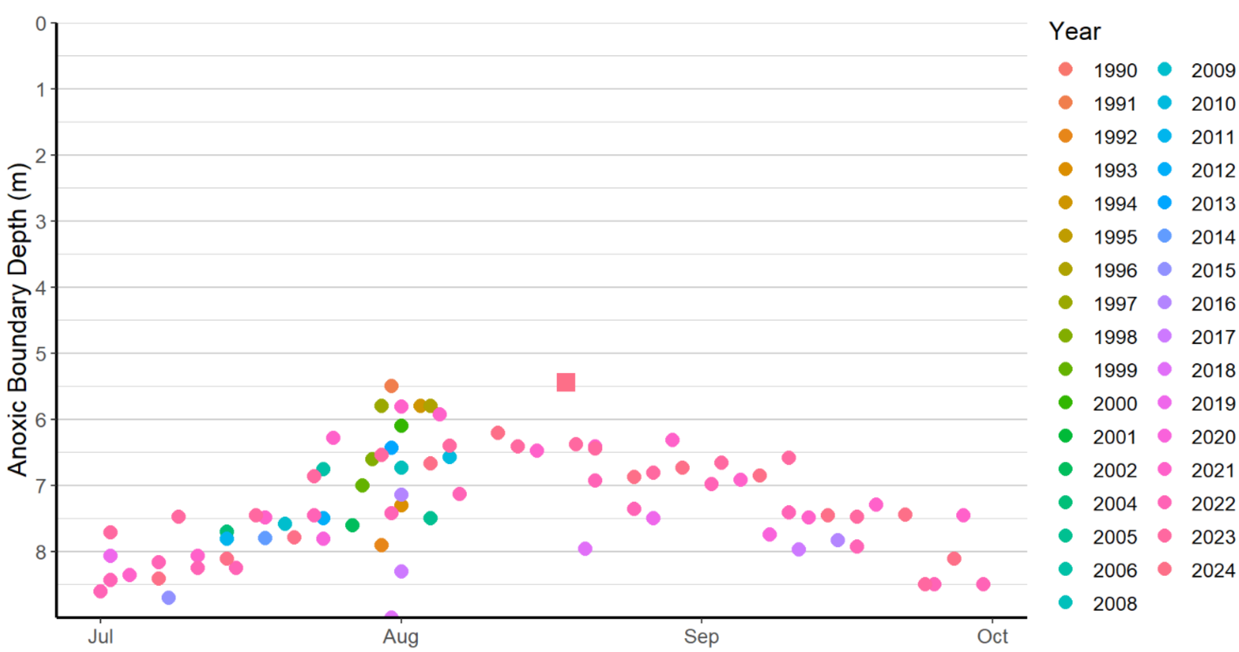
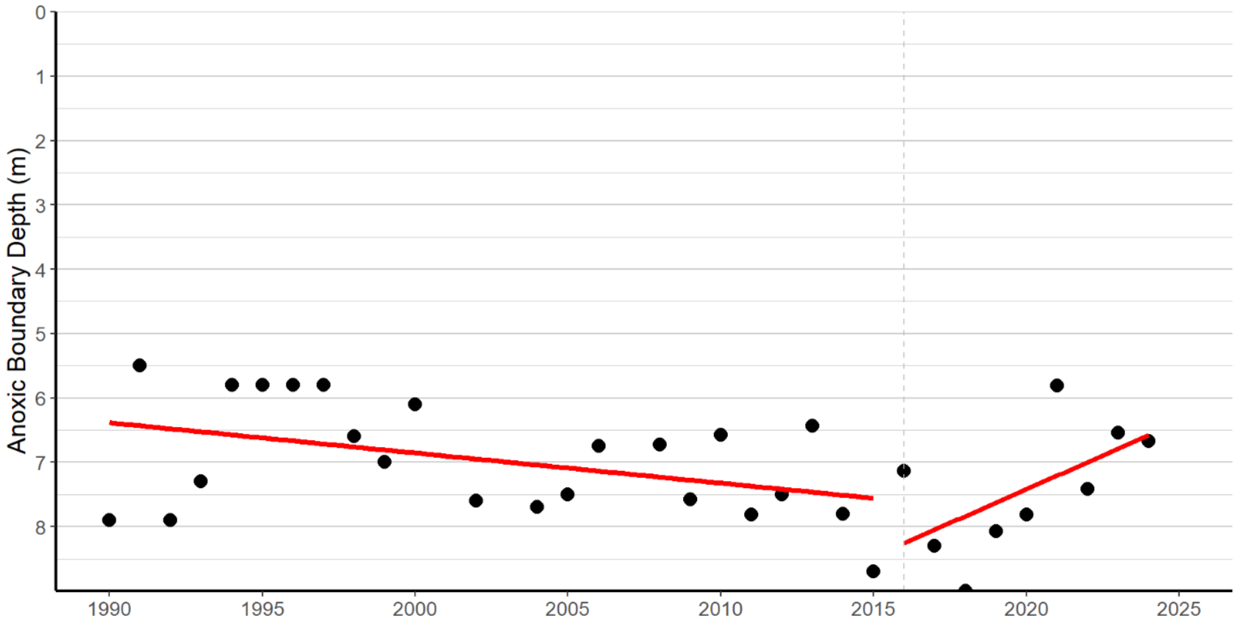


Figure 6. Annual late July/early August anoxic boundaries, 1990-2024, with regression lines 1990 to 2015 and 2016 to 2024.



Nutrients

Total Phosphorus

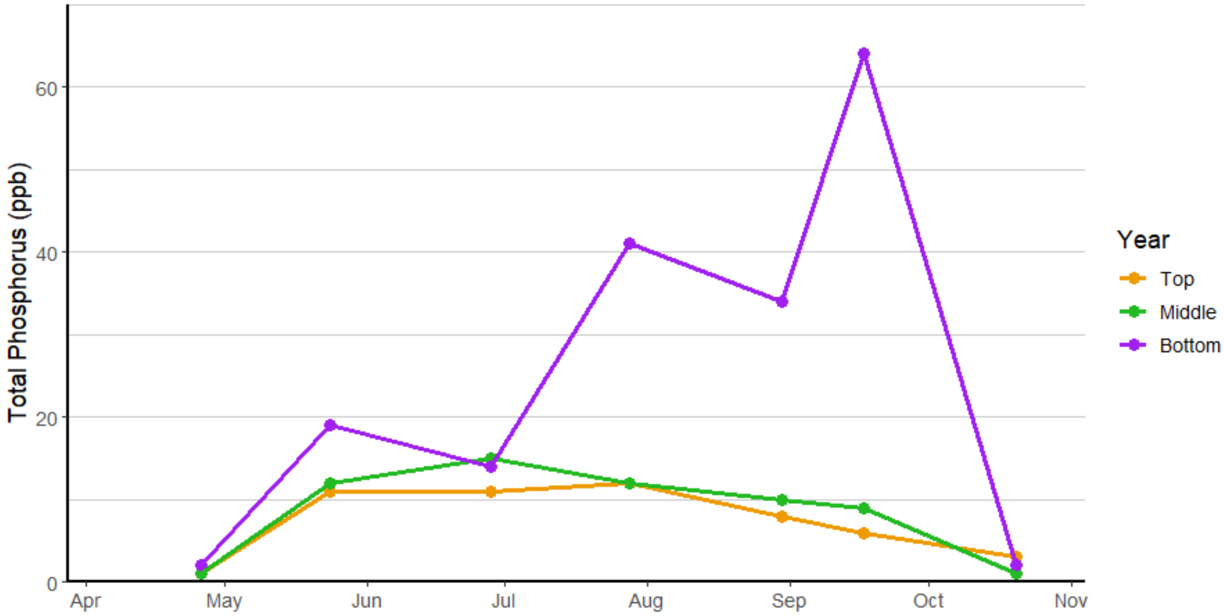
Total phosphorus (TP) at the top and middle of the water column remained ≤ 15mg/L for the duration of the 2024 sampling season (**Table 2**, **Figure 7**). TP was low at all three sampling depths in April. However, we have some reservations about these results. Both the 1m and 5m samples came back with "non-detect" for TP, meaning the value was below the detection limit of 1 ppb. It is extremely unlikely for total phosphorus in lake water to be that low, even in lakes with extremely good water quality.

TP in the bottom water increased in July to about 40ppb, consistent with the onset of anoxia in the bottom water beginning at the end of June. However, TP decreased in August despite more intense anoxic conditions at that time. TP increased again in September to the seasonal maximum concentration of 64ppb. However, anoxic conditions were waning at this time, with only the bottom meter of water anoxic. Typically, internal loading concentrations follow the increase in the volume of anoxic water. Crystal Pond did almost the opposite, as TP decreased when the volume of anoxia was the largest (mid-August) then TP increased at the tail end of the period of anoxic water when the lake was almost mixed to the bottom. The mid-October sampling, which occurred after fall overturn, showed low TP at all sampling depths.

Table 2. Total phosphorus concentrations (ppb) in Crystal Pond in 2024.

Water Depth	Apr 26	May 25	Jun 28	Jul 28	Aug 30	Sep 17	Oct 20
Top	1	11	11	12	8	6	3
Middle	1	12	15	12	10	9	1
Bottom	2	19	14	41	34	64	2

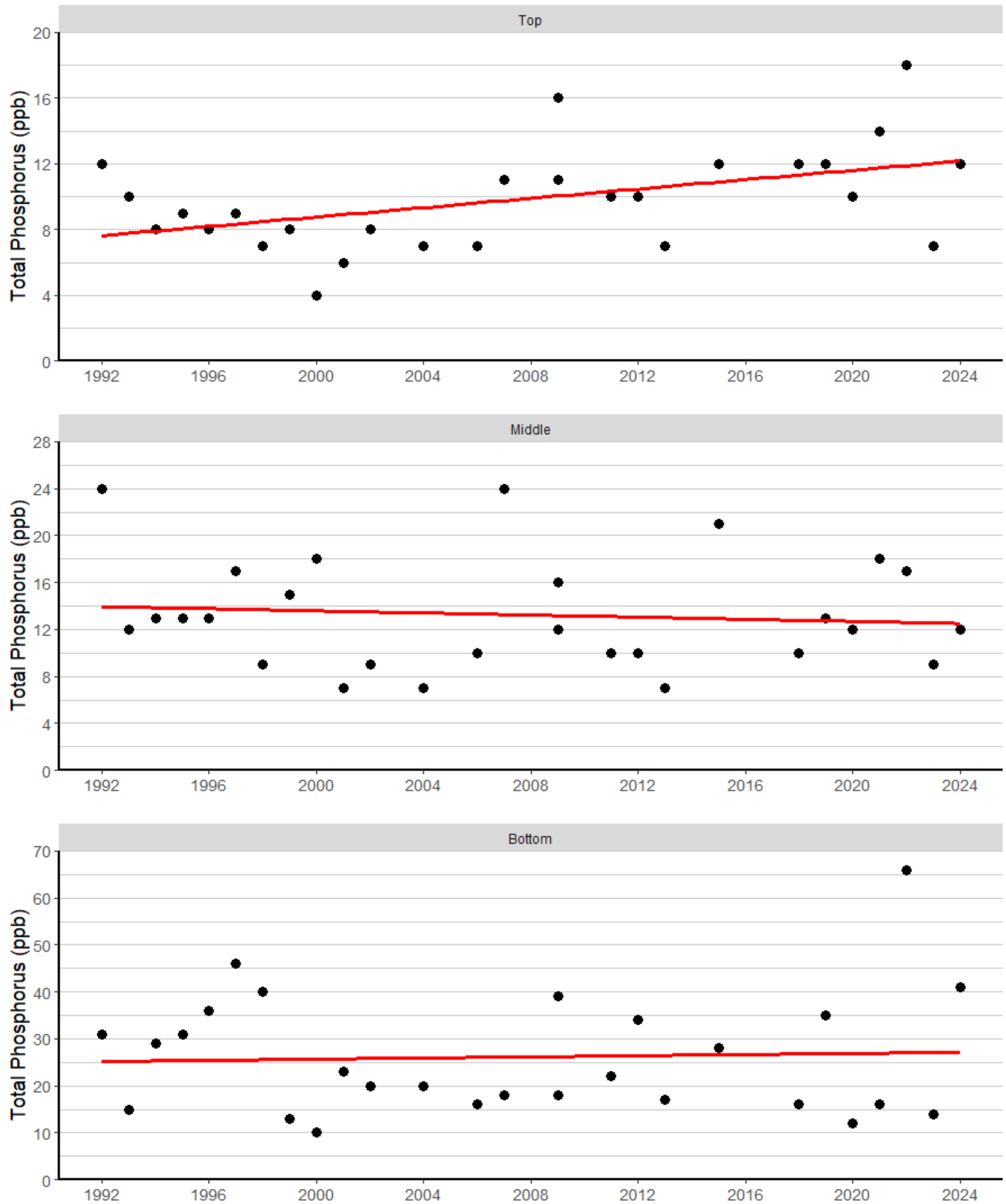
Figure 7. Total phosphorus concentrations (ppb) in Crystal Pond in 2024.



All, 1992 to 2024, late July/early August top, middle, and bottom total phosphorus (TP) data is shown in **Figure 8**. Surface water had relatively good to very good TP concentration <8ppb until about 2007 when concentration climbed to about 10ppb, then in the last 10 years to 12 ppb.

TP at the middle and bottom of the water column has shown no significant change over the study period. Middle water has shown a large variation between 5 ppb and 24 ppb, but the bulk of the values have remained between ~10ppb and 16ppb during the study period. Bottom water TP has similarly shown no significant change over time. Most values were between 10ppb and 30ppb. Higher values, over 40ppb, have occurred 4 times.

Figure 8. Annual late July/early August total phosphorus concentrations, 1992-2024. Linear regression shown as red lines are not significant.



Nitrogen

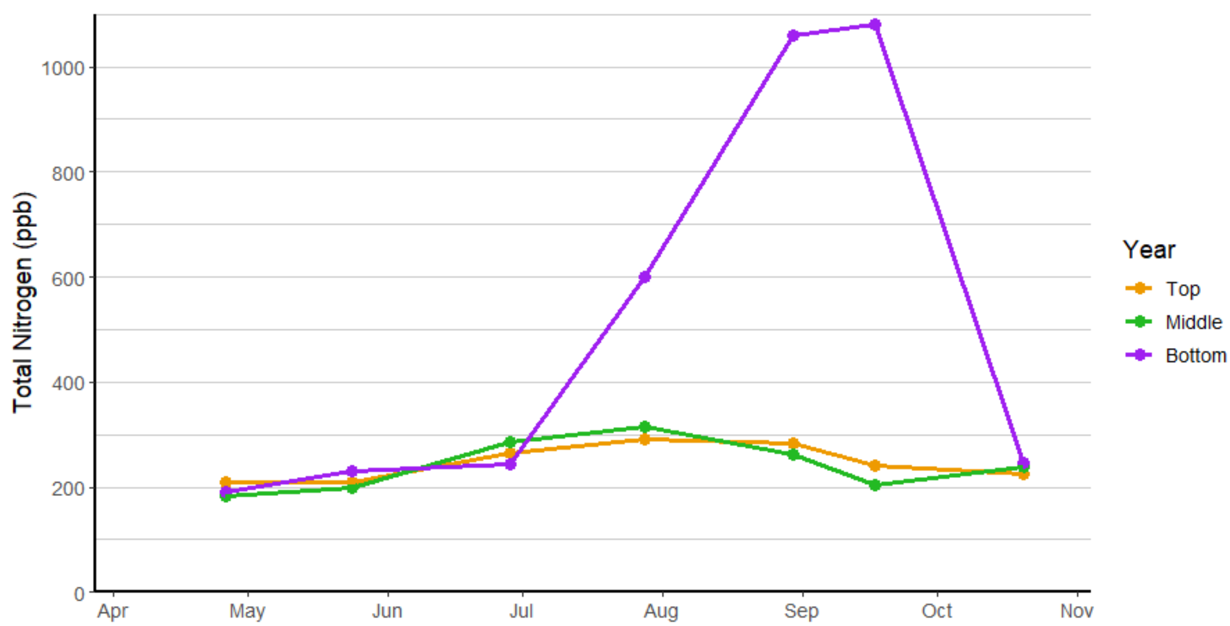
Total nitrogen (TN) remained low at all three sampling depths through late June (**Table 3**, **Figure 9**). From July through September, TN in the bottom water increased, reaching concentrations of over 1,000ppb in August and September, indicating internal loading. Middle and top water remained low throughout the season. Bottom water TN decreased to less than 300ppb by mid-October.

Late July/early August total nitrogen concentrations over the 32-year study period have shown an overall decline at all three sampling depths (top = 5ppb decrease per year, middle = 5ppb decrease per year, bottom = 18ppb decrease per year) (**Figure 10**). However, 2024 late July/early August TN concentrations were higher than most recent years at all sampling depths, so it is important to continue tracking TN and its ongoing trajectory.

Table 3. Total nitrogen concentrations (ppb) in Crystal Pond in 2024.

Water Depth	Apr 26	May 24	Jun 28	Jul 28	Aug 30	Sep 17	Oct 20
Top	208	208	264	292	282	240	224
Middle	183	200	285	314	263	204	238
Bottom	192	230	244	599	1,060	1,080	245

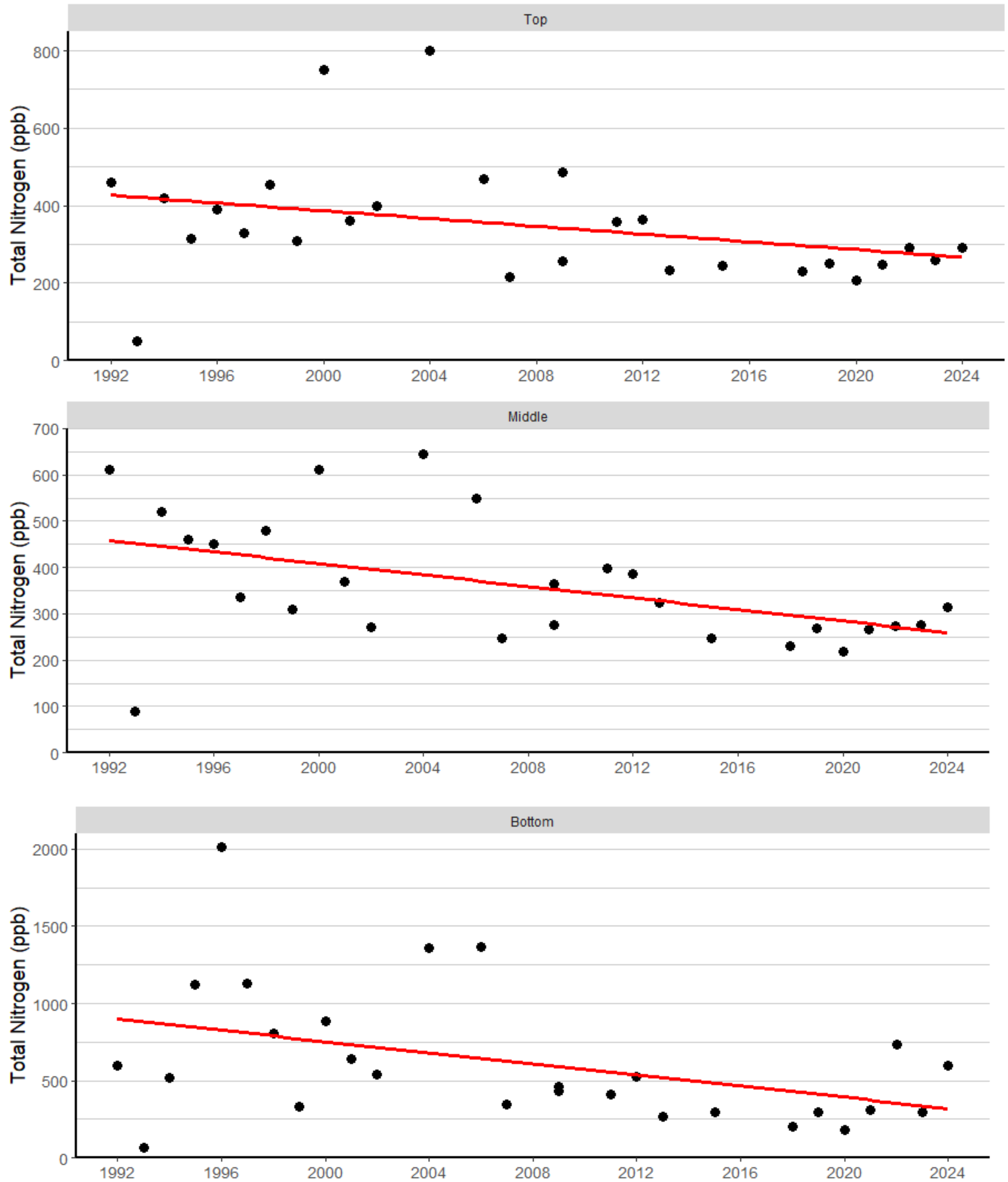
Figure 9. Total nitrogen concentrations (ppb) in Crystal Pond in 2024.



The long-term trend in surface, middle, and bottom water TN is shown in **Figure 10.** The TN in surface water has both decreased over time and become more stable, with no very high values. For several years, 1992-2009, TN values over 400ppb were occasional, after 2012 all surface water TN concentration have been less 300ppb. This indicates that the watershed loading of nitrogen has declined since monitoring began in 1992. The last nine years have shown excellent background concentrations of TN, ~250 ppb. The middle TN values follow the same general trend as surface values, with slightly higher values between

1992 and 2009. The last several years have had middle layer concentrations similar to surface values. Bottom water TN follows a similar pattern – early, until ~2009, concentrations were erratic and sometimes very high, ~2000ppb is highest we have recorded. After 2005, concentrations rarely exceeded 500 ppb.

Figure 10. Annual late July/Early August total nitrogen concentrations, 1992-2024. Regression lines (Red) are not significant.



Ammonia Nitrogen

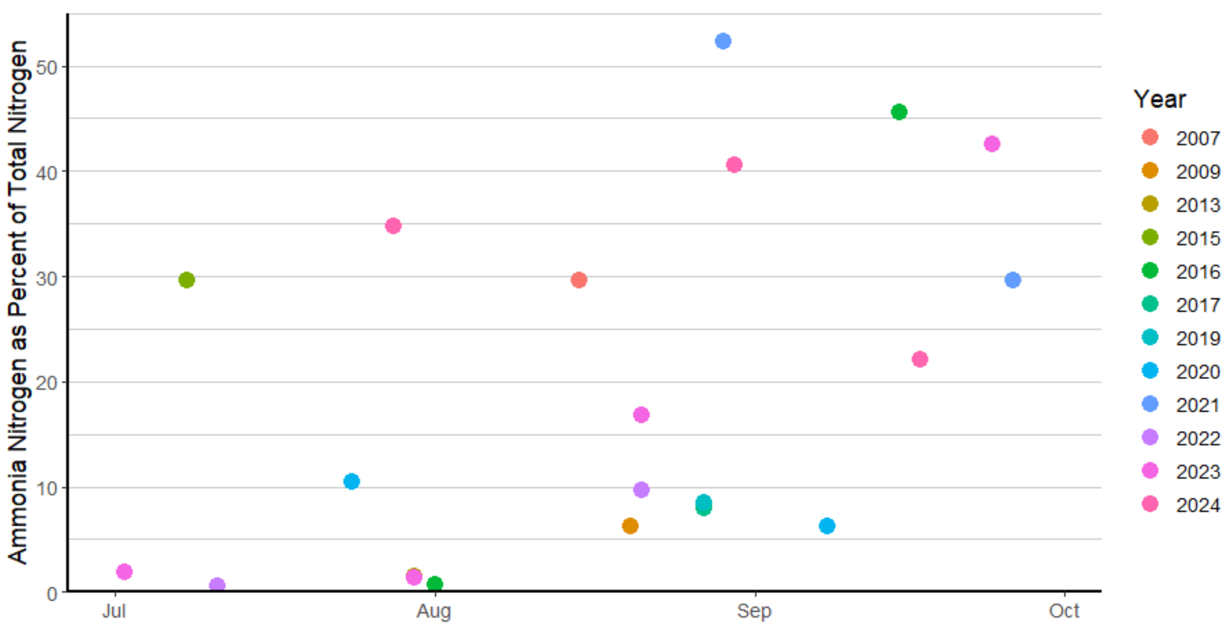
Ammonia (NH_3) was only measured at the bottom to detect release from sediments. The ammonia level was very low in May and June, when dissolved oxygen was still present in bottom waters, and again in October after the lake had thoroughly mixed dissolved oxygen to the bottom (**Table 4**). During the period of anoxia, July through September, ammonia concentration was elevated but not as much as expected based on the total nitrogen values. Typically, ammonia comprises a majority (75-95% is common) of the total nitrogen released from anoxic sediments. In 2024 however, ammonia was less than half the total nitrogen.

While low ammonia nitrogen in the bottom water during periods of internal loading is not typical for lakes in general, it is typical for Crystal Pond. We looked back at historical data for Crystal Pond showing bottom water ammonia as a percent of total nitrogen during the primary months of internal loading – July, August, and September. We found that ammonia only once exceeded 50% of the total nitrogen concentration (**Figure 11**).

Table 4. Ammonia-nitrogen concentration (ppb) in Crystal Pond in 2024.

Water Depth	May 24	Jun 28	Jul 28	Aug 30	Sep 17	Oct 20
Bottom NH_3	<3	3	209	430	239	<3
Bottom TN	230	244	599	1,060	1,080	245

Figure 11. July through September bottom water ammonia as percent of total nitrogen, 2007-2024.



Inlet Nutrients

Stormwater samples were collected from inlets 4, 7, 8, and 9 on April 27th and May 25th, 2024 (**Map 1**). Total phosphorus concentrations were low, 8-12ppb, at all four sampled inlets on April 27th (**Table 5**). TP concentrations were higher, 21-47ppb, on May 25th, particularly at Inlets 4 and 9 where the TP concentration was ~40ppb. These data indicate that further sampling of inlets is warranted.

Total nitrogen concentrations were low at inlets 4, 8, and 9 on April 27th, but inlet 7 had 453ppb total nitrogen. The low TP but high TN in this sample may be indicative of phosphorus-free nitrogen fertilizer. TN concentrations on May 25th were notably higher at Inlets 4 and 9 and similar to the April concentrations at inlets 7 and 8.

An assessment of the spring TP and TN concentrations in the primary inlets from 2014 through 2024 suggests that inlets 4 and 9 have consistently had higher TP than most other inlets (**Figure 12**). More recently (beginning in 2020) inlet 7 has also had elevated TP.

Map 1. Locations of Crystal Pond inlets sampled in 2024.

Table 5. Nutrient results for inlet stormwater samples.

	Total Phosphorus (ppb)		Total Nitrogen (ppb)	
Inlet	**April 27th**	**May 25th**	**April 27th**	**May 25th**
Inlet 4	11	47	176	383
Inlet 7	8	27	453	441
Inlet 8	12	21	239	278
Inlet 9	12	40	296	474

Figure 12. May inlet total phosphorus concentrations, 2014 – 2024. 2023 inlet data is not included because sampling was conducted in July and is therefore not comparable to spring readings.

Plankton

The plankton community of freshwater lakes is composed of microscopic animals (zooplankton) and a large group of non-animals, or phytoplankton, many of which are single-celled photosynthetic "plants". Some phytoplankton are also heterotrophic, meaning they can also feed on other smaller organisms.

Phytoplankton

The phytoplankton population in Crystal Pond in 2024 was small, reaching a maximum total of just 8,000 cells/mL in July (**Figure 13**). The community was dominated by Cyanobacteria, but the numbers were low with regards to the risk of health impacts (**Figure 14, Table 6**). Greens were the second most abundant Group but again, numbers were low. Greens are single-celled, tiny, and represent the major food source for Daphnia zooplankton. Cyanobacteria increases in July were probably triggered by the onset of ammonia release from the bottom sediments.

Figure 13. Phytoplankton numbers by Group in Crystal Pond in 2024.

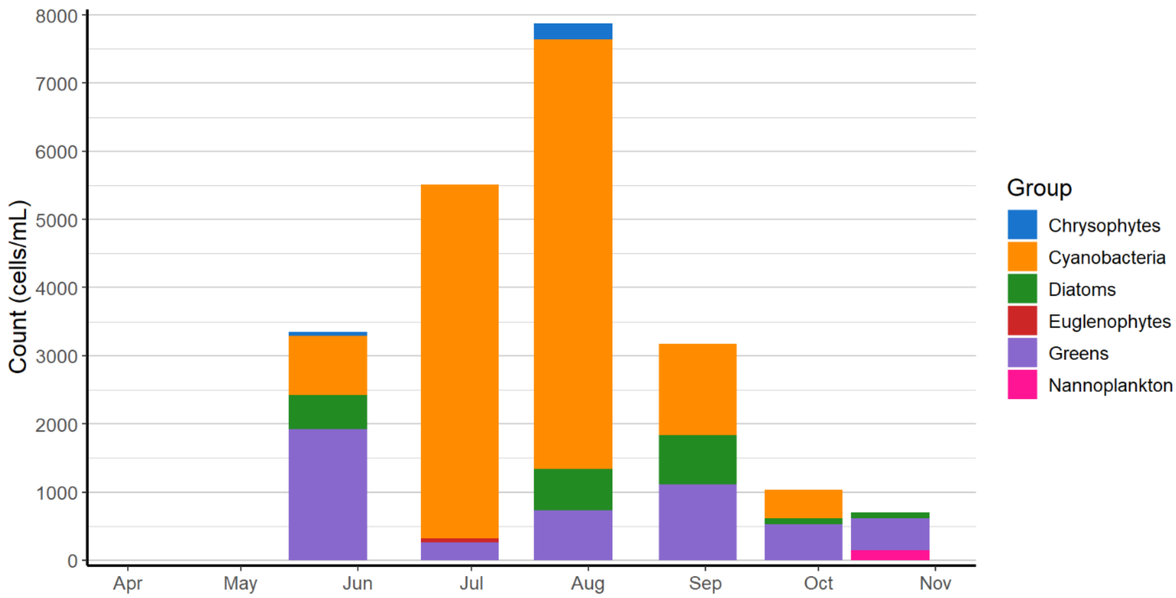


Figure 14. Cyanobacteria numbers by Group in Crystal Pond in 2024.

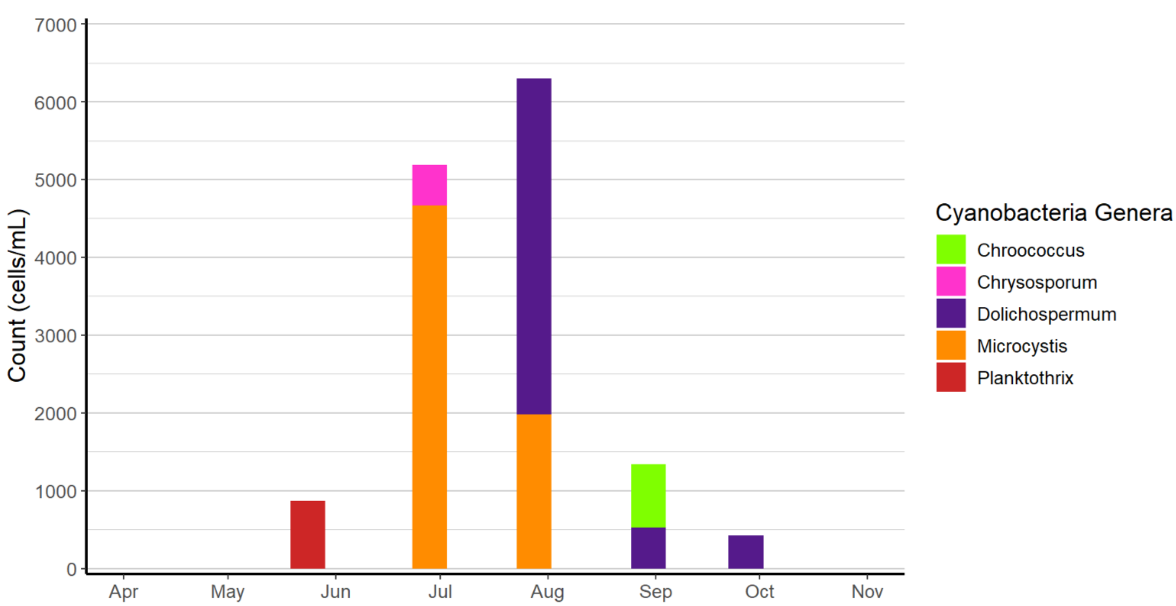


Table 6. WHO guidance values for the relative probability of health effects resulting from exposure to cyanobacteria.

Relative Probability of Acute Health Effects	Cyanobacteria Density (Cells/mL)
Low	< 20,000
Moderate	20,000-100,000
High	100,000-10,000,000
Very High	> 10,000,000

Zooplankton

The zooplankton, or water fleas, are small animals, mostly less than 1mm in length, although some can be up to 2mm in length. All are predators on either other smaller animals or single celled algae. Crystal Pond has a healthy population of zooplankton with all groups represented, however numbers reported for 2024 were much lower than the counts in 2023 (**Figure 15**). There was a very large year class of immature Copepods in April, and plenty of large-bodied organisms were present throughout the season (**Figure 16**). Especially important was the consistent presence, April through August, of large-bodied Cladocera of greater than 1mm in size. These are the principal algae grazers in lake systems.

Figure 15. Zooplankton numbers in Crystal Pond in 2024.

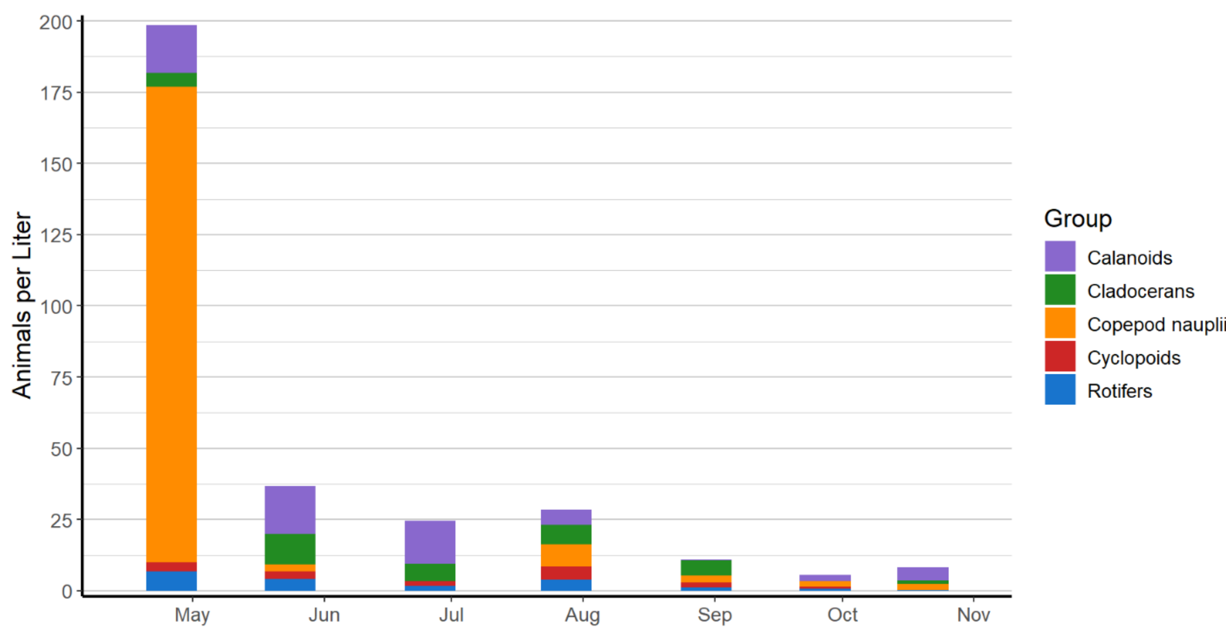
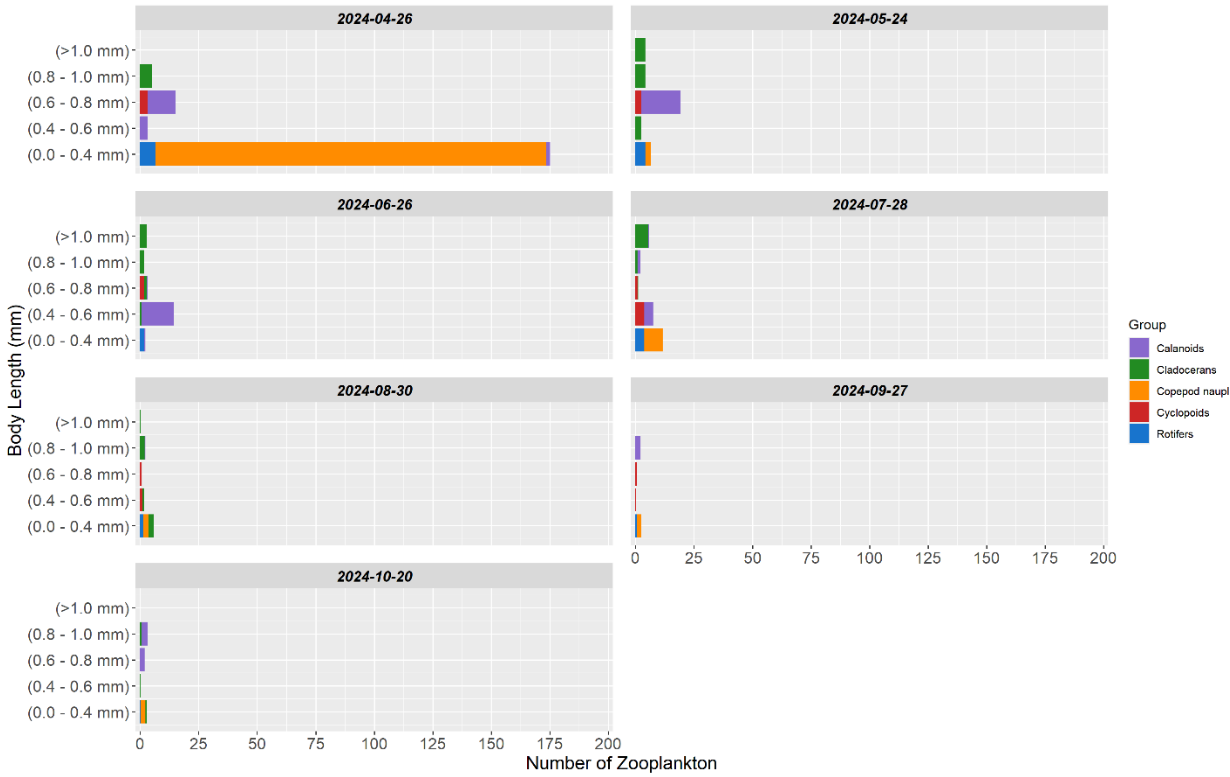


Figure 16. Zooplankton numbers by size classes in Crystal Pond in 2024.



Aquatic Plants

A total of 22 aquatic plant species were documented in Crystal Pond during the October 3rd, 2024 aquatic plant survey (**Table 7**). Filamentous algae and aquatic sponge also documented. Large-leaf Pondweed *(Potamogeton amplifolius*) and Robbin's Pondweed *(Potamogeton robbinsii*) were dominant, meaning they were present at greater than 20% of the survey waypoints (**Map 2, Map 3**). All remaining species were present at a low frequency of less than 10% of the survey waypoints.

Water Marigold *(Biden's beckii*) is a state-listed protected species with historical presence in Crystal Pond. During the 2024 survey, Water Marigold was scattered throughout the littoral zone (**Map 4**).

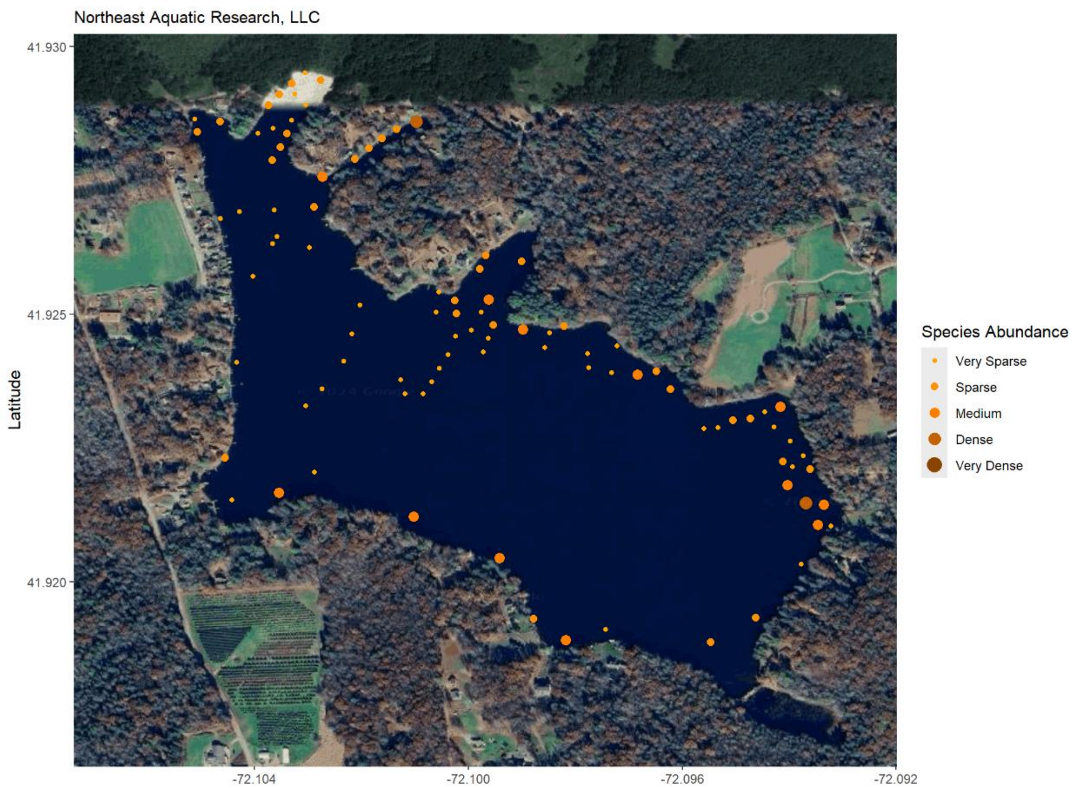
Mudmat *(Glossostigma cleistanthum*) is an invasive species that was first found in the lake in 2018 and has been observed periodically in the following years. In 2024, Mudmat was observed in one location near a boat launch (**Map 5**). Mudmat is a tiny, low-lying plant found in shallow water with sandy substrate. Though it is invasive, it is rarely a nuisance species. Because Mudmat grows in very shallow water, it is difficult to thoroughly search for this species by boat. Therefore, it is possible that small populations of Mudmat are present elsewhere in the lake but were not documented.

Filamentous algae was present in most of the lake's coves, indicating that there is likely higher nutrient levels in the coves (**Map 6**).

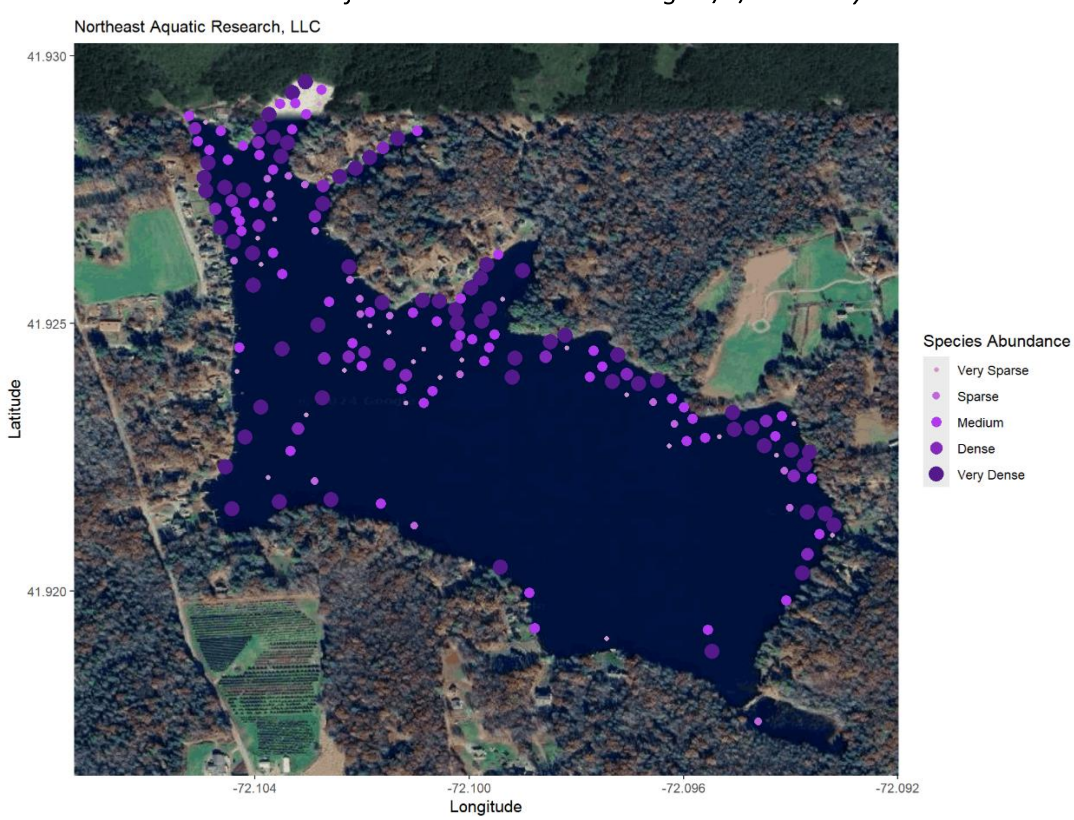
Table 7. Aquatic plant species observed in Crystal Pond during October 3rd, 2024 aquatic plant survey, with associated perfect frequency and average density. CT state-listed species is highlighted in blue. Invasive species is highlighted in orange.

Scientific Name	Common Name	% Frequency	Avg. Density
Bidens beckii	Water Marigold	6	24
Brasenia schreberi	Watershield	1	70
Ceratophyllum echinatum	Spiny Coontail	2	5
Elatine sp.	Waterwort	<1	5
Eleocharis acicularis	Needle Spikerush	2	12
NA	Filamentous algae	8	34
Fontinalis sp.	Aquatic Moss	7	6
Glossostigma cleistanthum	Mudmat	<1	10
Lyngbya	Cyanobacteria Mat	1	15
Nitella sp.	Stonewort	1	5
Nuphar variegata	Yellow Water Lily	<1	60
Nymphaea odorata	White Water Lily	1	28
Potamogeton amplifolius	Large-Leaf Pondweed	38	11
Potamogeton berchtoldii	Berchtold's Pondweed	<1	60
Potamogeton gramineus	Grassy Pondweed	6	41
Potamogeton pusillus	Small Pondweed	2	12
Potamogeton robbinsii	Robbins Pondweed	72	54
Potamogeton epihydrus	Ribbon-Leaf Pondweed	2	6
Stuckenia pectinata	Sago Pondweed	1	23
Utricularia geminiscapa	Hiddenfruit Bladderwort	1	10
Utricularia macrorhiza	Common Bladderwort	<1	NA
Utricularia purpurea	Eastern Purple Bladderwort	5	13
Vallisneria americana	Tapegrass	7	28
	Sponge	<1	NA

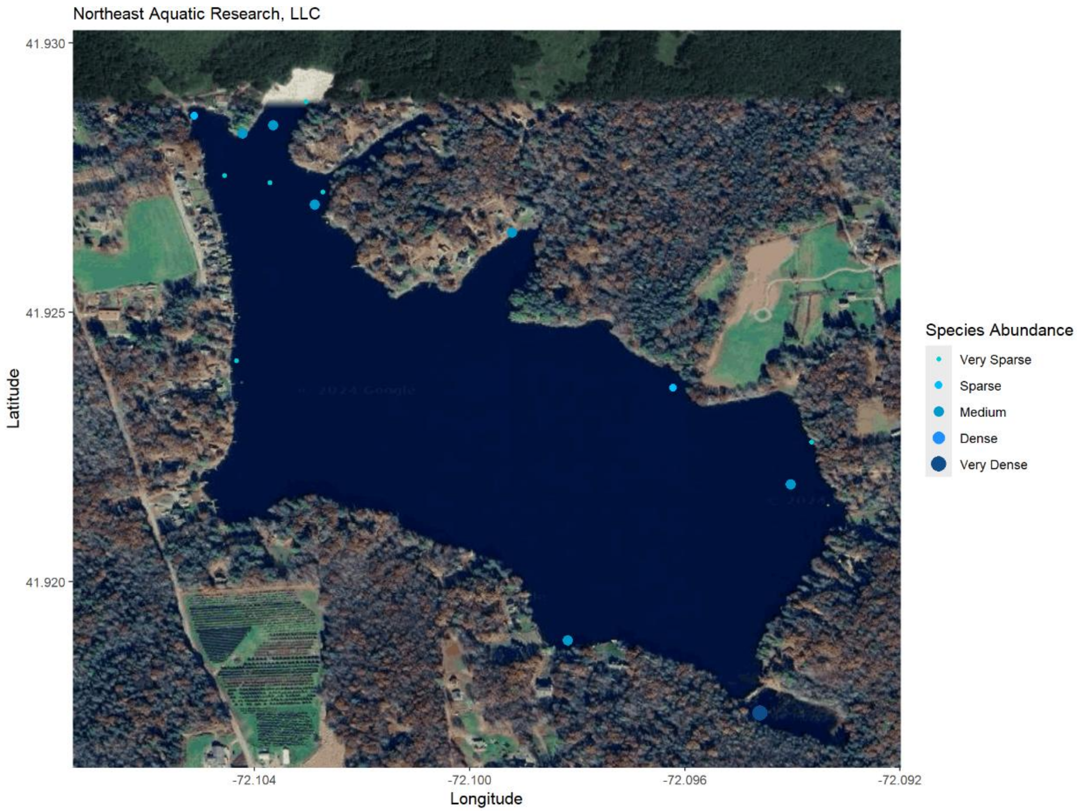
Map 2. Locations and abundances of Large-leaf Pondweed during 10/3/24 survey.



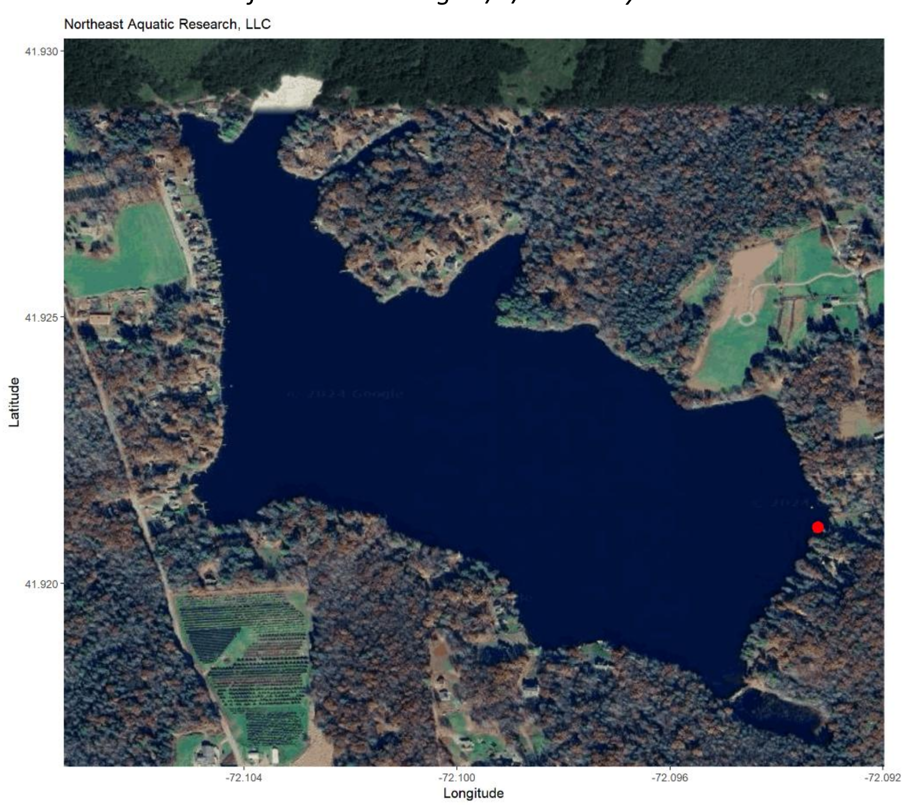
Map 3. Locations and abundances of Robbin's Pondweed during 10/3/24 survey.



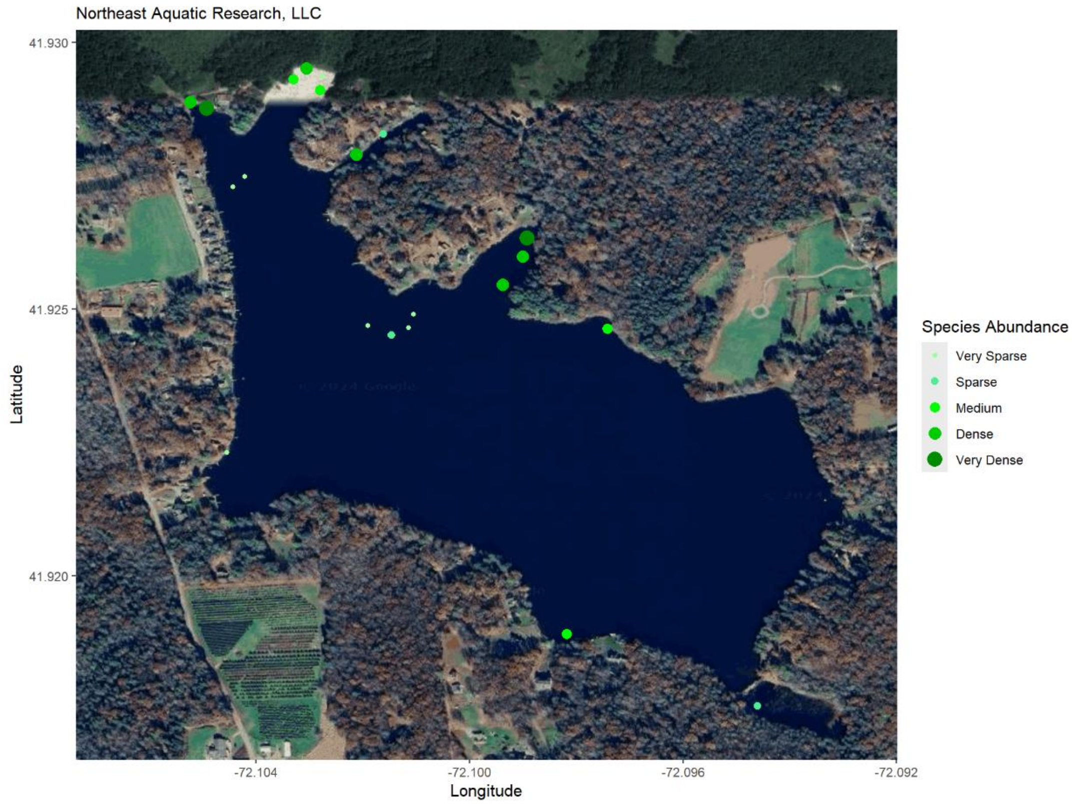
Map 4. Locations and abundances of Water Marigold during 10/3/24 survey.



Map 5. Locations and abundances of Mudmat during 10/3/24 survey.



Map 6. Locations and abundances of Filamentous Algae during 10/3/24 survey.



Conclusions of Long-Term Data Analysis

Lake monitoring of Crystal Pond began in 1990 and consisted of Chuck Lee of DEP and a couple of residents visiting the location of deepest water on the evening of July 31st. NEAR assumed the responsibility of conducting the July 31st lake monitoring in 2010. NEAR continued sampling the lake only once per season, around July 31st, until 2016 when visits were increased to include April/May, and August/September. The first full season of monitoring, monthly between April and October, was conducted in 2021 when CPA assumed the responsibility of conducting the monitoring. That year and each year since, the CPA has conducted exceptional monitoring.

Our analysis of the long-term data set is limited by the lack of data for the first twenty years of lake monitoring. The first ten years of lake monitoring relied on only one data point per year. The choice of July 31st as the best of the season to sample the lake was based on an assumption that the lake on July 31st would be comparable to every July 31st going forward. Unfortunately, the assumption is false when made about data collected from any month other than April after ice out. For the next ten years, the long-term data set includes only three visits per year. At the beginning of 2021, data was collected throughout the whole season for the first time. When all the data is portrayed as in the long-term graphs, it is important to keep in mind that the first 16 years of the data is represented by only data point per year.

Secchi Disk Depth

The July 31st water clarity readings have shown a general improvement over the monitoring period, going from roughly 3 meters to roughly 5.5 meters. This is an excellent improvement – increased light penetration into the water column improves many aspects of aerobic lake function. Seasonal clarity trends are more complicated than what the one reading on just one date tell us. For many years (1990-2015), the water clarity was rarely better than 4 meters, with some readings of 4+ meters or even a couple 5-meter readings. Something changed around 2015 yielding maximum water clarities annually better than 6 meters, with 7- and 8-meter clarities common each year. The concern is that although the clarity readings are excellent, two readings in 2024 were less than 3 meters. These poorer readings were caused by increased cyanobacteria at that time, most likely triggered into buoyancy by the advent of anoxic release of ammonia.

Anoxia

The development of anoxic water on the lake bottom is due to the activity of bacteria as they decompose settled organic material. The process proceeds aerobically until the dissolved oxygen is depleted. Once all DO is gone, the decomposition continues anaerobically, that is, the electron donor is either nitrogen, iron, sulfur, or carbon, in that order. Bottom water accumulates an oxygen debt in the form of reduced iron and sulfur, and eventually methane. This translates into the migration upward of the boundary between water with dissolved oxygen and water without it as the amount of anaerobic decomposition at the bottom increases. As the anoxic water rises higher in the water column during the summer, the rate of decomposition at the bottom increases. For many years, anoxia began in early July, reached a maximum ascent depth of ~6 meters on July 31st, and slowly diminished after that. In 2024, an anoxic boundary was measured at 5.5 meters in mid-August, something not detected before.

Phosphorus

The long-term data suggests that total phosphorus is increasing, at least in surface water, possibly going from a period of 8ppb to one of 10ppb and now one of 12ppb. Middle and bottom depths don't show an appreciable change in concentration over time

Nitrogen

The total nitrogen concentration in surface waters has steadily declined since monitoring began in 1990, going from ~400ppb to a stable value of ~300 ppb since 2013, representing a large decrease in mass loading. The steady concentration of 300ppb is consistent with our water quality goals.

Middle-depth TN concentrations have also declined over the long term, from early year values around 500ppb through a period of unsteady concentration until around 2006 when values generally declined and stopped exceeding 400ppb. Middle water TN has been near 300ppb, similar to the surface water, for several years now.

Bottom water TN has also decreased over time, going from sporadic values between 200ppb and 2000ppb, but mostly around 700ppb, to the recent years when TN rarely exceeded 500ppb.

Recommendations for 2025

The CPA lake monitoring program consistently and effectively collects regular water quality data. The uniformity and frequency of the data collection allows understanding of the lake at a much higher resolution. If CPA has the ability, this level of attention should be continued indefinitely, with the possible addition of one monitoring event in November and collecting more samples for bottom TP testing.

The number of water samples tested for TP and TN in bottom water could be increased, especially in the summer and fall. Bottom water TP was over 50 ppb again in 2024 (September). This only happened once before, when in 2022 bottom water had TP concentrations of 66ppb in August and 75ppb in October. Water samples were historically only collected on or around July 31; only recently has sampling frequency increased. Maximum bottom water TP on or around July 31st varied between 15ppb and 40ppb. Bottom water in July 2024 was 41ppb, very similar to the historical maximums observed since monitoring began in 1992. It's likely that TP values over 50 ppb have regularly occurred in fall months and were just not observed. More bottom water sampling will help determine that. Water sampling should be conducted in November to determine if the bottom water TP has returned to base-line levels.

The anoxic boundary was higher in the water column in 2024 than has been recorded so far since monitoring began. In addition, the anoxic boundary crossed the thermocline in early August. There was no impact to nutrient levels at the middle sampling depth, but this occurrence is of concern. The anoxic boundary has typically been deeper in the water column.

We recommend a deeper investigation of the bottom water total phosphorus concentrations and the loss of oxygen data for the 2025 report. If anoxic water continues to intersect with the thermocline, the internal loading of phosphorus to bottom water will become available to mix with upper waters. If this does continue to occur, we may recommend the aeration of bottom water be considered at Crystal Pond. NEAR is currently researching state-of-the-art hypolimnetic aeration to determine which method(s) would be suitable for use at Crystal Pond.

The inlets sampling showed higher than desired TP and TN concentrations. Continued inlet sampling is recommended to determine whether nutrient concentrations remain elevated. If they do remain elevated, we will look for sources and provide recommendations for improvement.

The threat of invasive aquatic plants getting into Crystal Pond is now greater than ever with rampant spreading of Hydrilla. We strongly encourage the CPA to advise residents to refrain from taking a boat to the CT River or allowing any boats that have been on the CT River to come back to Crystal Pond without a thorough search and cleaning. We also strongly encourage the CPA to get the word out about Hydrilla so residents can be on the lookout for any suspicious plants and to notify NEAR immediately if any are observed. A comprehensive aquatic plant survey should be conducted in late August or early September 2025 to assess the aquatic plant community and search for invasive species.