

NORTHEAST POND

2014 SAMPLING HIGHLIGHTS

Milton, NH



Please refer to the Milton Three Ponds Annual Report (2014) for additional information

Blue = Excellent = Oligotrophic

Yellow = Fair = Mesotrophic

Red = Poor = Eutrophic

Gray = No Data

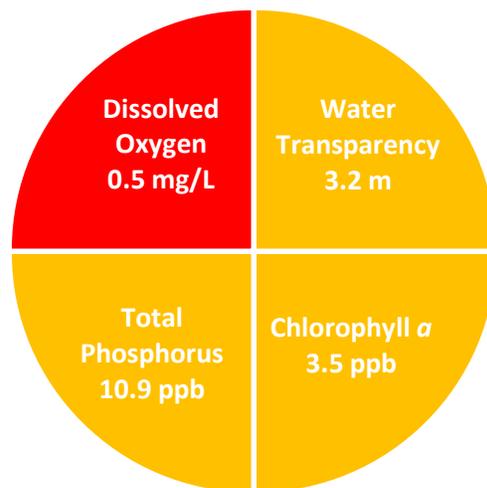


Figure 1. Northeast Pond Water Quality (2014)

Table 1. 2014 Northeast Pond Seasonal Averages and NHDES Trophic Level Classification Criteria

Parameter	Oligotrophic "Excellent"	Mesotrophic "Fair"	Eutrophic "Poor"	Northeast Pond Average (range)	Northeast Pond Classification
Water Clarity (meters)	4.0 – 7.0	2.5 - 4.0	< 2.5	3.2 meters (2.4 – 4.1)	Mesotrophic
Chlorophyll a (ppb)	< 3.3	> 3.3 – 5.0	> 5.0 – 11.0	3.5 ppb (1.8 – 5.8)	Mesotrophic
Total Phosphorus (ppb)	< 8.0	> 8.0 – 12.0	> 12.0 – 28.0	10.9 ppb (8.9 – 12.6)	Mesotrophic
Dissolved Oxygen (mg/L)	5.0 – 7.0	2.0 – 5.0	<2.0	0.5 mg/L (0.4 – 0.6)	Eutrophic

*Dissolved oxygen concentrations were measured between 7.5 m to 14.5 meters in the bottom water layer

Table 2. 2014 Northeast Pond Seasonal Average Accessory Water Quality Measurements

Parameter	Assessment Criteria					Northeast Pond Average (range)	Northeast Pond Classification
Color (color units)	< 10 uncolored	10 – 20 slightly colored	20 – 40 lightly tea colored	40 – 80 tea colored	> 80 highly colored	49.9 color units (range: 32.2 – 50.2)	Lightly tea colored
Alkalinity (mg/L)	< 0.0 acidified	0.1 – 2.0 extremely vulnerable	2.1 – 10 moderately vulnerable	10.1 – 25.0 low vulnerability	> 25.0 not vulnerable	9.5 mg/L (range: 8.0 – 11.0)	Moderately Vulnerable
Specific Conductivity (uS/cm)	< 50 uS/cm Characteristic of minimally impacted NH lakes		50-100 uS/cm Lakes with some human influence	> 100 uS/cm Characteristic of lakes experiencing human disturbances		88.8 uS/cm (range: 88.7 – 88.8)	Some human influences

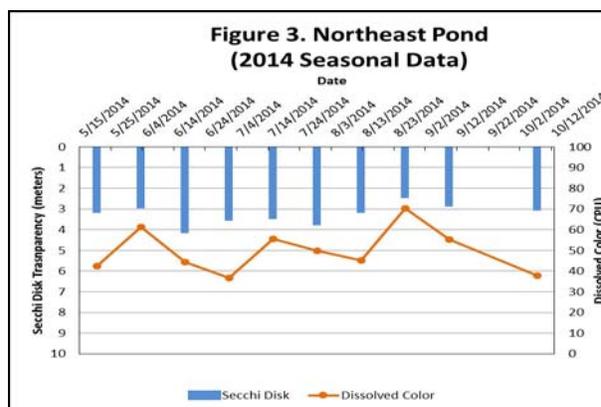
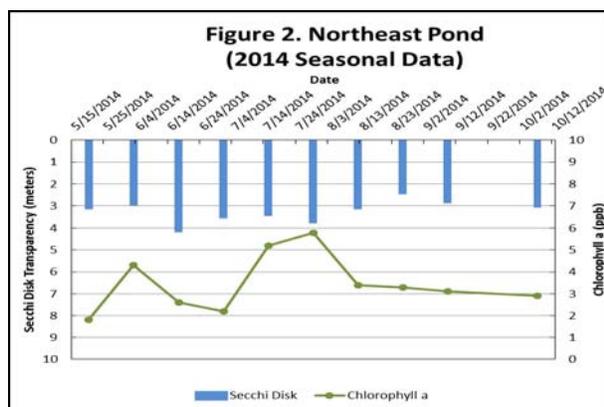


Figure 2 and 3. Seasonal Secchi disk transparency, chlorophyll a changes and dissolved color concentrations. Figures 2 and 3 illustrate the interplay among Secchi Disk transparency, chlorophyll a and dissolved color. Shallower water transparency measurements oftentimes correspond to increases in chlorophyll a and/or color concentrations.

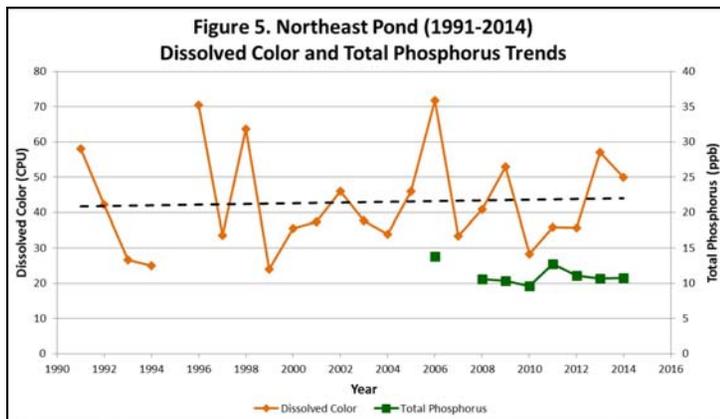
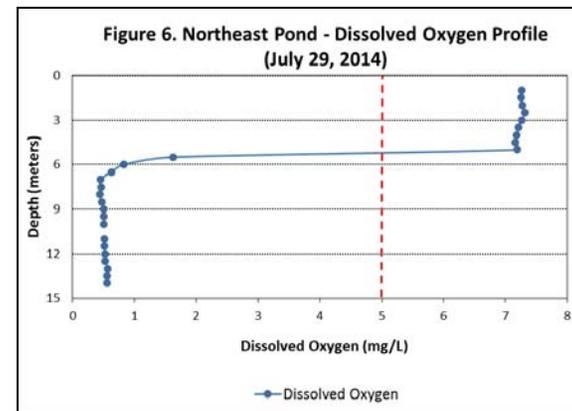
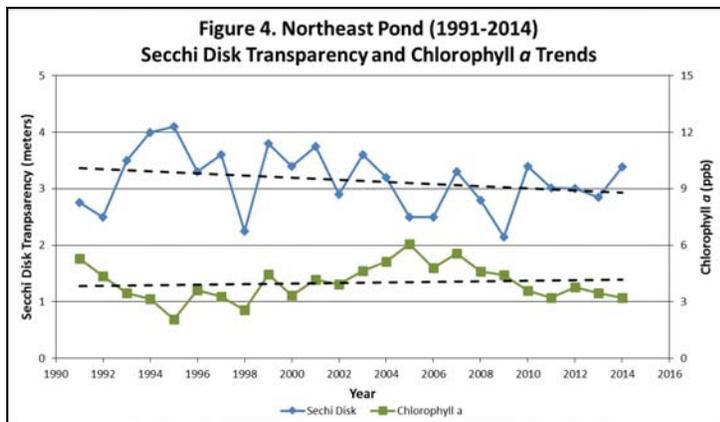
LONG TERM TRENDS

WATER CLARITY: The Northeast Pond water clarity measurements, measured as Secchi Disk transparency, display a trend of decreasing water clarity over the past twenty-four years.

CHLOROPHYLL: The Northeast Pond chlorophyll *a* concentrations, a measure of microscopic plant life within the lake, display a trend of slightly increasing chlorophyll *a* concentrations over the past twenty-four years.

TOTAL PHOSPHORUS: Phosphorus is the nutrient most responsible for microscopic plant growth. Due to limited total phosphorus data, including gaps among sampling years, a trend analysis was not performed. Once ten years of total phosphorus data have been collected, a trend analysis will be performed.

COLOR: The Northeast Pond color data, the result of naturally occurring “tea” color substances from the breakdown of soils and plant materials, varied annually and display a relatively stable trend over the past twenty-three years.



Figures 4 and 5. Changes in the Northeast Pond water clarity (Secchi Disk depth), chlorophyll *a*, dissolved color and total phosphorus concentrations measured between 1991 and 2014. **These data illustrate the relationship between plant growth, natural water color and water clarity. Total phosphorus data are also displayed and are oftentimes correlated with the amount of plant growth.** Trendlines are displayed when ten or more years of data are available.

Figure 6. Northeast Pond dissolved oxygen profile taken by the **Center for Freshwater Biology** on July 29, 2014. The vertical red line indicates the oxygen concentration commonly considered the threshold for successful growth and reproduction of cold water fish such as trout and salmon.

Recommendations:

Implement Best Management Practices within the Northeast Pond watershed to minimize the adverse impacts of polluted runoff and erosion into the lake. Refer to “Landscaping at the Water’s Edge: An Ecological Approach” and “New Hampshire Homeowner’s Guide to Stormwater Management: Do-It-Yourself Stormwater Solutions for Your Home” for suggestions that can help reduce nutrient loading caused by overland run-off.

- http://extension.unh.edu/resources/files/Resource004159_Rep5940.pdf
- <http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/wd-11-11.pdf>

Figure 7. Northeast Pond

Milton, NH

2014 Deep water sampling sites with average water clarity



Aerial Orthophoto Source: NH Grant
Site Locations GPS coordinates collected by the UNH Center for Freshwater Biology