

NORTH RIVER LAKE

2016 SAMPLING HIGHLIGHTS

Station 1 Turtle Rock

Barrington, Northwood and Nottingham, NH



Refer to the North River Lake Annual Report (2016) for additional information. Water quality data displayed in Tables 1 and 2 are surface water measurements.

Blue = Excellent = Oligotrophic

Yellow = Fair = Mesotrophic

Red = Poor = Eutrophic

Gray = No Data

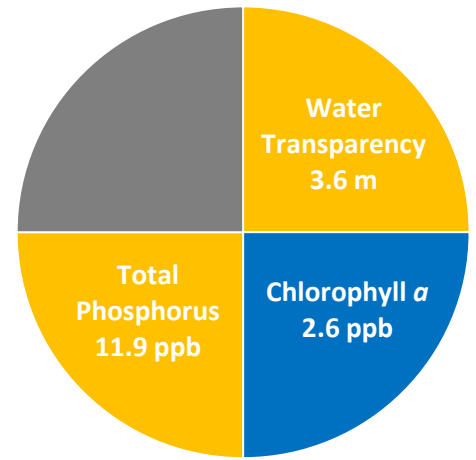


Figure 1. North River Lake Water Quality (2016)

Table 1. 2016 North River Lake Seasonal Averages and NH DES Trophic Level Classification Criteria

Parameter	Oligotrophic "Excellent"	Mesotrophic "Fair"	Eutrophic "Poor"	North River Lake Average (range)	North River Lake Classification
Water Clarity (meters)	4.0 – 7.0	2.5 - 4.0	< 2.5	3.6 meters (3.1 – 4.3)	Mesotrophic
Chlorophyll <i>a</i> (ppb)	< 3.3	> 3.3 – 5.0	> 5.0 – 11.0	2.6 ppb (1.6 – 3.4)	Oligotrophic
Total Phosphorus (ppb)	< 8.0	> 8.0 – 12.0	> 12.0 – 28.0	11.9 ppb (10.8 – 13.5)	Mesotrophic

Table 2. 2016 North River Lake Seasonal Average Accessory Water Quality Measurements

Parameter	Assessment Criteria					North River Lake Average (range)	North River Lake Classification
Color (color units)	< 10 uncolored	10 – 20 slightly colored	20 – 40 Lightly tea colored	40 – 80 tea colored	> 80 highly colored	17.7 color units (12.6 – 27.1)	Slightly 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	7.5 mg/L (7.1 – 8.0)	Moderately vulnerable

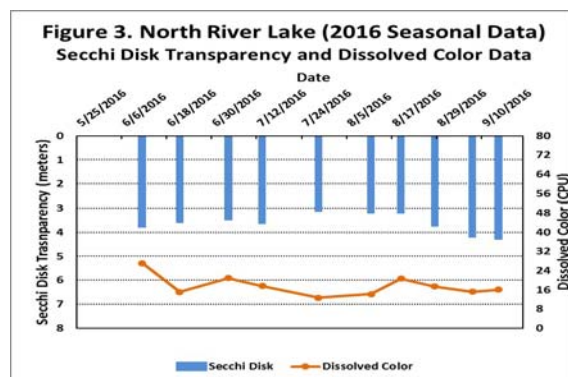
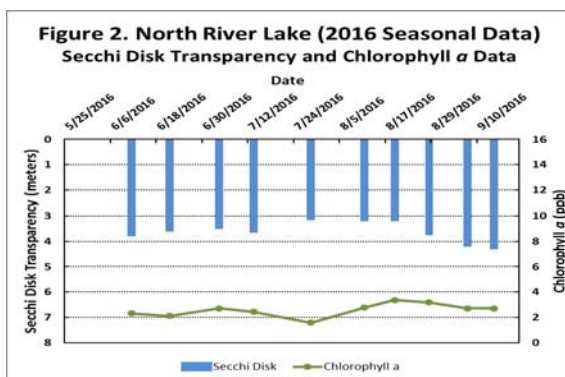


Figure 2 and 3. Seasonal Secchi disk transparency, chlorophyll *a* changes and dissolved color concentrations. Figures 2 and 3 illustrate the interplay among Secchi Disk transparency, chlorophyll *a* concentrations and dissolved color concentrations. Shallower water transparency measurements oftentimes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

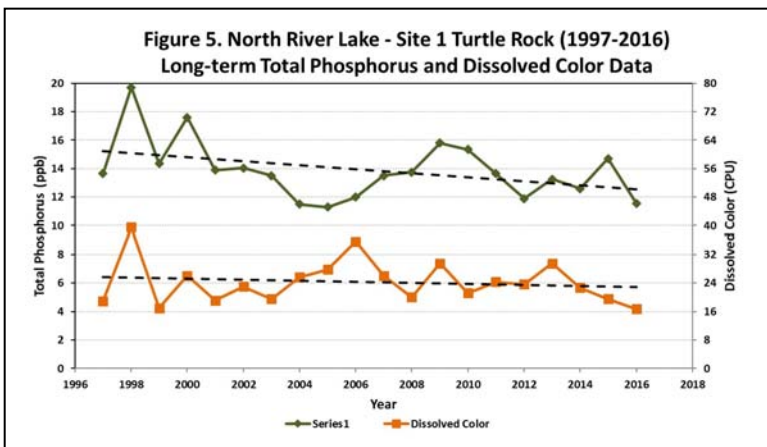
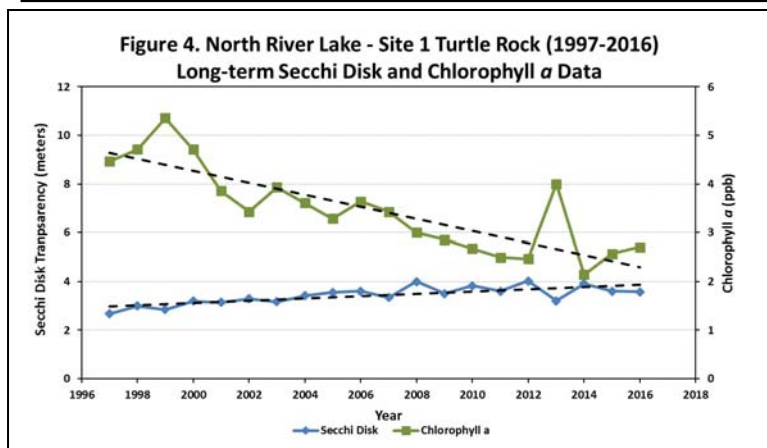
LONG-TERM TRENDS

WATER CLARITY: The North River Lake water clarity measurements, measured as Secchi Disk transparency, display a trend of increasing water clarity over the twenty year span from 1997 to 2016 (Figure 4).

CHLOROPHYLL: The North River Lake chlorophyll *a* concentrations, a measure of microscopic plant life within the lake, display a trend of decreasing concentrations over the twenty year span from 1997 to 2016 (Figure 4).

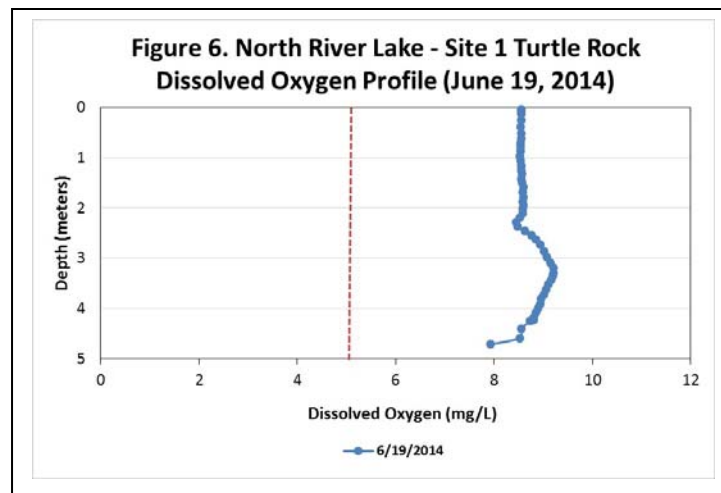
TOTAL PHOSPHORUS: Phosphorus is the nutrient most responsible for microscopic plant growth. The North River Lake total phosphorus concentrations display a trend of decreasing concentrations over the twenty year span from 1997 to 2016 (Figure 5).

COLOR: The North River Lake color data, the result of naturally occurring “tea” color substances from the breakdown of soils and plant materials, have oscillated among years while the long-term trend is stable from 1997 to 2016 (Figure 5).



Figures 4 and 5. Changes in the North River Lake water clarity (Secchi Disk depth), chlorophyll *a*, dissolved color and total phosphorus concentrations measured between 1997 and 2016. **These data illustrate the relationship among plant growth, water color and water clarity. Total phosphorus data are also displayed and are oftentimes correlated with the amount of plant growth.**

Figure 6. June 19, 2014 North River Lake dissolved oxygen profile. The vertical red line indicates the oxygen concentration commonly considered the threshold for successful growth and reproduction of warm water fish. *Note, the June 19, 2014 measurements are the most recent North River Lake dissolved oxygen data.*



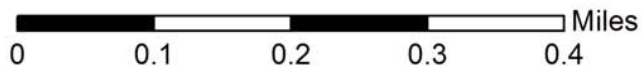
Recommendations

Implement Best Management Practices within the North River Lake watershed to minimize the adverse impacts of polluted runoff and erosion in North River 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 more information on how to reduce nutrient loading caused by overland run-off.

- http://extension.unh.edu/resources/files/Resource004159_Rep5940.pdf
- <http://soaknh.org/wp-content/uploads/2016/04/NH-Homeowner-Guide-2016.pdf>

Figure 7. North River Lake

Barrington, Northwood and Nottingham, NH
2016 Deep water sampling stations and seasonal average water clarity



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



Extension

