Round Pond

2021 SAMPLING HIGHLIGHTS

Station 1 Deep

Effingham, NH

Extension

Water quality data displayed in Tables 1 and 2 are surface water measurements with the exception of the dissolved oxygen data that are collected near the lake bottom. Summary statistics are provided for bi-weekly samples collected between May 13 and October 14, 2021.

Blue = Excellent = Oligotrophic

Yellow = Fair = Mesotrophic

Red = Poor = Eutrophic

Gray = No Data

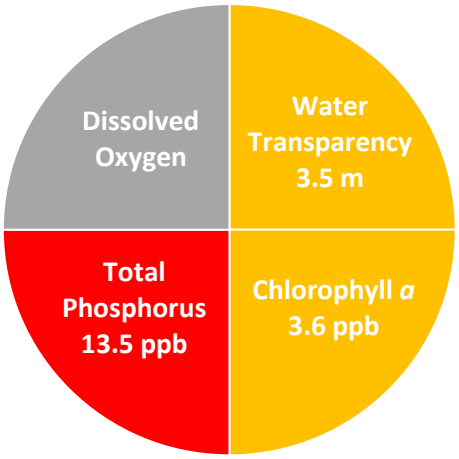


Figure 1. Round Pond Water Quality (2021)

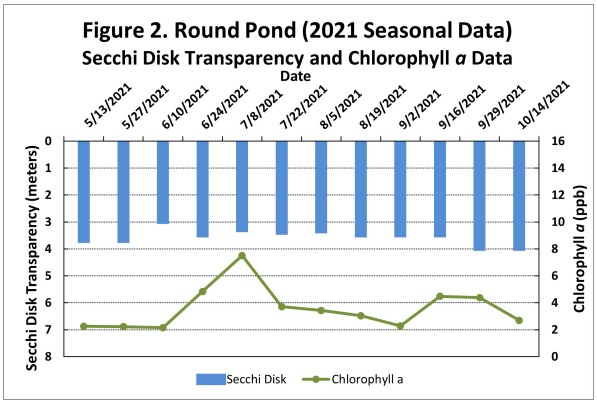
Table 1. 2021 Round Pond Seasonal Averages and NH DES Aquatic Life Nutrient Criteria[1]

Parameter	Oligotrophic "Excellent"	Mesotrophic "Fair"	Eutrophic "Poor"	Round Pond Average (range)	Round Pond Classification
Water Clarity (meters)	4.0 – 7.0	2.5 - 4.0	< 2.5	**3.5** meters (3.0 – 4.0) *	Mesotrophic
Chlorophyll *a* [1] (ppb)	< 3.3	> 3.3 – 5.0	> 5.0 – 11.0	**3.6** ppb (2.1 – 7.5)	Mesotrophic
Total Phosphorus [1] (ppb)	< 8.0	> 8.0 – 12.0	> 12.0 – 28.0	**13.5** ppb (7.4 – 37.8)	Eutrophic
Dissolved Oxygen (ppm)	5.0 – 7.0	2.0 – 5.0	<2.0	No Data **	Not Assessed

* Secchi Disk measurements were intermittently visible on the lake bottom and thus likely underestimate the water clarity.
**Round Pond does not develop a deep water layer that is the basis for the dissolved oxygen classification criteria.

Table 2. 2021 Round Pond Seasonal Average Accessory Water Quality Measurements

Parameter	Assessment Criteria					Round Pond Average (range)	Round Pond Classification
Color (color units)	< 10 uncolored	10 – 20 slightly colored	20 – 40 lightly tea colored	40 – 80 tea colored	> 80 highly colored	**20.1** color units (range: 17.4 – 22.1)	Lightly tea colored
Alkalinity (ppm)	< 0.0 acidified	0.1 – 2.0 extremely vulnerable	2.1 – 10 moderately vulnerable	10.1 – 25.0 low vulnerability	> 25.0 not vulnerable	**3.1** ppm (range: 2.6 – 4.2)	Moderately vulnerable
pH (std units)	< 5.5 suboptimal for successful growth and reproduction		6.5 – 9.0 optimal range for fish growth and reproduction			**6.3** standard units (range: 5.9 – 6.9)	Sufficient for fish growth and reproduction
Specific Conductivity (*u*S/cm)	< 50 *u*S/cm Characteristic of minimally impacted NH lakes		50-100 *u*S/cm Lakes with some human influence	> 100 *u*S/cm Characteristic of lakes experiencing human disturbances		**43.5** *u*S/cm (range: 37.2 – 53.4)	Characteristic of minimally impacted NH lakes



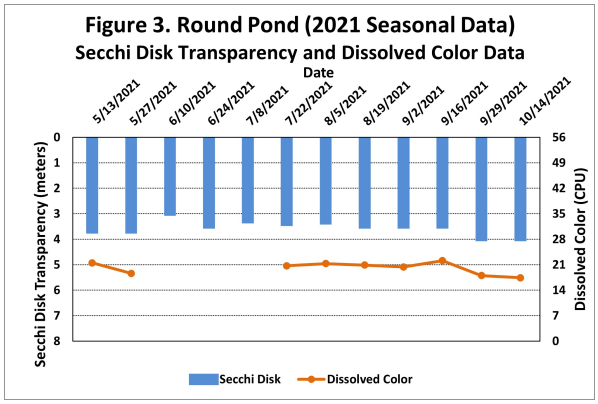
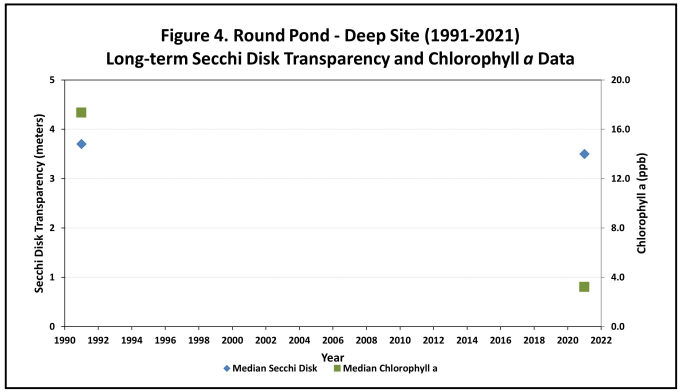


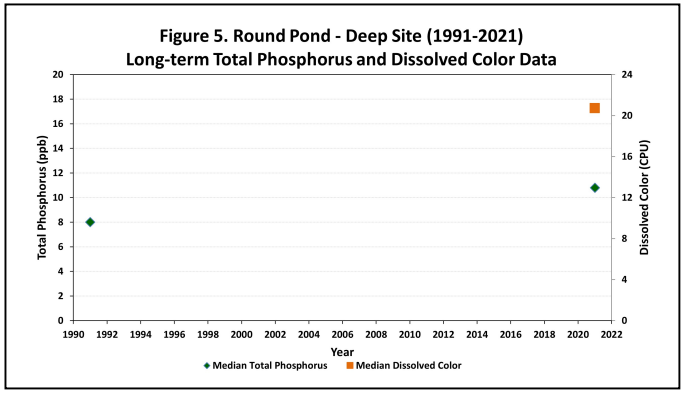
Figure 2 and 3. Seasonal Secchi disk transparency, chlorophyll *a* changes and dissolved color concentrations. Figures 2 and 3 illustrate the interplay among Secchi Disk transparency, chlorophyll *a* and dissolved color. Shallower water transparency measurements oftentimes correspond to increases in chlorophyll *a* and/or color concentrations. *Note: Some Secchi Disk transparency measurements remained visible on the lake bottom and likely underestimate the Round Pond water transparency.*

Table 3. Loon Lake and Round Pond inter-depth (2021 Data: bi-weekly sampling between May 13 and October 14)

Lake / Zone	Average (range) Total Phosphorus (ppb)	Average (range) Specific Conductivity (uS/cm)	Average (range) Total Alkalinity @ pH 5.2 (ppm)	Average (range) pH (standard units)
Loon Lake – surface composite (epilimnion)	11.2 ppb (range: 5.2 – 24.7)	75.0 *uS/cm* (range: 61.7 – 82.7)	6.4 ppm (range: 5.1 – 7.3)	6.5 std units (range: 6.1 – 7.1)
Loon Lake – surface zone (epilimnion)	8.0 ppb (range: 5.4 – 16.3)	76.3 *uS/cm* (range: 57.7 – 87.4)	6.7 ppm (range: 5.7 – 7.7)	6.7 std units (range: 6.3 – 7.3)
Loon Lake - mid-lake zone (metalimnion)	8.3 ppb (range: 5.7 – 10.8)	66.6 *uS/cm* (range: 57.5 – 83.4)	5.4 ppm (range: 4.7 – 6.7)	6.3 std units (range: 5.6 – 7.2)
Loon Lake – deep water zone (hypolimnion)	14.7 ppb (range: 6.8 – 46.2)	68.9 *uS/cm* (range: 57.4 – 83.7)	7.5 ppm (range: 4.9 – 16.5)	5.9 std units (range: 5.2 – 6.4)
Round Pond – surface composite (epilimnion)	13.5 ppb (range: 7.4 – 37.8)	43.5 *uS/cm* (range: 37.2 – 53.4)	3.1 ppm (range: 2.6 – 4.2)	6.3 std units (range: 5.9 – 6.9)
Round Pond – surface zone (epilimnion)	11.7 ppb (range: 6.8 – 37.2)	41.9 *uS/cm* (range: 37.0 – 49.9)	3.3 ppm (range: 2.6 – 4.1)	6.3 std units (range: 5.8 – 6.7)
Round Pond – mid-lake zone (metalimnion)	10.3 ppb (range: 7.8 – 15.3)	42.0 *uS/cm* (range: 36.5 – 47.3)	3.1 ppm (range: 2.4 – 4.2)	6.2 std units (range: 5.9 – 6.9)

- Water quality summary statistics are reported for Loon Lake and Round Pond. Summary data are included for each of the three thermal zones (when applicable), as well as the epilimnetic surface composite samples. *Note: Round Pond becomes thermally stratified intermittently and does not develop a deep water (hypolimnion) zone.*





Figures 4 and 5. Annual Median Round Pond water transparency (Secchi Disk depth), chlorophyll *a*, dissolved color and total phosphorus concentrations measured measurede through the New Hampshire Department of Environmental Services (1991) and the New Hampshire Lakes Lay Monitoring Program (2021).

Recommendations

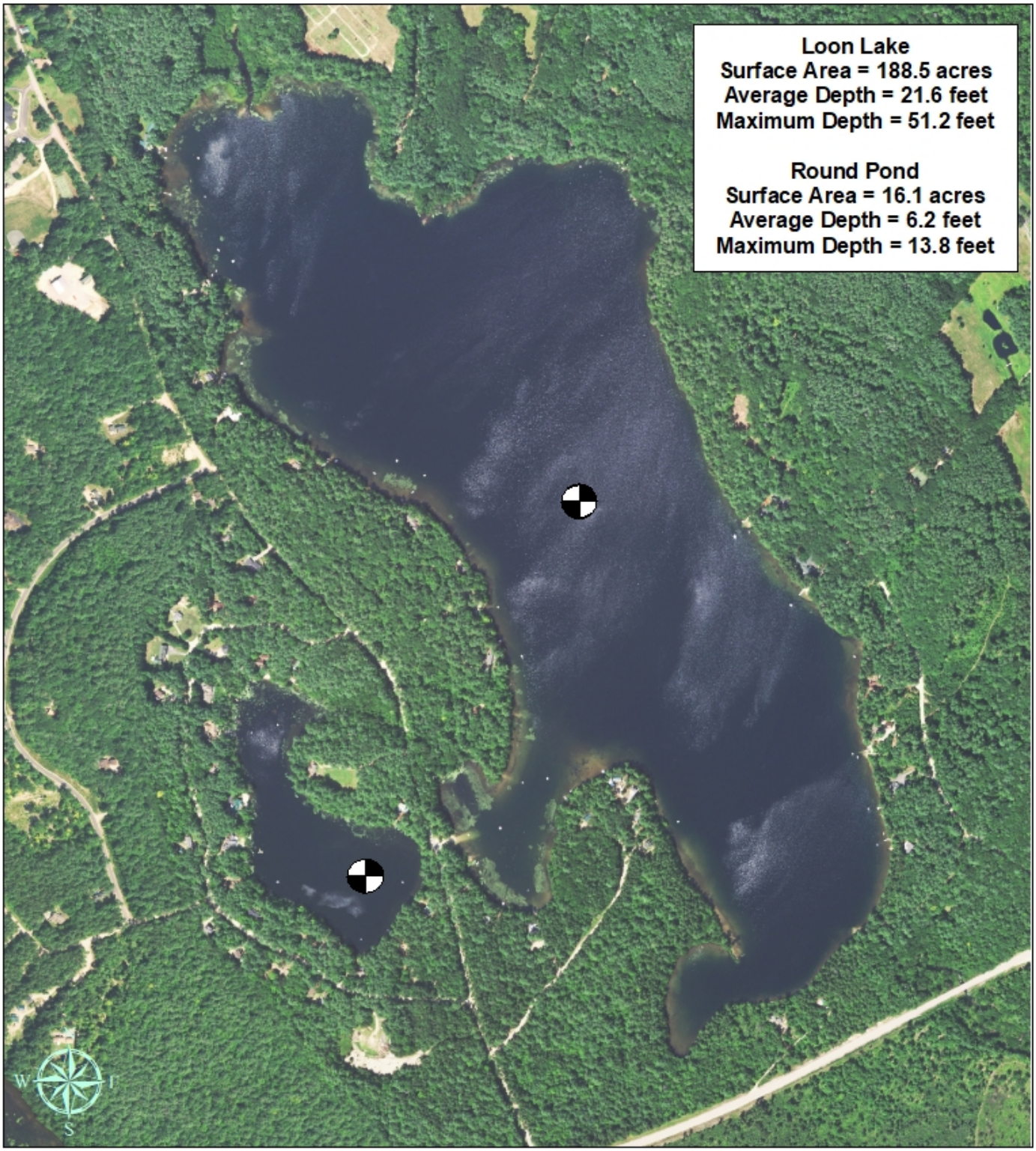
Implement Best Management Practices (BMPs) within the Loon Lake watershed to minimize the adverse impacts of polluted runoff and erosion into Loon Lake. Refer to "Landscaping at the Water's Edge: An Ecological Approach", "New Hampshire Homeowner's Guide to Stormwater Management: Do-It-Yourself Stormwater Solutions for Your Home", and the Green Mountain Conservation Group BMP page for more information on how to reduce nutrient loading caused by overland run-off.

- https://extension.unh.edu/resources/files/Resource004159_Rep5940.pdf
- https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/2020-01/homeowner-guide-stormwater.pdf
- https://www.gmcg.org/project-bmp/

Figure 6. Loon Lake and Round Pond

Effingham, NH

2021 deep sampling locations



Aerial Orthophoto Source: NH Granit, 2018 National Agriculture Imagery Program
GPS Coordinates collected by the UNH Center for Freshwater Biology

NH Extension