

# NEWFOUND LAKE

## 2018 SAMPLING HIGHLIGHTS

### Station – Loon Island 4



**Blue** = Excellent = Oligotrophic

**Yellow** = Fair = Mesotrophic

**Red** = Poor = Eutrophic

**Light Gray** = No Data

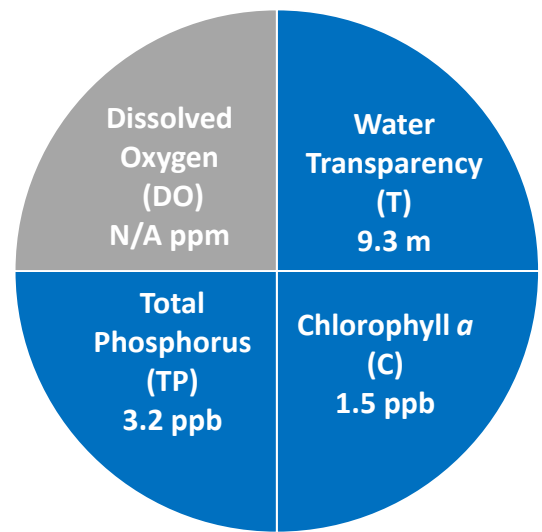


Figure 1. Station Loon Island 4 Water Quality (2018)

Table 1. 2018 Station Loon Island 4 Seasonal Averages and NH DES Aquatic Life Nutrient Criteria<sup>1</sup>

Parameter	Oligotrophic "Excellent"	Mesotrophic "Fair"	Eutrophic "Poor"	Station Loon Island 4 Average (range)	Station Loon Island 4 Classification
Water Clarity (meters)	4.0 – 7.0	2.5 - 4.0	< 2.5	9.3 meters (range: 7.6 – 10.7)	Oligotrophic
Chlorophyll $\alpha$ <sup>1</sup> (ppb)	< 3.3	> 3.3 – 5.0	> 5.0 – 11.0	1.5 ppb (range: 1.0 – 2.2)	Oligotrophic
Total Phosphorus <sup>1</sup> (ppb)	< 8.0	> 8.0 – 12.0	> 12.0 – 28.0	3.2 ppb (range: 2.2 – 4.0)	Oligotrophic
Dissolved Oxygen (ppm)	5.0 – 7.0	2.0 – 5.0	<2.0	No Data	Not Assessed

Table 2. 2018 Station Loon Island 4 Seasonal Average Accessory Water Quality Measurements.

Parameter	Assessment Criteria					Station Loon Island 4 Average (range)	Station Loon Island 4 Classification
	< 10 uncolored	10 – 20 slightly colored	20 – 40 lightly tea colored	40 – 80 tea colored	> 80 highly colored		
Color (color units)	< 10 uncolored	10 – 20 slightly colored	20 – 40 lightly tea colored	40 – 80 tea colored	> 80 highly colored	11.6 color units (range: 8.2 – 15.2)	Slightly 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	4.0 ppm (range: 3.9 – 4.1)	Moderately vulnerable
pH (std units)	< 5.5 suboptimal for successful growth and reproduction		6.5 – 9.0 optimal range for fish growth and reproduction			7.0 standard units (range: 7.0 – 7.0)	Optimal range for fish growth and reproduction
Specific Conductivity ( $\mu$ S/cm)	< 50 $\mu$ S/cm Characteristic of minimally impacted NH lakes		50-100 $\mu$ S/cm Lakes with some human influence	> 100 $\mu$ S/cm Characteristic of lakes experiencing human disturbances		41.7 $\mu$ S/cm (range: 41.4 – 41.9)	Characteristic of minimally impacted NH lakes

### Recommendations for Property Owners:

Implement Best Management Practices within the Newfound Lake 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 more information on how to reduce nutrient loading caused by overland run-off.

- o [https://extension.unh.edu/resources/files/Resource004159\\_Rep5940.pdf](https://extension.unh.edu/resources/files/Resource004159_Rep5940.pdf)
- o <http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/wd-11-11.pdf>

## LONG TERM WATER QUALITY

Site Loon Island 4 is located in the most northerly section of Newfound Lake (Figure 4). The condition of site Loon Island 4 is a reflection of the nearby lakeshore development, as well as, the various inputs that enter the lake through local stream channels that include Georges Brook. Further review of water quality measurements at the other Newfound Lake sampling locations will provide a better assessment of more localized pollutant inputs that impact the other sampling locations (refer to the 2018 summary data contained in Table 3).

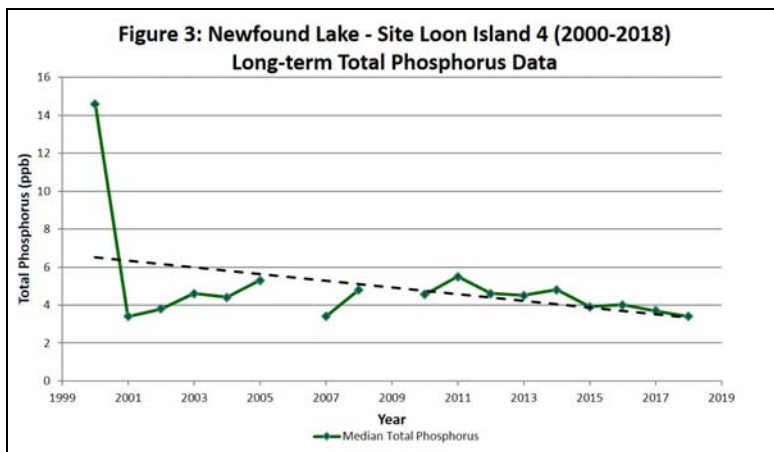
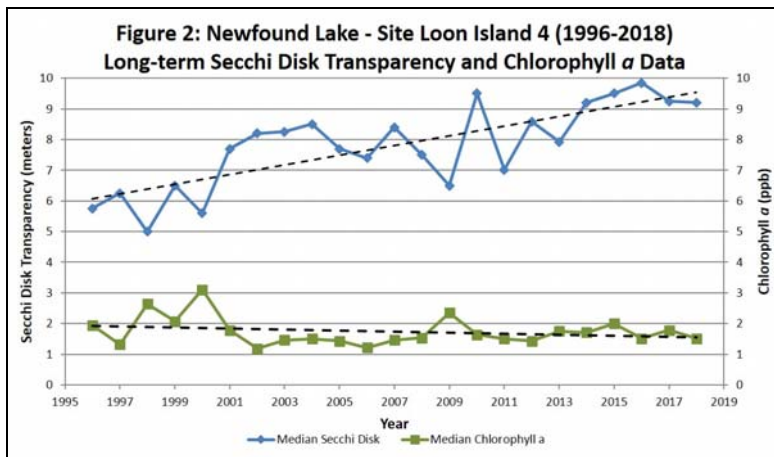
**WATER CLARITY:** The site Loon Island 4 water clarity display a trend of increasing water clarity over the past twenty-three years of sampling (1996–2018).

**CHLOROPHYLL:** The site Loon Island 4 chlorophyll *a* data display a trend of decreasing chlorophyll *a* concentrations over the twenty-three years of sampling (1996–2018).

**COLOR:** The site Loon Island 4 color data display a trend of decreasing color concentrations over the twenty-two years of sampling (1996–2018).

**TOTAL PHOSPHORUS:** The site Loon Island 4 total phosphorus concentrations have decreased over the past seventeen years of sampling (2000-2018).

In summary, the site Loon Island 4 continues to display excellent water quality. The long-term water clarity has increased while the chlorophyll *a* and total phosphorus (nutrient) concentrations have decreased. One should be aware that total phosphorus data have not been collected on an annual basis and that data gaps exist among years (Figure 3).



**Table 3. Seasonal Average Water Quality by Sampling Location (2018)**

Site	Average Secchi Disk Transparency (meters)	Average Chlorophyll <i>a</i> (ppb)	Average Total Phosphorus (ppb)	Average Dissolved Oxygen (ppm)
Deep 1	9.4	1.3	3.9	10.1
Mayhew 2	7.7	1.4	2.9	2.9
Pasquaney 3	9.3	1.2	3.1	9.9
Loon Island 4	9.3	1.5	3.2	XXXX
Cockermouth 5	8.8	1.5	3.9	9.9
Beechwood 6	9.0	1.8	3.3	10.1
Follansbee 8	10.0	1.5	3.8	XXXX

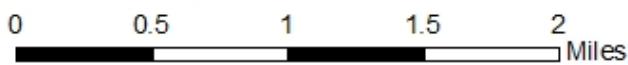
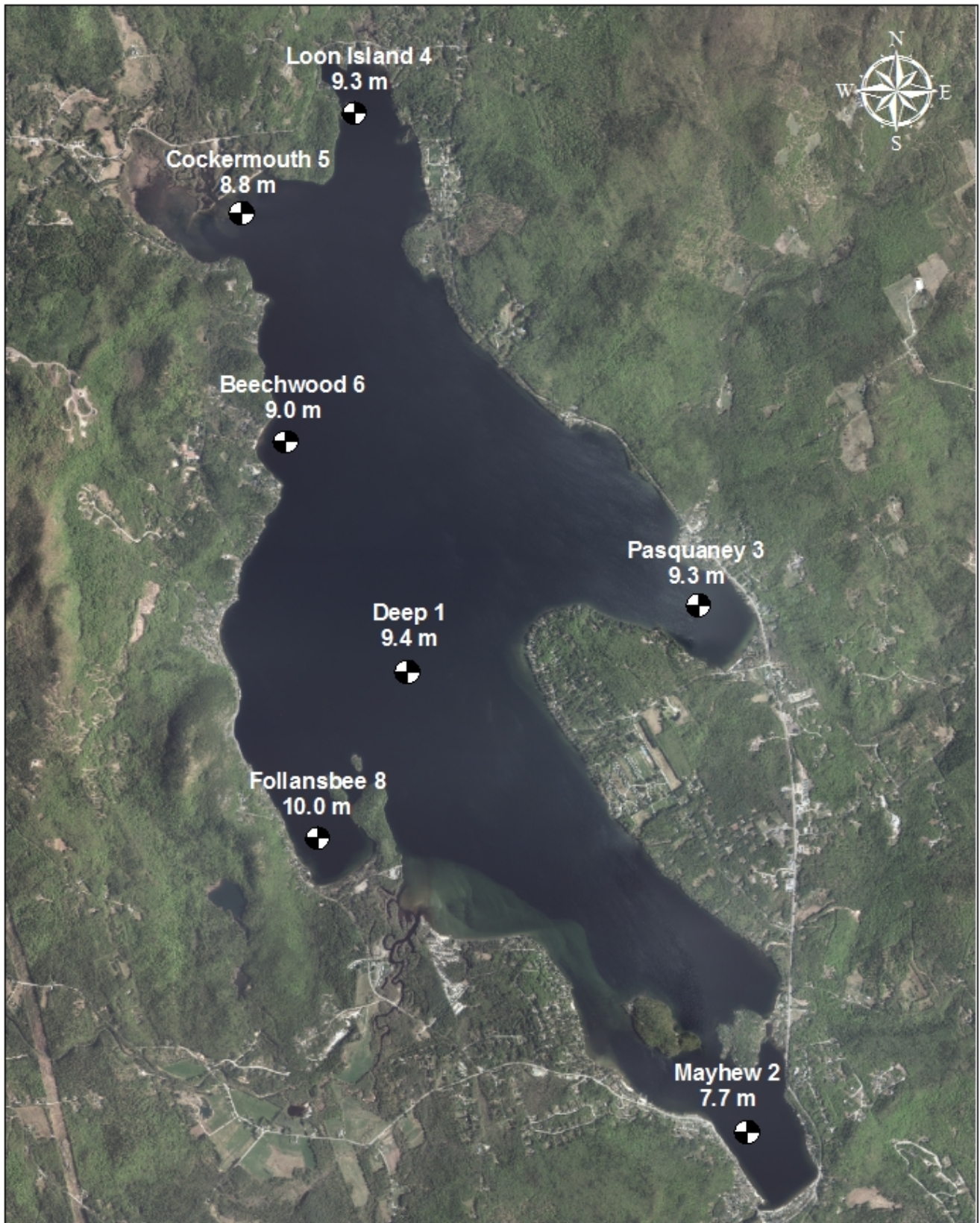
XXXX indicates site is too shallow to collect comparable oxygen data.

Figures 2 and 3. Changes in the Newfound Lake water clarity (Secchi Disk depth), chlorophyll *a* and total phosphorus concentrations measured between 1996 and 2018 at site Loon Island 4. **These data indicate the relationship between plant growth and water clarity. Total phosphorus data are also displayed and are oftentimes correlated with the amount of plant growth.** Note: due to personnel limitations and budgetary constraints, there are years between 1996 and 2018 when incomplete data were collected at site Loon Island 4.

# Figure 4. Newfound Lake

Bristol, Alexandria, Bridgewater & Hebron, NH

2018 Deep sampling sites with seasonal average water clarity



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



Extension

