

# NEWFOUND LAKE

## 2019 SAMPLING HIGHLIGHTS

### Station – Follansbee 8



**Blue** = Excellent = Oligotrophic

**Yellow** = Fair = Mesotrophic

**Red** = Poor = Eutrophic

**Light Gray** = No Data

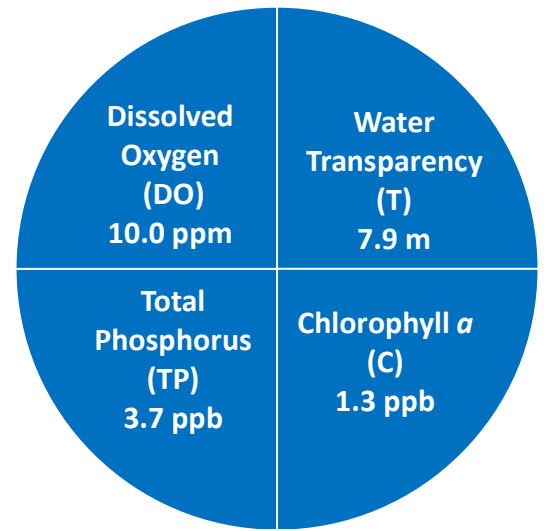


Figure 1. Station Follansbee 8 Water Quality (2019)

Water quality data displayed in Tables 1, 2 and 3 are surface water measurements with the exception of the dissolved oxygen data that were collected in the bottom water layer.

Table 1. 2019 Station Follansbee 8 Seasonal Averages and NH DES Aquatic Life Nutrient Criteria<sup>1</sup>

| Parameter                                  | Oligotrophic<br>“Excellent” | Mesotrophic<br>“Fair” | Eutrophic<br>“Poor” | Station Follansbee 8<br>Average (range) | Station<br>Follansbee 8<br>Classification |
|--|-----------------------------|-----------------------|---------------------|---|---|
| Water Clarity<br>(meters)                  | 4.0 – 7.0                   | 2.5 - 4.0             | < 2.5               | 7.9 meters (range: 6.7 – 8.5)           | Oligotrophic                              |
| Chlorophyll <i>a</i> <sup>1</sup><br>(ppb) | < 3.3                       | > 3.3 – 5.0           | > 5.0 – 11.0        | 1.3 ppb (range: 0.8 – 2.1)              | Oligotrophic                              |
| Total Phosphorus <sup>1</sup><br>(ppb)     | < 8.0                       | > 8.0 – 12.0          | > 12.0 – 28.0       | 3.7 ppb (range: 3.4 – 4.0)              | Oligotrophic                              |
| Dissolved Oxygen<br>(ppm)                  | 5.0 – 7.0                   | 2.0 – 5.0             | <2.0                | 10.0 ppm (range: 9.9 – 10.1)            | Oligotrophic                              |

\* Dissolved oxygen concentrations measured on 8/15/19 between 12.0 and 16.0 meters in the bottom water layer.

Table 2. 2019 Station Follansbee 8 Seasonal Average Accessory Water Quality Measurements.

| Parameter                                    | Assessment Criteria  |                                      |  |   |                             | Station Follansbee 8<br>Average (range)   | Station<br>Follansbee 8<br>Classification              |
|--|--|--------------------------------------|--|---|-----------------------------|---|--|
| Color<br>(color units)                       | < 10<br>uncolored  | 10 – 20<br>slightly<br>colored       | 20 – 40<br>lightly tea<br>colored                            | 40 – 80<br>tea<br>colored   | > 80<br>highly<br>colored   | 9.6 color units<br>(range: 5.7 – 14.0)    | Uncolored  |
| Alkalinity<br>(ppm)                          | < 0.0<br>acidified   | 0.1 – 2.0<br>extremely<br>vulnerable | 2.1 – 10<br>moderately<br>vulnerable                         | 10.1 – 25.0<br>low<br>vulnerability   | > 25.0<br>not<br>vulnerable | 3.8 ppm<br>(range: 3.3 – 4.2)             | Moderately<br>vulnerable                               |
| pH<br>(std units)                            | < 5.5<br>suboptimal for successful<br>growth and reproduction            |                                      | 6.5 – 9.0 optimal range for fish growth and<br>reproduction  |   |                             | 7.0 standard units<br>(range: 7.0 – 7.0)  | Optimal range for<br>fish growth and<br>reproduction   |
| Specific<br>Conductivity<br>( <i>uS/cm</i> ) | < 50 <i>uS/cm</i><br>Characteristic of<br>minimally impacted NH<br>lakes |                                      | 50-100 <i>uS/cm</i><br>Lakes with<br>some human<br>influence | > 100 <i>uS/cm</i><br>Characteristic of lakes<br>experiencing human<br>disturbances |                             | 40.4 <i>uS/cm</i><br>(range: 39.6 – 41.8) | Characteristic of<br>minimally<br>impacted NH<br>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.

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

## LONG TERM WATER QUALITY

Site Follansbee 8 is located in a westerly basin near Wellington State Park (Figure 4). The condition of site Follansbee 8 is best reflected by activities along Wellington State Beach, local nearshore development and inputs that enter the lake through local stream inlets. 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 2019 summary data contained in Table 3).

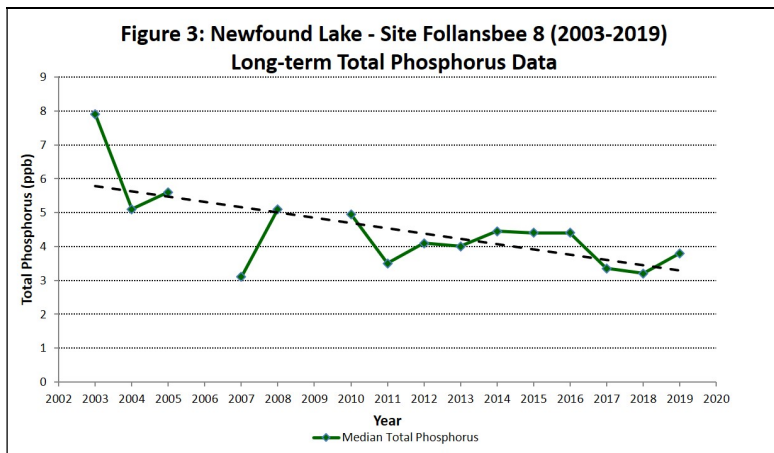
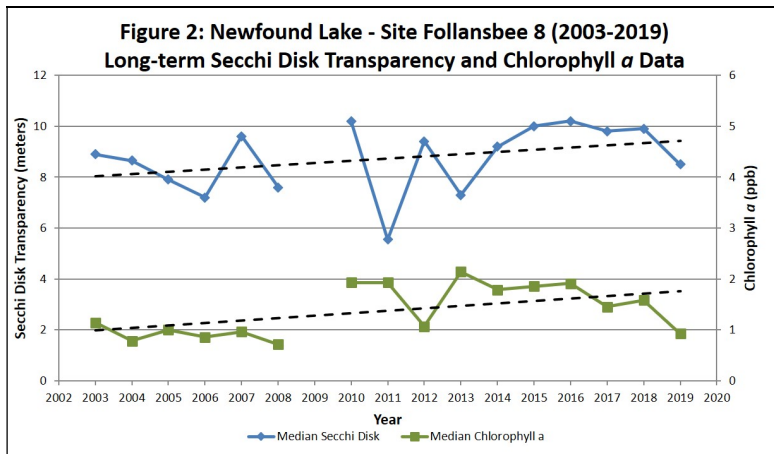
**WATER CLARITY:** The site Follansbee 8 water clarity display an increasing trend over the sixteen years of sampling (2003–2019).

**CHLOROPHYLL:** The site Follansbee 8 chlorophyll *a* data display a trend of increasing chlorophyll *a* concentrations over the sixteen years of sampling (2003–2019).

**COLOR:** The site Follansbee 8 color data display a trend of decreasing color concentrations over the sixteen years of sampling (2003–2019).

**TOTAL PHOSPHORUS:** The site Follansbee 8 total phosphorus concentrations display a trend of decreasing total phosphorus concentrations over the past fifteen years of sampling (2003-2019).

In summary, the site Follansbee 8 continues to display good water quality. The water clarity data display a trend of increasing water clarity while the chlorophyll *a* concentrations have increased and the total phosphorus (nutrient) concentrations have decreased. One should be aware that data have not been collected on an annual basis and that data gaps among years exist (Figure 2 and 3).



**Table 3. Seasonal Average Water Quality by Sampling Location (2019)**

| Site          | Average Secchi Disk Transparency (meters) | Average Chlorophyll <i>a</i> (ppb) | Average Total Phosphorus (ppb) | Average Dissolved Oxygen (ppm) |
|---------------|---|------------------------------------|--------------------------------|--------------------------------|
| Deep 1        | 7.7                                       | 1.5                                | 4.2                            | 10.4                           |
| Mayhew 2      | 6.5                                       | 1.6                                | 4.5                            | 3.0                            |
| Pasquaney 3   | 7.7                                       | 1.8                                | 3.8                            | 9.9                            |
| Loon Island 4 | 7.0                                       | 1.6                                | 4.9                            | XXXX                           |
| Cockermouth 5 | 6.9                                       | 1.9                                | 4.2                            | 9.3                            |
| Beechwood 6   | 6.8                                       | 2.1                                | 4.2                            | 10.0                           |
| Follansbee 8  | 7.9                                       | 1.3                                | 3.7                            | 10.0                           |

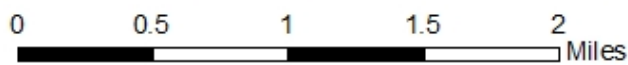
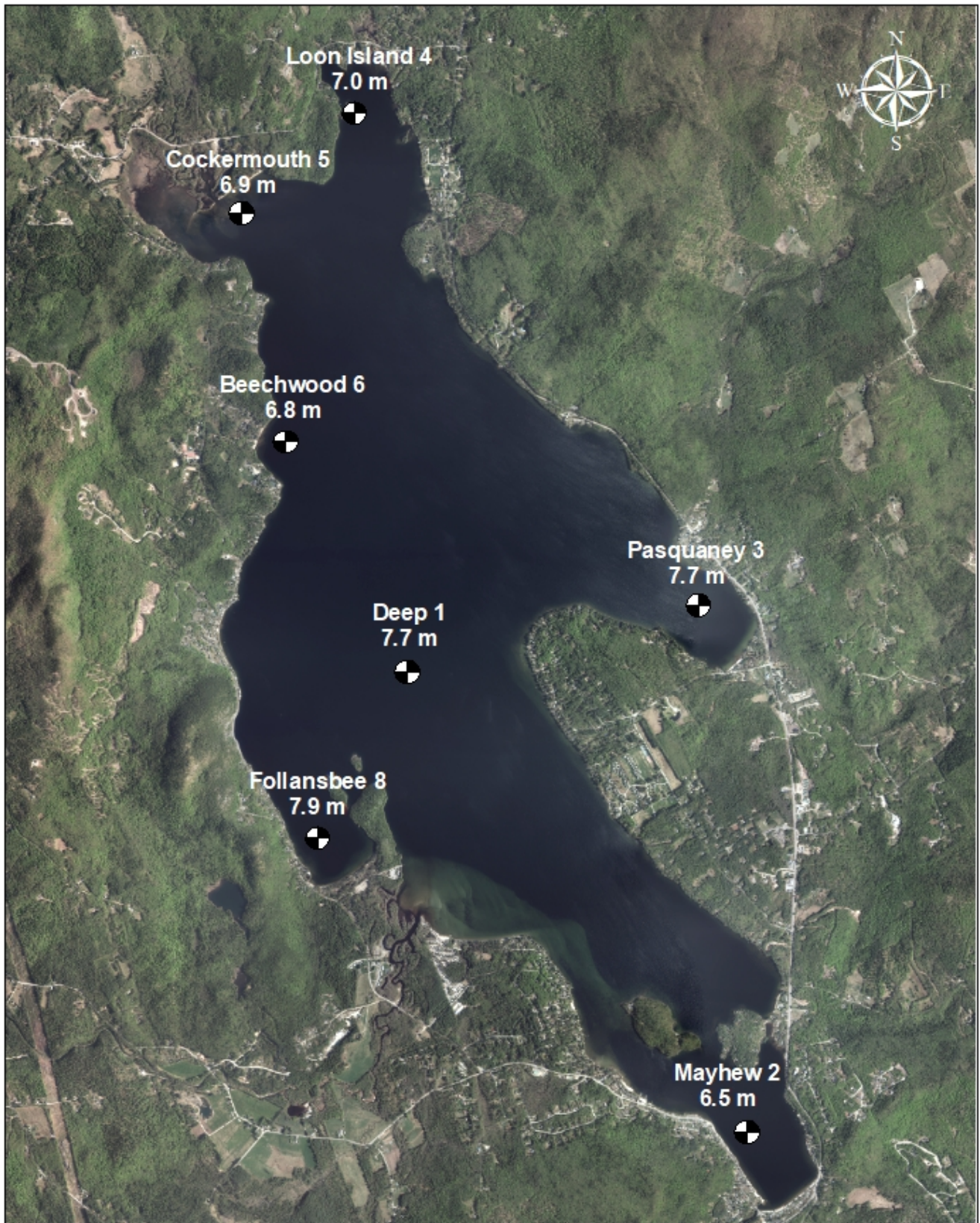
XXXX indicates site is too shallow to collect comparable oxygen data.

Figures 2 and 3. Changes in the Newfound Lake water clarity (Secchi Disk depth), chlorophyll *a* and total phosphorus concentrations measured between 2003 and 2019 at site Follansbee 8. **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 2003 and 2019 when incomplete data were collected at site Follansbee 8. Median trend graphs are developed using median annual values to minimize the impact of outlier data.

# Figure 4. Newfound Lake

Bristol, Alexandria, Bridgewater & Hebron, NH

2019 Deep sampling sites with seasonal average water clarity



Extension

