

NEWFOUND LAKE

2017 SAMPLING HIGHLIGHTS

Station - Mayhew 2



Blue = Excellent = Oligotrophic

Yellow = Fair = Mesotrophic

Red = Poor = Eutrophic

Light Gray = No Data

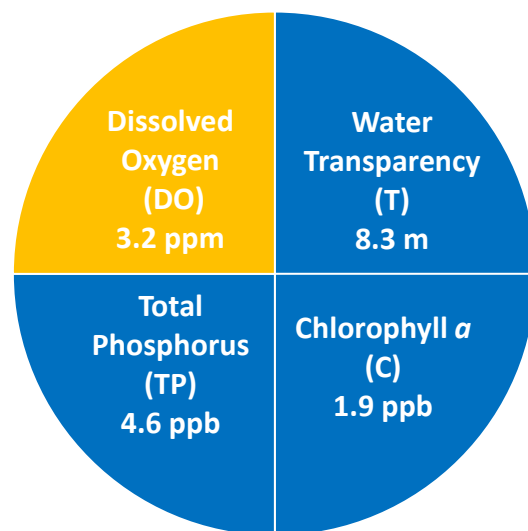


Figure 1. Station Mayhew 2 Water Quality (2017)

Table 1. 2017 Station Mayhew 2 Seasonal Averages and NHDES Trophic Level Classification Criteria

Parameter	Oligotrophic "Excellent"	Mesotrophic "Fair"	Eutrophic "Poor"	Station Mayhew 2 Average (range)	Station Mayhew 2 Classification
Water Clarity (meters)	4.0 – 7.0	2.5 - 4.0	< 2.5	8.3 meters (range: 8.2 – 8.4)	Oligotrophic
Chlorophyll a (ppb)	< 3.3	> 3.3 – 5.0	> 5.0 – 11.0	1.9 ppb (range: 1.5 – 2.7)	Oligotrophic
Total Phosphorus (ppb)	< 8.0	> 8.0 – 12.0	> 12.0 – 28.0	4.6 ppb (range: 2.9 – 6.4)	Oligotrophic
Dissolved Oxygen (ppm)	5.0 – 7.0	2.0 – 5.0	<2.0	3.2 ppm (range: 1.4 – 4.5)	Mesotrophic

* Dissolved oxygen concentrations measured on 8/22/17 between 10.0 and 17.6 meters in the bottom water layer.

Table 2. 2017 Station Mayhew 2 Seasonal Average Accessory Water Quality Measurements.

Parameter	Assessment Criteria					Station Mayhew 2 Average (range)	Station Mayhew 2 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	10.8 color units (range: 8.8 – 13.0)	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	4.5 ppm (range: 4.3 – 4.7)	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: 6.9 – 7.1)	Optimal range for fish growth and reproduction
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		40.8 uS/cm (range: 40.5 – 41.1)	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.

- https://extension.unh.edu/resources/files/Resource001799_Rep2518.pdf
- <http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/wd-11-11.pdf>

LONG TERM WATER QUALITY

Site Mayhew 2 is located in the most southerly basin (Figure 4) that is characterized by dense first-tier lakeshore development. The condition of Site Mayhew 2 is a reflection of the nearby lakeshore development, as well as, the various inputs that enter the lake through the drainages to the north of Mayhew Island. 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 2017 summary data contained in Table 3).

WATER CLARITY: The site Mayhew 2 water clarity data do not display a trend of decreasing water clarity over the past thirty-two years of sampling (1986–2017).

CHLOROPHYLL: The site Mayhew 2 chlorophyll *a* data display a trend of increasing chlorophyll *a* concentrations over the thirty-two years of sampling (1986–2017).

COLOR: The site Mayhew 2 color data display a trend of decreasing color concentrations over the thirty years of sampling (1987–2011).

TOTAL PHOSPHORUS: The site Mayhew 2 total phosphorus concentrations have increased over the past twenty-nine years of sampling (1987-2017).

In summary, site Mayhew 2 continues to show good water quality conditions, however, there are some indications of a slight decrease in the site Mayhew 2 Lake water quality. The long-term chlorophyll *a* and the total phosphorus (nutrient) concentrations have increased. One should be aware that the total phosphorus data have not been collected on an annual basis and that data gaps exist among years (Figure 3).

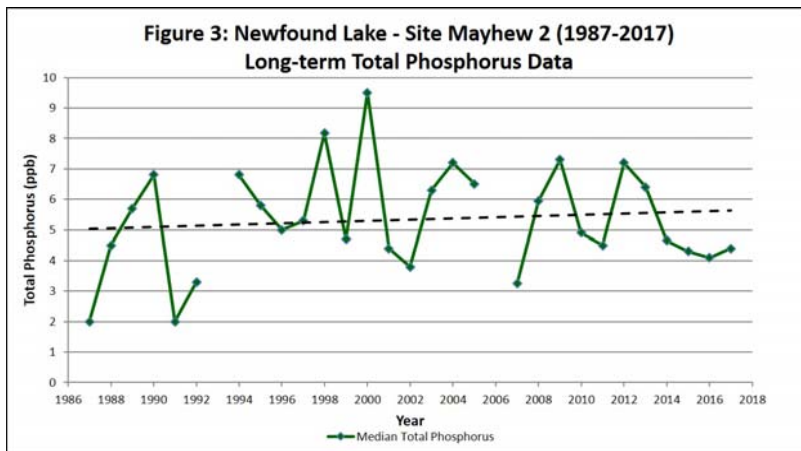
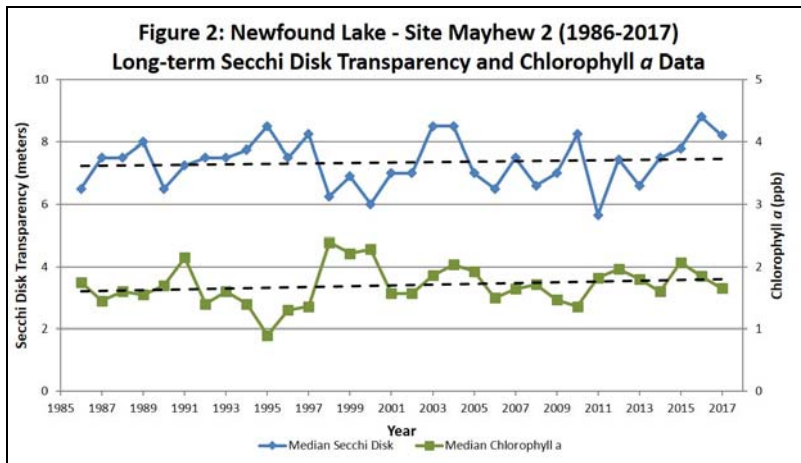


Table 3. Seasonal Average Water Quality by Sampling Location (2017)

Site	Average Secchi Disk Transparency (meters)	Average Chlorophyll <i>a</i> (ppb)	Average Total Phosphorus (ppb)	Average Dissolved Oxygen (ppm)
Deep 1	9.8	1.5	3.0	10.5
Mayhew 2	8.3	1.9	4.6	3.2
Pasquaney 3	8.7	2.0	3.2	10.4
Loon Island 4	9.2	2.0	4.0	XXXX
Cockermouth 5	9.2	2.2	3.5	10.2
Beechwood 6	9.3	1.6	3.3	10.5
Follansbee 8	9.8	1.7	3.4	10.4

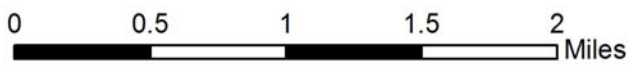
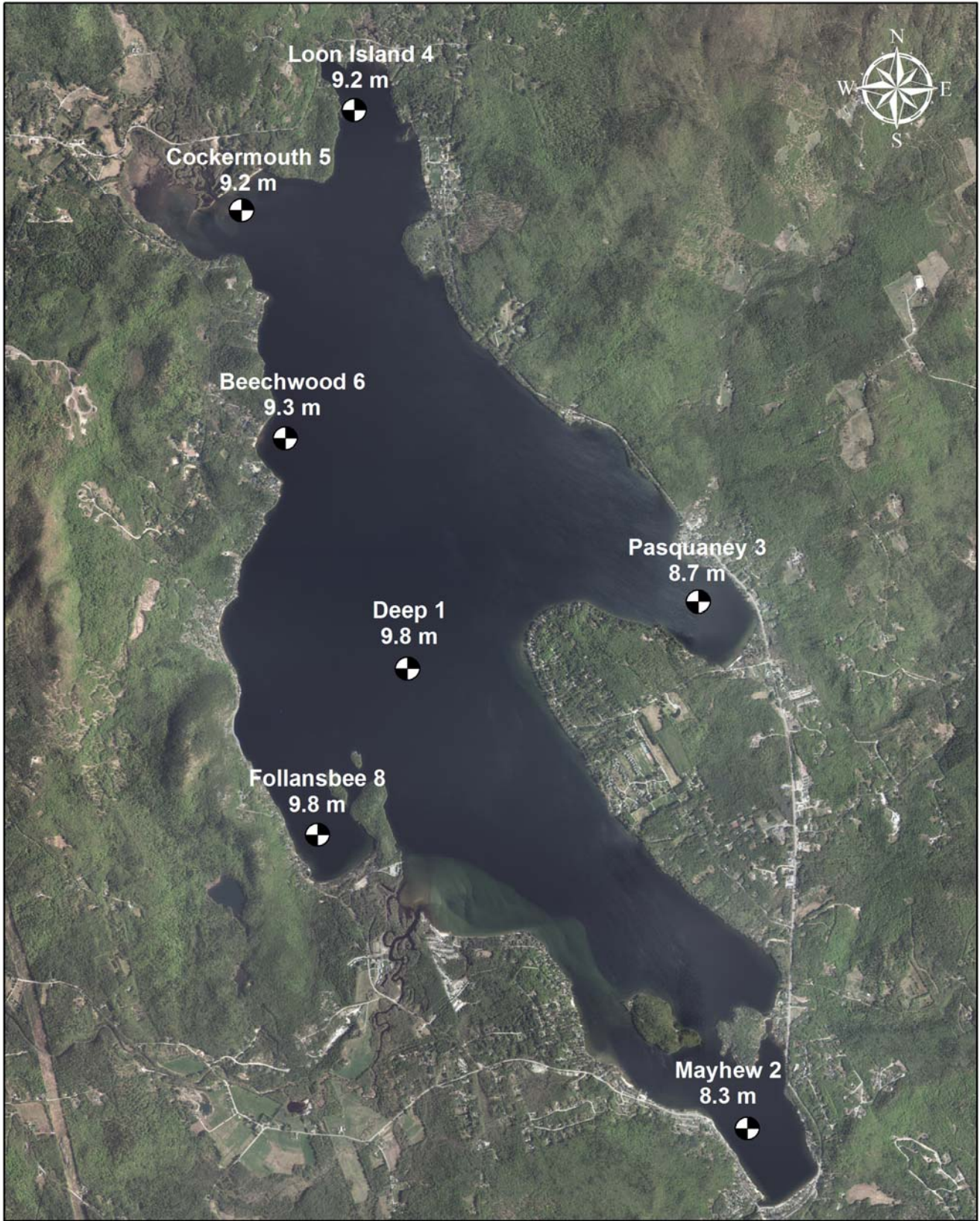
XXXX indicates site is too shallow to collect comparable oxygen data.

Figures 2 and 3. Changes in the Newfound Lake water clarity (Secchi Disk depth), chlorophyll *a* and total phosphorus concentrations measured between 1986 and 2017 at site Mayhew 2. **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 1986 and 2017 when incomplete data were collected at site Mayhew 2.

Figure 4. Newfound Lake

Bristol, Alexandria, Bridgewater & Hebron, NH

2017 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

