

2025 Volunteer Lake Assessment Program

Individual Report: Island Pond – Stoddard

Water Quality Summary: Pond quality is generally representative of mesotrophic, or average, conditions, with low to moderate levels of phosphorus and algal growth. The improving phosphorus and chlorophyll trends are encouraging; however, phosphorus levels have remained within a higher range since 2021 and we should carefully watch how this impacts algal and/or Cyanobacteria growth. Historical trend analysis also indicates stable levels of epilimnetic (upper water layer) conductivity, pH, water transparency and hypolimnetic (bottom water layer) phosphorus. On average, Island Pond has similar water quality compared to the median New Hampshire lake and doesn't exceed any New Hampshire water quality standards.

Recommended Actions: Factors related to climate change such as shorter periods of winter ice cover, warmer water temperatures, drought conditions and the increased intensity of storm events are creating an environment more suitable for cyanobacteria growth. Continue monitoring the pond in late spring/early summer for cyanobacteria blooms. Great job continuing dissolved oxygen monitoring in 2025! We can now see that Island Pond experiences slight anoxic (no oxygen) conditions in the hypolimnion in August, which can potentially fuel late-summer cyanobacteria blooms. Consider development of a watershed management plan to identify and quantify nutrient (phosphorus) loads to the pond and make recommendations on ways to reduce nutrient loading. If interested contact the NHDES [Watershed Assistance Program](#). Encourage shoreline property owners to be certified [LakeSmart](#) through NH LAKES' lake-friendly living program. Keep up the great work and thank you for your continued participation in VLAP!

Historical Water Quality Trend Analysis

Table 1. Historical Water Quality Trends for Island Pond – Stoddard

Parameter	Trend
Conductivity (Epilimnion)	Stable
Chlorophyll-a (Composite)	Improving
pH (Epilimnion)	Stable
Transparency	Stable
Phosphorus (Epilimnion)	Improving
Phosphorus (Hypolimnion)	Stable

Historical Water Quality Graphics - Deep Spot

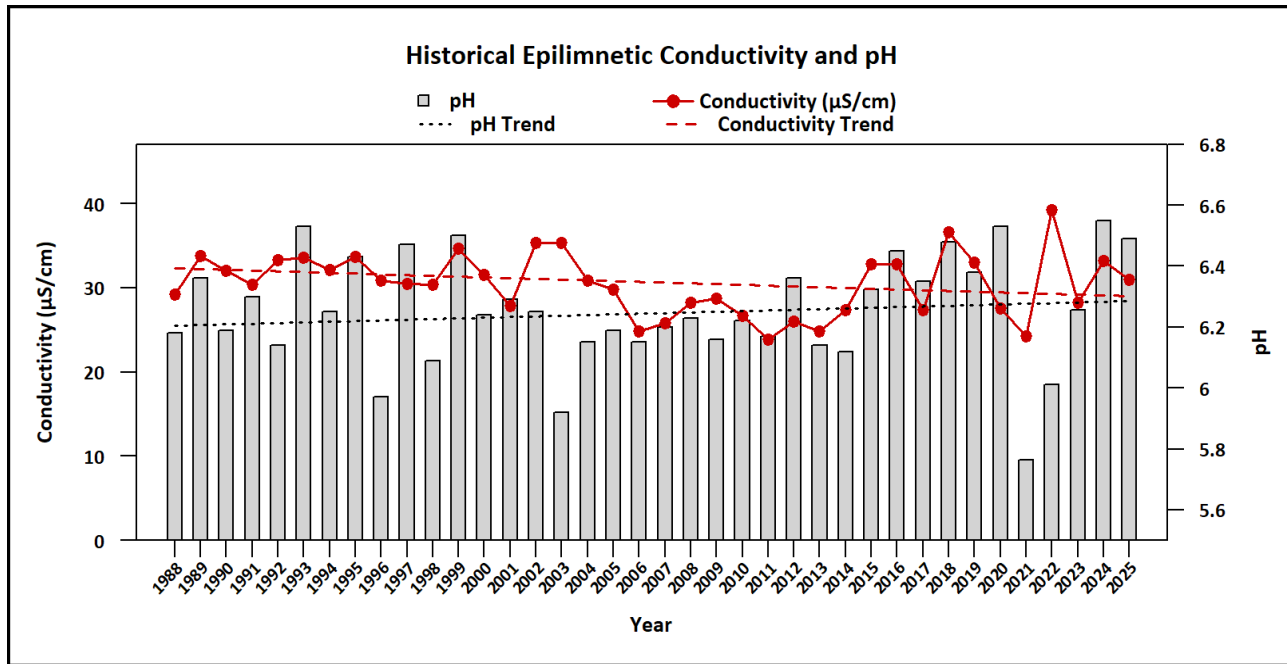


Figure 1. Median epilimnetic pH (gray bars) and conductivity (red points) by year, with corresponding trend lines shown as black and red dashed lines, respectively. Epilimnetic pH is stable and conductivity is stable since monitoring began.

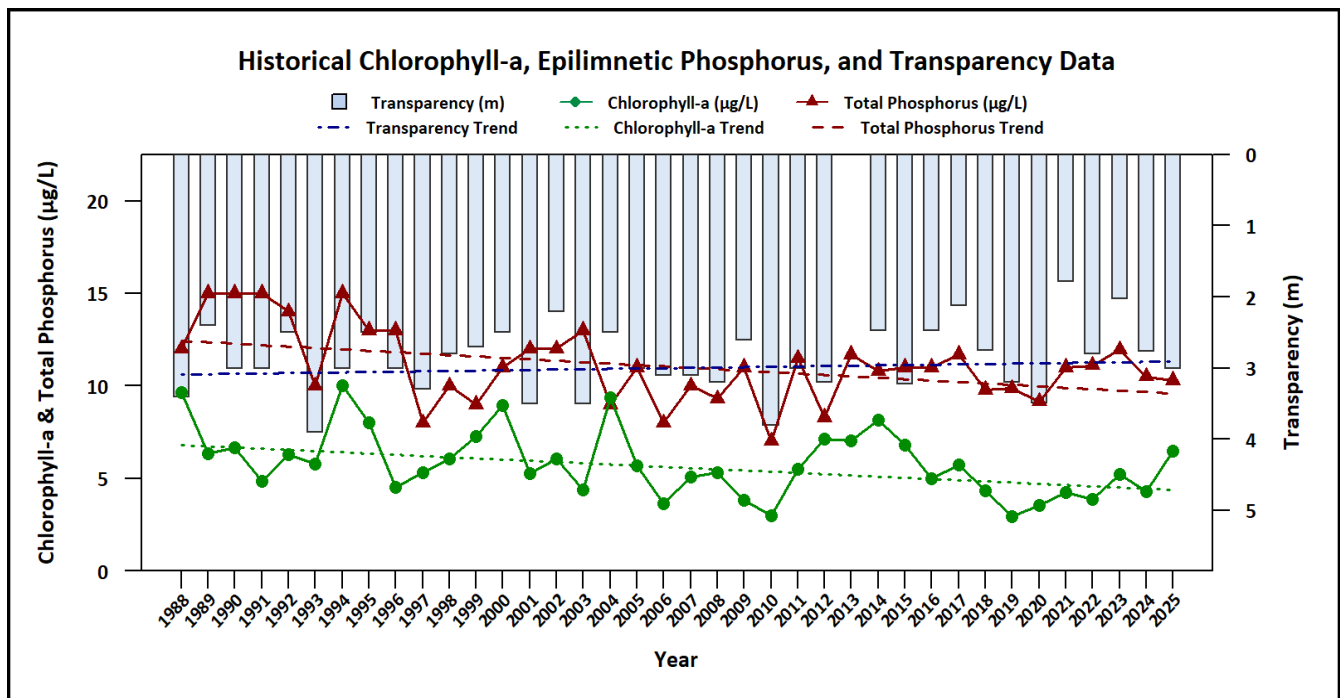


Figure 2. Median Secchi disk transparency (blue bars), epilimnetic phosphorus (red triangles), and chlorophyll-a (green points) by year, with corresponding trend lines shown as blue, red, and green dashed lines, respectively. Water transparency is stable, phosphorus is improving, and chlorophyll-a is improving since monitoring began.

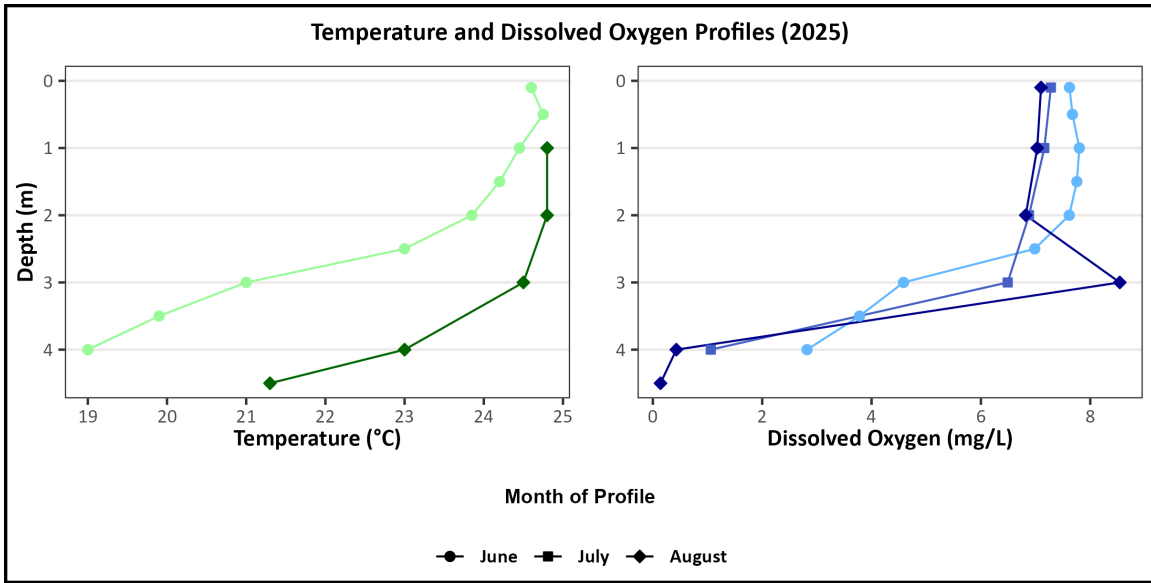


Figure 3. 2025 vertical profiles of temperature (°C; green points, left plot) and dissolved oxygen (mg/L; blue points, right plot) plotted against depth (m). Profile month is indicated by point shape and color intensity, with lighter shades representing earlier-season samples and darker shades representing later-season samples.

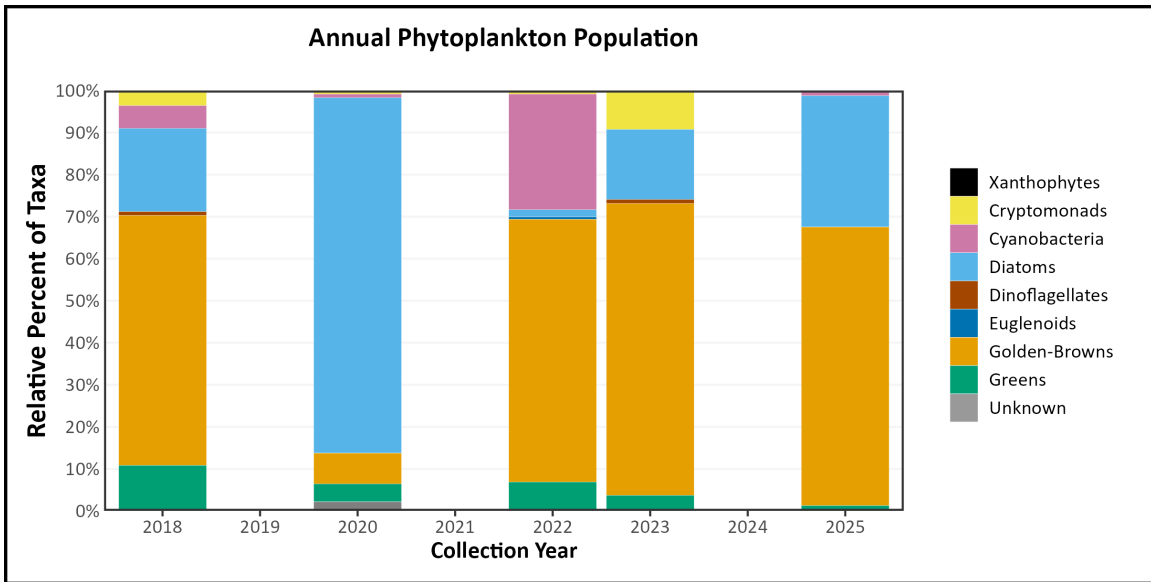


Figure 4. Phytoplankton community composition over time, expressed as relative abundance of major taxonomic groups.

Table 2. 2025 Average Water Quality Data for Island Pond – Stoddard

Station	Alk. (mg/L)	Chlor-a (µg/L)	Chloride (mg/L)	Color (pcu)	Cond. (µS/cm)	Total P (µg/L)	Trans. NVS (m)	Trans. VS (m)	Turb. (ntu)	pH	E. coli (mpn/100 mL)
Epilimnion	3.23	6.51	2.89	75	31.18	10.7	3.07	3.05	0.96	6.48	4
Hypolimnion	No Value	No Value	No Value	No Value	34.55	17.67	No Value	No Value	1.81	5.98	No Value
Inlet	No Value	No Value	No Value	No Value	30.63	13.37	No Value	No Value	0.8	6.3	25.73

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Outlet	No Value	No Value	No Value	No Value	31.72	7.96	No Value	No Value	0.92	6.42	4.93
Town Beach	No Value	No Value	No Value	No Value	No Value	No Value	No Value	No Value	No Value	No Value	60.4

Observations (Refer to Table 2 and Historical Deep Spot Data Graphics):

- Chlorophyll-a (Chlor-a):** Chlorophyll level remained within a slightly elevated range throughout the summer. The median chlorophyll level increased from 2024 and was greater than the state median and the threshold for mesotrophic lakes. Historical trend analysis indicates significantly improving (decreasing) chlorophyll levels since monitoring began.
- Conductivity (Cond.)/Chloride:** Epilimnetic, Hypolimnetic, Inlet and Outlet conductivity and/or chloride levels remained low and less than or approximately equal to the state medians. Epilimnetic conductivity decrease from 2024 and remains lower than the spike in 2022. Historical trend analysis indicates stable epilimnetic conductivity levels since monitoring began.
- Color:** Apparent color measured in the epilimnion indicates the water was highly tea colored, or brown, in June, then decreased to moderately tea colored in August. Average color increased (darkened) from the moderately tea colored conditions measured in 2024.
- Total Phosphorus (Total P):** Epilimnetic phosphorus level was slightly elevated in June but decreased as the summer progressed. The median epilimnetic phosphorus level remained stable with 2024, was slightly greater than the state median and was approximately equal to the threshold for mesotrophic lakes. Historical trend analysis indicates significantly improving (decreasing) epilimnetic phosphorus levels since monitoring began. Hypolimnetic phosphorus level was high in June, decreased slightly in July, then increased to an elevated level in August, potentially due to phosphorus released from bottom sediments under anoxic (no dissolved oxygen) conditions. Historical trend analysis indicates relatively stable Hypolimnetic phosphorus levels since monitoring began. Inlet phosphorus levels fluctuated within a slightly elevated range for that station. Outlet phosphorus levels were slightly elevated in June.
- Transparency (Trans.):** Transparency measured without the viewscope (NVS) was average in June, increased (improved) in July and slightly decreased (worsened) in August. The median NVS transparency increased from 2024 but was lower (worse) than the state median. Historical trend analysis indicates stable, yet variable, NVS transparency since monitoring began. Viewscope (VS) transparency was higher (better) than NVS transparency and a better measure of actual conditions.
- Turbidity (Turb.):** Epilimnetic, Inlet and Outlet turbidity levels fluctuated within an average range for that station. Hypolimnetic turbidity levels were slightly elevated in June.
- pH:** Epilimnetic pH levels were just outside the desirable range of 6.5-8.0 units. Historical trend analysis indicates relatively stable epilimnetic pH levels since monitoring began. Hypolimnetic, Inlet, Outlet pH levels were acidic and less than desirable.
- E. coli:** Epilimnetic, Inlet, Outlet and Town Beach E. coli levels were very low and less than the state standards for public beaches and surface waters.

- Temperature/Dissolved Oxygen (DO) Profile:** The lake was stratified in June, July and August at the time of sampling. Epilimnetic water temperatures were approximately 25 °C, with DO concentrations around 6.5 mg/L. The metalimnion (thermocline) began at approximately 2.0 m, where temperature and DO declined rapidly, except in August when DO increased to over 8 mg/L, suggesting a metalimnetic layer of algal growth. By 4.0 m (the hypolimnion), temperatures dropped to around 19-21 °C and DO concentrations steadily dropped below 2 mg/L. Anoxic (low to no oxygen) conditions are likely contributing to internal phosphorus loading that causes elevated hypolimnetic phosphorus levels.
- Phytoplankton Community:** Since 2018, the phytoplankton community has been dominated by Golden-Brown algae and Diatoms. Cyanobacteria have appeared throughout the years and were dominant in 2022. Continue collecting phytoplankton samples to track changes in cyanobacteria abundance.

How does your lake compare to New Hampshire lakes and water quality standards?

Table 3. New Hampshire Median Lake Water Quality Values. Median values generated from historic lake monitoring data.

Parameter	Median Value
Alkalinity	4.5 mg/L
Chlorophyll-a	4.39 µg/L
Chloride	5 mg/L
Conductivity	42.3 µS/cm
Total Phosphorus	11 µg/L
Transparency	3.3 m
pH	6.6

Table 4. New Hampshire Water Quality Standards. Numeric criteria for specific parameters. Water quality violation occurs if thresholds are exceeded.

Parameter	Threshold
Chloride	> 230 mg/L (chronic)
E. coli (beach)	> 88 cts/100 mL
E. coli (surface water)	> 406 cts/100 mL
pH	between 6.5-8.0 (unless naturally occurring)
Turbidity	> 10 NTU above natural