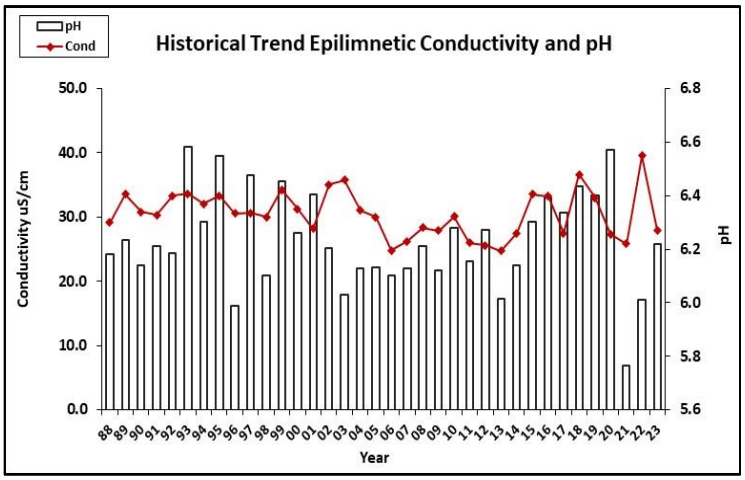
2023 VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
ISLAND POND, STODDARD

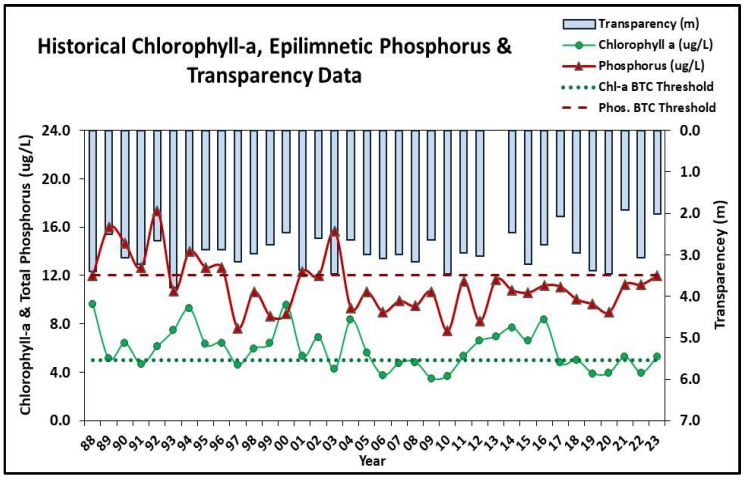
Recommended Actions: Great job sampling in 2023 and adding an extra sampling event in May! Excessive summer rainfall did not seem to have a long-term negative impact on water quality in 2023, however it did result in highly tea colored water and poor water clarity. Pond nutrient (phosphorus) levels remain representative of mesotrophic conditions however have remained within a higher range since 2021. Algal growth (chlorophyll) has generally remained below the threshold for mesotrophic lakes since 2017 following a steady increase which is encouraging, however the pond has experienced brief periods of elevated cyanobacteria growth in recent years. 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. Add dissolved oxygen monitoring to better understand if the hypolimnion experiences anoxia as the summer progresses and to what extent. 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!

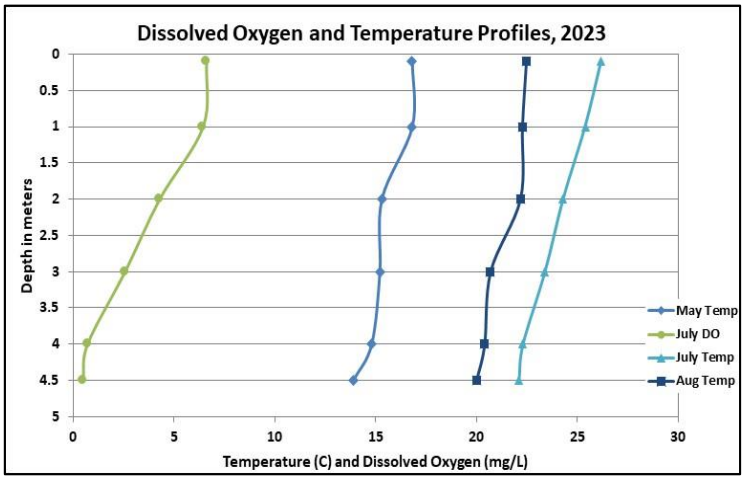
HISTORICAL WATER QUALITY TREND ANALYSIS

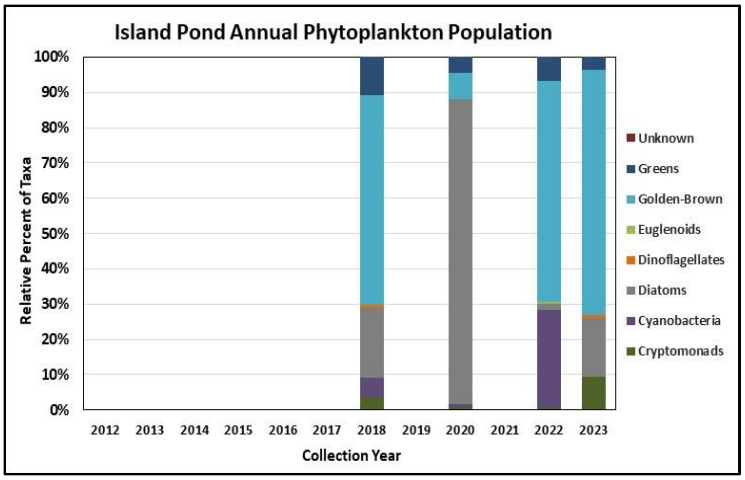
PARAMETER	TREND	PARAMETER	TREND
Conductivity	Stable	**Chlorophyll-a**	Improving
pH (epilimnion)	Stable	**Transparency**	Stable
Phosphorus (hypolimnion)	Stable	**Phosphorus (epilimnion)**	Improving

HISTORICAL WATER QUALITY GRAPHICS









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OBSERVATIONS *(Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **CHLOROPHYLL-A:** Chlorophyll level was low in May, increased to a slightly elevated level in June, and decreased gradually to an average level through August. Average chlorophyll level increased from 2022 and was slightly greater than the state median and the threshold for mesotrophic lakes. Historical trend analysis indicates significantly decreasing (improving) chlorophyll levels since monitoring began.
- **CONDUCTIVITY/CHLORIDE:** Epilimnetic (upper water layer), Hypolimnetic (lower water layer), Inlet, and Outlet conductivity and/or chloride levels remained low and less than the state medians. Historical trend analysis indicates stable epilimnetic conductivity levels since monitoring began.
- **COLOR:** Apparent color measured in the epilimnion indicates the water was moderately tea colored in May and darkened to highly tea colored, or dark brown, conditions by August. Water color was twice as dark as that measured in 2022.
- **E. COLI:** Town Beach E. coli levels were low and less than the state standard for public beaches on each sampling event.
- **TOTAL PHOSPHORUS:** Epilimnetic phosphorus level was slightly elevated in May, decreased to a low level in June, increased to a slightly elevated level in July, and decreased slightly in August. Average epilimnetic phosphorus level increased slightly from 2022, was slightly greater than the state median, and was approximately equal to the threshold for mesotrophic lakes. Historical trend analysis indicates significantly decreasing (improving) epilimnetic phosphorus levels since monitoring began. Hypolimnetic phosphorus level fluctuated within an elevated range from June through August and was highest in July. Historical trend analysis indicates relatively stable hypolimnetic phosphorus levels since monitoring began. Inlet phosphorus level was elevated in July. Outlet phosphorus level fluctuated within a low range for that station.
- **TRANSPARENCY:** Transparency measured with (VS) and without (NVS) the viewscope was below average (worse) in May, increased (improved) slightly in June, decreased (worsened) in July, and increased slightly in August. Average NVS transparency decreased (worsened) from 2022, was lower than the state median, and was approximately one meter lower (worse) than 2022. Historical trend analysis indicates stable, yet increasingly variable, NVS transparency since monitoring began.
- **TURBIDITY:** Epilimnetic turbidity levels fluctuated within a low range but were slightly above average. Hypolimnetic turbidity level was slightly elevated in June. Inlet and Outlet turbidity levels were also slightly elevated in June following significant rainfall.
- **PH:** Epilimnetic, Inlet and Outlet pH levels were slightly acidic and less than the desirable range of 6.5-8.0 units. Historical trend analysis indicates relatively stable epilimnetic pH levels since monitoring began. Hypolimnetic pH level was acidic and potentially critical to aquatic life.

Table 1. 2023 Average Water Quality Data for ISLAND POND - STODDARD

Station Name	Alk. (mg/L)	Chlor-a (ug/L)	Chloride (mg/L)	Color (pcu)	Cond. (us/cm)	E. coli (mpn/100mL)	Total P (ug/L)	Trans. (m)		Turb. (ntu)	pH
								NVS	VS		
Epilimnion	2.9	5.29	3	103	28.0	16	12	2.02	2.92	0.90	6.22
Hypolimnion	-	-	-	-	28.0	1	15	-	-	1.21	5.91
Inlet	-	-	-	-	28.8	4	12	-	-	0.79	6.28
Outlet	-	-	-	-	26.8	4	9	-	-	0.87	6.29
Town Beach	-	-	-	-	-	19	-	-	-	-	-
Town Beach Deep	-	-	-	-	-	30	-	-	-	-	-

NH Median Values

Median values generated from historic lake monitoring data.

Alkalinity: 4.5 mg/L
Chlorophyll-a: 4.39 ug/L
Conductivity: 42.3 uS/cm
Chloride: 5 mg/L
Total phosphorus: 11 ug/L
Transparency: 3.3 m
pH: 6.6

NH Water Quality Standards

Numeric criteria for specific parameters. Water quality violation if thresholds exceeded.

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