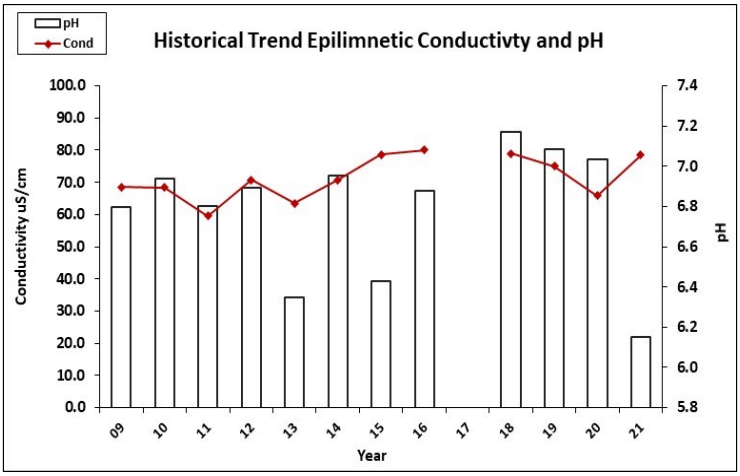
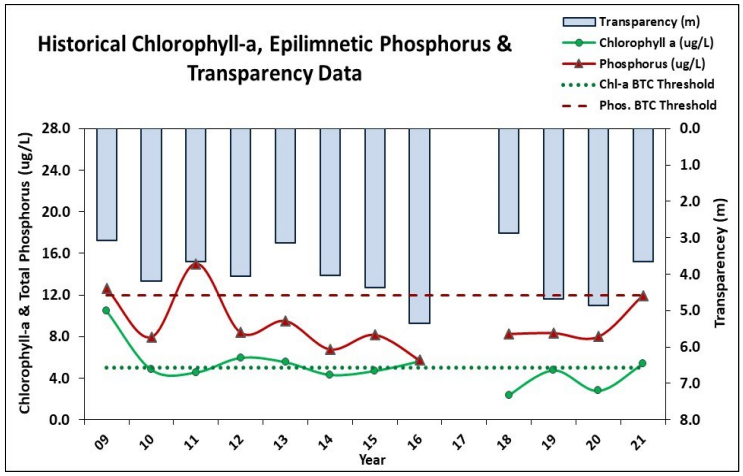
Volunteer Lake Assessment Program Individual Lake Reports
Walker Pond, Boscawen/Webster
2021 Data Summary

Recommended Actions: Great job sampling in 2021! Pond quality remained representative of mesotrophic, or average, conditions. Pond nutrient (phosphorus) levels and algal growth (chlorophyll) increased in 2021, and water color was darker due to record summer rainfall amounts and associated stormwater runoff and flushing of wetland systems rich in dissolved organic matter. Higher levels of algal growth and darker water color resulted in decreased water clarity (transparency) by late summer and we will continue to evaluate how water color may influence water clarity. Continue education and outreach efforts on ways to reduce phosphorus loading to the pond and 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

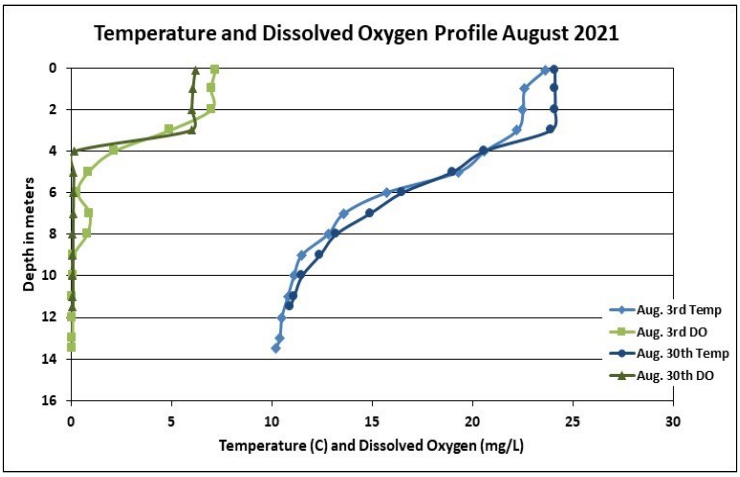
Parameter	Trend	Parameter	Trend
Conductivity	Stable	**Chlorophyll-a**	Stable
pH (epilimnion)	Stable	**Transparency**	Stable
		Phosphorus (epilimnion)	Stable

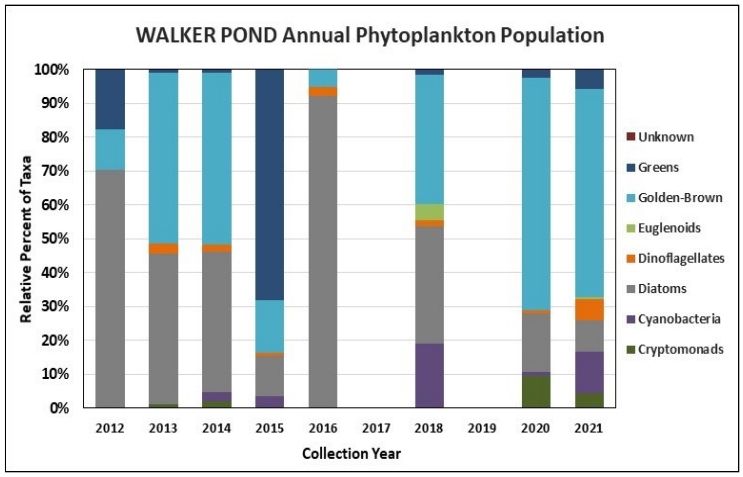




Dissolved Oxygen and Phytoplankton

(Note: Information may not be collected annually)





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

- **Chlorophyll-a:** Chlorophyll level was within a low range in July, increased to a slightly elevated level in early August, and then decreased to a moderate level in late August. Average chlorophyll level increased from 2020 and was slightly greater than the state median and the threshold for mesotrophic lakes. Historical trend analysis indicates relatively stable chlorophyll levels since monitoring began.
- **Conductivity/Chloride:** Epilimnetic (upper water layer), Metalimnetic (middle water layer) and Hypolimnetic (lower water layer) conductivity levels remained slightly greater than the state median, yet less than a level of concern. Epilimnetic chloride level was also slightly greater than the state median and decreased gradually as the summer progressed. Epilimnetic chloride level was much less than the state chronic chloride standard. Historical trend analysis indicates stable epilimnetic conductivity levels since monitoring began.
- **Color:** Epilimnetic color data indicate moderately tea colored, or brown, conditions in July that increased two-fold to highly tea colored conditions in August following record rainfall amounts and flushing of wetland systems rich in dissolved organic matter.
- **Total Phosphorus:** Epilimnetic phosphorus level was low in July, increased to a slightly elevated level in early August following record rainfall, and then decreased to a low level in late August. Average epilimnetic phosphorus level increased from 2020, was slightly greater than the state median, and was approximately equal to the threshold for mesotrophic lakes. Historical trend analysis indicates relatively stable epilimnetic phosphorus levels since monitoring began. Metalimnetic phosphorus level fluctuated within a moderate range and was highest in early August following significant rainfall. Hypolimnetic phosphorus level was slightly elevated in July and early August, and greatly elevated in late August indicating release of phosphorus from bottom sediments under anoxic (no dissolved oxygen) conditions.
- **Transparency:** Transparency measured with (VS) and without (NVS) the viewscope was above average (good) in July, decreased to well below average in early August following record rainfall, increased algal growth, and darker water color, and then increased (improved) slightly in late August. Average NVS transparency decreased from 2020 but remained higher (better) than the state median. Historical trend analysis indicates stable, yet variable, NVS transparency since monitoring began.
- **Turbidity:** Epilimnetic turbidity level was slightly elevated in early August following record rainfall. Metalimnetic turbidity level was elevated in late August potentially indicating a layer of algal/cyanobacteria growth. Hypolimnetic turbidity levels were elevated in early and late August due to the formation and accumulation of organic compounds under anoxic conditions.
- **pH:** Epilimnetic, Metalimnetic and Hypolimnetic pH levels fluctuated within a slightly acidic range and were less than desirable 6.5-8.0 units. Historical trend analysis indicates stable, yet variable, epilimnetic pH levels.

Station Name	Table 1. 2021 Average Water Quality Data for WALKER POND - BOSCAWEN/WEBSTER									
	Alk. (mg/L)	Chlor-a (ug/L)	Chloride (mg/L)	Color (pcu)	Cond. (us/cm)	Total P (ug/L)	Trans. (m)		Turb. (ntu)	pH
							NVS	VS		
Epilimnion	9.0	5.40	14	87	78.4	12	3.66	4.60	1.08	6.15
Metalimnion					81.5	13			1.45	5.91
Hypolimnion					86.3	32			6.96	6.00

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)