Volunteer Lake Assessment Program Individual Lake Reports

WALKER POND, BOSCAWEN, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	5,799	**Max. Depth (m):**	12.8	**Flushing Rate (yr^{-1}):**	3.4
Surface Area (Ac.):	205	**Mean Depth (m):**	4.8	**P Retention Coef:**	0.5
Shore Length (m):	5,700	**Volume (m^3):**	3,984,500	**Elevation (ft):**	500

TROPHIC CLASSIFICATION

Year	Trophic class
1996	EUTROPHIC
2013	MESOTROPHIC

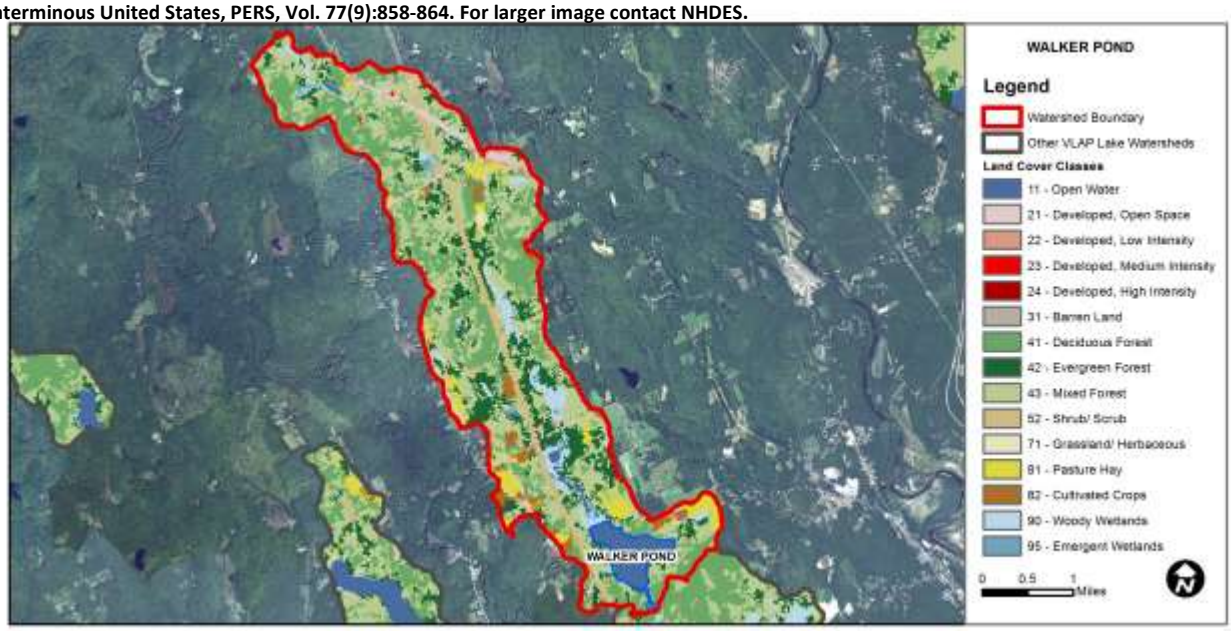
KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the DRAFT 2018 305(b) report on the status of N.H. waters, and are based on data collected from 2008-2017. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organization/divisions/water/wmb/swqa/index.htm

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Very Good	Sampling data is 50 percent better than the water quality standards or thresholds for this parameter.
	pH	Slightly Bad	Data periodically exceed water quality standards or thresholds for a given parameter by a small margin.
	Oxygen, Dissolved	Bad	Data periodically exceed water quality standards or thresholds for this parameter by a large margin.
	Dissolved oxygen satura	Slightly Bad	Data periodically exceed water quality standards or thresholds for a given parameter by a small margin.
	Chlorophyll-a	Very Good	Sampling data is 50 percent better than the water quality standards or thresholds for this parameter.
Primary Contact Recreation	Escherichia coli	Encouraging	Limited data for this parameter predicts water quality standards or thresholds are being met; however more data are necessary to fully assess the parameter.
	Chlorophyll-a	Good	Sampling data commonly meet water quality standards or thresholds for this parameter.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	3.97	Barren Land	0	Grassland/Herbaceous	0.29
Developed-Open Space	3.4	Deciduous Forest	22.58	Pasture Hay	4.64
Developed-Low Intensity	0.86	Evergreen Forest	15	Cultivated Crops	2.77
Developed-Medium Intensity	0.09	Mixed Forest	36.35	Woody Wetlands	4.64
Developed-High Intensity	0.02	Shrub-Scrub	4.38	Emergent Wetlands	0.8

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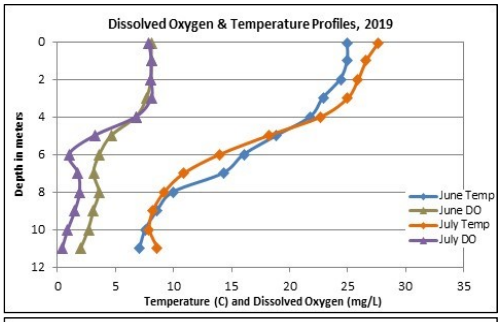
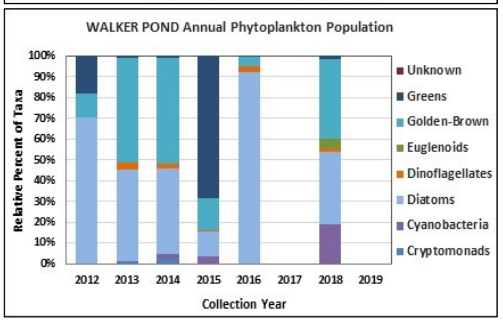
2019 Data Summary

Recommended Actions: Pond quality remained representative of mesotrophic, or average, conditions, and although phosphorus, chlorophyll and water clarity trends are stable, they appear to be improving since monitoring began. We hope to see this continue! Conductivity levels, while within an average range for NH lakes, have increased since monitoring began potentially due to the impacts of winter de-icing materials. Consider adding chloride monitoring at any Inlets to help assess loading. Encourage local and private winter maintenance companies to obtain Voluntary NH Salt Applicator license through UNH Technology Transfer Center's Green SnowPro Certification program. Keep up the great work!

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

- **Chlorophyll-a:** Chlorophyll level was low in June and increased to a slightly elevated level in July. Average chlorophyll level increased from 2018, was slightly greater than the state median, but was slightly less than 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 and/or chloride levels were slightly greater than the state medians, yet not above a level of concern. However, historical trend analysis indicates significantly increasing (worsening) epilimnetic conductivity levels since monitoring began.
- **Color:** Apparent color measured in the epilimnion indicates the water was moderately tea colored, or brown, in June. Hypolimnetic apparent color indicates the water was highly tea colored in July due to the accumulation of organic acids from decomposition of organic matter in bottom sediments.
- **E. coli:** Epilimnetic E. coli levels were very low and much less than the state standards for public beaches and surface waters.
- **Total Phosphorus:** Epilimnetic and Metalimnetic phosphorus levels were stable and low from June to July. Average epilimnetic phosphorus level remained stable with 2018 and was less than the state median and the threshold for mesotrophic lakes. Historical trend analysis indicates relatively stable epilimnetic phosphorus levels since monitoring began. Hypolimnetic phosphorus level was moderate in June and increased to an elevated level in July likely due to release of phosphorus from bottom sediments under anoxic conditions.
- **Transparency:** Transparency measured with (VS) and without (NVS) the viewscope was high (good) in June and remained stable in July. Average NVS transparency increased (improved) from 2018 and was higher (better) than the state median. Historical trend analysis indicates stable, yet variable, transparency since monitoring began.
- **Turbidity:** Epilimnetic and Metalimnetic turbidity levels were within a low range and increased slightly from June to July. Hypolimnetic turbidity levels were low in June and slightly elevated in July likely due to the formation and accumulation of organic compounds in hypolimnetic waters under anoxic conditions.
- **pH:** Epilimnetic pH levels were within the desirable range 6.5-8.0 units, however epilimnetic pH levels have historically fluctuated below the desirable range. Historical trend analysis indicates relatively stable epilimnetic pH levels since monitoring began. Metalimnetic and Hypolimnetic pH levels were slightly acidic and less than desirable.





Station Name	Table 1. 2019 Average Water Quality Data for WALKER POND - BOSCAWEN										
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Color pcu	Cond. us/cm	E. coli mpn/100ml	Total P mg/l	Trans. m		Turb. ntu	pH
								NVS	VS		
Epilimnion	8.6	4.78	14	50	75.1	2	8	4.68	5.32	0.38	7.10
Metalimnion					72.8		10			0.40	6.26
Hypolimnion			15	100	75.4		19			2.51	6.12

NH Median Values: Median values for specific parameters 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. Results exceeding criteria are considered a water quality violation.
Chloride: > 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: between 6.5-8.0 (unless naturally occurring)

Historical Water Quality Trend Analysis

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Worsening	Data significantly increasing.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
pH (epilimnion)	Stable	Trend not significant; data moderately variable.	Transparency	Stable	Trend not significant; data highly variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data moderately variable.