



Volunteer Lake Assessment Program Individual Lake Reports

CHESTNUT POND, EPSOM, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	154	Max. Depth (m):	7	Flushing Rate (yr ⁻¹):	0.8
Surface Area (Ac.):	30	Mean Depth (m):	3.4	P Retention Coef:	0.76
Shore Length (m):	1,600	Volume (m ³):	420,000	Elevation (ft):	737

TROPHIC CLASSIFICATION

Year	Trophic class
1988	OLIGOTROPIC
2006	MESOTROPIC

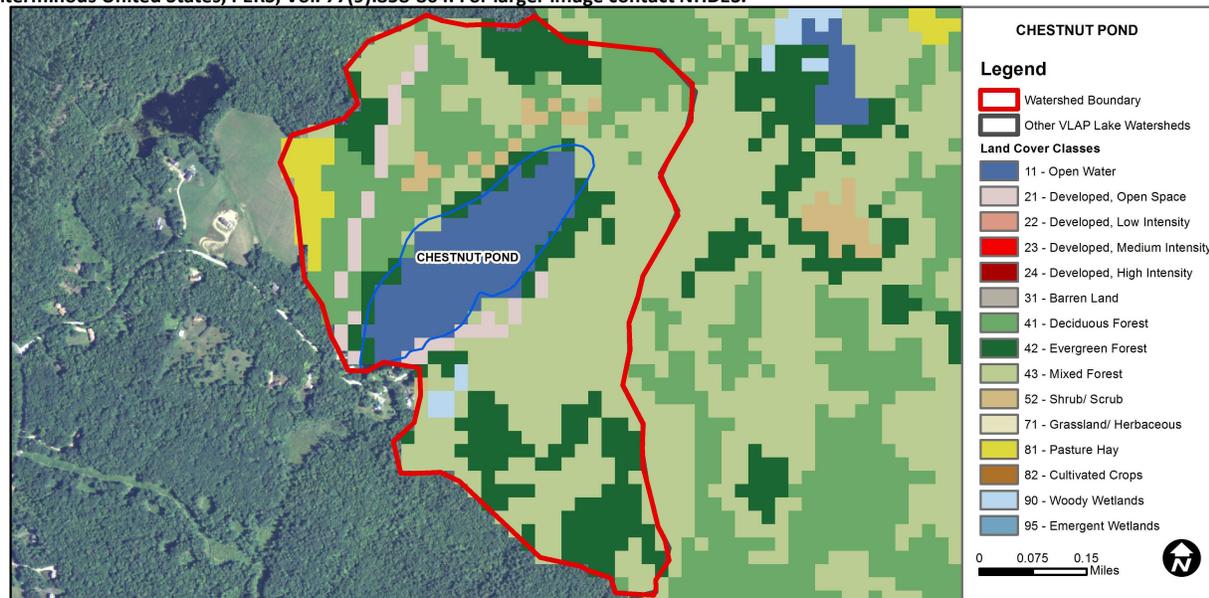
KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	The calculated median is from 5 or more samples and is > indicator and the chlorophyll a indicator is exceeded.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Oxygen, Dissolved	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Dissolved oxygen satura	Cautionary	There are < 10 samples with 1 exceedance of criteria. More data needed.
	Chlorophyll-a	Slightly Bad	The calculated median is from 5 or more samples and is > indicator.
Primary Contact Recreation	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.
	Chlorophyll-a	Very Good	There are a total of at least 10 samples with 0 exceedances of indicator.

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	12.8	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	4.14	Deciduous Forest	16.92	Pasture Hay	2.88
Developed-Low Intensity	0	Evergreen Forest	20.72	Cultivated Crops	0
Developed-Medium Intensity	0	Mixed Forest	40.28	Woody Wetlands	0.69
Developed-High Intensity	0	Shrub-Scrub	1.96	Emergent Wetlands	0



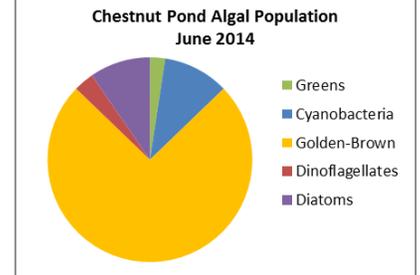
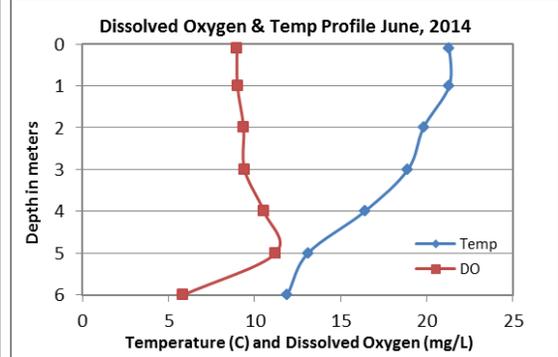
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CHESTNUT POND, EPSOM

2014 DATA SUMMARY

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

- CHLOROPHYLL-A:** Chlorophyll levels increased slightly from June to July, and then remained stable from July to August. Average chlorophyll levels were stable with 2013 and much less than the state median. Historical trend analysis indicates significantly decreasing (improving) chlorophyll levels since monitoring began and we hope to see this continue!
- CONDUCTIVITY/CHLORIDE:** Deep spot and tributary conductivity and chloride levels remained stable from June to August, were low and approximately equal to the state median. Historical trend analysis indicates relatively stable epilimnetic (upper water layer) conductivity with moderate variability between years.
- E. COLI:** Outlet and near shore E. coli levels were low and much less than the state standards of 88 cts/100 mL for public beaches and 406 cts/100 mL for surface waters which is a good sign.
- TOTAL PHOSPHORUS:** Epilimnetic and hypolimnetic (lower water layer) phosphorus levels were very low in June, but elevated in July following a significant storm event of greater than 1.0 inch of rain, and then decreased to average levels in August. Historical trend analysis indicates stable epilimnetic phosphorus since monitoring began. East Side Inlet phosphorus levels were low in June but were not measured in July and August due to no flow conditions. Outlet phosphorus levels were low in July and August.
- TRANSPARENCY:** Transparency was very good in June and then decreased slightly in July and August, however average transparency remained better than the state median and improved slightly from 2013. Historical trend analysis indicates stable transparency since monitoring began.
- TURBIDITY:** Epilimnetic and hypolimnetic turbidities were elevated in July following the significant storm event. Hypolimnetic turbidity was also elevated in August potentially due to algal growth or suspended sediments from boating activity.
- pH:** Epilimnetic and hypolimnetic pH levels were within the desirable range of 6.5–8.0 units on each sampling event. Historical trend analysis indicates significantly increasing (improving) epilimnetic pH since monitoring began. We hope to see this continue!
- RECOMMENDED ACTIONS:** The elevated deep spot phosphorus and turbidity following a significant storm event of over 1.0 inch of rainfall indicates that stormwater runoff carries excess nutrients and sediments into the pond from shoreline properties. Identify areas of stormwater runoff and install stormwater management practices to reduce runoff into the pond. DES' "NH Homeowner's Guide to Stormwater Management" is a great resource. Educate residents to utilize phosphate free fertilizers which are now available in most stores. Motor boat activity in the pond may be contributing to shoreline erosion and suspending bottom sediments which could also increase phosphorus and turbidity levels. DES has a new Fact Sheet WD-WMB-25 Impacts of Motorized Craft on New Hampshire's Waterbodies to help educate boaters. The improving chlorophyll and pH trends are a great sign and we hope to see those continue! Keep up the great work!



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)

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.

Alkalinity: 4.9 mg/L

Chlorophyll-a: 4.58 mg/m³

Conductivity: 40.0 uS/cm

Chloride: 4 mg/L

Total Phosphorus: 12 ug/L

Transparency: 3.2 m

pH: 6.6

Station Name	Table 1. 2014 Average Water Quality Data for CHESTNUT POND									
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	E. Coli #/100ml	Total P ug/l	Trans. m		Turb. ntu	pH
Epilimnion	5.77	2.83	4	34.2		11	4.80	4.94	1.02	6.86
Hypolimnion				33.1		12			1.28	6.62
Barbs Dock					10					
East Side Inlet			3	32.5		7			0.58	6.78
Outlet				34.3	25	7			0.81	6.79

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Stable	Trend not significant; data moderately variable.	Chlorophyll-a	Improving	Data significantly decreasing.
pH (epilimnion)	Improving	Data significantly increasing.	Transparency	Stable	Trend not significant; data show low variability.
			Phosphorus (epilimnion)	Stable	Trend not significant; data show low variability.

