Volunteer Lake Assessment Program Individual Lake Reports

LOON LAKE, PLYMOUTH, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	2,240	**Max. Depth (m):**	8.8	**Flushing Rate (yr^{-1}):**	2.6
Surface Area (Ac.):	112	**Mean Depth (m):**	3.9	**P Retention Coef:**	0.55
Shore Length (m):	2,600	**Volume (m^3):**	1,784,500	**Elevation (ft):**	489

TROPHIC CLASSIFICATION

Year	Trophic class
1983	MESOTROPHIC
1999	MESOTROPHIC

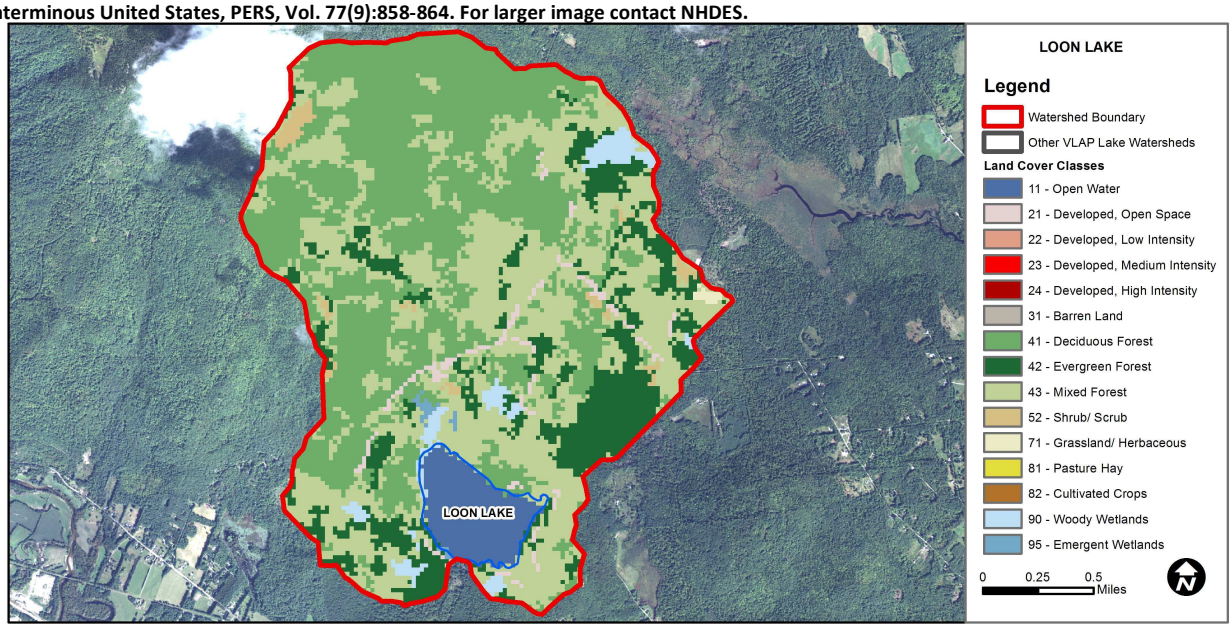
KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
	pH	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	D.O. (mg/L)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	D.O. (% sat)	Cautionary	< 10 samples and 1 exceedance of criteria. More data needed.
	Chlorophyll-a	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
Primary Contact Recreation	E. coli	Encouraging	>2 samples exist that are > 75% of geometric mean criteria, but not enough samples to calculate geomertic mean. No single sample exceedances. More data needed.
	Chlorophyll-a	Very Good	At least 10 samples with 0 exceedances of criteria.

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	4.62	Barren Land	0	Grassland/Herbaceous	0.17
Developed-Open Space	1.61	Deciduous Forest	39.28	Pasture Hay	0
Developed-Low Intensity	0	Evergreen Forest	13.92	Cultivated Crops	0
Developed-Medium Intensity	0	Mixed Forest	36.44	Woody Wetlands	2.4
Developed-High Intensity	0	Shrub-Scrub	1.26	Emergent Wetlands	0.29

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
LOON LAKE, PLYMOUTH, NH
2012 DATA SUMMARY

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

- **CHLOROPHYLL-A:** Chlorophyll levels were low throughout the summer and well below the NH lake median. Historical trend analysis indicates a relatively stable chlorophyll level since monitoring began.
- **CONDUCTIVITY/CHLORIDE:** Deep spot conductivity levels were low, below the NH lake median, and only slightly higher in the tributaries.
- **E. COLI:** E. coli levels in the tributaries were well below state standards for surface waters, however higher than we would typically expect for undisturbed waters. Beaver dams were noted upstream on Mill Brook Inlet which could easily contribute to the E. coli levels.
- **TOTAL PHOSPHORUS:** Deep spot phosphorus levels were low and historical trend analysis indicates a significantly decreasing (improving) epilimnetic (upper water layer) phosphorus level since monitoring began. We hope to see this continue! Phosphorus levels were slightly elevated in Mill Brook Inlet as was the turbidity.
- **TRANSPARENCY:** Transparency was slightly higher in 2012 and average for most NH lakes. Historical trend analysis indicates a relatively stable transparency since monitoring began.
- **TURBIDITY:** Turbidity was elevated in Mill Brook Inlet throughout the summer. Rain events occurred prior to sampling and with the beaver dam activity, could have washed debris downstream. Hypolimnetic (lower water layer) turbidity was slightly elevated in September possiblydue to sediment contamination.
- **PH:** pH levels in the epilimnion were satisfactory; however decrease to critical levels towards the lake bottom.
- **RECOMMENDED ACTIONS:** Identify potential source of E. coli in Gargaz Inlet. The improving phosphorus trend is a good sign, keep up the great work!

Dissolved Oxygen & Temperature Profile

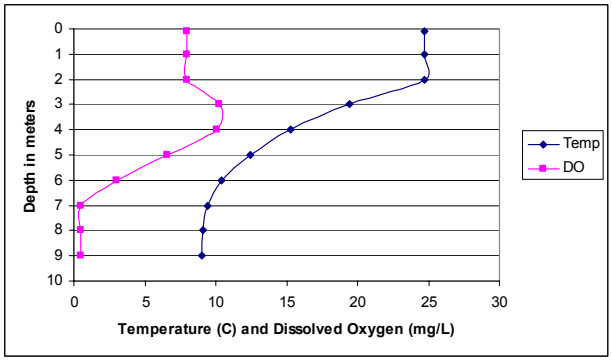


Table 1. 2012 Average Water Quality Data for LOON LAKE

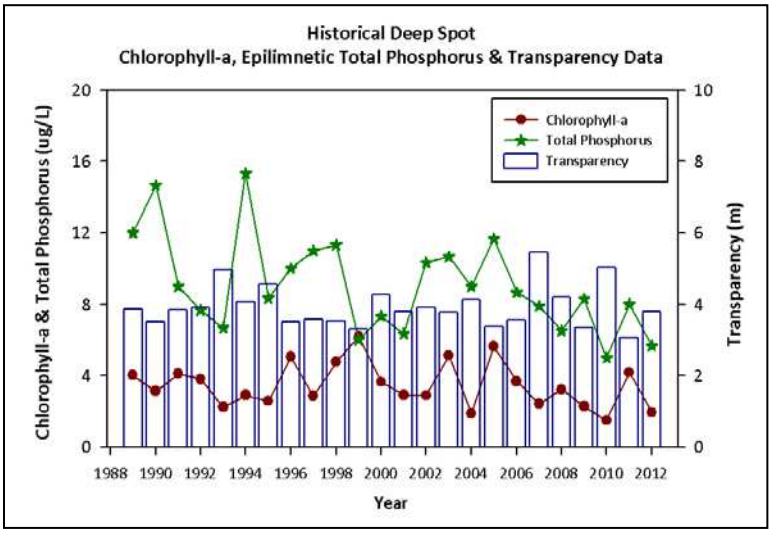
Station Name	Alk.	Chlor-a	Cond.	E. Coli	Total P	Trans.		Turb.	pH
	mg/l	ug/l	uS/cm	#/100ml	ug/l	m		ntu	
						NVS	VS		
Deep Epilimnion	4.30	1.95	29.0		6	3.80	4.23	0.89	6.85
Deep Metalimnion			27.0		8			1.02	6.56
Deep Hypolimnion			28.1		13			2.51	6.05
Gargaz Inlet			46.3	81	14			1.23	6.87
Mill Brook Inlet			31.9	95	23			4.13	6.53

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 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: 6.5-8.0 (unless naturally occurring)

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation
Chlorophyll-a	Stable	Data not significantly increasing or decreasing.
Transparency	Stable	Data not significantly increasing or decreasing.
Phosphorus (epilimnion)	Improving	Data significantly decreasing.



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