Volunteer Lake Assessment Program Individual Lake Reports

COBBETTS POND, WINDHAM, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	2,048	**Max. Depth (m):**	19.2	**Flushing Rate (yr^{-1}):**	0.4
Surface Area (Ac.):	345	**Mean Depth (m):**	5.2	**P Retention Coef:**	0.8
Shore Length (m):	7,400	**Volume (m^3):**	7,208,000	**Elevation (ft):**	177

TROPHIC CLASSIFICATION

Year	Trophic class
1986	MESOTROPHIC
2003	EUTROPHIC

KNOWN EXOTIC SPECIES

Variable Milfoil

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

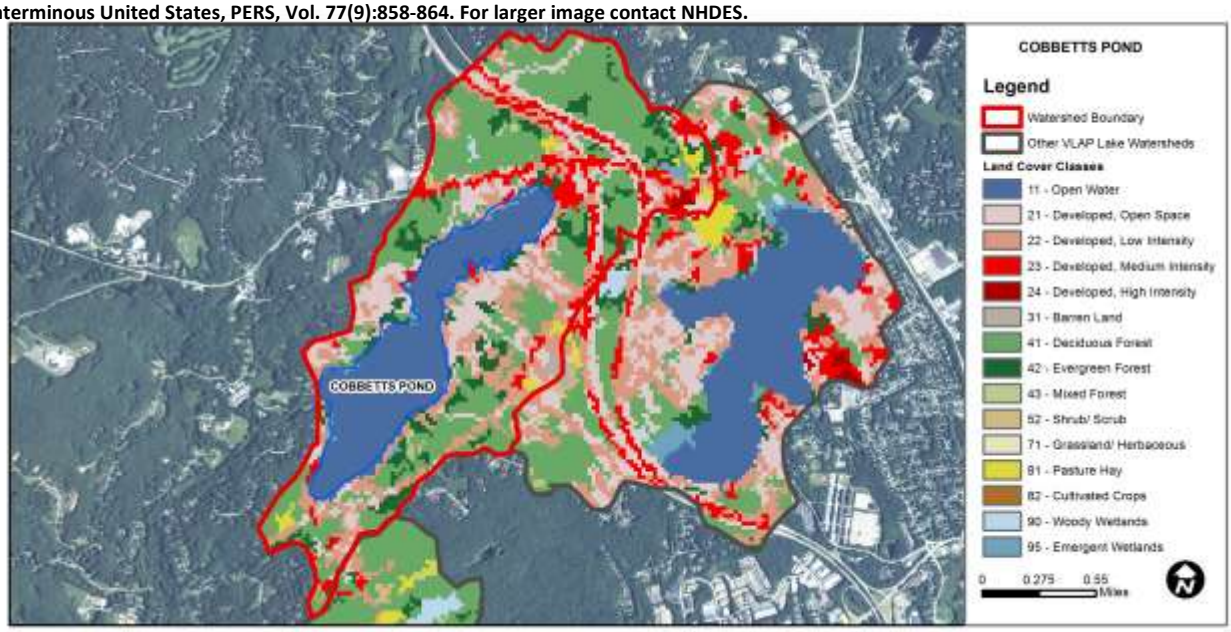
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	Data exceed water quality standards or thresholds for a given parameter by a small margin.
	pH	Slightly Bad	Data periodically exceed water quality standards or thresholds for a given parameter by a small margin.
	Oxygen, Dissolved	Very Good	All sampling data meet water quality standards or thresholds for this parameter.
	Dissolved oxygen satura	Cautionary	Limited data for this parameter predicts exceedance of water quality standards or thresholds; however more data are necessary to fully assess the parameter.
	Chlorophyll-a	Slightly Bad	Data exceed water quality standards or thresholds for a given parameter by a small margin.
Primary Contact Recreation	Escherichia coli	Cautionary	Limited data for this parameter predicts exceedance of water quality standards or thresholds; however more data are necessary to fully assess the parameter.
	Cyanobacteria hepatoto	Slightly Bad	Cyanobacteria bloom(s).
	Chlorophyll-a	Very Good	All sampling data meet water quality standards or thresholds for this parameter.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

COBBETTS POND - DUNKAN BEACH	Escherichia coli	No Data	No data for this parameter.
COBBETTS POND - TOWN BEACH	Escherichia coli	Bad	Data periodically exceed water quality standards or thresholds for this parameter by a large margin.
COBBETTS POND - TOWN BEACH	Cyanobacteria	Slightly Bad	Cyanobacteria bloom(s).

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	19.5	Barren Land	0.34	Grassland/Herbaceous	0
Developed-Open Space	14.9	Deciduous Forest	31.57	Pasture Hay	1.44
Developed-Low Intensity	15	Evergreen Forest	7.92	Cultivated Crops	0
Developed-Medium Intensity	7.25	Mixed Forest	0.22	Woody Wetlands	0.14
Developed-High Intensity	0.27	Shrub-Scrub	0.22	Emergent Wetlands	0.9

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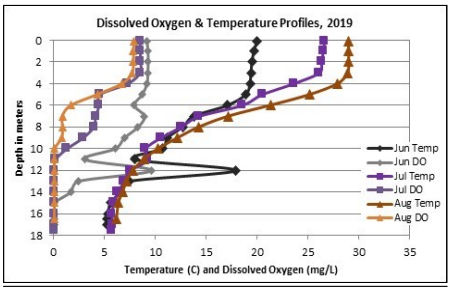
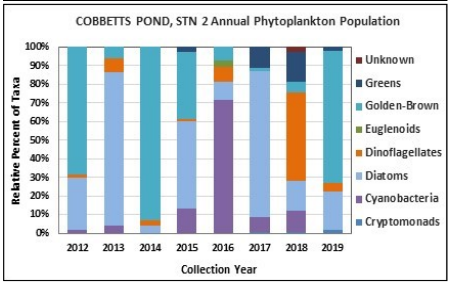
Cobbetts Pond, Stn. 2, Windham
2019 Data Summary

Recommended Actions: Station 2 algal growth (chlorophyll) has generally remained at a lower level since 2015 and we hope to see this continue. Bella Vista phosphorus levels were extremely high and the sample location was moved. Investigate potential sources of nutrients at this location. Tributaries experienced elevated phosphorus and turbidity levels during dry conditions and low flows. Collect samples only if there's enough flow to obtain samples free of sediment/organic matter. Tributary and pond conductivity and chloride levels are concerning and chloride levels approached the state chronic chloride standard at several sites. Continue enhanced conductivity and chloride monitoring program to better understand what sites contribute higher salt loads. Consider developing a management plan addressing chloride as a significant pollutant in the watershed as this could help identify and quantify different sources contributing to the load such as septic systems and water softeners. Keep up the great work!

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

- **Chlorophyll-a:** Chlorophyll level was slightly elevated in June, decreased to a low level in July, and remained stable in August. Average chlorophyll level decreased from 2018, was less than the state median, and was approximately equal to the threshold for oligotrophic lakes. We hope to see this continue! However, historical trend analysis indicates significantly increasing (worsening) chlorophyll levels since monitoring began.
- **Conductivity/Chloride:** Deep spot and tributary conductivity and chloride levels remained elevated and much greater than the state medians. Connie's Bk., Connie's Bk. West, Connie's Bk. at 111, Dinsmore West, and Main Inlet chloride levels exceeded the state chronic chloride standard on at least one sampling event. Historical trend analysis indicates significantly increasing (worsening) epilimnetic (upper water layer) conductivity levels since monitoring began, particularly since 2015.
- **Color:** Apparent color measured in the epilimnion indicates the lake water was lightly tea colored, or light brown.
- **E. coli:** Community Beach E. coli levels were very low in June and early July, and exceeded the state standard for public beaches in late July.
- **Total Phosphorus:** Epilimnetic phosphorus levels were moderate in June and decreased to a low level as the summer progressed. Average epilimnetic phosphorus level remained stable with 2018 and was slightly greater than the state median and the threshold for oligotrophic lakes. Metalimnetic (middle water layer) phosphorus levels were moderate and stable from June to August. Hypolimnetic (lower water layer) phosphorus levels were elevated and highest in August. Historical trend analysis indicates significantly increasing (worsening) epilimnetic and hypolimnetic phosphorus levels since monitoring began. Bella Vista phosphorus levels were greatly elevated in June during moderate flows. Connie's Bk. at 111, Community Beach and Main Inlet phosphorus levels fluctuated within a low to moderate range for those stations. All other tributary stations experienced elevated phosphorus levels in late July during low flow conditions and all samples contained sediment and organic matter.
- **Transparency:** Transparency measured with (VS) and without (NVS) the viewscope was below average (worse) in June when algal growth was higher, and increased (improved) as the summer progressed. Average NVS transparency increased from 2018 and was higher (better) than the state median. Historical trend analysis indicates stable, yet variable, transparency since monitoring began.
- **Turbidity:** Epilimnetic turbidity level was slightly elevated in early July. Metalimnetic, Hypolimnetic, Community Beach, Main Inlet, and Mess turbidity levels fluctuated within low to moderate ranges for those stations. All other stations experienced elevated turbidity levels in July during low flows and sediment/organic matter was noted in the samples.
- **pH:** Deep spot and all tributary stations except Mess experienced pH levels within the desirable range 6.5-8.0 units. Historical trend analysis indicates stable epilimnetic pH levels since monitoring began.





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: 4.5 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

Station Name	Table 1. 2019 Average Water Quality Data for COBBETTS POND, STN. 2 - WINDHAM										
	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	32.8	3.57	99	27	407.7		12	3.52	4.18	1.21	7.56
Metalimnion			108		435.0		14			1.64	6.88
Hypolimnion			148		586.0		34			1.93	6.89
Armstrong			150		571.7		34			4.82	6.86
Bella Vista			64		302.0		115			2.90	6.89
Castleton Culvert			188		831.7		25			5.54	6.68
Community Beach					416.7	407	14			1.24	7.84
Connie's Bk.			195		788.5		49			46.03	7.43
Connie's Bk. West			334		1336.5		47			52.2	7.73
Connie's Bk. at 111			130		578.0		13			22.47	6.95
Dinsmore West			180		796.5		51			16.86	7.41
Main Inlet Castleton Bk.			187		776.2		19			2.86	6.86
Mess					48.5		45			1.53	5.94
Walkey Rd.			71		342.6		66			6.02	6.96

Historical Water Quality Trend Analysis

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