Volunteer Lake Assessment Program Individual Lake Reports

OSSIPEE LAKE, OSSIPEE, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	209,595	**Max. Depth (m):**	18.5	**Flushing Rate (yr^{-1}):**	4.6
Surface Area (Ac.):	3250	**Mean Depth (m):**	8.5	**P Retention Coef:**	0.39
Shore Length (m):	17,100	**Volume (m^3):**	108,421,500	**Elevation (ft):**	406

TROPHIC CLASSIFICATION

Year	Trophic class
1987	OLIGOTROPHIC
2003	OLIGOTROPHIC

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

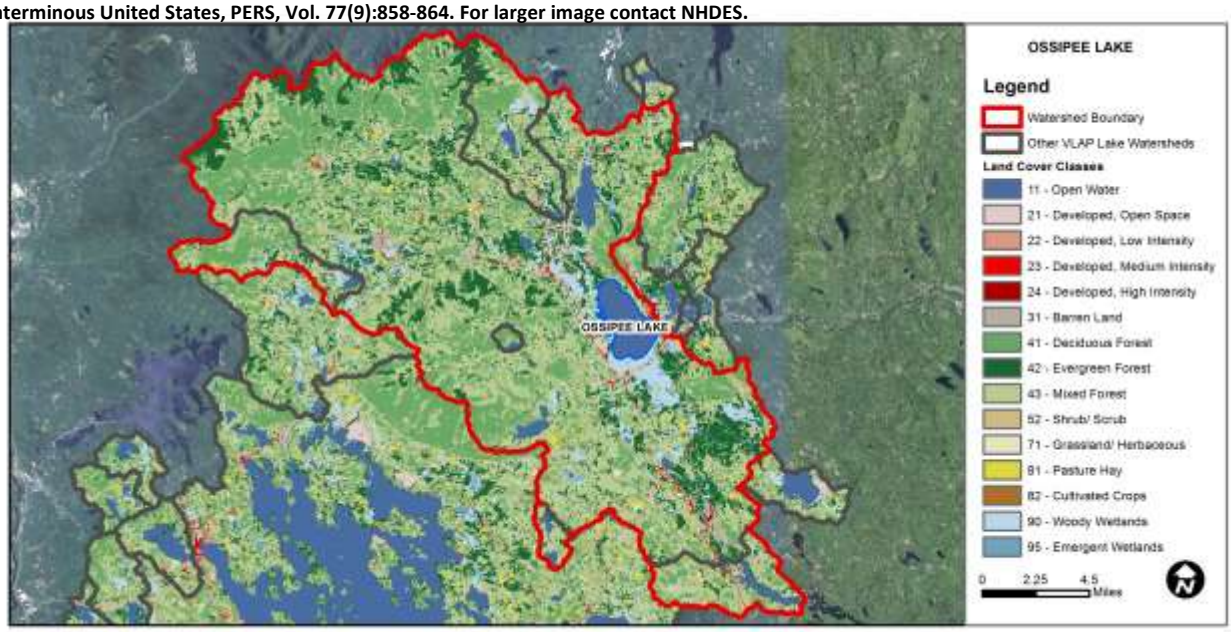
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	Sampling data is better than the water quality standards or thresholds for this parameter.
	pH	Slightly Bad	Data periodically exceed water quality standards or thresholds for this parameter by a small margin.
	Oxygen, Dissolved	Very Good	All sampling data meet water quality standards or thresholds for this parameter.
	Dissolved oxygen satura	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 is better than the water quality standards or thresholds for this parameter.
Primary Contact Recreation	Escherichia coli	No Data	No data for this parameter.
	Chlorophyll-a	Very Good	All sampling data meet water quality standards or thresholds for this parameter.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

OSSIPEE LAKE - DEER COVE PB BEACH	Escherichia coli	No Data	No data for this parameter.
OSSIPEE LAKE - OSSIPEE LAKE NATURAL AREA	Escherichia coli	Slightly Bad	Data periodically exceed water quality standards or thresholds for this parameter by a small margin.
OSSIPEE LAKE - CAMP CODY FOR BOYS BEACH	Escherichia coli	Very Good	All sampling data meet water quality standards or thresholds for this parameter.
OSSIPEE LAKE - CAMP CALUMET BEACH	Escherichia coli	Very Good	All sampling data 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	3.48	Barren Land	0.66	Grassland/Herbaceous	0.37
Developed-Open Space	2.87	Deciduous Forest	22.98	Pasture Hay	0.86
Developed-Low Intensity	0.75	Evergreen Forest	20.55	Cultivated Crops	0.51
Developed-Medium Intensity	0.25	Mixed Forest	38.67	Woody Wetlands	4.85
Developed-High Intensity	0.04	Shrub-Scrub	2.52	Emergent Wetlands	0.59

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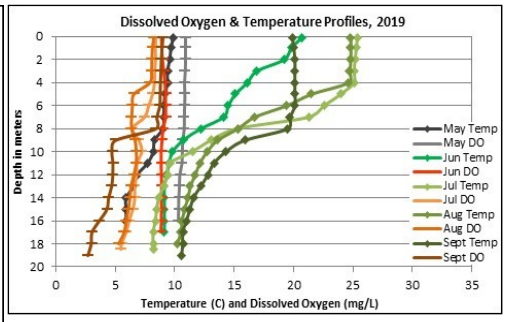
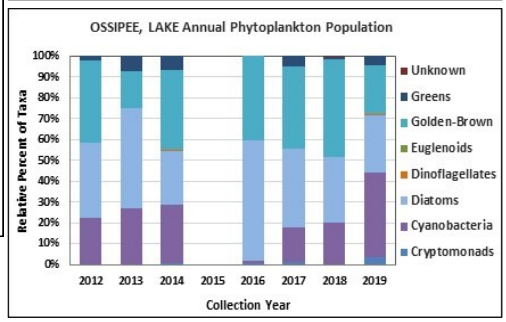
Lake Ossipee, Ossipee
2019 Data Summary

Recommended Actions: Lake water quality remained representative of oligotrophic, or high quality, conditions. However, water clarity was below average which may in part be due to wind and wave action while sampling. Water color was darker in 2019 as well; continue to measure the relationship between water color and clarity as the increased frequency and intensity of storm events flushes waters rich in dissolved organic matter that imparts a tea color to the water. Conductivity levels, while low, have increased gradually since 2012 indicating potential impacts of de-icing agents. Educate road agents and watershed residents on ways to reduce the application of de-icing and dust suppressants on roads, parking lots, walkways, and driveways. Keep up the great work!

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

- **Chlorophyll-a:** Chlorophyll levels fluctuated within a low range and were highest in July. Average chlorophyll level decreased slightly from 2018 and was less than the state median and the threshold for oligotrophic 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 fluctuated within an average range for NH lakes and were approximately equal to the state median. Epilimnetic chloride levels were within a low range and slightly greater than the state median. Historical trend analysis indicates stable epilimnetic conductivity levels since monitoring began.
- **Color:** Apparent color measured in the epilimnion indicates the lake water fluctuated within a moderately tea colored, or brown, range and was darkest in June and July.
- **Total Phosphorus:** Epilimnetic phosphorus level was slightly elevated in May, decreased to a low level in June, and then remained fairly stable through August. Average epilimnetic phosphorus level increased from 2018, was slightly less than the state median, and was approximately equal to the threshold for oligotrophic lakes. Historical trend analysis indicates relatively stable epilimnetic phosphorus levels since monitoring began. Metalimnetic and Hypolimnetic phosphorus levels fluctuated within a low range from May through September.
- **Transparency:** Transparency measured without the viewscope (NVS) was below average (worse) in May likely due to moderate wave conditions, increased (improved) slightly in June, decreased in July, remained stable in August, and then increased in September and was the highest (best) for the summer. Average NVS transparency decreased greatly from 2018 and was less (worse) than the state median. Historical trend analysis indicates highly variable transparency since monitoring began. Viewscope transparency (VS) was generally higher (better) than NVS transparency and was within a more normal range for the lake.
- **Turbidity:** Epilimnetic and Metalimnetic turbidity levels fluctuated within a low range and were highest in May and June. Hypolimnetic turbidity levels increased slightly as the summer progressed but remained within a low range.
- **pH:** Eplimnetic pH levels were within the desirable range 6.5-8.0 units. Historical trend analysis indicates stable epilimnetic pH levels since monitoring began. Metalimnetic pH levels were slightly less than desirable, and Hypolimnetic pH levels were slightly acidic and less than desirable.





Station Name	Table 1. 2019 Average Water Quality Data for OSSIPEE LAKE - OSSIPEE									
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Color pcu	Cond. us/cm	Total P mg/l	Trans. m		Turb. ntu	pH
							NVS	VS		
Epilimnion	5.3	1.59	9	52	48.1	8	2.98	3.89	0.60	6.61
Metalimnion					43.0	7			0.53	6.21
Hypolimnion					42.6	7			0.91	5.99

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	Stable	Trend not significant; data show low variability.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
pH (epilimnion)	Stable	Trend not significant; data show low variability.	Transparency	Stable	Trend not significant; data highly variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data moderately variable.