



# The Sampler

November 28, 2016

The Sampler is a monthly e-newsletter produced by the Volunteer Lake Assessment Program.

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## Web Highlights

This month's featured lake website is [Messer Pond Protective Association, New London, NH](#)

[Climate Change Could Outpace EPA Lake Protections](#)

[Road Salt Can Change Sex Ratios in Frog Populations](#)

[The Zebra Mussel Hunter](#)

[Saving Lake Urmia](#)

[Russia's Lake Baikal is Invaded by Toxic Algae](#)

## Upcoming Events

[Forest Laws for Municipal Officials and Volunteers](#)

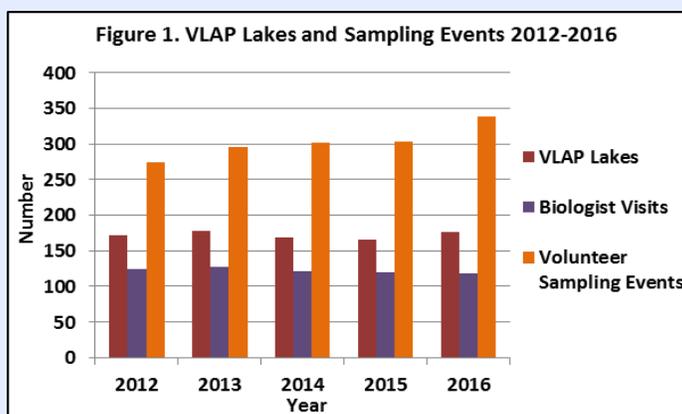
December 14, 2016  
8:00 a.m. - 3:00 p.m.  
Salisbury Town Hall  
645 Old Turnpike Rd.  
Salisbury, NH 03268

[2017 NH Water and Watershed Conference](#)

March 24, 2017  
Plymouth State University  
Plymouth, NH 03264

## 2016 VLAP Season Stats

The Volunteer Lake Assessment Program (VLAP) experienced another busy year for volunteers and staff in the Jody Connor Limnology Center (JCLC). Approximately 500 volunteers monitored 176 lakes throughout New Hampshire, an increase of 10 lakes from the 2015 sampling season! A total of 457 individual sampling events were conducted at VLAP lakes. Volunteers conducted a total of 339 individual sampling events, and biologists assisted volunteers for an additional 118 sampling events (Figure 1).



The dedication and hard work of volunteer monitors has led to a steady increase of sampling events since 2012; great job volunteers! Approximately 184 deep spots and 500 river/stream stations were sampled. Continuing with the biennial biologist visit schedule, lake names A-L received a biologist visit in 2016 and lake names M-Z will receive a biologist visit in 2017.

Save the Date!  
 NEAEB 2017  
 March 14-16, 2017  
 Hilton Hartford Hotel  
 Hartford, CT

2017 Lakes Congress

June 1-2, 2017  
 Church Landing at Mills Falls  
 Meredith, NH 03253

**Grants**

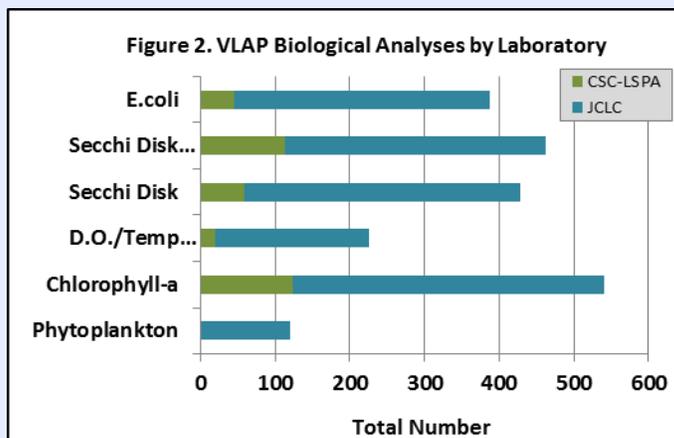
NH Charitable Foundation  
 Multiple Grant Programs

2017 Healthy Watersheds Consortium Grants

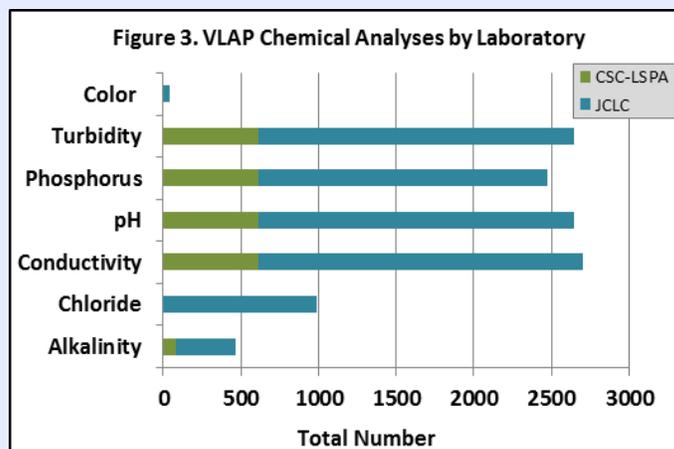
Request for Proposals  
 February 1, 2017

**Limno Lingo**

**Oxbow Lake:** A lake formed over time by a meandering river. River sediments are eroded on the outer, concave side of the river bend while deposition of sediments occurs on the inner, convex side. Eventually, the U-shaped meander closes in upon itself and the main river cuts a new channel through the meander where sediment deposits eventually close off the loop forming the oxbow. There are many oxbow lakes in New Hampshire; Horseshoe Pond in Concord is an example of an oxbow lake.



Figures 2 and 3 provide a summary of VLAP sample parameters analyzed by the JCLC and Colby Sawyer College-Lake Sunapee Protective Association (CSC-LSPA) satellite laboratory for the 2016 sampling year. Approximately 14,172 sample results were generated by VLAP in 2016 which increased by approximately 500 over 2015. Volunteers also participated in the Regional Cyanobacteria Pilot Project collecting bi-weekly samples for the analysis of phycocyanin, a pigment produced by cyanobacteria.



Annual data collection is essential in establishing long-term water quality trends. These trends help determine whether water quality is getting better or worse and aid in watershed management decisions to protect and restore waters. Trend analyses are performed on VLAP lakes with ten or more consecutive years of data collection. The 2016 trend analyses are not complete, however the 2015 trend analyses were performed on approximately 140 lake deep spots for the following parameters: chlorophyll-a, transparency, total phosphorus, pH, and conductivity to determine if water quality improving, stable or getting worse over time.

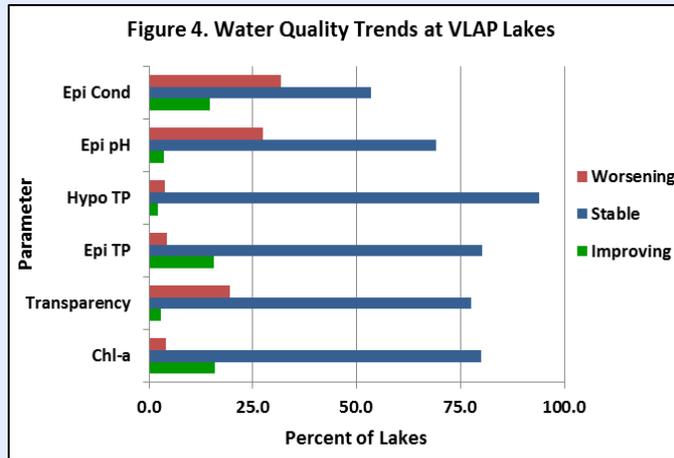


Figure 4 indicates the percent of lake deep spots with improving, stable or worsening trends in 2015. All parameters combined, approximately 75 percent indicate stable conditions, meaning water quality has not changed significantly over time while 10 percent indicate improving conditions, and 15 percent indicate worsening conditions. However when looking at specific parameters, epilimnetic (upper water layer) conductivity and pH has worsened at approximately 30 percent of lake deep spots, and 20 percent have worsening transparency or water clarity. The use of road salt as a de-icing agent for roads, parking lots and driveways has likely contributed to the increased epilimnetic conductivity levels in our lakes. Regional differences in air patterns, geology, may account for some of the decreasing pH values as the majority of lakes lie within the Dartmouth Lake Sunapee and Lakes Regions. The worsening lake transparency trends are cause for concern as lake clarity is linked to recreation, tourism and property tax revenues.

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