

# 55 years(!) of the nation's first & longest-standing volunteer lake monitoring program!

Matthew Scott, Scott Williams, and Linda Bacon

While Maine's several thousand lakes are among the clearest and cleanest in the nation, they are also sensitive and thus very much threatened by the perfect storm of present-day challenges. Regional climate change has resulted in warmer temperatures and more intense storms, both of which affect lake water quality. Warmer water and a longer growing season, have a profound influence on lake biota making conditions prime for invasive species to displace native populations and promoting harmful algal blooms. Nutrient additions via stormwater runoff exacerbate these effects by carrying mineralized nutrients to our waterways from destabilized post-glacial soils.

Coincident with these are increased demand for year-round shorefront homes, expansive upland watershed development due to increases in population, and longer construction seasons. Impervious surfaces, overtaxed absorptive capacity of soils, and aging septic systems, some of which are in some degree of failure, have resulted in the Maine Department of Environmental Protection (DEP) expanding its list of threatened or impaired lakes, and prioritizing additional lake watersheds for remediation. Lake protection through raising public awareness and protection efforts is less costly than restoration.

Some of these threats to lake ecosystems were recognized at the passage of the Clean Water Act in the early 1970s and provided the impetus for developing a cost-effective means for gathering credible lake data from Maine lakes.

Fifty-five years ago in 1971, the Volunteer Monitoring Program (VMP) was established in statute by the Maine

Legislature. This program resulted from early discussions initiated by DEP (Matt Scott) among University of Maine and Maine college scientists. Numerous meetings were held to determine which parameter would be the best choice for members of the public to collect.

Following lengthy talks and consultations, Secchi Disk transparency was chosen. Lake clarity is a simple, intuitive indicator of water quality and lake health, easily understood by the public. The legislation allowed members of lake communities to be trained and involved in the collection of data under the supervision of staff in the Maine Department of Environmental Protection (DEP).

Maine now has an extensive quality-assured data set on nearly 900 lakes, gathered by more than 1,000 volunteers. Comparisons of these volunteer-acquired results to data collected by limnological professionals have demonstrated that trained volunteers are capable of collecting credible information according to established QAQC protocols, of research and regulatory quality, capable of withstanding any legal challenge. Maine's program became a national model and catalyst for similar volunteer efforts as there are now at least 900 volunteer-monitoring initiatives in the U.S according to United States Environmental Protection Agency (EPA) estimates!

Unfortunately, state funding became an issue in the early 1990s putting the program in jeopardy. A committee was formed to explore options for saving the program. The final solution was to create the Maine Volunteer Lake Monitoring Program (VLMP) (Figure 1), a private 501(C)3, non-governmental organization (NGO), which eventually fell under Lake

Stewards of Maine (Figure 2) umbrella (LSM-VLMP). The DEP has continued to provide partial funding for the organization, and because the program is an NGO, it has been able to successfully supplement state and federal funds with donations from individuals, lake associations, and charitable foundations.

## Who are the volunteers of VLMP?

Formerly known as volunteer lake monitors, our *Community Scientists* come from all walks of life, with their passion for lakes in common. They are driven by a strong sense of lake stewardship, which gets to the core of why Maine's program has been so successful. Many volunteers have been continuously active gathering data on their lakes for multiple decades. Volunteers are essentially the eyes of professionals in the field. With thousands of Maine lakes within public domain, sufficient funding for state agency professionals to gather the data necessary to understand and protect them is unlikely. In Maine, volunteers collect valuable data used by several state agencies, including the departments of Inland Fisheries and Wildlife, Marine Resources, and Agriculture, Conservation and Forestry. Although the objectives and agency missions vary, agency staff depend on trained members of the public to gather essential data for decision making.

## Evolving the program

Through the years, many additional parameters have been added to the program, including sampling for total phosphorus, and gathering temperature and dissolved oxygen profile data (Figure 3). The growing threat of aquatic invasive plants has drawn in several hundred additional volunteers who have received



Figure 1. A photo array of Lake Stewards in action.



Figure 2. Lake Stewards of Maine logo.

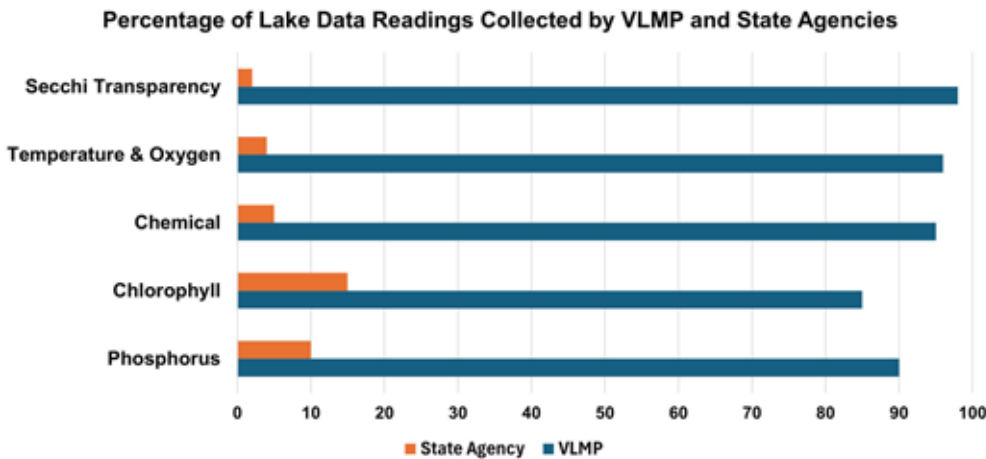


Figure 3. Graph showing the percentage of data collected by volunteers (blue bars) compared to state agencies (orange bars).

training ranging from invasive plant screenings to full shoreline plant species surveys. Interested volunteers may also be trained to participate in “lake watershed surveys” to detect and help resolve land uses that contribute to lake degradation. All of this requires additional training with a continued strong emphasis on quality assurance of the data.

It was recognized early on that success of the program would be dependent on valuable feedback to volunteers concerning their work. In the early days, paper reports were provided to volunteers; now data are presented and summarized on the Lakes of Maine [website](#). Presently, regular meetings with volunteers at training and recertification workshops, newsletters, online technical support sessions, webinars, and an annual conference are the norm. Conference presenters highlight the ways in which volunteer data has been used to help understand and protect their lakes, and individual volunteers are recognized for their longevity in the program.

In order for the LSM-VLMP to be successful over time, there will need to be continued financial support from both the public and private sectors. Legislation has been passed since 1971 to provide dedicated funding to the DEP for lake resources (1974, 1987, 1998, 2023, 2025), but cuts often roll these allocations back. Because LSM-VLMP has provided a stable platform for volunteers, lake data gathering has weathered these state cutbacks and the data gathered by volunteers continues to be available to all interested stakeholders.

*Impressively, the time and resources that volunteers provide through their work is of considerable value, estimated to be over \$721,000 annually!*

In retrospect, the transition of the VMP from the DEP to an NGO was probably good fortune: the organization continues to benefit from working closely with the powerful technical support and

quality assurance overview provided by the DEP Lakes Program, while having the flexibility of being an independent organization that has the ability to raise funds from diverse sources, and to act quickly when opportunities arise that benefit the program and its constituents. It is the author's goal of this report to recognize Maine's volunteer lake monitors for their 55 years of dedicated efforts, and to encourage new volunteers to become involved. The State of Maine is deeply appreciative of your good work!

**Acknowledgements**

Success of Maine's community scientist-based lake monitoring program would not have been possible without the help of an incredible team of shepherds over the past 55 years – too numerous to list. Special recognition goes to Roy Bouchard who succeeded the senior author upon his retirement as the Lakes Section leader in 1988, followed by co-author Linda Bacon who recently retired and passed the torch to Jeremy

Deeds. Co-author Scott Williams deserves special credit for his dedication and success growing the program after it became a non-profit organization. Special thanks to Alison Cooney, current Executive Director of Lake Stewards of Maine (LSM), and Barbara Welch, recent President, now Vice President of the LSM Board.

**Matt Scott**, a founder of the Lakes Section at the MEDEP, and founder of the VMP, is now in his retirement. He started with three volunteers! Matt is the past president of NALMS (1988-89) and the 2024 recipient of the NALMS Secchi Disk Award.



**Scott Williams** was the Executive Director of LSM-VLMP for 26 years, during which time the organization expanded substantially the numbers of lakes, volunteers and scope of operation. He continues to monitor a number of

Maine's lakes and to share his experience and passion with volunteers and lake communities. He was the recipient of NALMS Technical Excellence Award in Public Education and Research in 2000.



**Linda Bacon**, Limnologist, is currently serving as President of the LSM Board of Directors. She retired as DEP's Lake Assessment Section's Leader in 2025 after working closely with LSM on QA/QC protocols and data management. Prior to that, Linda worked on lake acid rain projects while earning her master's degree at the University of Maine (Orono). 🌸



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