



Executive Summary

New Hampshire Citizen Lake Monitors Survey

The communication and influence of citizen science
in lake communities

A report published on behalf of the New Hampshire Lakes Lay Monitoring Program and
the New Hampshire Volunteer Lakes Assessment Program (NHDES)

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Executive Summary

The two established volunteer lake monitoring programs in New Hampshire (NH), the New Hampshire Lakes Lay Monitoring Program (LLMP) and the New Hampshire Volunteer Lake Assessment Program (VLAP), engage citizens in the monitoring of their local lakes to determine water quality status and trends. The LLMP, a program run jointly by the Cooperative Extension Program of the University of New Hampshire (UNH) and the UNH Center for Freshwater Biology, was formed in 1979 and coordinates 215 volunteers on 34 lakes. VLAP, a program of the NH Department of Environmental Services (NHDES), coordinates 500 volunteers on 140 lakes. Together the programs coordinate over 700 volunteers on 174 lakes in New Hampshire. Both programs encourage their participants to communicate lake monitoring results to their local officials and to mentor their community on stewardship of their lakes and watersheds. To better understand the distribution, communication and influence of lake monitoring in lake communities, the LLMP and VLAP conducted a joint survey in late spring and early summer of 2013, asking their lake monitors and lake association participants to share their thoughts and feedback on the subject. This report describes the survey and presents its findings, conclusions and recommendations.

Objectives

The primary objective of the lake monitoring survey was to better understand if and how the LLMP/VLAP lake monitoring data and programs reached and influenced decisions, attitudes and behaviors in lake communities. A secondary objective was to shed light on the potential and challenges for citizen science to inform decisions and behaviors. Sharing of quotes from respondents in the final appendix of this report intends to deepen understanding of respondent's experiences and perceptions, and to stimulate further discussion on the effective communication of citizen science in New Hampshire's lake communities.

Methods

The survey was designed with 30 open-ended and non-guided questions, 26 multiple choice and 7 mixed multiple choice with a text option. The 63 ended questions focused on five areas: respondent experiences and concerns, their interactions with and perceptions of local government and the broader community, collaborations, and program feedback on communications, monitoring needs and training. Approximately 315 LLMP/VLAP participants were invited by email to participate in the survey. The UNH Institutional Review Board for the Protection of Human Subjects reviewed and approved survey methods. As a pre-requisite to participation, respondents read and agreed to a letter of informed consent. Participation was anonymous. Survey respondents had the option of responding online or by postal mail. Responses were collected and analyzed using Qualtrics survey software and further tabulated and categorized for qualitative analysis in Excel. The survey remained open for responses from May through July 2013.

Results

About the Respondents

A total of 123 respondents participated in the survey, all online, representing a 40% response rate. Over a quarter of the respondents in both programs had participated for 15 years or more with the monitoring programs. Respondents were moreover evenly distributed in terms of years monitoring with approximately one quarter having monitored less than five years. Half of all survey respondents said they engaged with local officials and their community on lake issues, and a little over half participated with voluntary or appointed committees in their communities. About 40% of the respondents were retired and a third had a background as educators.

Just over half of the respondents monitored with additional programs. One-third of these respondents were involved in state programs to prevent the spread of invasive aquatic species, with most mentioning the state Lake Host and Weed Watcher programs. Respondents also monitored rivers and watersheds, loons, wildlife and backyard birds. In addition, the respondents reported 132 examples of their supporting environmental and community organizations based or active in New Hampshire, predominantly with a community or regional focus.

A majority of respondents named an individual lake as the lake or watershed issue they most engaged with, with many going on to name issues that for the most part related to land use, runoff, or invasive aquatic species. Over half of the monitors said they became more active on lake and conservation issues since beginning their monitoring experience.

Reaching Local Government and the Community

Approximately one-third of respondents reported that they began interacting or engaging with local government after they had begun participating with the lake monitoring programs. Respondents commented that the monitoring information provided credibility and confidence when approaching decision makers and helped maintain community interest in the lake environment.

Half of the respondents said local officials requested their input for lake and watershed decisions, for guidance, interpretation and education, and to clarify water quality and trends. Local officials referred to the monitoring data when adopting shoreline, zoning, watershed, and conservation ordinances, as well as master plans and easements, road and septic system improvements, and funding of monitoring, remediation and restoration projects. Responses did not always specify how the lake monitoring data had influenced those outcomes. Close integration of lake monitoring programs with lake associations often made it hard to distinguish the impact of the data from the advocacy efforts of its communicators.

Differences in how lake communities and local officials responded to lake monitoring and stewardship information appeared to be at least partly due to the values and awareness of their communities, the importance of the lake to the community and local economy, and relationships with the community and local officials. Respondents attributed property values, taxes and local economy, a crisis response, and a desire to avoid costs among the main factors motivating local government and community stewardship of the lakes. Non-monetary values were more diverse, including quality of life, health, future generations, community pride, ownership, recreation, aesthetics, and seeing positive results from stewardship efforts.

Cultivating relationships, trainings and education helped improve government responsiveness to lake information. The Conservation Commissioners emerged as the most likely partners for lake

protection, while Planning Board officials were most frequently noted as the local officials requesting input. Town Selectmen were viewed as either allies or obstacles, and mostly with ambivalence.

Approximately sixty percent of the respondents reported that they had presented lake monitoring information or mentored others in their community on lake stewardship practices. Lake association meetings, including those of neighborhood and road associations, were the most consistently mentioned way of sharing lake information to the community.

Other means of distributing lake information appeared more variable, differing across communities. Some respondents reported posting lake monitoring reports in Town Halls and on lake association and municipal websites. To a more varied degree, respondents distributed monitoring information to libraries, schools and local organizations, in newsletters and during town events. One respondent requested the lake programs provide guidance on where to distribute lake reports.

Poor compliance and enforcement of the Shoreland Protection Act, the only piece of legislation named by respondents in the survey, was a frequently mentioned source of frustration. Respondents said residents in their lake communities hesitated to report shoreline violations, wanting to maintain good relations with their neighbors. They also said developers ignored regulations and local officials did not intervene. An anonymous reporting scheme was suggested by one respondent. Others said education of shoreline residents and property owners should be a priority. Respondents perceived shoreline residents as a particular group on account of their direct impacts on the lakes.

About one-quarter of the respondents said local schools had used lake information in elementary and high school classes and projects, or in undergraduate research. Respondents engaged students in lake stewardship projects and recruited them in volunteer projects. Approximately half of the respondents did not know if their schools used monitoring information.

Collaborations

Approximately one-quarter of the respondents and their associations reported that they had collaborated with peers on other lakes. The collaborations provided opportunities for respondents and their associations to share knowledge and learning and to maximize resources by sharing equipment and organizing joint trainings and other activities.

Program Feedback

Respondents requested electronic versions of lake reports for personal access and for wider distribution. They also voiced a preference for email as the means of receiving direct communications from the lake monitoring programs. A few respondents asked for data in real time as it became available, rather than waiting for annual or biennial reporting. There was an even split between respondents who wanted comprehensive lake reports and those preferring simpler reporting in layman's terms. One respondent suggested stand-alone, non-technical fact sheets summarizing longer reports to distribute to lakeside residents as an education tool.

Regarding monitoring for new parameters, respondents expressed interest in trend analyses, lake comparisons, and monitoring social indicators. About one-fifth of the respondents voiced interest in further trainings to develop skills and knowledge on advocacy, PowerPoint presentations, lake and conservation science issues, and stewardship techniques.

Conclusions and Observations

- The active community engagement of the respondents and the retention and steady recruitment of the lake monitoring programs indicates a stable, committed and knowledgeable base of citizens that adds to the stewardship and decision-making capacity of lake communities.
- The extended monitoring of invasive species, rivers, watersheds and wildlife by the majority of respondents provides additional capacity to programs that extend beyond their lake communities.
- The lake monitoring programs appear to motivate and support civic engagement. Many respondents reported their level of engagement in the community and interaction with decision makers increased during, after or as a result of their participation in the programs.
- These survey provides some evidence that the lake monitoring information informs decisions in many communities. Over half of the respondents said their town officials had actively requested lake information, and many provided examples of resulting ordinances, master plans, zoning, and management decisions. Not all respondents shared this experience, however, indicating that in many communities this potential had yet to be realized.
- Building relationships with local government and the community increased the receptiveness to lake information, according to some respondents. Program encouragement and support, with peer-to-peer sharing of experiences and ideas, could help monitors who want to build these relationships. Conservation Commissioners emerged as potential allies when first engaging with town officials.
- Lake associations were the most consistently reported means of delivering lake information in the communities, after which paths of communication varied. While communities differ and no one size fits all, more delivery strategies could make pathways for information distribution more predictable.
- Respondents voiced less certainty on whether lake information had changed stewardship practices in the broader community, perhaps partly because changes in behavior and values stand out less prominently than town decisions. Identifying indicators to track changes in how communities receive and respond to lake stewardship information would help future assessments.
- Two areas, schools and collaborations, emerged as potential opportunities for further exploration and where the lake monitoring programs could potentially lend support.
- A desire for better improved shoreline stewardship and compliance with shoreland regulations emerged from many responses and could be a topic for further shared learning.
- Digital communications emerged as a strong preference. Respondents asked for online posting of lake data, reports and archives and use of email between the program and volunteers.
- The suggestion of stand-alone factsheets summarizing lake reports for distribution to shoreline residents, town officials and others in the community could also resolve the split among respondent preferences for simpler versus more technical reporting.
- Further tracking on the use of lake monitoring information in the community would help future evaluations on the integration of monitoring data in local decisions. Interviewing town officials and other members of the communities could provide insights to overcome communication barriers.
- Finding training opportunities for interested participants would support those respondents who wish to develop skills in presenting and communicating lake information in their communities.
- Further discussions are likely to generate ideas that lead to new pathways of integrating the science of the citizen lake monitoring programs into the decisions of New Hampshire's lake communities.