Public Education, Outreach and Engagement Efforts in NH and RI

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Jeff Schloss & Linda Green
Northeast States & Caribbean Islands Regional Water Program
Presentation Overview

- Why volunteer monitoring (VM) makes sense
- Volunteer monitoring program introduction:
  - New Hampshire Lakes Lay Monitoring Program (LLMP)
  - URI Watershed Watch Program (URIWW)
- Resources to support VM programs
Through trained volunteers, citizen water quality monitoring programs:

- Educate local residents about water quality and the science behind watershed protection;
- Provide valuable data
  - Baseline conditions & trends
  - Target for additional monitoring/efforts
- Engage the community and build awareness
- Assist researchers & agencies
  - Innovative monitoring methods,
  - BMP effectiveness
  - Model development
The Continuum of Volunteer Monitoring Data Use

Education / Awareness → Assess Impairment → Legal & Regulatory

Increasing Time - Rigor - QA - Expense $$
Essential Ingredients

- Science-based
- Bottom-up approach
- Involve the public
- Educational, not regulatory
- Provide good, useful information
- Stable funding
NH Lakes Lay Monitoring Program (LLMP - Jeff Schloss)

Over 30 Years of Collaboration between UNH and NH Communities (1978)

Monitoring 100s of lake, tributary and outlet sites each year

A Model of "Participatory Research" and Community Empowerment
LLMP Objectives

- Baseline monitoring for long-term trend detection.
- Locate problem areas and “hotspots”.
- Provide unbiased data for informed watershed management decision.
- Develop protocols for citizen monitoring.
- Conduct participatory research that addresses the concerns of participants.
LLMP 1979-2009

- 108 Lakes
- 380+ Lake Sites Monitored
- Over 27,000 lake site trips!
- 360+ Stream sites
- 4,900 stream trips
- 8 Watershed Nutrient/Water Budgets
  - TMDL determination
  - High Quality Water Design
  - Land Use Change
Low Tech Data Gathering Approach

With access to UNH Center for Freshwater Biology Lab resources
Volunteer Monitoring and Participatory Science

- Motorboat impact studies
- Fish Condition/Water Quality
- Resource Economics of Water Clarity
- Determination of nutrient export coefficients
- Option to subsample CHL filters and collect whole water samples for microcystin toxin analysis
- Use of mussels for integrating microcystin toxin monitoring
URI Watershed Watch (URIWW)

- Begun in 1988 with 14 lakes
- Now monitors +270 sites on ~100 waterbodies with +400 volunteers
- Provides ~90% of RI’s lake multi-year baseline data

~ 10 lakes with +20 years of data
Many Program Sponsors (40)

Base Funding:
- URI Cooperative Extension

Program Specific Annual Grant:
- RI DEM

Local Sponsorship (per site per year)
- Watershed & Environmental Organizations,
- Municipal Conservation Commissions,
- Narragansett Indian Tribe,
- Lake associations,
- Businesses/Industry

Local sponsors pay an annual fee per location
Cornerstone of Cooperative Extension (CE) Water Quality Program

2 fulltime staff, 4 - 5 students

Dedicated staff essential to support the volunteers
Combination of Field & Lab

Field monitoring
- Secchi
- Temperature
- Chlorophyll
- Diss. Oxygen
- Salinity
- Recent weather
- Stream height / lake depth

Laboratory
- pH & alkalinity
- Bacteria
  - Enterococci
  - Fecal coliform
- Nutrients (P, N, Cl)
- Chlorophyll analysis

URIWW lab state-certified since 2006
Classroom & field training

No specific volunteer certification
- QC checks in lab
- We own monitoring supplies

No monitoring tiers

Monitoring season May - October
All data and monitoring materials can be found at
www.uri.edu/ce/wq/ww/
This Volunteer Water Quality Monitoring National Facilitation Project is designed to build a comprehensive support system for Extension volunteer water quality monitoring efforts across the country. The goal is to expand and strengthen the capacity of existing Extension volunteer monitoring programs and support development of new groups.

www.usawaterquality.org/volunteer
Guide for Growing Programs

- Why Volunteer Water Quality Monitoring Makes Sense
- Designing Your Monitoring Strategy
  - Matrix of Monitoring Activities
- Effective Training Techniques
  - Additional Resources – equipment and supplies
  - Direct Links to On-line manuals
- Building Credibility: Vol. Mon. QA/QC
- Volunteer Management and Support
- Planning Your Data Management System
- Outreach tools
- Support and funding
December 2004
Factsheet VI
(Updated July 2008)

Building Credibility:
Quality Assurance and Quality Control for Volunteer Monitoring Programs

University of Rhode Island
University of Wisconsin

Elizabeth Herron, Linda Green, Kris Stepenuck and Kelly Addy

The ultimate goal of most volunteer monitoring programs is to assure that well-trained volunteers collect high quality data and that the data are used. Despite decades of demonstrating that volunteers can and do collect representative data, government agencies, scientists and often the general public are sometimes reluctant to use data not collected by “experts.” Therefore volunteer water quality monitoring programs must work especially hard to build and maintain credibility—some have even said, “twice as hard for half the recognition.” This factsheet provides an overview of quality assurance and quality control issues and provides examples of methods used by Cooperative Extension and other volunteer monitoring programs to substantiate the credibility of their data.

Water quality monitoring data are typically gathered to support decision-making, whether it is for encouraging waterfront residents to convert lawns into vegetated buffers, for enacting local ordinances to strengthen wetlands protection or storm water management, or for regulatory action. In order to be useful, monitoring data must provide relevant information—if the concern is potential bacterial contamination, measuring turbidity or dissolved oxygen won’t help much. And the data must be credible, which usually means that it is documented and defensible. Data of unknown quality are essentially useless, and useless data can potentially corrupt the decision-making process. Therefore incorporating a Quality System into your monitoring program is necessary for generating useful data.

Quality System Components:
Assurance, Control and Assessment

Generating reliable data requires adherence to an overall quality policy or system, but what exactly makes up that system? The Quality System can most easily be thought of in terms of what you need to Do Before, During and After your monitoring effort (Table 1). Three elements combine to form the Quality System: quality assurance, control and assessment. Developing your Quality System should be an iterative process and focused on how you intend for the data to be used. This system should be incorporated into every aspect of your monitoring program—the bedrock upon which your program is based.

<table>
<thead>
<tr>
<th>Table 1. Data Quality System</th>
<th>Before: Plan</th>
<th>During: Implement</th>
<th>After: Assess</th>
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</thead>
<tbody>
<tr>
<td>Quality Assurance</td>
<td>Training</td>
<td>Follow the written monitoring manual</td>
<td>Data proofing/review</td>
</tr>
<tr>
<td>Study design</td>
<td>Follow standard operating procedures (SOPs)</td>
<td>Outside performance evaluation</td>
<td>Outside performance evaluation</td>
</tr>
<tr>
<td>Quality Assurance Project Plan</td>
<td>Document changes</td>
<td>Reconcile data with objectives</td>
<td>Reconcile data with objectives</td>
</tr>
<tr>
<td>Develop training program and materials</td>
<td>Proficiency testing</td>
<td>Revise SOPs as needed</td>
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</tbody>
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This is the sixth in a series of factsheet modules which comprise the Guide for Growing CSREES Volunteer Monitoring Programs, part of the National Facilitation of Cooperative State Research Education Extension Service (CSREES) Volunteer Monitoring Efforts Project. Funded through the USDA-CSREES, the purpose of this four-year project is to build a comprehensive support system for Extension volunteer water quality monitoring efforts nationally. The goal is to expand and strengthen the capacity of existing Extension volunteer monitoring programs and support development of new groups. Please see http://www.usawaterquality.org/volunteer for more information.

All factsheet modules have MANY active regularly updated links
Additional Resources

- **US EPA**
  - *The Volunteer Monitor* - National newsletter
  - Monitoring manuals and guidance documents
  - VolMon listserv: Program coordinators
  - National Water Quality Monitoring Council biennial conference

- **Secchi Dip-in website** ([www.secchidipin.org](http://www.secchidipin.org))

- **LaMotte/Hach** kits and catalogs

- **New England Regional Monitoring Collaborative** ([www.umass.edu.edu/tei/mwwp/nermc/](http://www.umass.edu.edu/tei/mwwp/nermc/))
THANKS!