

Focus Area: Volunteer Water Quality Monitoring

National Theme:
Watershed Management

Volunteer Monitoring Data:
Helping Communities Better Manage Their Water
Resources

New England Regional Review
October 16, 2007



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Audiences

- Volunteer program coordinators,
- Environmental data generators and data users,
- Local, state and federal decision makers, including citizen groups,
- Research & Extension scientists
- Extension program coordinators (particularly NEMO programs)

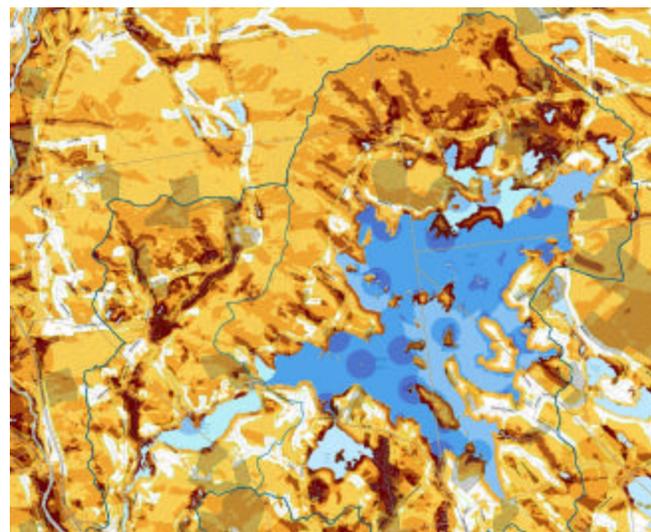


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Situation

Insufficient information is available on watershed health for effective protection and restoration efforts, Federal, state and municipal agencies do not have adequate resources to produce the data necessary, and Community buy-in is needed to support monitoring, conservation and restoration activities.



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Agency Questions (probabilistic)

- What is the **condition** of the nation's surface, ground, estuarine, and coastal waters?
- Where, how and why are water quality conditions **changing over time**?
- Are water quality **goals and standards being met**?
- **Where** are water quality problems?
- What is the **cause**?
- Are **programs** to address problems **working effectively**?



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Community and Individual Concerns

(focused monitoring)

- I want to find out **what's in my water**.
- I think there's **something wrong with my lake**? It was crystal clear 5-10-20 years ago!
- **Is it safe for my dog** to drink from the stream?
- **Is it safe for my kids/grandkids** to go in the water?
- Are **the BMPs we've installed** working?
- What can I do about **weeds/geese**?



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Approach – Volunteer Monitoring

Engages stakeholders throughout the watershed management process

- Collects valuable water quality data
 - Long term trends
 - Pre- and post- watershed restoration efforts
 - Locally relevant water resources
 - Assess regional differences
 - First alert for WQ problems / invasives
- Educates volunteers, decision-makers and the public
- Empowers communities to use data as the basis for decision-making



Fosters WQ Protection and Restoration

- Heightens awareness of water resources issues
- Creates an immediate sense of the link between the water and the watershed
- Highlights human health connections
- Supports drinking water protection
- Creates linkages to other focus area programs, improving understanding of changes needed at the farm, home and community level to ensure water quality protection
- Galvanizes local action

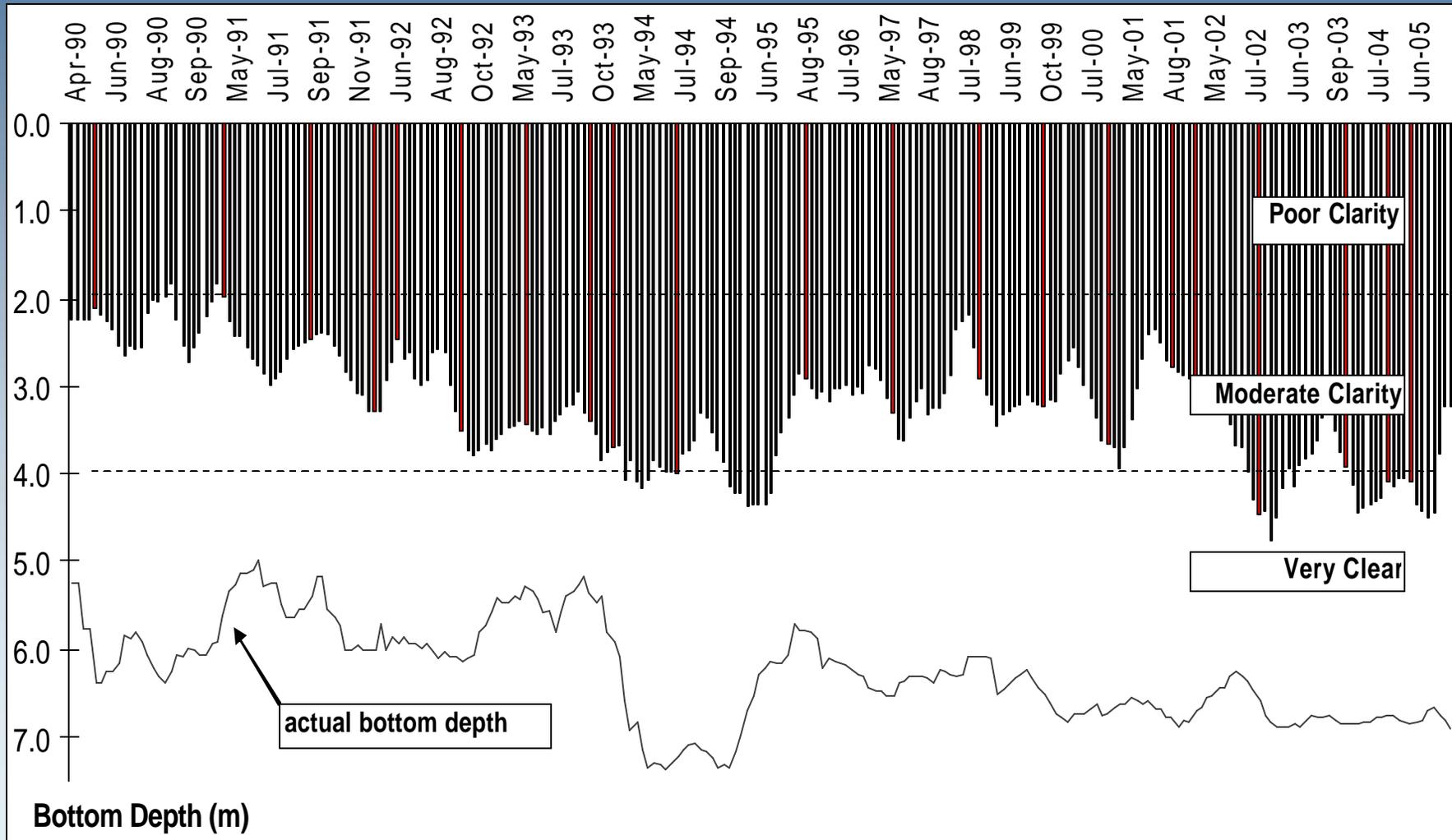


Local people motivated by local knowledge!

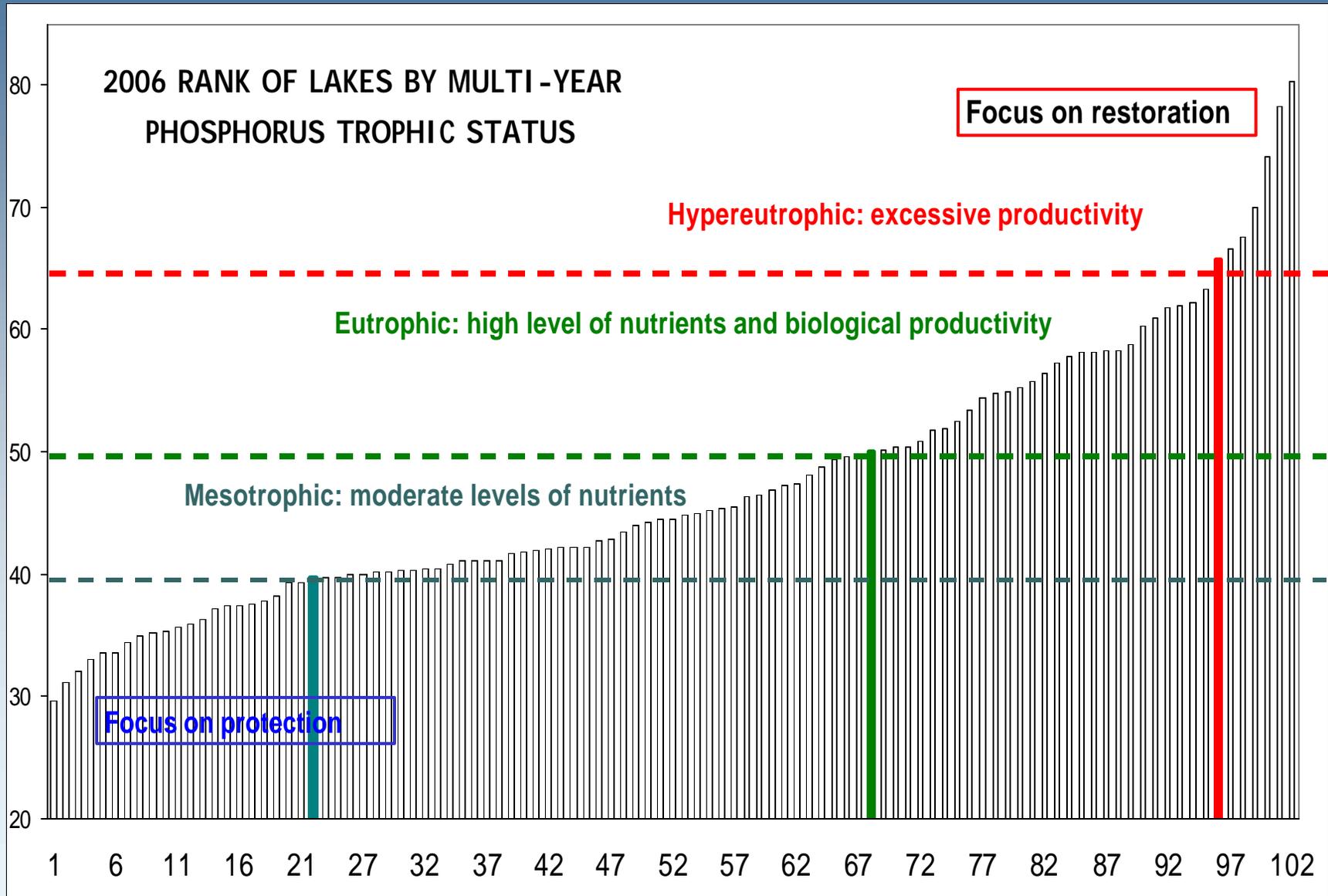
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Volunteers Provide Intensive, Long Term Data



And Extensive Datasets



Volunteer Monitoring Is ~~NOT~~

- Targeting individual landowners as water pollution culprits
- Carrying out personal agendas

A well designed volunteer monitoring program **WILL** develop WQ trend data that communities and other Extension efforts can benefit from



New England Volunteer Monitoring

- Over 3,500 volunteers monitoring more than 850 rivers, streams, lakes, ponds, reservoirs, wetlands, estuaries, and marine sites
- Data being used
 - 305b and 303d reports
 - TMDLs / nutrient budgets
 - Resource inventories
 - BMP assessment
 - Restoration effectiveness



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Gaining Clarity on Water Transparency Measurements

**3 Foot loss of transparency =
\$6,000 to \$19,000 loss in property value!**

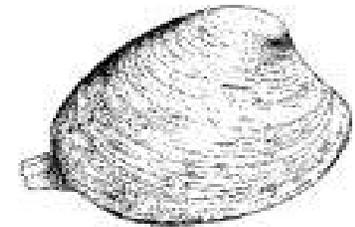


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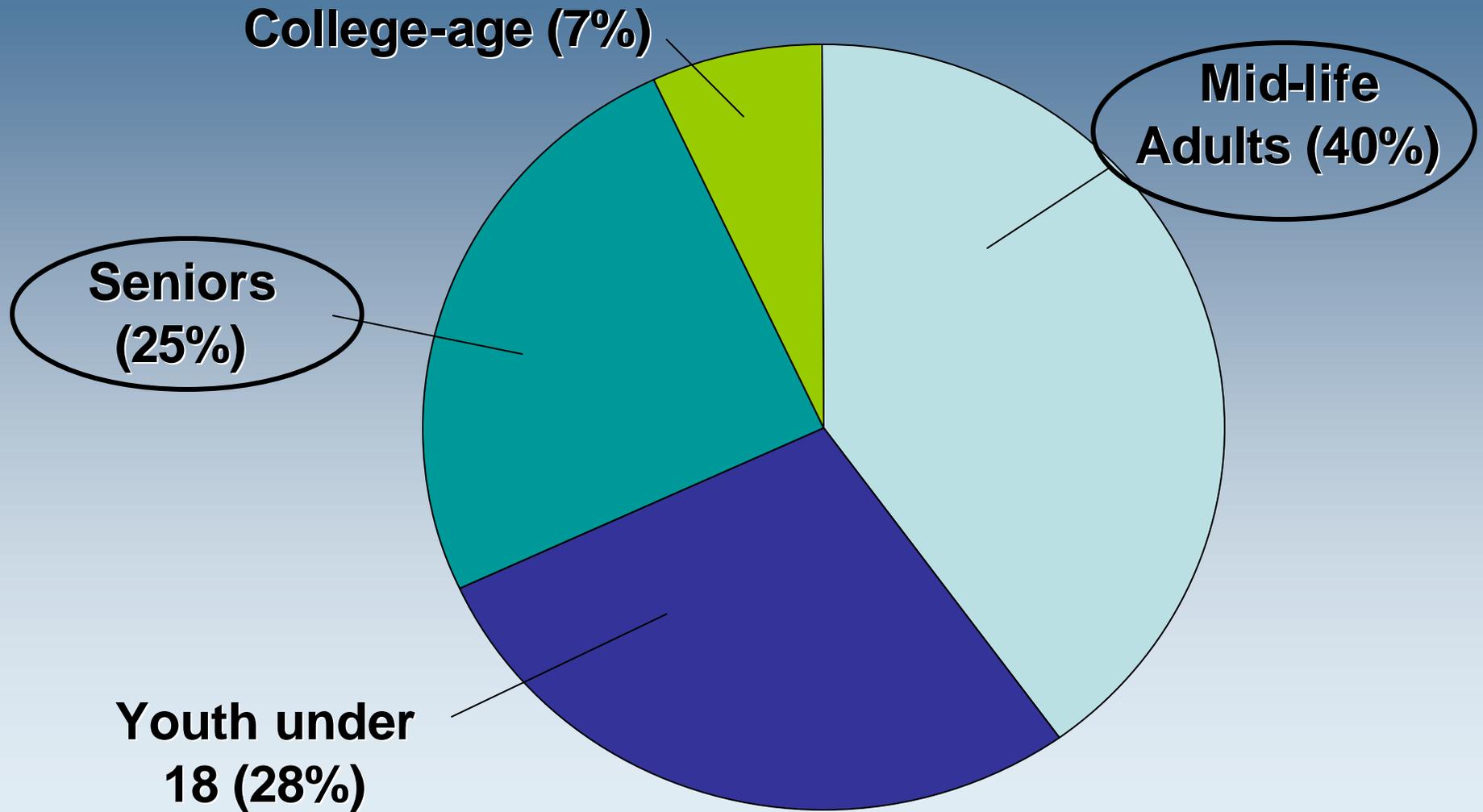


Select Success Stories

- MA – State funded development of a general QAPP to facilitate use of volunteer generated WQ, wetland biological and marine invasive species monitoring data.
- ME – 100,000 acres of clam flats opened for harvest over a 12 year period by volunteers collecting samples and conducting shoreline surveys
- RI – TMDLs based entirely on volunteer generated data significantly reduced the costs and time needed for completion



Who Monitors?



Community leaders and decision-makers

Long-term Goal

Abundant volunteer generated water quality monitoring data is utilized appropriately to understand, protect and restore water resources in New England



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Interim Goals

- Volunteers assess and protect water local resources,
- Volunteers (groups) apply their findings and data to educate the public and improve community water resource management strategies,
- Volunteer generated data is integrated into NEMO watershed assessment tools,
- Volunteer data used appropriately by local, state and federal decision-makers to understand water quality and watershed conditions,
- Volunteer programs use NFP tools to start/expand monitoring efforts.



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Focus Area Participation

- Elizabeth Herron (Facilitator) and Linda Green, University of Rhode Island
- Jeff Schloss, Robert Craycraft, and Ann Reid University of New Hampshire
- Marie-Francoise Walk and Jerry Schoen, University of Massachusetts
- Laura Wilson, University of Maine
- Caitrin Noel, University of Vermont



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Selected External Partners

- US Environmental Protection Agency
- Natural Resources Conservation Service
- US Geologic Survey
- National Oceanic and Atmospheric Administration
- North American Lake Management Society (NALMS)
- National Water Quality Monitoring Council
- NE Interstate Water Pollution Control Commission (NEIWPCC)
- New England Chapter of NALMS
- New England State environmental agencies
- New England Water Resources Research Institutes
- State lakes associations
- Regional and watershed organizations
- Municipal commissions or agencies

Participatory Research

- Volunteer monitoring methods assessments
 - Compared volunteer data with professional data
 - Bacterial, chlorophyll and water clarity methods
- Provide baseline water quality data to researchers
 - RI resource sensitivity to Zebra mussel infestation
 - Economic impact due to changes in water quality in NH and ME
 - Investigation into harmful algal blooms in NH
 - Changes in land use on water quality
- Work *WITH* researchers
 - Satellite and remote sensing “ground truthing”
 - Chlorophyll
 - Cyanobacteria
 - Temperature
 - Fish condition assessment
 - Acid rain monitoring



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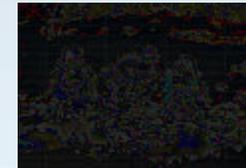


Education

UVM Watershed Alliance: curriculum materials, equipment, Watershed Educators and support to schools and youth groups. Watershed Educators are UVM undergraduates in natural resources.

URIWW: experiential learning for students, including URI Coastal Fellows as program staff; conducts annual limnology lab; high school students earn community service hours; schools & scout monitor, science fair support.

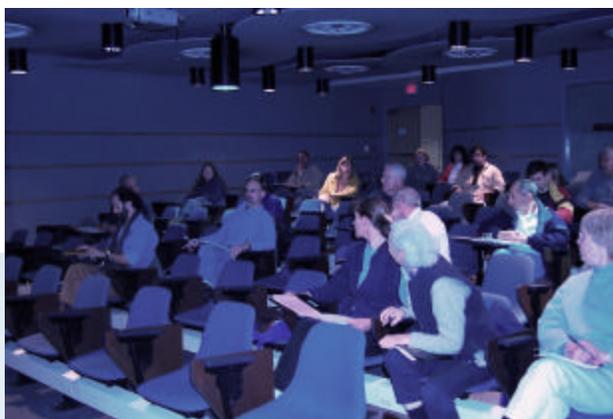
NH LLMP: experiential learning for students, program is fully integrated in the UNH Center for Freshwater Biology and provides faculty for courses, and field and laboratory analyses for researchers.



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Regional Activities

- Developed and shared information in workshops at local and regional conferences, provision of training materials online, in hard copy and video formats, and host regional summits that bring together program coordinators, data users and other stake holders.
- Integrated across focus areas through development of relevant water quality information, distribution of educational materials, and participation in projects.



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Leveraging

- > 42,000 vol. hours worth \$800K per year (>\$5.8M since 2000)
- State agency grants
- USGS, US EPA, NEIWPC, Sea Grant
- Local communities
- Foundations and non-profits
- CSREES
 - Facilitation Grant – Volunteer Monitoring
 - Integrated Grant – Northern New England Lake Education and Action Plan Project (LEAP)



More than \$1M direct \$\$ since 2000

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Outputs

Products:

- Training materials online, in hard copy and video formats;
- Water quality data on diverse local water resources;
- Research results on monitoring procedures, methods and other topics;
- Watershed assessments;
- Regional workshops and summit reports;
- General Quality Assurance Project Plans (QAPP) that can be adapted as project specific QAPP by volunteer programs



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Outcomes

New England Monitoring Summit – Shared Waters, a collaborative meeting of federal, state, and volunteer water quality monitoring partners.

- Identified successful elements of different approaches to monitoring (success stories, surveys, evaluations etc.),
- Reached consensus on information and resource needs of all monitoring partners,
- Discussed partnership opportunities and how to best plan for the future,
- Produced a reported on network needs and helped prioritize future activities.



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Other Outcomes

Exchanging information with monitoring practitioners representing community-based, state, tribal, national, and international monitoring programs through diverse outlets.



- Focus group members played a major role in the National Water Quality Monitoring Council's biennial national conference;
- Annually helped plan and conduct workshops at the New England Lakes Conference;
- National facilitation project bringing NE materials to the nation, and outside materials to NE;
- Presentations in many conferences and workshops.



Focus Area Strengths

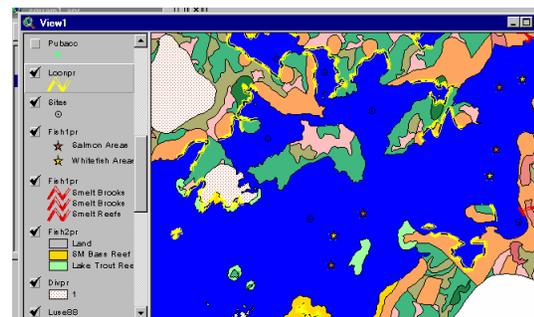
- New England Extension hosts well-established volunteer monitoring programs objectively addressing a variety of local concerns including bacterial contamination of shellfishing beds, lake eutrophication and riverine health.
- Regional programming includes:
 - Rigorous evaluation and improvements to field collection, storage and analytical procedures to improve the quality control and reliability of data;
 - Development, testing and refinement of volunteer monitoring training guides and workshops, including appropriate monitoring tests, site selection, equipment, storage, and data interpretation;
 - Creation of tools that improve accessibility and value of the data for public and decision-makers.



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Focus Area Challenges

- Monitoring is a long-term activity, and thus funding for sustaining programs can be a challenge;
- Ensuring that volunteer monitoring procedures keep up with changing technologies, while preserving the long-term data sets based on the older methods,
- Sustaining volunteer interest and participation,
- Involving new groups and monitoring programs.



What's Next

- Data interpretation & presentation workshop November 2007,
- Continue working with NEMO Network to foster increased usage of volunteer data in NEMO assessments,
- Promote River and Stream Continuity Methodology for use by NE volunteer monitoring programs,
- Expand aquatic invasive species monitoring efforts.



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