Supporting Volunteer Monitoring Efforts Across the Country

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CSREES Volunteer Water Quality Monitoring National Facilitation Project

2008 NALMS International Symposium
Lake Louise, Alberta, Canada

Linda Green[1] (Lgreen@uri.edu, 401-874-2905)
Elizabeth Herron[1], Kristine Stepenuck[2],
Art Gold[1] and Robin Shepard[2]

[1] University of Rhode Island
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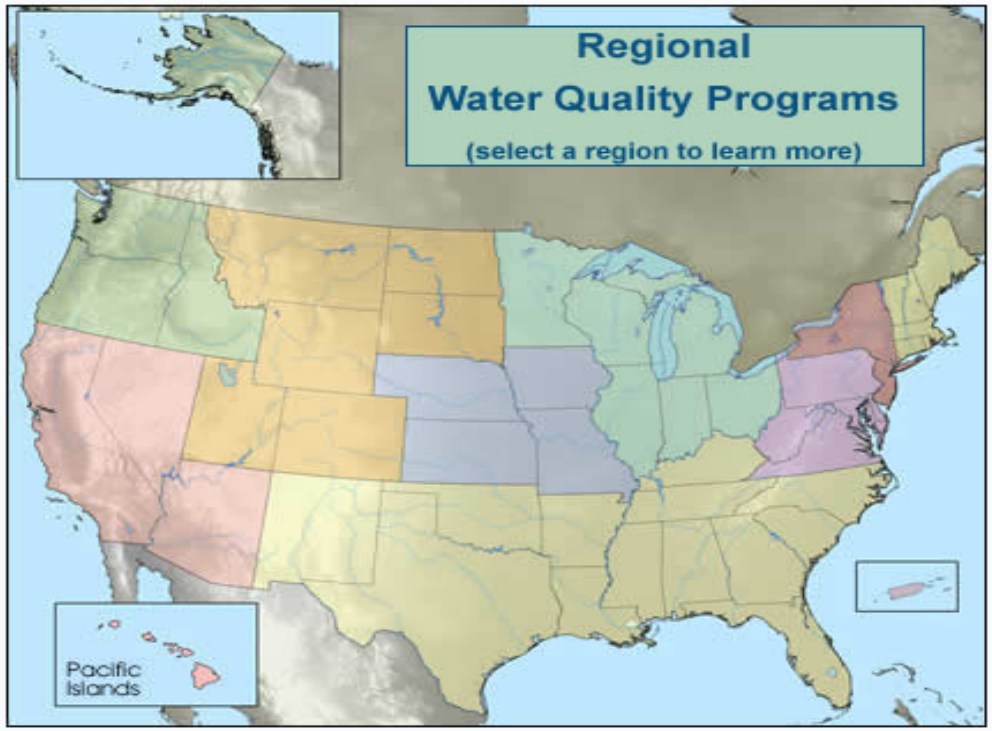
Alphabet Soup

- USDA = US Department of Agriculture
- CSREES = Cooperative State Research, Education and Extension Service
- NFP = National Facilitation Project, grant category of the USDA CSREES National Integrated Water Program

National Water Program

A Partnership of USDA CSREES & the Land Grant System

Applying knowledge to improve water quality



News & Highlights (more...)

CSREES National Integrated Water Program announces the funding of $10 million in water resources projects. Complete listing of the **FY2008 PROJECTS** posted on Oct 28, 2008.

The Northern Plains and Mountains Region has launched its Agricultural Water Conservation Clearinghouse. The project invites you to submit relevant documents and other feedback.

2009 USDA-CSREES National Water Conference, **POSTER ABSTRACTS WELCOME**

Upcoming Events (more...)

November 3-6: Asheville, NC
Stream Restoration in the Southeast

November 11-14: Alberta, CAN
NALMS: Lake Mgmt in a Changing Environment

November 17-19: Shepardstown, WV
Mid-Atlantic Regional WRRI Conference

November 17-20: New Orleans, LA
AWRA Water Resources Conference

SAVE THE DATES- Feb 8-12, 2009: St Louis, MO
CSREES National Water Conference

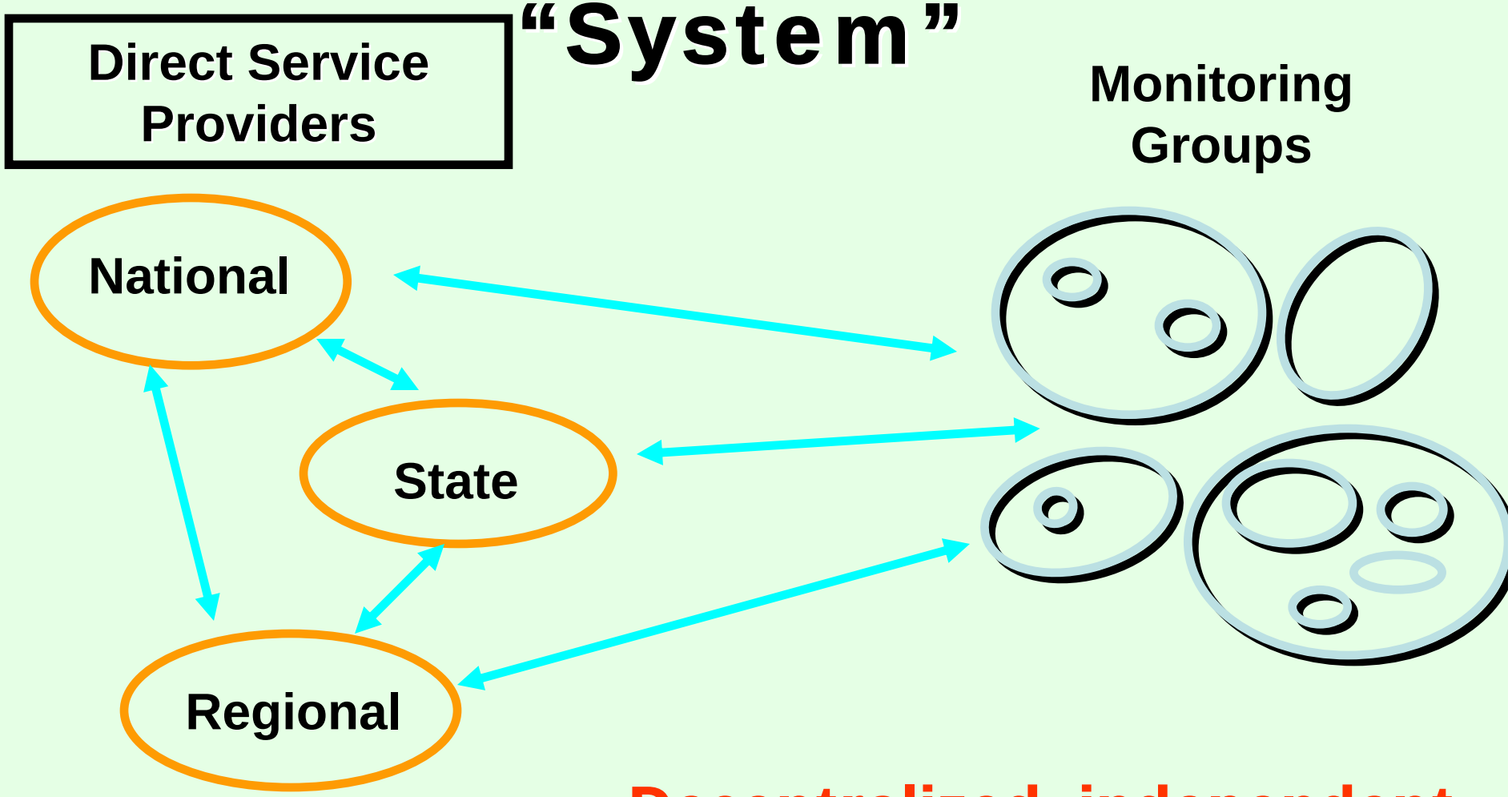
Volunteer Monitoring Makes A Difference

- Identifies & solves problems locally
- Involves people in real science
- Raises awareness, and educates
- Provides info on places where no one else is looking
- Creates an informed constituency
- Creates stewards

Characteristics of Successful Volunteer Water Quality Monitoring Programs . . .

- Well-organized
- Sound scientific basis
- Report results
- Strong institutional support
- Make a difference

The Volunteer Monitoring "System"



Goals

Build a comprehensive support system for CSREES volunteer water quality monitoring efforts.

Enhance integration of volunteer monitoring into research, education, and extension activities.

Objectives

- Identify current Extension programs
- Link Extension programs to each other
- Develop training materials
- Offer training programs
- Develop Internet and Web-based tools
- Increase collaboration and cooperation

Identify & Connect Extension Volunteer Monitoring Programs

visibility,

vitality,

viability

Land Grant Colleges' and Universities'

Volunteer Water Quality Monitoring

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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

Current estimates:

800 – 1200 programs

Land Grant Colleges' and Universities'

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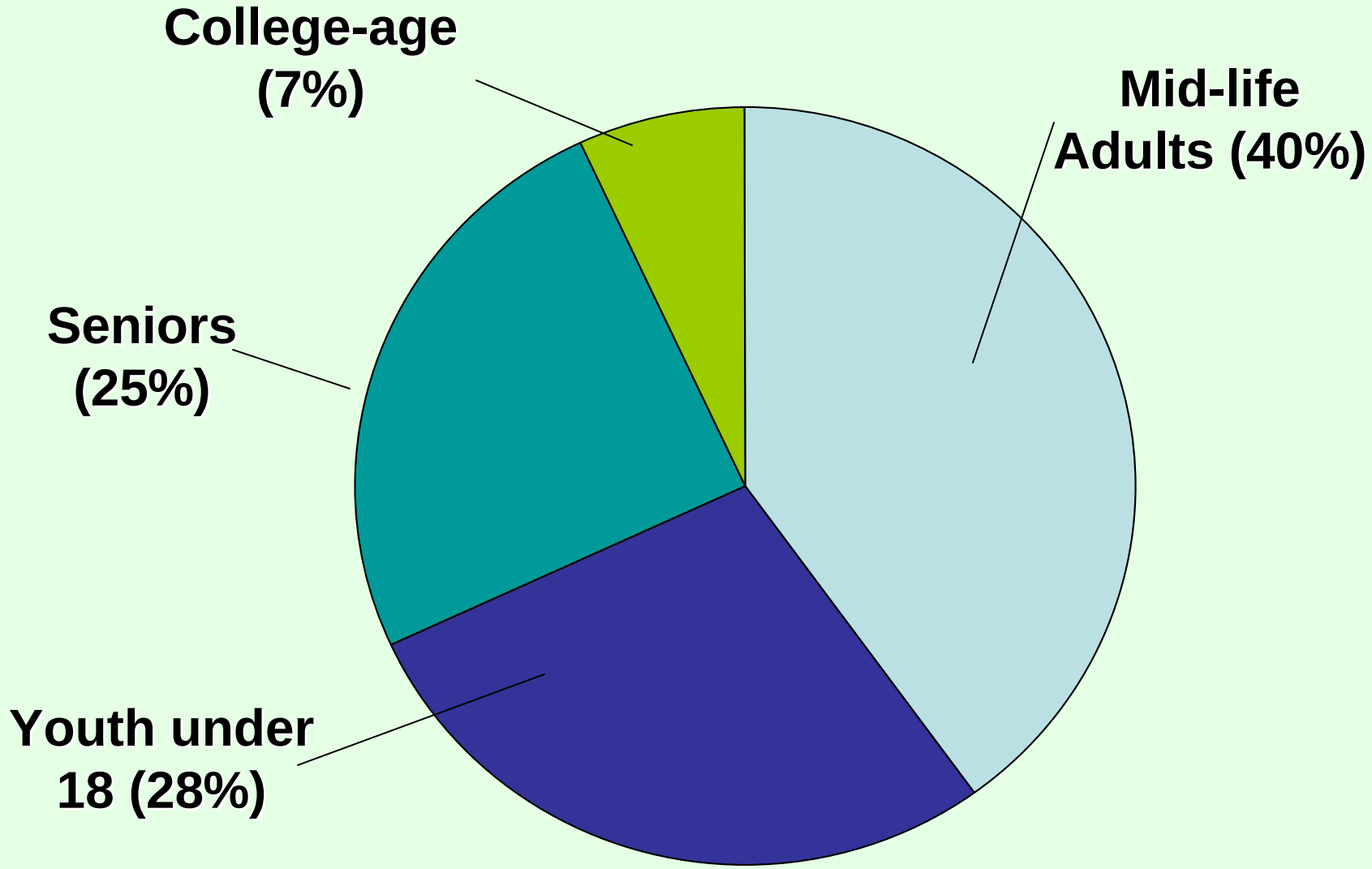
Volunteer Monitoring National Facilitation Project

- Project Description (382 K pdf file)
- Outreach Materials and Activities
- Nationwide Inquiry
- Online Databases

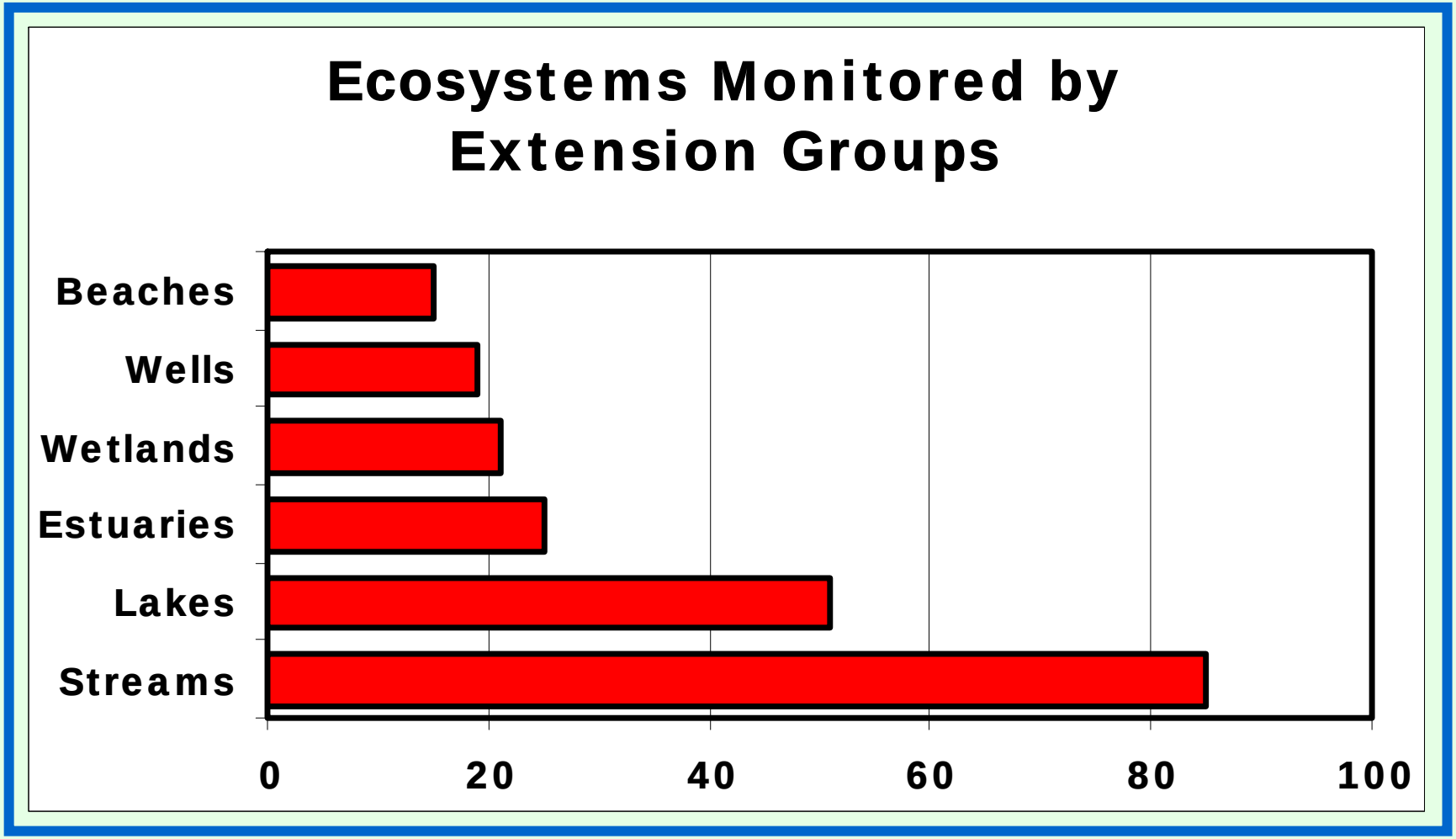
Extension Volunteer Monitoring Programs

- Program Listings
- Breaking News
- Current Highlight: Georgia NEW! Adopt-A-Wetland

Who Are Our Volunteers?



Where Do They Monitor?



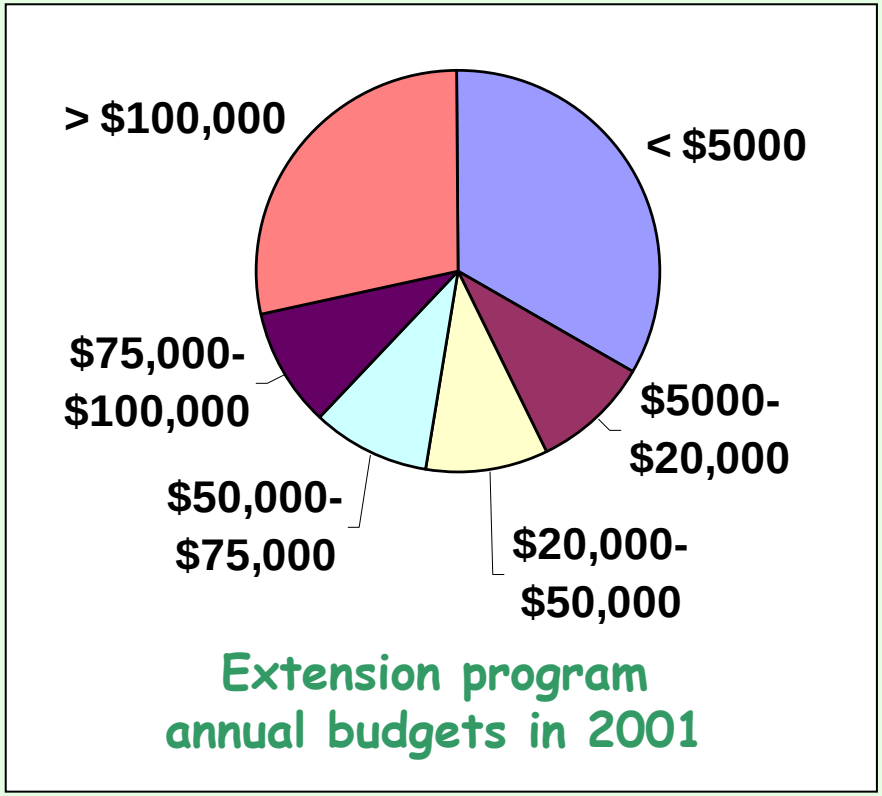
Select Inquiry Results – Outreach Tools

Table 1: Written sampling protocols/methodology availability.

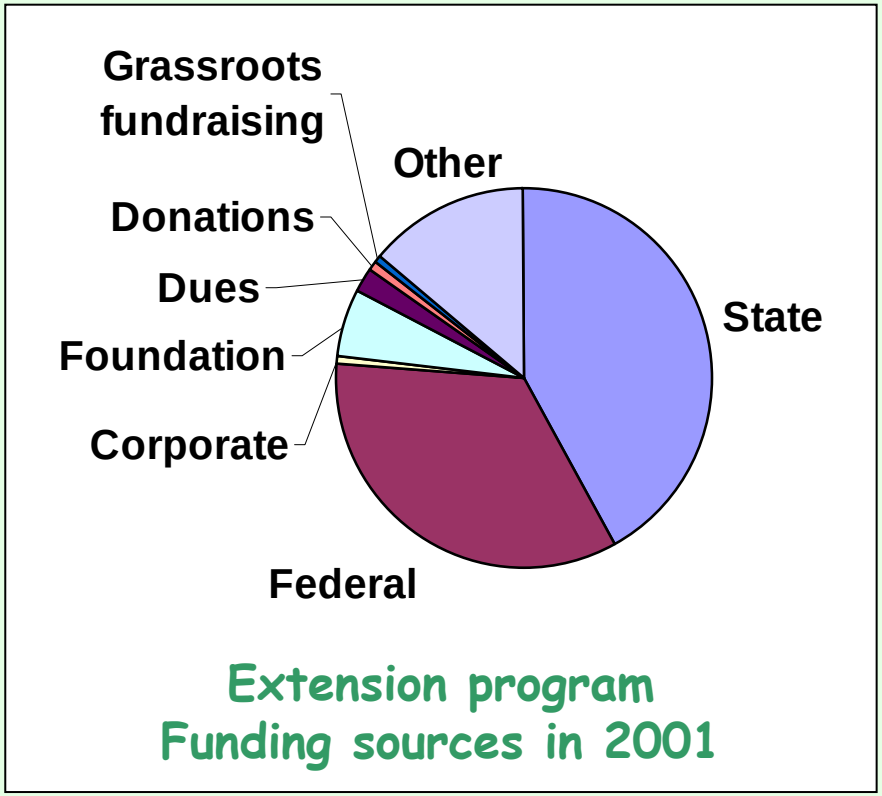
State	Program	Methods developed	Available for purchase	Available for free	Available on website*
AL	Alabama Water Watch	✓	✓	✓	Some
CO	North Fork Volunteer Monitoring Project	✓		✓	
IN	Hoosier Riverwatch	✓	✓	✓	✓
IA	IOWATER	✓		✓	
KS	Private well monitoring				
ME	Maine Shore Stewards	✓	✓	✓	
MI	Lake Superior Lake Watch	✓		✓	
MN	Volunteer Stream Monitoring Partnership	✓		✓	
MN	St. Louis River- River Watch				
NV, CA	Tahoe-Truckee Snapshot				
NH	NH Lake Lay Monitoring Program	✓		✓	
NH	Great Bay Coast Watch	✓	✓		
NY	Community Fly Fisher	✓		✓	
NC	Watershed Watch				
OK	Illinois Basin/Spring Creek Blue Thumb	✓		✓	
RI	URI Watershed Watch	✓	✓	✓	✓
WA	WSU Beach Watchers	✓		✓	
WA, ID, OR	Pacific Northwest Water Quality Monitoring Program	✓		✓	
WI	Adopt-a-Lake	✓	✓	✓	
WI	Water Action Volunteers	✓	✓**	✓	✓
VT	Watershed Alliance	✓		✓	

www.usawaterquality.org/volunteer

Select Inquiry Results - Funding



Extension program
annual budgets in 2001



Extension program
Funding sources in 2001

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- Programs' Achievements
- Current Highlight: Great Bay Coast Watch NEW!

Guide for Growing Programs

- Getting Started (914 K pdf)
- Why Monitoring Makes Sense (582 K pdf)
- Designing Your Monitoring Strategy (1.6 M pdf)
- Monitoring Matrix (80 K pdf)
- Effective Training (986 K pdf)
- Monitoring Equipment Suppliers (437 KB pdf)
- Direct Links to Monitoring Programs' Manuals (online)
- Building Credibility (1.5 M pdf)
- Sharing Information Through Internet Exchanges (1 M pdf)
- Volunteer Management (7 M pdf)
- Planning Your Program's Data Management System (6 M pdf)
- Outreach Tools
- Locating Support and Funding

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- *almost done*
- Support and funding – *still under construction*

Applying knowledge to improve water quality
Volunteer Water Quality Monitoring
National Facilitation Project
A Partnership of USDA CSREES & Land Grant Colleges and Universities

December 2004
Factsheet VI
(Updated July 2008)

CSREES

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 ensure 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[1]. 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 1. Data Quality System

Before - Plan	During - Implement	After - Assess
Quality Assurance	Quality Control	Quality Assessment
Study design Quality Assurance Project Plan Develop training program and materials	Training Follow the written monitoring manual Follow standard operating procedures (SOPs) Document changes Proficiency testing	Data proofing/review Outside performance evaluation Reconcile data with objectives Revise SOPs as needed

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.

- Quality System components
- Planning - Quality Assurance
- Data Quality Objectives
- Data Quality Terms
- QAPP's
  - On-line QAPP resources
- Monitor Training & Certification
- Implementing - Quality Control
  - Internal QC
  - External QC Glossary of QC checks
- Quality Assessment

Training Workshops
thru CSREES regional/state and other venues

- Based on "*The Guide for Growing*"
- Recently:
  - CSREES Nat'l & Regional Water confs.
  - Fellow CSREES NFP's (NEMO, TCU)
  - NWQMC conferences (next is May '10)
  - EPA Watershed Academy Webcast – Oct. '06
  - FALCON conf – Tribal conference
  - ASNROSP – Master Naturalists, Watershed Stewards
  - NE NALMS
  - Michigan Statewide Volunteer Mon. Conf (MICorps)

Getting Started in Volunteer Water Quality Monitoring

Webcast October 11, 2006

Sold out (>220 attendees)!

36 states, 2 foreign countries

http://www.epa.gov/owow/watershed/wacademy/webcasts/archives.html

Linda Green

University of RI Cooperative Extension

CSREES Volunteer Water Quality National Facilitation Project

Danielle Donkersloot

New Jersey Watershed Watch

New Jersey Department of Environmental Protection

EPA United States Environmental Protection Agency

The Watershed Academy

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Extension Volunteer Monitoring Programs

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- Breaking News
- Current Highlight: Georgia NEW! Adopt-A-Wetland
- Highlighted Program Archives
- Job postings

Related Research and Educational Efforts

- Researching Volunteer Monitoring
- Select Archives of Volunteer Monitoring Listserv Discussions
- Publications

Training Modules

Guide for Growing Programs

- Getting Started (914 K pdf)
- Why Monitoring Makes Sense (582 K pdf)
- Designing Your Monitoring Strategy (1.6 M pdf)
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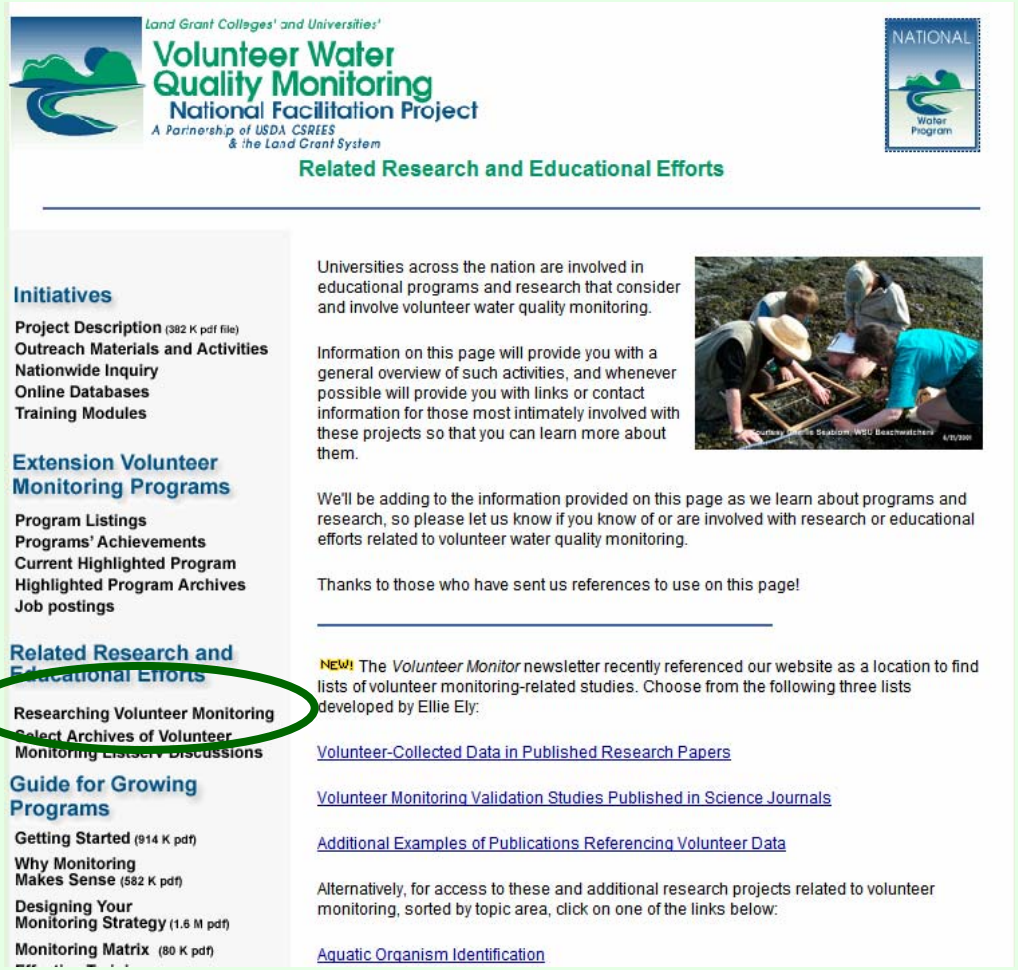
Research & Volunteer Monitoring (from A to V)



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Volunteer Water Quality Monitoring
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Initiatives

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Designing Your Monitoring Strategy (1.6 M pdf)
Monitoring Matrix (80 K pdf)

Universities across the nation are involved in educational programs and research that consider and involve volunteer water quality monitoring.

Information on this page will provide you with a general overview of such activities, and whenever possible will provide you with links or contact information for those most intimately involved with these projects so that you can learn more about them.

We'll be adding to the information provided on this page as we learn about programs and research, so please let us know if you know of or are involved with research or educational efforts related to volunteer water quality monitoring.

Thanks to those who have sent us references to use on this page!

NEW! The *Volunteer Monitor* newsletter recently referenced our website as a location to find lists of volunteer monitoring-related studies. Choose from the following three lists developed by Ellie Ely:

Volunteer-Collected Data in Published Research Papers

Volunteer Monitoring Validation Studies Published in Science Journals

Additional Examples of Publications Referencing Volunteer Data

Alternatively, for access to these and additional research projects related to volunteer monitoring, sorted by topic area, click on one of the links below:

Aquatic Organism Identification

- Beach monitoring
- Bug ID
- Chlorophyll in lakes
- Coral Reef monitoring
- E coli monitoring
- Secchi Disk & transparency tube studies
- Vernal Pool Monitoring

Land Grant Colleges' and Universities'

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Selected Archives of Volunteer Monitoring Listserv Discussions

Listserv CSREESvolmon-lists@uwex.edu

Outreach Materials and Activities
Nationwide Inquiry
Online Databases
Training Modules

these listservs to help ensure that the knowledge shared through them can reach as wide an audience as possible. Use the topic list below to access these exchanges.

Advocacy Rules of Engagement NEW!

Extension Volunteer Monitoring Programs

Program Listings
Programs' Achievements
Current Highlighted Program
Highlighted Program Archives
Job postings

Age of Volunteer Lake Monitoring Programs

Ammonia Monitoring

Aquatic Invasive Species Monitoring

Aquatic Plant Identification Guides

ATV Education to Discourage Erosion NEW!

Related Research and Educational Efforts

Researching Volunteer Monitoring

Select Archives of Volunteer Monitoring Listserv Discussions

Guide for Growing Programs

Getting Started

Why Monitoring Makes Sense (80 K pdf)

Designing Your Monitoring Strategy (1.8 M pdf)

Monitoring Matrix (80 K pdf)

Effective Training (246 K pdf)

Monitoring Equipment Suppliers (437 KB pdf)

Direct Links to Monitoring

California Watershed Assessment Manual

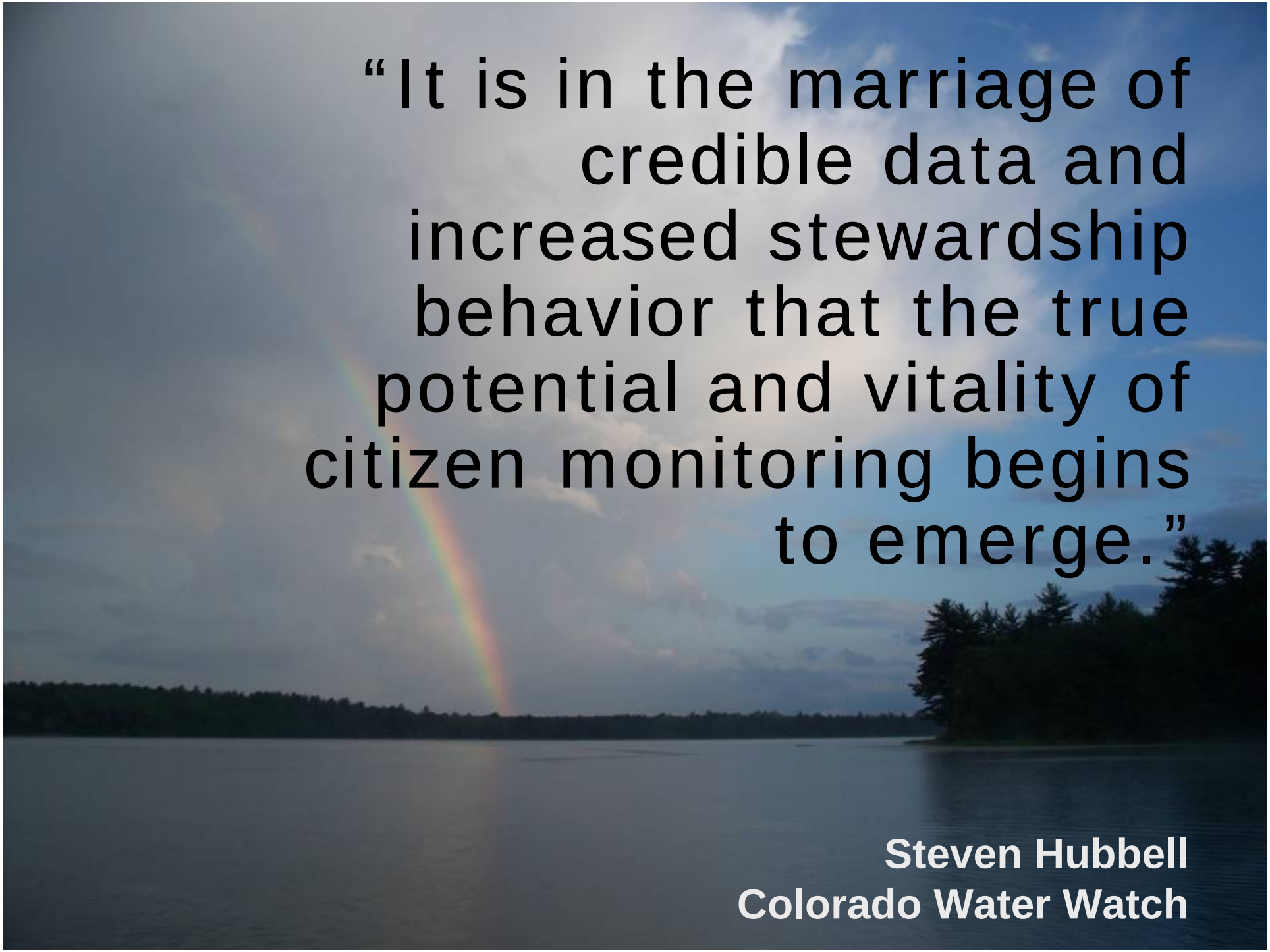
Creating a Volunteer Monitoring Program

Credible Data Laws

Data Presentation Suggestions for Visual/Habitat Surveys

Currently has >70 topics

Preserves the spontaneity of exchanges, provides quotes for factsheets, Cleans out your email box!!!


“It is in the marriage of credible data and increased stewardship behavior that the true potential and vitality of citizen monitoring begins to emerge.”
Steven Hubbell
Colorado Water Watch


Thanks!
Linda Green
lgreen@uri.edu
401-874-2905

Research questions usually can be answered at any point.

A year lost monitoring is a year that can never be regained.

Monitoring data increases in value with time.

Sam Droege, USGS Patuxent Wildlife Research Center

Cornell Citizen Science Conference 2007

Listserv Archives (from A to W)

Selected Archives of Volunteer Monitoring Listserv Discussions

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Direct Links to Monitoring

A tremendous amount of valuable information is shared through EPA and CSREES sponsored volunteer monitoring listservs (as well as others). We created this archive of select interactions from these listservs to help ensure that the knowledge shared throu
as possible. Use the topic list below to access these exchang

Advocacy Rules of Engagement NEW!

Age of Volunteer Lake Monitoring Programs

Ammonia Monitoring

Aquatic Invasive Species Monitoring

Aquatic Plant Identification Guides

ATV Education to Discourage Erosion NEW!

Bacteria Monitoring NEW!

Beavers and Lakes NEW!

California Watershed Assessment Manual

Chemical Safety and Procedures

Creating a Volunteer Monitoring Program

Credible Data Laws

Cutting Costs and Services Without Reducing Support

Data Presentation Suggestions for Visual/Habitat Surveys

- Greg from NC:

Does anybody have an education program to **discourage damage to streams from ATV riding**?

- Replies:
  - Michigan
  - Illinois

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Training Modules

Other National Facilitation Projects ↣

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- Locating Support and Funding

Of Special Interest

- Secchi Dip-In
- Volunteer *E. Coli* Monitoring Project
- *Volunteer Monitor* Newsletter

www.usawaterquality.org/volunteer

Top Lake Parameters Monitored by Volunteers

1. Secchi trans.
2. Water Temp.
3. Phosphorus
4. Diss. Oxygen
5. Chlorophyll
6. pH
7. Nitrogen
8. Exotics/Invasives
9. Aquatic Vegetation
10. Flow/water level

at that time bacteria monitoring ranked #11

Nat'l Directory. of Environmental Mon. Progs. - 5th Ed., 1998

What's Next?

- Native americans
- Citizen scientists
- Private well
- quantity/Low flow issues

By linking with Extension, Volunteer Water Quality Monitoring Programs:

- Educate the public on water quality or watershed issues, and how to protect and restore resources,
- Encourage citizens to adopt “watershed-friendly” behaviors and policies,
- Bring university science to the community and the community to the university,
- Gain valuable water quality data that is distributed to community decision makers is a usable format.