NJ Watershed Watch Network

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• Community Science
• History of Volunteer Monitoring
• Public Participation in Scientific Research
• Data Sharing
• 2009 Accomplishments
• Agenda Review
What is community science?

• Community science is partnership between professional scientists (university, agency, or industry) and volunteers (residents) to systematically document and analyze an environmental condition of concern or interest.

• The primary goal of community science is to produce “useful” data.
History of Volunteer Monitoring Movement

- # groups
- # volunteers
- Data credibility
- Scope of projects
- Networking
- Funding

1890 - 2009
Some Major Achievements

• Volunteer monitoring programs in every state.
• Acceptance of data at the local, state, and federal levels.
• Partnering at local, state, and federal levels.
• Representation on the National Water Quality Monitoring Council and at the biannual National Monitoring Conferences.
• Major networking system, including EPA-sponsored volunteer monitor listserv, The Volunteer Monitor newsletter, the CSREES Water Quality Monitoring website, and regional conferences.
• An increasingly larger toolkit of methods, embracing a wider range of protocols.
• Recognition and funding by NSF for informal science education value of programs.
Ongoing Challenges and Needs

- Volunteer recruitment and retention
- Secure funding
- Common databases
- Technical expertise
- Standardized methods depending on intended data use
- Effective communication & dissemination strategies
- Assessment protocols
- More networking opportunities
- National survey of data use
- Updated national directory (from 1998)
- Developing & refining protocols for monitoring emerging issues such as climate change, ecological resilience, and pharmaceuticals
Public Participation in Scientific Research: Defining the Field & Assessing Its Potential for Informal Science Education

a CAISE Inquiry Report

1. Models for Public Participation in Scientific Research
2. Impacts of Public Participation
3. Opportunities for the Field

Funded by:
Center for Advancement of Informal Science Education, National Science Foundation
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<tr>
<th>Steps in Scientific Process</th>
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(Adapted from Bonney, Ballard, Jordan, McCallie, Phillips, Shirk, and Wilderman, 2009)
Contributory Projects (Citizen-Science)

- Top-down, scientist-driven
- Issues studied usually have a wide geographic range
- Volunteers are primarily data collectors

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ALLARM acid rain project, Spotting the Weedy Invasives (Rutgers), and The Birdhouse Network (Cornell Lab of Ornithology)
A volunteer monitors monarch butterfly populations in Duluth, Minnesota. *Photo courtesy MLMP*

Monarch butterfly. *Photo by Christine Ruffo*

Participants in CoCoRaHS measure amounts of rain, hail, and snow. *Photo by Henry Reges, CoCoRaHS*

**Monarch Larvae Monitoring Project (U Minn) and CoCoRaHS (Community Collaborative Rain, Hail and Snow Network)**
CONSULTING model projects

- Top-down, scientist-driven
- Issues studied usually community based
- Volunteers participate in refining the study design, collecting data and disseminate findings

### Community Health Effects of Industrial Hog Operations

#### Steps in Scientific Process

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Goals and questions for the Community Health Effects of Industrial Hog Operations project originated in the affected community. Photo by Gary R. Grant.


## CO-CREATED, Community-based Participatory Research (CBPR)

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- **Bottom up, community-driven**
- **Issues are usually local**
- **Volunteers participate in all steps of the scientific process**

*Participants in Reclam the Bay are helping to restore shellfish to Barnegat Bay, New Jersey.*

*Image courtesy Reclam the Bay*
Importance of Service Providers

• In this model, partnerships with scientists are critical to producing valid, credible data

• Role of scientists is to provide capacity-building programmatic and scientific technical assistance to groups – to guide them to reach their own goals

• Scientists can also do validation studies and QA/QC to provide data credibility

• Two examples of service providers:
  – PA Consortium for Scientific Assistance to Watersheds, funded by the PA DEP
  – University of Florida and LAKEWATCH
For more information:


E2, DataMiner, & NJ GeoWeb

We have come a long way since 2004....
Stony Brook-Millstone Watershed Association, The Watershed Institute
Great Swamp Watershed Association

- Watershed Institute grant for the development of Silver Brook Watershed Mgt/Restoration Plan

- WATER QUALITY IN GREAT BROOK Monitoring Results January 2008 - June 2009
Great Swamp Watershed Association

- Winter Roads Maintenance Workshop for local Department of Public Works

Wood turtle
photo by Blaine Rothauser
Great Swamp Watershed Association

• 2009 Bio-Blitz in the Great Swamp
  – By the end of the 24-hour period volunteers and staff had a working tally of 640 species observed.

American featherfoil
South Branch Watershed Association

- 20 Sites monitored the last 2 weeks on June (2 new sites)
- The 2 extra sites are located in watersheds previously not monitored
  - Mulhockaway Creek & a site in High Bridge
South Branch Watershed Association

16 Years of Data
Hackensack River Benthic Habitat Restoration Study


Partners include
  Hackensack Riverkeeper
  Rutgers University
  Hackensack Meadowlands Commission
  Volunteers & Students
Hackensack Riverkeeper

Crowne Plaza Hotel in Secaucus, Sept 2009
Volunteers monitoring data for the following was used in the NJDEP Integrated Report:

- E. coli
- fecal coliform
- Enterococci
- nitrate-N
- Orthophosphate- P
- Total Phosphorus
- Total suspended solids
Pompeston Creek Watershed Association

Partnered w/ Rutgers Cooperative Extension to begin implementation of the Pompeston Creek Regional Stormwater Management Plan
Pompeston Creek Watershed Association

Overall project goals

– Identification bacterial sources
– Design & implementation of flooding & NPS controls in Delran
– Design of restoration projects on Pompeston Creek
• High Schools along the Passaic River
  – Barringer High School (Newark)
  – Montclair Kimberly Academy (Montclair)
  – Newark Academy (Livingston)
  – Passaic Valley High School (Little Falls)
  – Wallington High School (Wallington)

• Students:
  – Share their data over NJDEP’s GeoWeb
  – Conduct a scientific investigation using there data
  – Present and discuss results
Upper Raritan Watershed Association

• 21 volunteer assessments on Rockaway Creek, Peapack Brook, & the North Branch Raritan River

• Recruited & trained a group of volunteers to begin collecting data on the Black River (new site)
Craft’s Creek & Spring Hill Brook

- By-weekly monitoring program
- Organizes Environmental movie showings & discussions
- Helps Girl Scouts & Brownie Troops
Craft’s Creek & Spring Hill Brook Watershed Association

- Watershed News
- WWMD
- Roadside clean-ups
- Storm Drain Markings
- Stream Signage
In 9 years...AmeriCorps has

2,800  Completed Biological Assessments
4,600  Visual/habitat Assessments
5,000  Trees Planted
7,000  Educational Programs Conducted
79,000 Hours of Community Participation
150,000 Students and Volunteers Generated
15,000 Tons of Trash Cleaned Up
QAPP stands for....
Agenda Review
The progress we make is not anyone thing, just a steady slow climb; but we are now a presence in our community and we are increasing the types of things we do…

We only run a monitoring program, work with the girl scout and brownie troops, clean up roadside trash, participates in local land use planning….