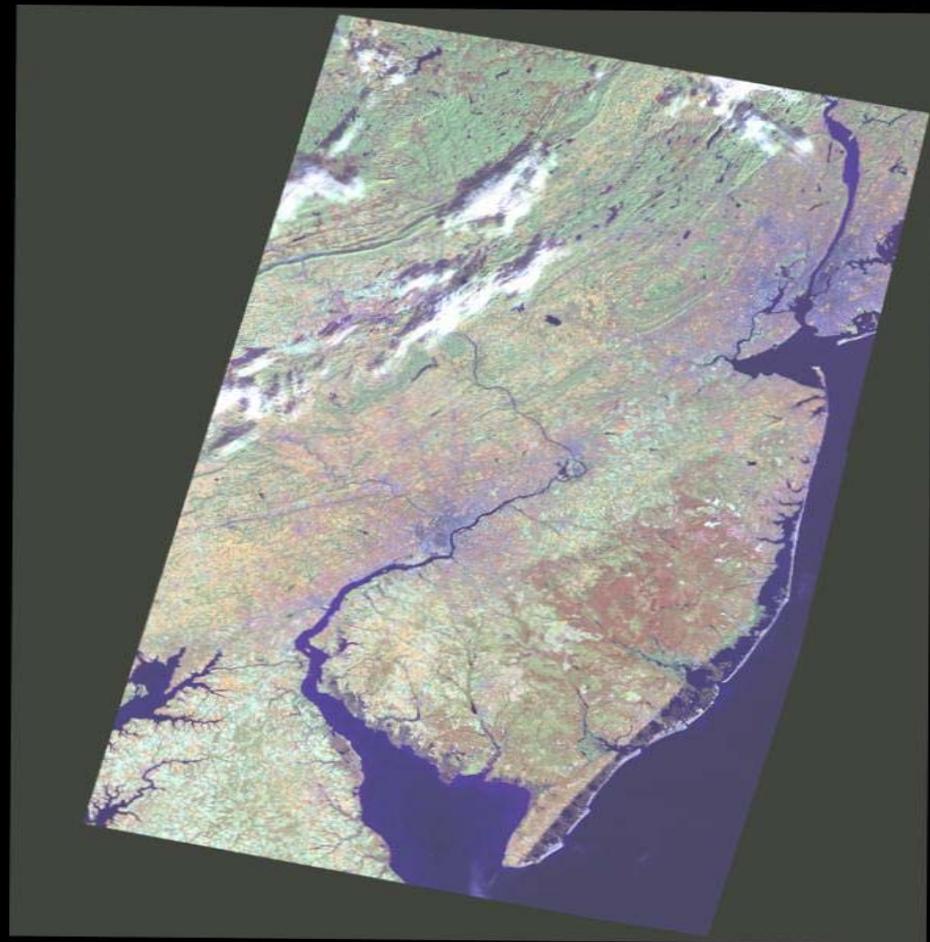


# NJ Watershed Watch Network

Danielle Donkersloot  
*Voluntary Monitoring  
Coordinator*

Katherine Axt, Assistant  
Monitoring Coordinator



- Community Science
- History of Volunteer Monitoring
- Public Participation in Scientific Research
- Data Sharing
- 2009 Accomplishments
- Agenda Review



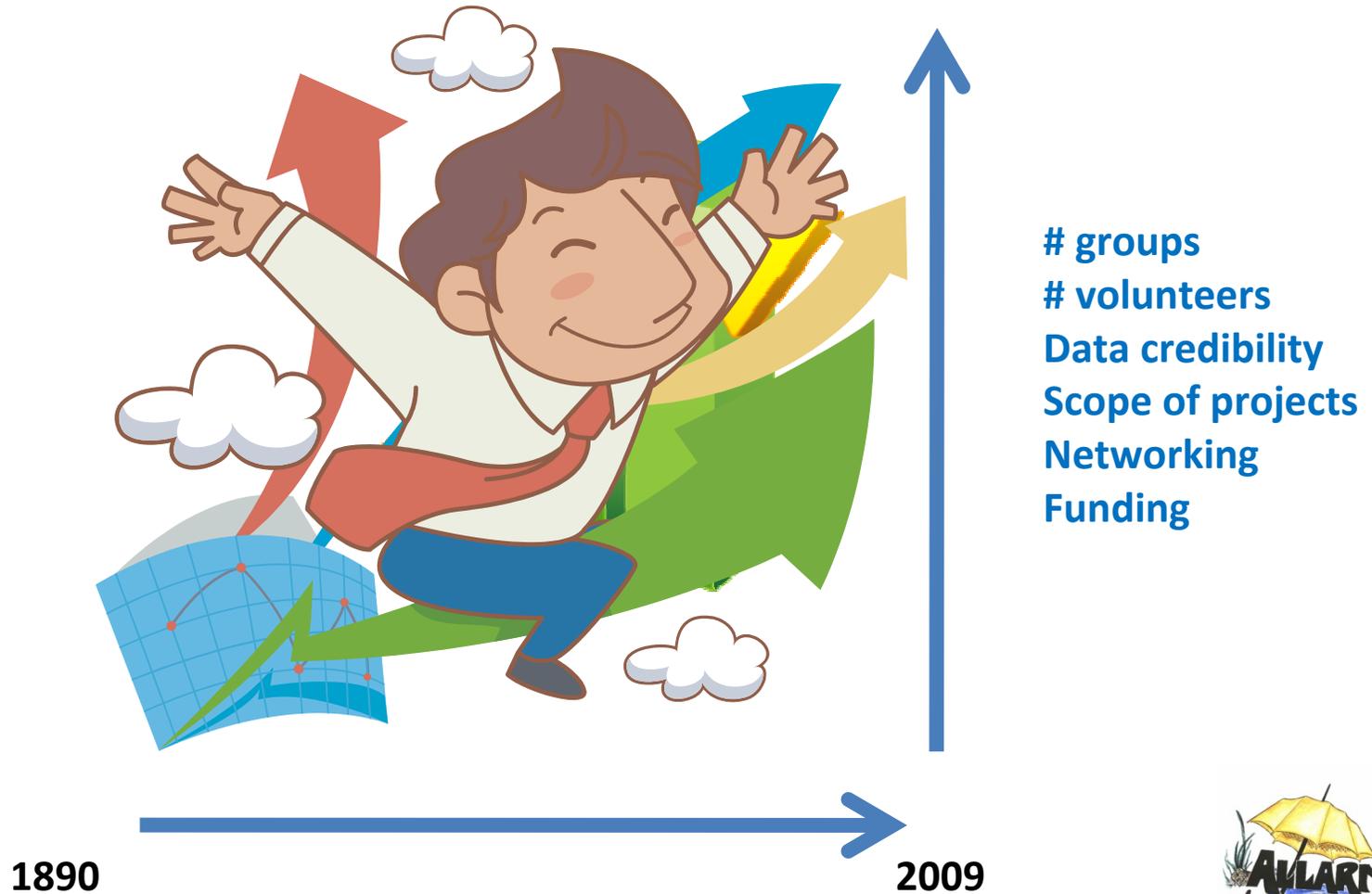


# What is community science?

- 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



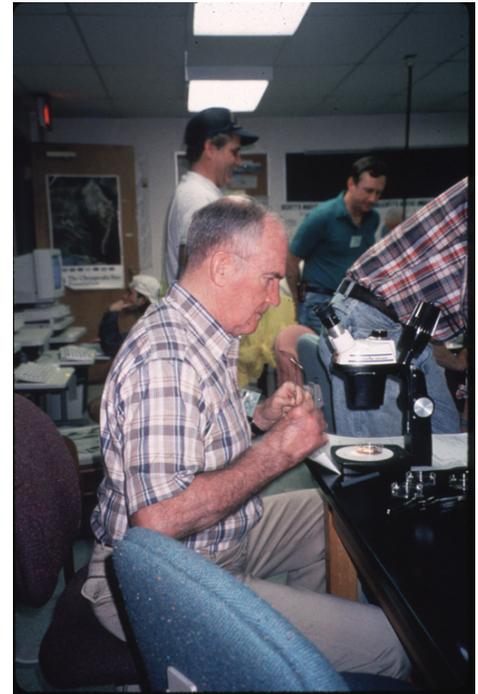
# Some Major Achievements

- 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

Steps in Scientific Process	Steps in which volunteers participate:		
	Contributory Projects	Consulting Projects	Co-created Projects
Choose or define questions of study		X	X
Gather information and resources		(X)	X
Develop hypotheses		(X)	X
Develop study design			X
Collect data	X		X
Analyze samples			X
Interpret data and draw conclusions			X
Disseminate conclusions/translate	(X)		X
Discuss results and ask new questions			X

(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

Steps in Scientific Process	Steps in which volunteers participate:
	Contributory Projects
Collect data	X
Disseminate conclusions/translate results into action	(X)



# CONTRIBUTORY



ALLARM acid rain monitoring volunteers follow set protocols to test water pH. *Photo courtesy ALLARM*



Volunteers for Spotting the Weedy Invasives attend training sessions before they begin to collect data. *Photo courtesy Spotting the Weedy Invasives*



Seeing young birds up close brought joy and discovery to participants in The Birdhouse Network. *Photo courtesy The Birdhouse Network*

ALLARM acid rain project, Spotting the Weedy Invasives (Rutgers), and The Birdhouse Network (Cornell Lab of Ornithology)

# CONTRIBUTORY



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

Steps in Scientific Process	Steps in which volunteers participate:
	Consulting Projects
Choose or define questions of study	X
Gather information and resources	(X)
Develop hypotheses	(X)

## Community Health Effects of Industrial Hog Operations



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)

Steps in Scientific Process	Steps in which volunteers participate:
	Co-created Projects
Choose or define questions of study	X
Gather information and resources	X
Develop hypotheses	X
Develop study design	X
Collect data	X
Analyze samples	X
Interpret data and draw conclusions	X
Disseminate conclusions/translate results into action	X
Discuss results and ask new questions	X

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



Participants in Reclaim the Bay are helping to restore shellfish to Barnegat Bay, New Jersey.  
*Image courtesy Reclaim 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:

- Bonney, R., Ballard, H., Jordan, R., McCallie, E., Phillips, T., Shirk, J., and Wilderman, C.C. 2009. Public Participation in Scientific Research: Defining the Field and Assessing Its Potential for Informal Science Education. *A CAISE Inquiry Group Report*. Washington, D.C.: Center for Advancement of Informal Science Education (CAISE)
- Ely, Eleanor, 2008. Volunteer Monitoring & the Democratization of Science, *The Volunteer Monitor*, 19(1), pp.1,3-5.
- McEver, C., R. Bonney, J. Dickinson, S. Kelling, K. Rosenberg, and J. Shirk (Editors), 2007. *Proceedings of the Citizen Science Toolkit Conference*, Cornell Laboratory of Ornithology, Ithaca, NY June 20-23, 2007.  
[www.birds.cornell.edu/citscitoolkit/conference/presentations](http://www.birds.cornell.edu/citscitoolkit/conference/presentations)
- Wilderman, C., A. Barron and L. Imgrund, 2003, “The ALLARM program: growth, change, and lessons learned,” *The Volunteer Monitor*, 15(1), pp.1-4.
- Wilderman, C. 2006. The taxonomy of community-based monitoring. Presentation at the *5<sup>th</sup> National Monitoring Conference*, Atlantic City, NJ May 18-22, 2006.

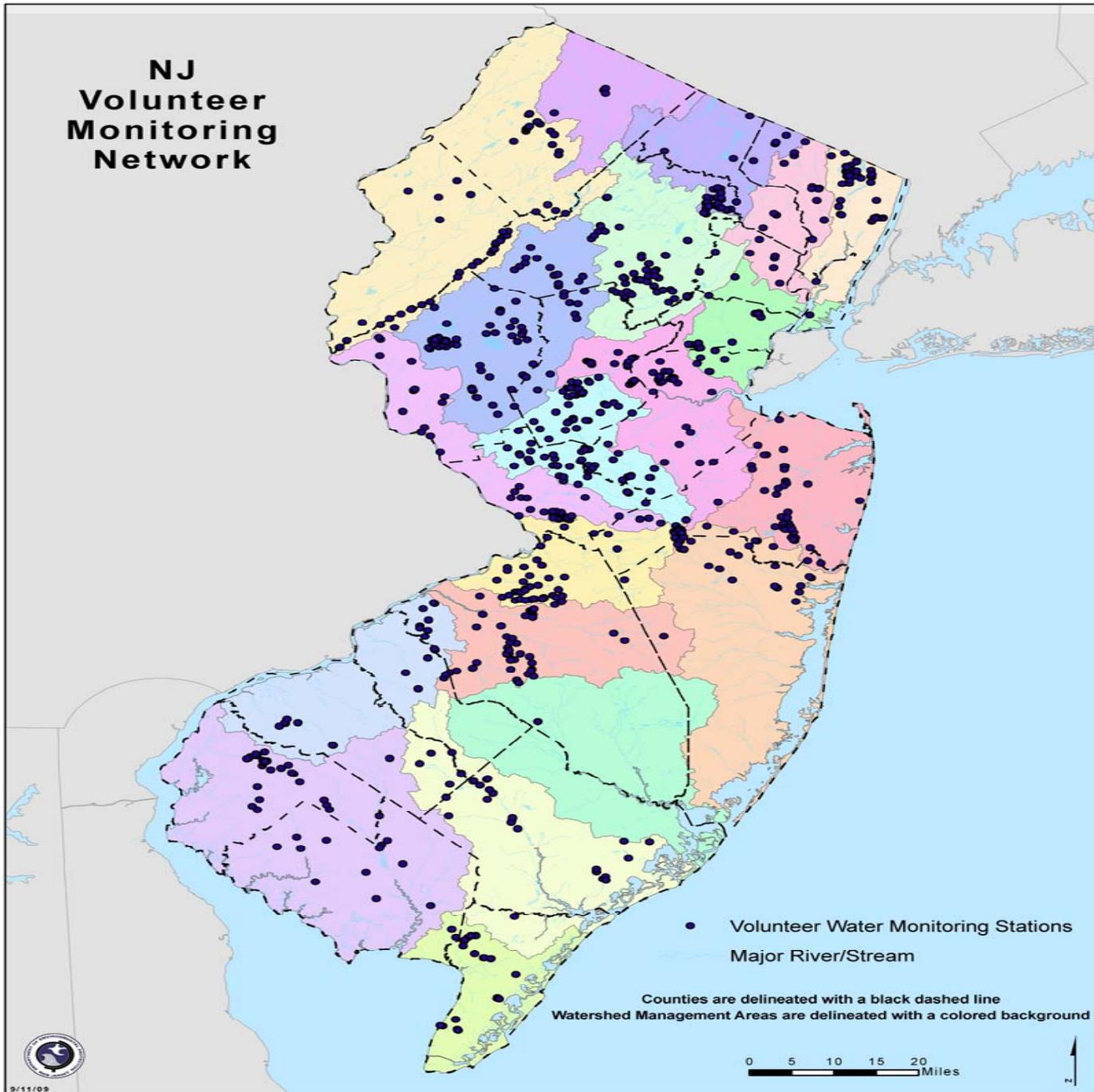


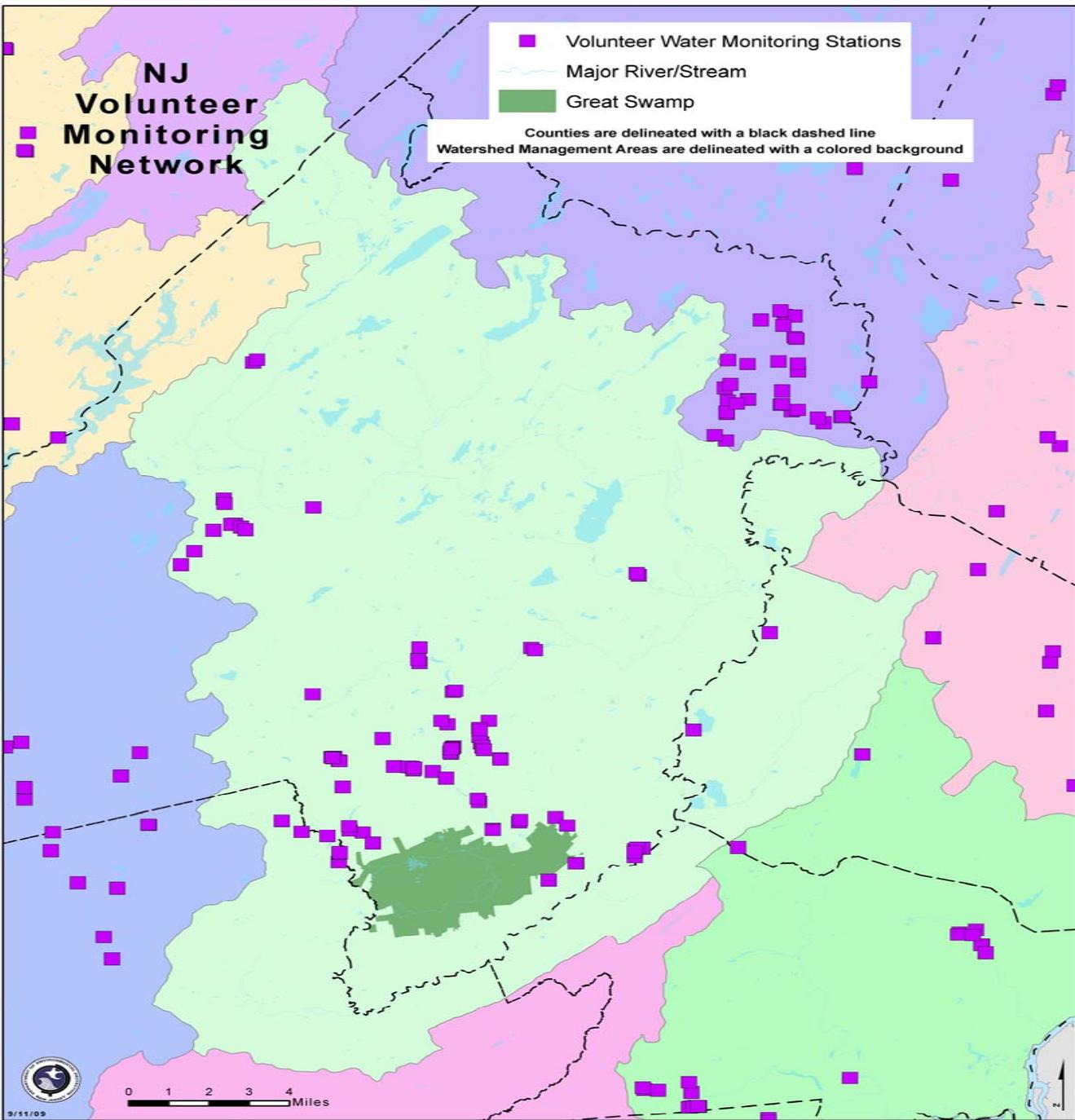
# E2, DataMiner, & NJ GeoWeb

We have come a long way since 2004....



# NJ Volunteer Monitoring Network





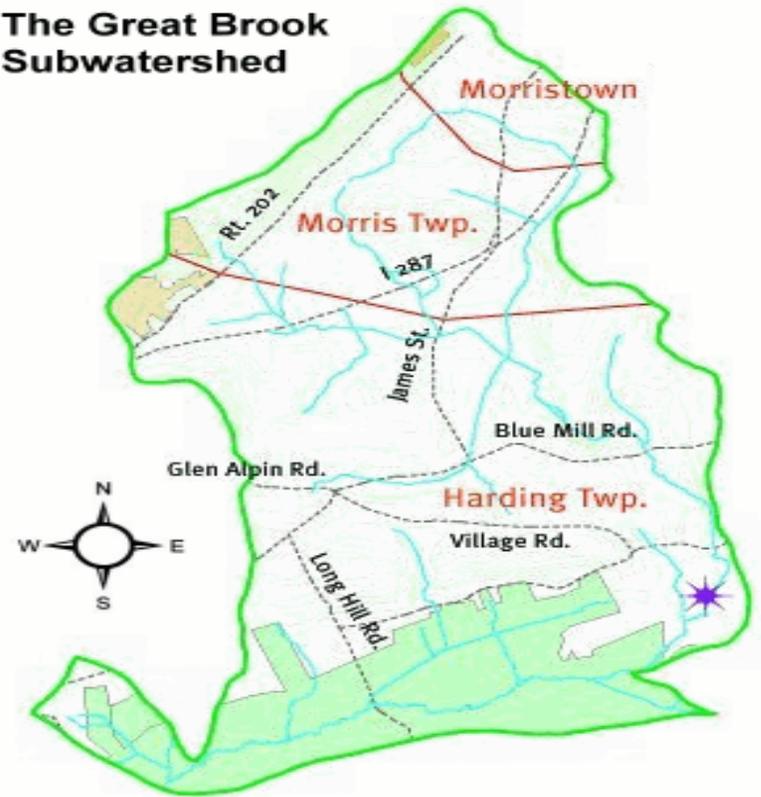
# Stony Brook-Millstone Watershed Association, The Watershed Institute



# 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

The Great Brook Subwatershed



- Subwatersheds
- Municipal Boundaries
- Monitoring Stations
- Contours
- Great Swamp Watershed Association
- Morristown National Historical Park
- Major Roads
- Major Streams

# 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

Final Report Dec. 2008

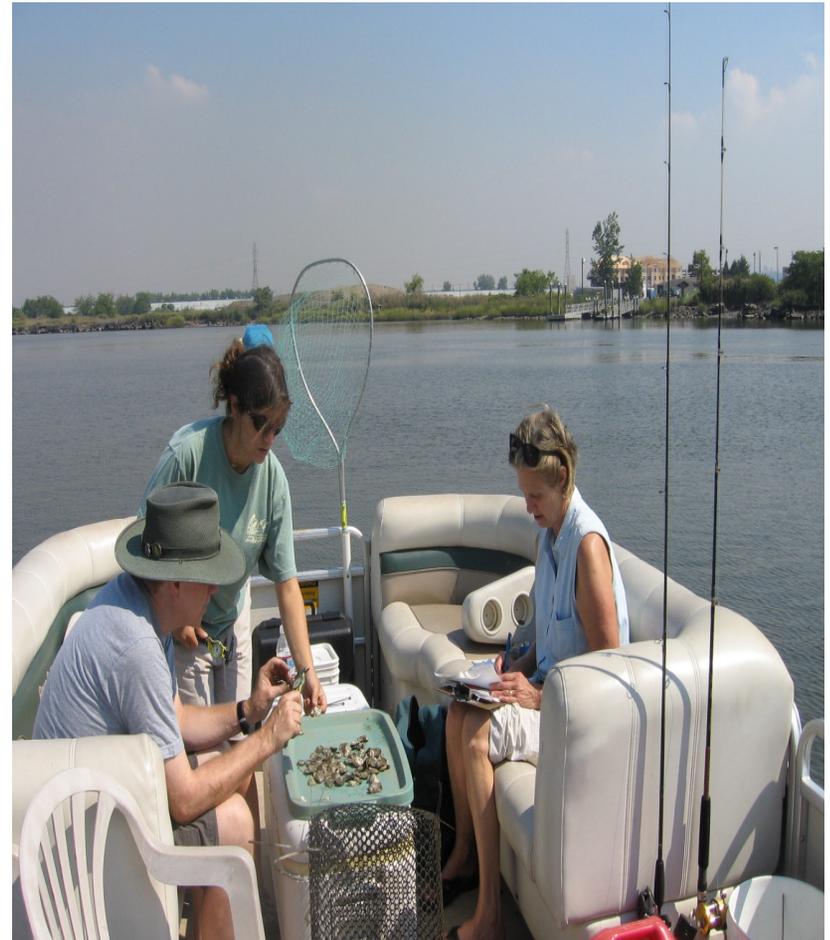
Partners include

Hackensack  
Riverkeeper

Rutgers University

Hackensack  
Meadowlands  
Commission

Volunteers & Students



# Hackensack Riverkeeper

Crowne Plaza Hotel in Secaucus, Sept 2009



# Pompeston Creek Watershed Association

Volunteers monitoring data for the following was used in the NJDEP Integrated Report:

- E. coli
- fecal coliform
- Enterococci
- nitrate-N
- Orthophosphate- P
- Total Phosphorous
- 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

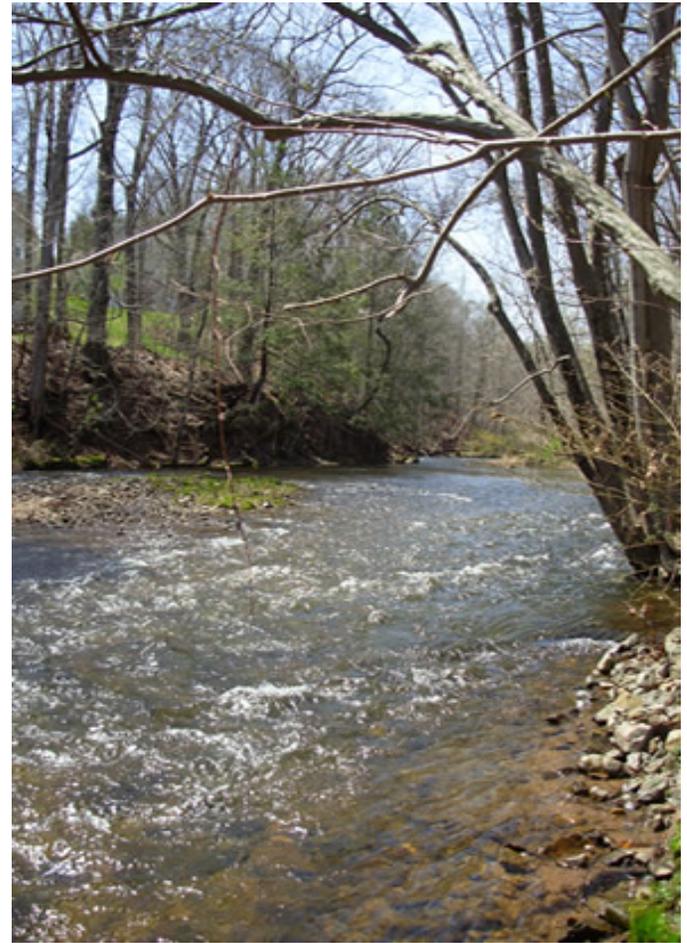
The logo features a light blue silhouette of a river winding through a landscape. The text 'Passaic River Environmental Education and Monitoring Organization' is stacked vertically in a bold, black, sans-serif font, centered over the river graphic.

**P**assaic  
**R**iver  
**E**nvironmental  
**E**ducation and  
**M**onitoring  
**O**rganization

- 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....