CITIZEN SCIENCE AND STREAM MONITORING IN THE GREAT SWAMP WATERSHED

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Water Quality Program Goals

• Monitor water quality throughout Great Swamp watershed
• Communicate monitoring findings
• Improve any impairments
• Protect high quality sites
• Create community stewards
Challenges for a Nonprofit

- 55 square mile watershed
- 5 main streams
- Small organization – 1 WQ employee
- Limited budget and resources

GSWA Water Quality Lab
GSWA’s Stream Team

- Approximately 40 volunteers
- Varied interest and expertise
  - Local citizens, students, young professionals, technical background
- Trained by GSWA as needed
Stream Team Training

• Program-specific:
  • Visual assessment
  • Macroinvertebrate assessment
  • *E. coli* sample collection
  • Other
Stream Team Training

• Stream Team interest
  • Hydrology
  • Policy
  • Plant ID
    • Photograph plants for later identification
    • Native vs. invasive
Volunteer Engagement

• Various types of engagement from technical assistance to “I want to get my feet wet”
• Independent projects
  • Data analysis, using new equipment
• Staff-led projects
  • Chemical, macroinvertebrate monitoring
What Do We Monitor and
How Do Volunteers Help?
Chemical Monitoring

- 11 sites over 2 days, 4x per year
- Collect samples for lab analysis
- Meters
- Flow
Visual Stream Assessments

• NJDEP protocol
• New vols. assigned a site, partner
• 22 sites assessed by 30 volunteers biannually (fall, spring)
• Best to have consistent volunteers to spot problems
Visual Assessment Findings

- Illegal stream channel dredging
- Nutrient output from local WWTP
- Potentially invasive aquatic plant
  - Efforts led to ID by Brooklyn Botanical Garden (non-invasive)
Macroinvertebrate Assessments

- Annual survey, since 2000
- Recently taken over by GSWA staff
- 2 vols. collect MIVs
- Meter data informs results
Starting a New Program: *E. coli*

- *E. coli* suggested by Stream Team
- Sites recommended by Stream Team, local residents, park managers, etc.
- 17 sites, 11 volunteers, 2 backup vols.
- Samples collected standard day, time for 5 weeks
- Very valuable program
E. coli Results

• Rain increases e. coli levels everywhere, even ¼”
• Low E. coli levels at parks
• 2 surprises
  • Artificially low E. coli and total coliforms
  • Very high levels at GSWA’s Conservation Management Area
## Stream Team Benefits

### For GSWA
- Help with projects
- Expand programs
- Engaged citizens giving valuable input

### For Volunteers
- New skills
- Networking
- Social aspect
- Valued input on local issues
Questions?

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