



WISCONSIN'S VOLUNTEER STREAM

MONITORING PROGRAM:



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GOAL AND OBJECTIVES

- Established 1996
- Goal: To help preserve and protect Wisconsin's over 15,000 lakes and 86,000 miles of rivers
- Objectives:
 - × Educate citizens about water quality
 - Build a network of informed citizens and empower them to take action to protect and improve natural resources
 - Obtain high quality water resources data useful for DNR decision-making

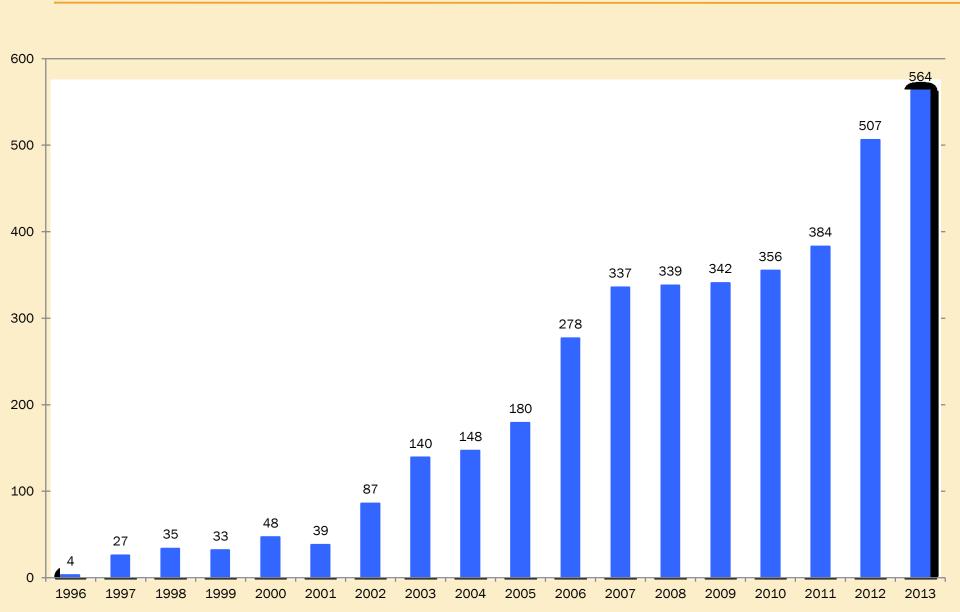


THREE LEVELS

- Accommodates varied interests & time availability of volunteers
- Volunteers can assess if stream monitoring is for them
- Builds trust with staff to invite participation at higher levels



Number of Volunteer Stream Monitoring Sites Over Time



MULTIPLE LEVELS

Level 1 – Educational

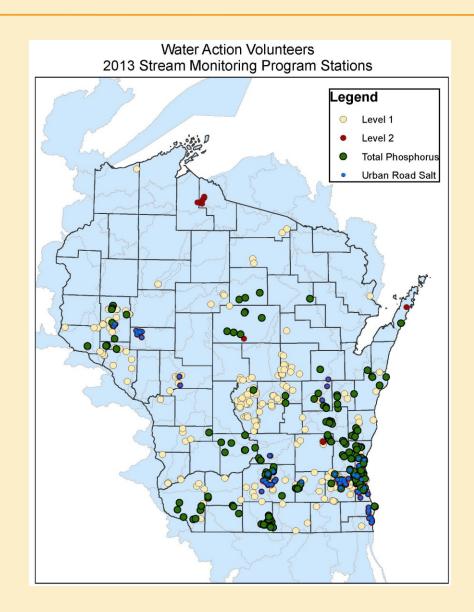
- + Introduction to monitoring
- Better understand the connection between land use & water quality
- + Self-selected sites

Level 2 – Status and trends

- + Established 2006
- + More intensive monitoring
- + Must follow a specific schedule
- + Utilize DNR methods & databases
- + Primarily self-selected sites

Level 3 – Research projects

- + Address specific issues
- Researcher-identified sites

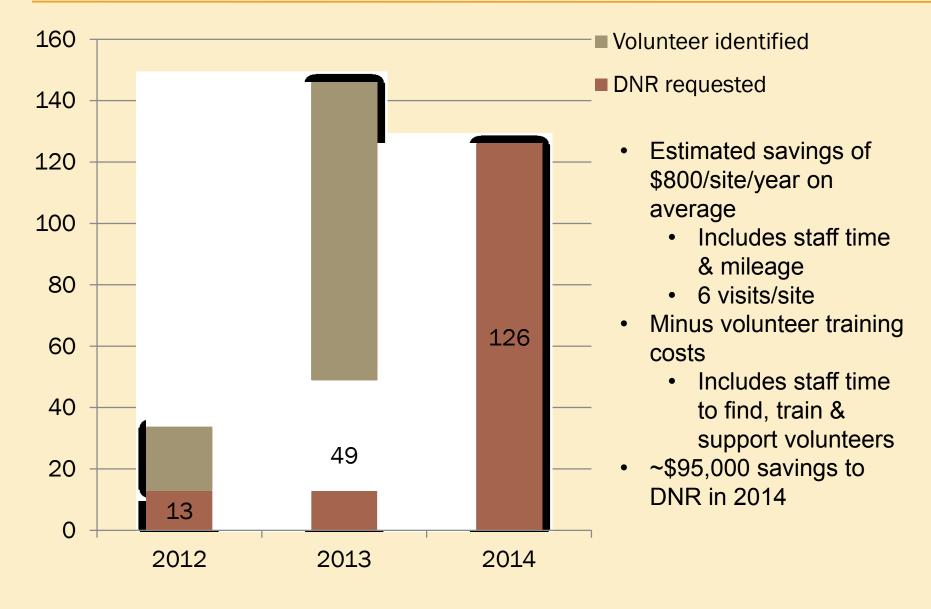


WHAT'S MONITORED?

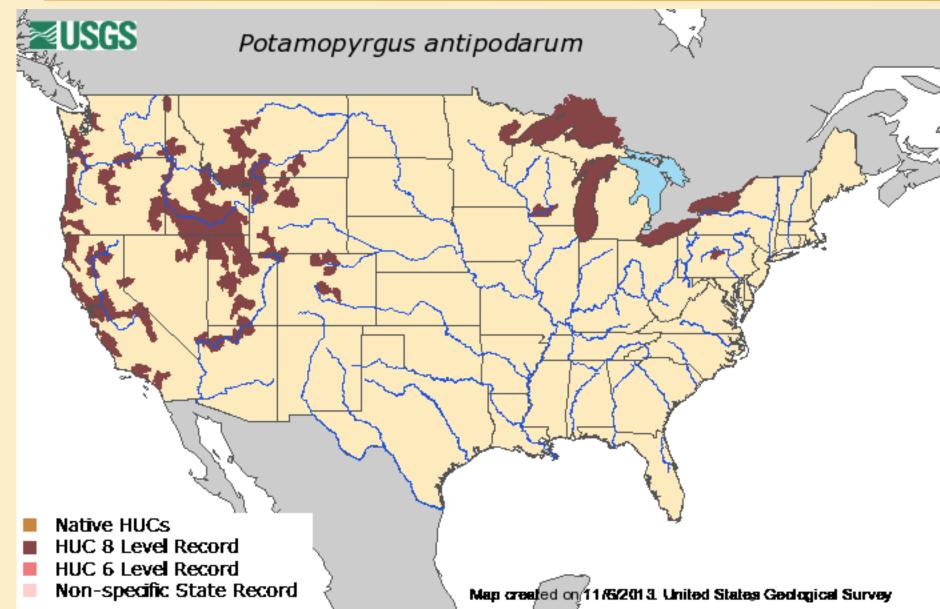
- Level 1: Dissolved oxygen, temperature, transparency, habitat, biotic index, streamflow
- Level 2: Continuous temperature, pH, dissolved oxygen, transparency
- × Level 3:
 - + Projects defined annually
 - × New Zealand mudsnails
 - × Specific conductance/Chloride
 - × Total Phosphorus
 - x Total Suspended Solids (coming 2014)
 - × Macroinvertebrates (coming 2014)



OPERATIONS MODEL - TOTAL PHOSPHORUS SITES



OPERATIONS MODEL - NEW ZEALAND MUDSNAILS

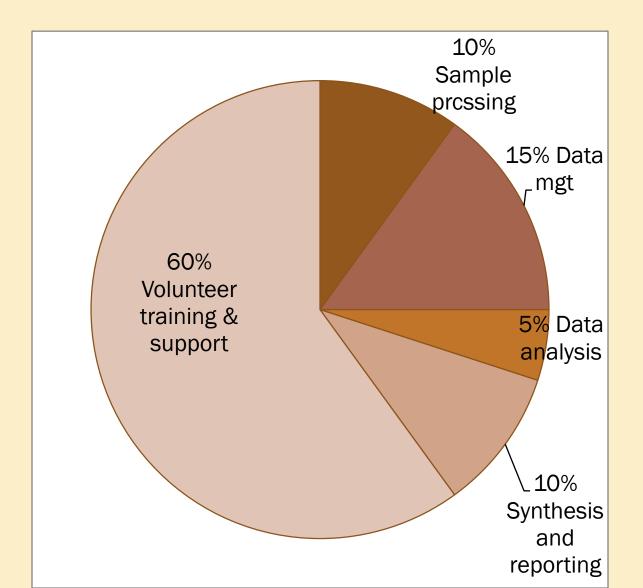


OPERATIONS MODEL - NEW ZEALAND MUDSNAILS

- Population present at least1 year before identification
- Extent of spread now?
- × 150 priority sites identified
- × Volunteers sorting benthic samples
- * ~\$75/sample to sort at contract lab
- * ~\$11,000 savings



Volunteer Stream Monitoring Program Funding



Sources:

- EPA Clean Water Act funds (DNR)
 - ~75%
- State General funds (UW-Extension)
 - ~25%
- Supplemented by:
 - Grants
 - Local groups' \$

DELIVERY OF RESULTS

- Data are available raw through
 - + A map-based search:
 - http://dnrmaps.wi.gov/sl/?Viewer=SWDV
 - + An Oracle database:
 - https://prodoasjava.dnr.wi.gov/swims/
- Site-specific annual summary reports
- Electronically distributed to volunteers and potential data users
- Downloaded by internal (DNR) data users (e.g., evaluation section staff for impaired waters listings)

Galloway at Third Street

Road Salt Monitoring Data Summary November 2012 -June 2013



Volunteers: Chelsey Baranczyk, Adam Cameron, Jonathan Dahlen, Brett Eliason, Katelyn Hain, Megen Hines, Krista James, Alexa Levie, Tim Logan, Ted Ludwig, Evan Petska, Caitlin Sandin, Amanda Smith, Kamron Stalsberg, Nathan Stobb, and Youzhu Wang Specific conductance summary:

- 40 measurements taken
- Minimum: 170 μS/cm on 4/10/2013
- Maximum: 4600 µS/cm on 1/29/2013
- Mean: 839 µS/cm

EPA Acute and Chronic Exceedences for Chloride¹

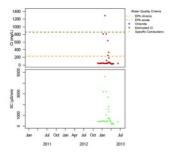
The EPA acute chloride standard of 860 mg/L was exceeded once at this site o 1530 mg/L on 1/29/2013 (measured)

- In addition, the EPA chronic chloride standard of 230 mg/L was exceeded five times at this site:
- o 335 mg/L on 3/7/2013 (calculated) o 253 mg/L on 2/27/2012 (calculated)
- 638 mg/L on 2/26/2013 (calculated)
- o 810 mg/L on 1/11/2013 (calculated)

0 samples collected (Galloway at Red

Cedar River used as surrogate)

- o 810 mg/L on 2/11/2013 (calculated)



Source: EPA. 1988. Ambient Water Quality Criteria for Chloride. EPA 440/6-88-001.

² Calculated chloride: When SC >1540 µS/cm was Cl = 0.3441 * SC - 291, adjR² = 0.98; when SC was ≤ 1540 µS/cm was Cl = 1.044 * (exp(0.001609 * SC + 3.046)), adj R2 = 0.65. Equations based on data from both Madison and Milwaukee

USE OF RESULTS

- DNR and partner agency (e.g., USGS) staff use the information for
 - + Impaired waters listings
 - + Total Maximum Daily Load (TMDL) implementation monitoring
 - + Research papers

TOP THREE SUCCESSES

- Building partnerships to effectively engage citizens to collect high quality data useful for research and decision-making
- Achieving 100% volunteer success in following defined monitoring sampling design for total phosphorus monitoring
- Building a network of trusted volunteers who are well-trained and willing to assist with collecting data

TOP THREE CHALLENGES

- Identifying and making connections with potential partners and their data needs to which volunteers could effectively contribute
- Sustaining long-term stable funding for the volunteer monitoring program
- Building trust of potential partners to allow citizens to contribute to data collection