Mohonk Preserve StreamWatch Project

Volunteer Orientation Summer 2017
Wednesday, June 28th 6:00 – 8:00 PM
Saturday, July 1st 9:00 – 11:00 AM

Natalie Feldsine
Research Collection and Citizen Science Coordinator

Mohonk Preserve®
saving the land for life

Pin Oak Allee by Michael Neil O'Donnell

Conservation Science at the Daniel Smiley Research Center

- Ecological Management
- Human Use & History
- Collections Management

- Long-Term Environmental Monitoring on the Ridge
  - 100+ Years of Natural History Data

- Citizen Science Program
  - Climate Trackers (year-round)
  - Phenology Project (year-round)
  - Peregrine Watch (March-June)
  - Hawk Watch (August-November)
  - Christmas Bird Count (December)
  - StreamWatch (year-round)

Top: Elms Cottage
Bottom: Paul Huth by Jay Diggs

Citizen Science Program Goals

- Educate and engage Preserve members and the public about visible impacts of climate change on the Shawangunk Ridge and beyond
- Expand scope of scientific study
- Build capacity for long-term ecological monitoring

Left: Climate Trackers Measuring Ice Thickness on Mohonk Lake
Right: Volunteers Collecting Phenological Observations

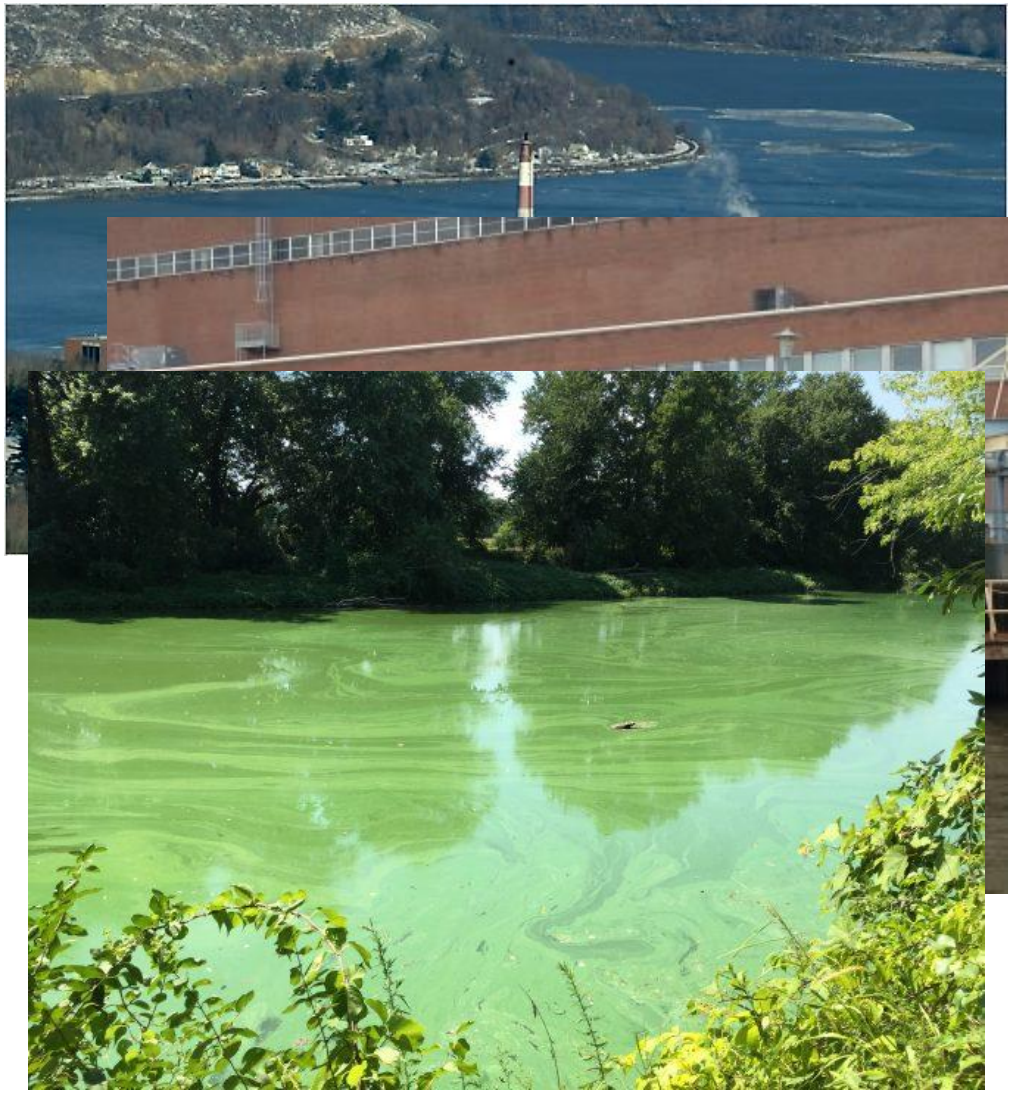
StreamWatch – Goals

- Evaluate water quality
- Identify vulnerable or invasive species
- Determine the need for riparian buffers and changes to current agricultural practices
- Inform future Mohonk Preserve projects
- Develop a watershed management plan

Sampling downstream of Split Rock

Hudson River Estuary

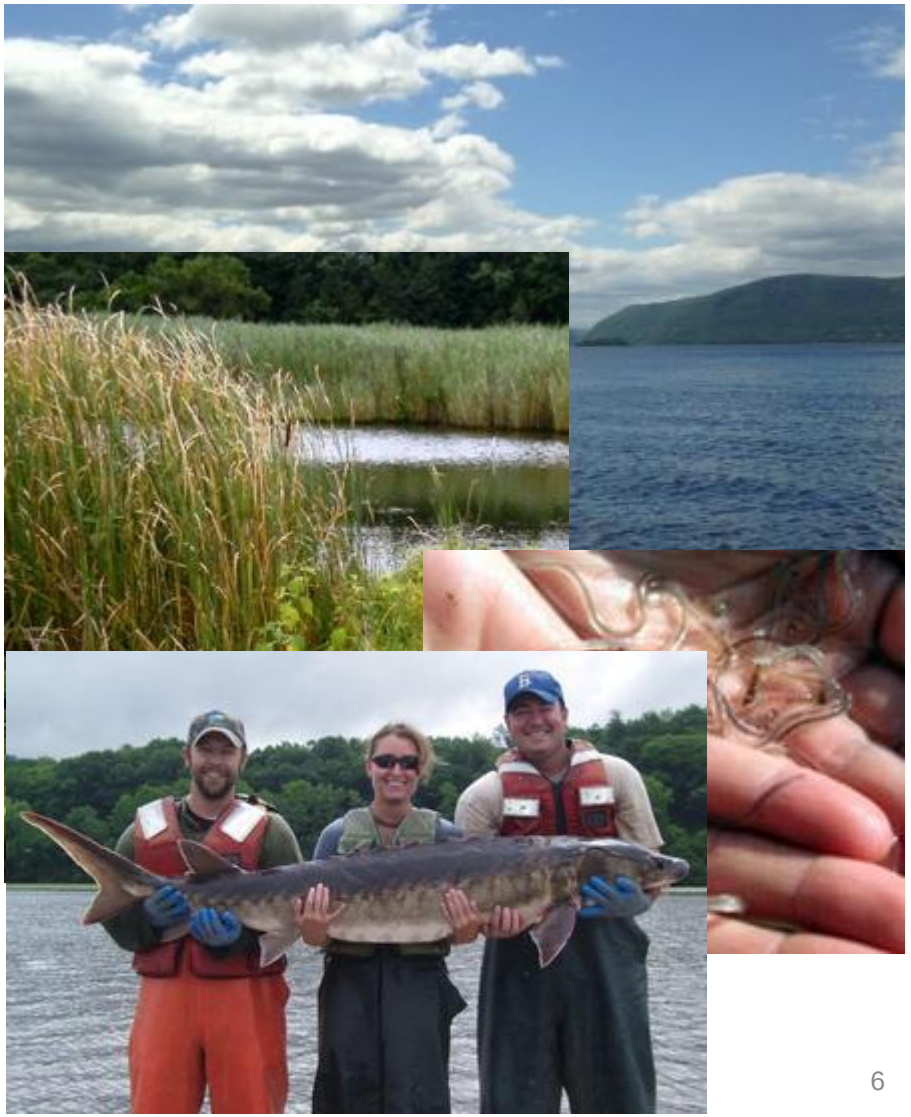
- Historical Water Quality Issues
  - Sewer overflows
  - Stormwater runoff
  - Sedimentation
  - Heritage Contaminants (PCBs)
  - Destruction of surrounding wetlands
  - Cooling water intake/discharge
  - Harmful algal blooms
- NYS Pure Waters Bond Act (1965)
- US Clean Water Act (1972)



Algal bloom in Wallkill River, New Paltz. Image from NYS DEC

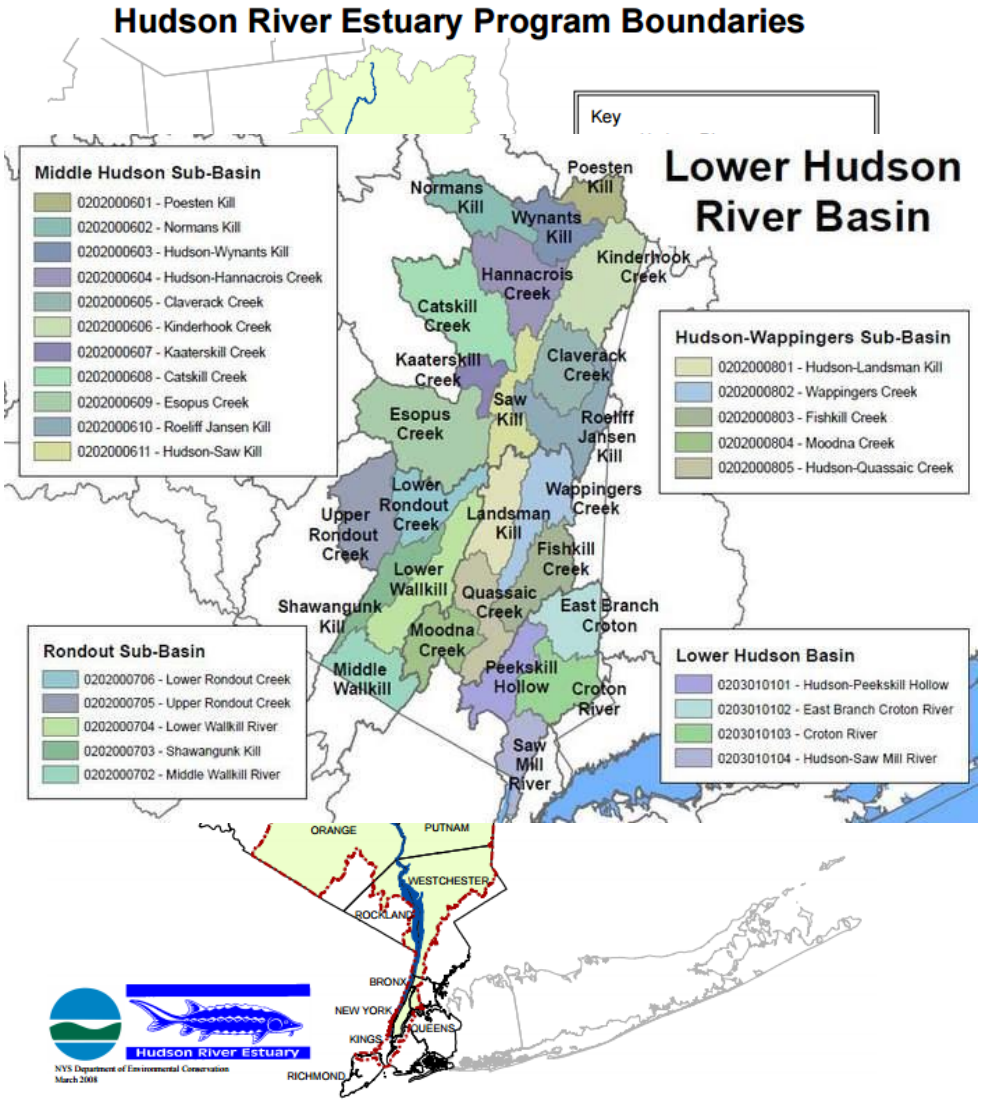
Hudson River Estuary

- Support for biodiversity
  - <200 species of fish
  - Commercial and recreational benefits
- Diverse habitats
  - Brackish and freshwater tidal wetlands
  - Aquatic plant beds
  - Shorelines
  - River bottoms
  - Tributary streams
- Recreation
- Natural Scenery



Hudson River Estuary

- Watershed
  - Land area that drains to a common body of water
- Influenced by many watersheds
  - Land use
  - Population
- Improving water quality at the watershed level

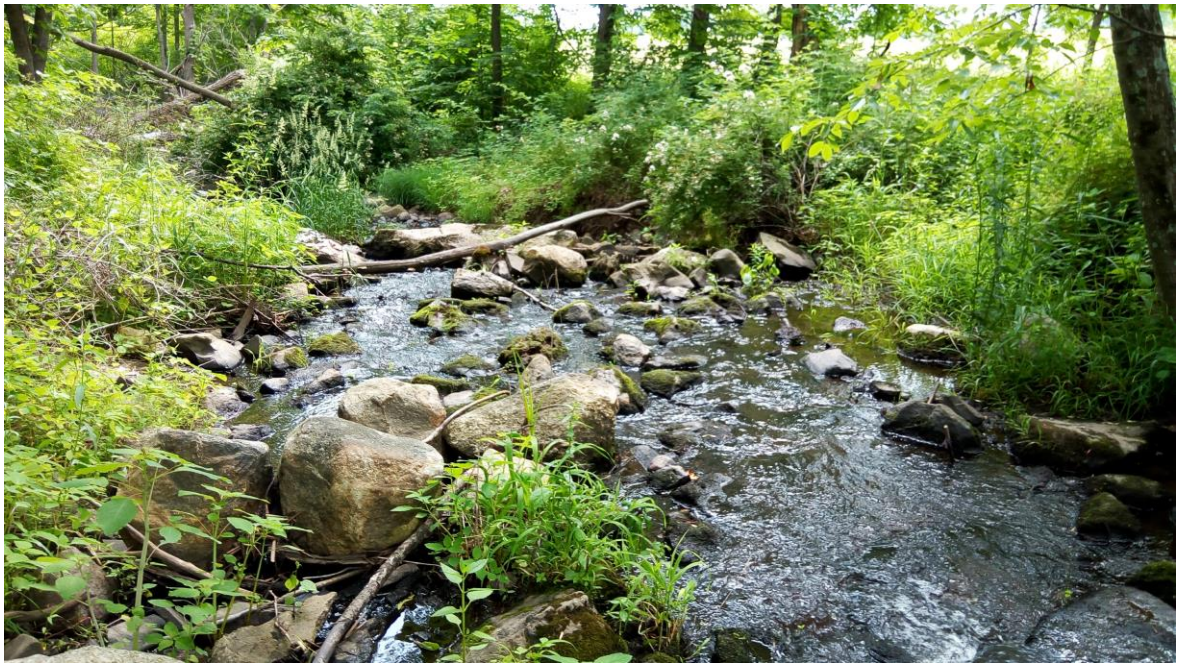


StreamWatch – Structure

- StreamWatch Volunteer orientation
- Site-Specific Training
- Ongoing training opportunities & workshops
  - Macroinvertebrate workshop
  - Invasive species workshop
    - Dates TBD

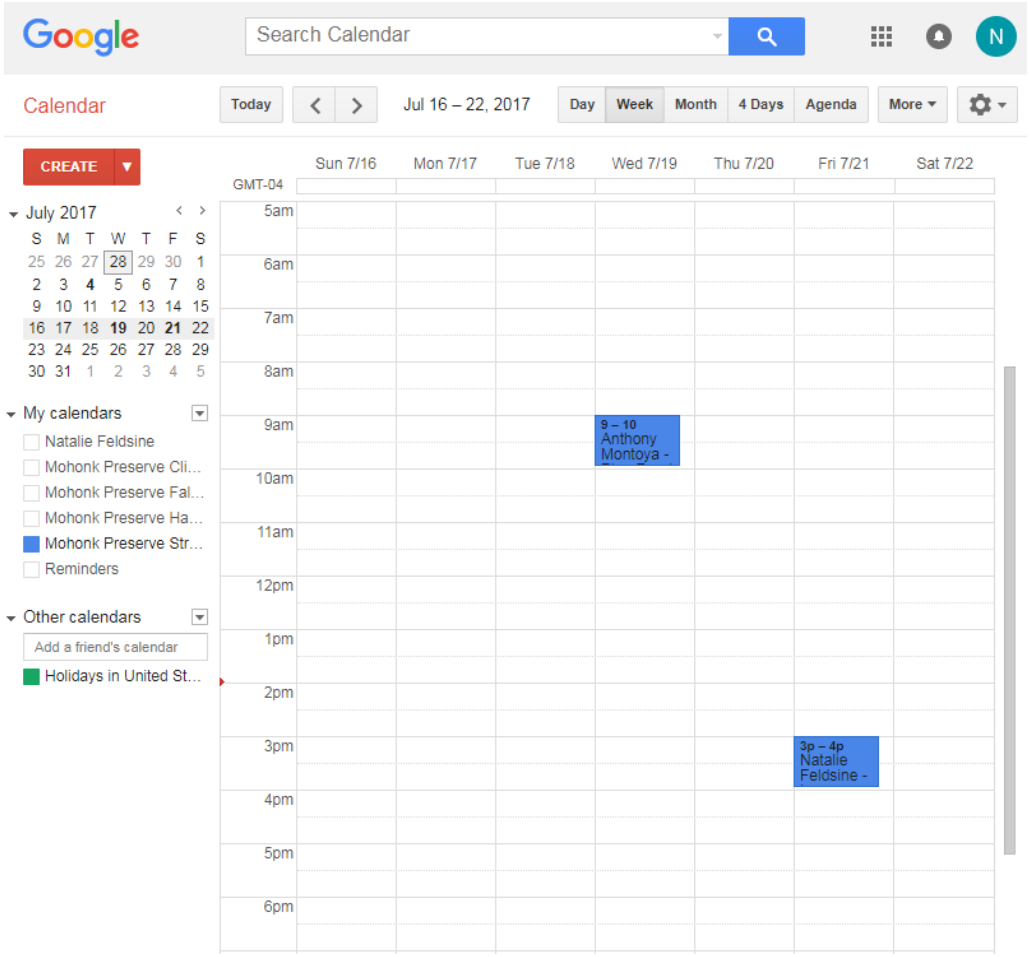
StreamWatch – Requirements

- Attend StreamWatch Volunteer Orientation
- Attend Site-Specific Training
  - Sign up for desired sampling location
  - Email Natalie to schedule Training
- Sample biweekly or 2x/month
  - **Schedule via Google Calendar** View Mohonk Preserve StreamWatch calendar
- Submit data within 48 hours of collection
  - https://goo.gl/forms/z72XZLUOuTxJ2f533



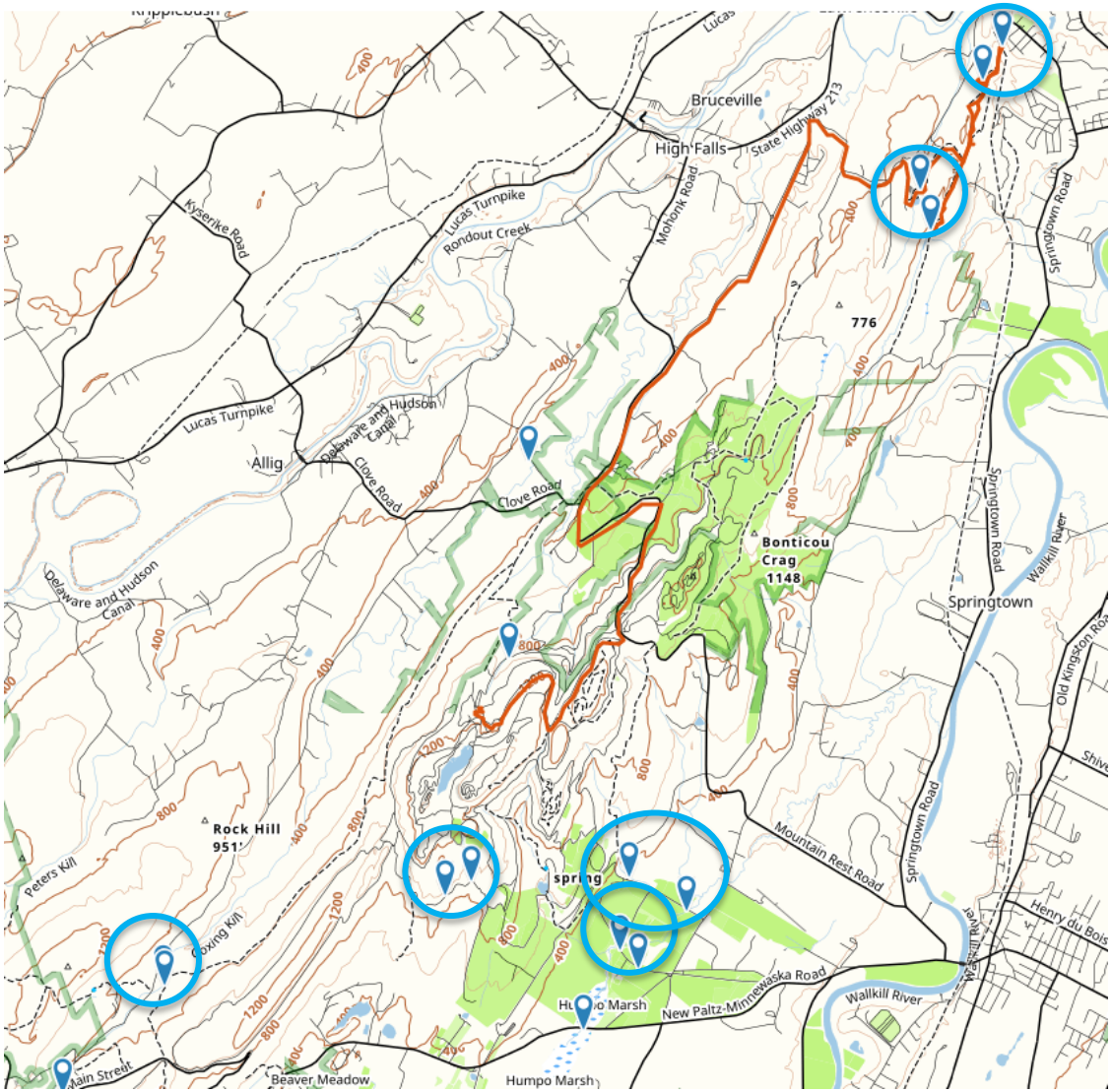
Scheduling: First Come, First Serve Basis

- Google Calendar
  - Volunteers able to view available shifts
  - Choose shifts that work for your schedule
  - At least 2 shifts per month
  - View Mohonk Preserve StreamWatch calendar
- Email Citizen Science Coordinator – Natalie
  - Sends confirmation email with confirmed shifts
  - Your name and sampling time placed on Google Calendar



StreamWatch – Sampling Locations

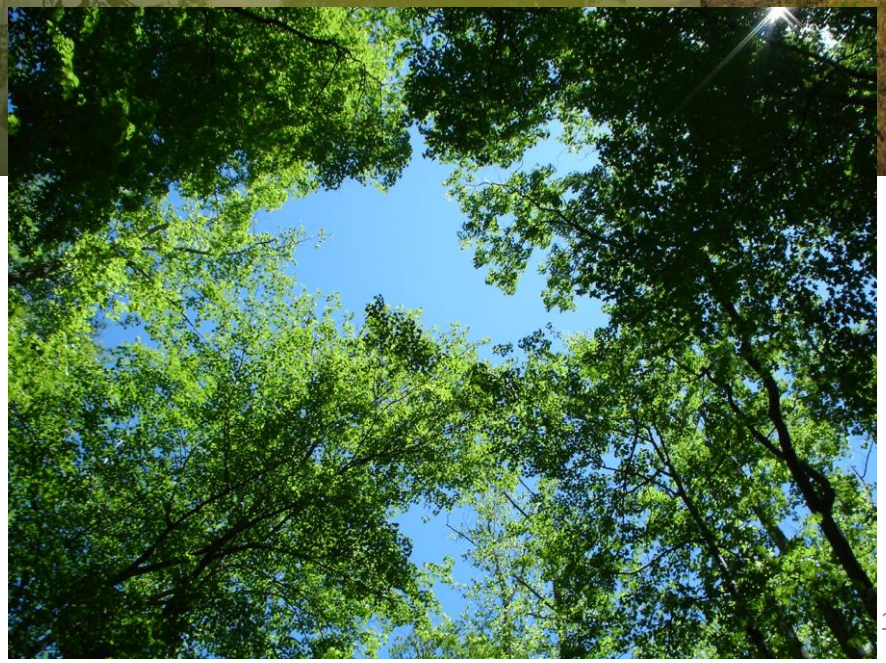
- 16 Sampling Locations
- Some locations are ***paired*** due to their proximity to each other
- Stream characteristics are widely varied among sites
- Google Map of Sites
  - https://drive.google.com/open?id=12PgODc05Y07-fV089JC5eTz0IW4&usp=sharing



StreamWatch – Stream Variability

Protocol Overview – Observation/Assesment

- Water appearance
- Water odor
- Canopy Cover
- Air Temperature
- Precipitation
- Sky Conditions
- Wind



Protocol Overview – Stream Conditions

- Stream Width
- Stream Depth
- Velocity

Protocol Overview – Water Quality

- Water Temperature
- Turbidity
- pH (in-lab measurement)
- Dissolved Oxygen*

Protocol Overview – Stream Biota

- Invasive Species
- Macroinvertebrates

Oriental bittersweet, image from Delaware Wildflowers

Macroinvertebrate samples, image from Marietta College

Invasive Species

- Non-native species which overpopulate and outcompete native species
- Pose a threat to biodiversity
- Volunteers will record any observations of invasive species at the sampling location
- Resources for identification include:
  - Table 1 in StreamWatch Protocol
  - StreamWatch Invasive Species Guide
  - DEC's page on Nuisance and Invasive Species http://www.dec.ny.gov/animals/265.html
  - New York Invasive Species Information http://nyis.info/
  - New York iMapInvasives http://www.nyimapinvasives.org/
  - New York State Invasive Plant guide https://drive.google.com/file/d/0B1ygrduHhjvvY3JMVFZGdXVkLU0/edit

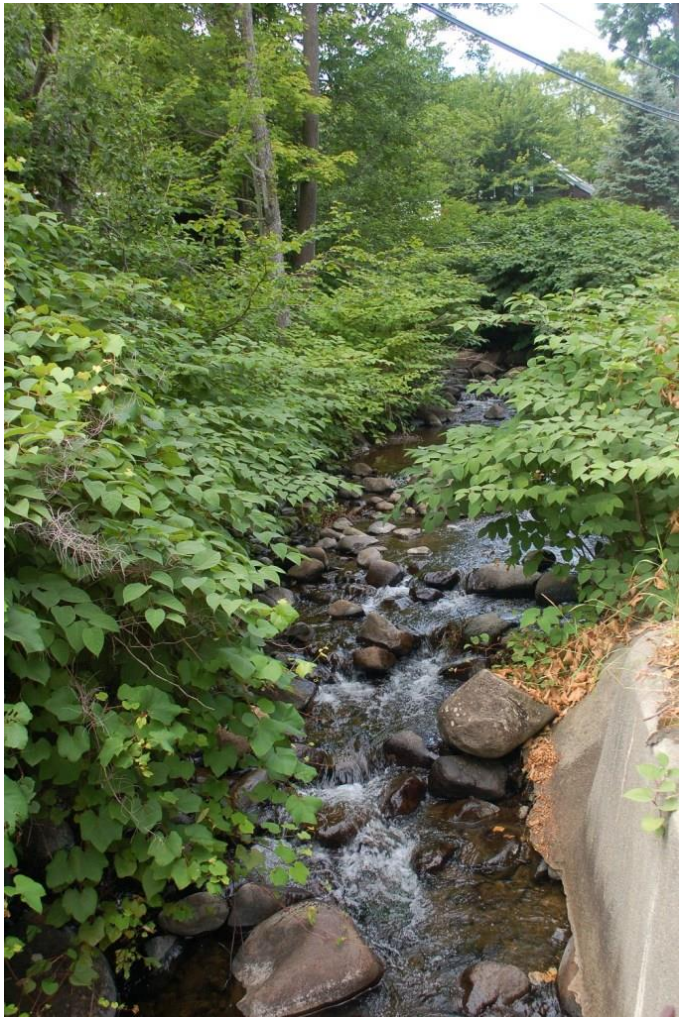


Photo of Japanese Knotweed by Anne Green for Finger Lakes PRISM

Common Invasive Species of Riparian Areas

Didymo: brown algae that can disrupt oxygen and nutrient supplies for stream life

Japanese Knotweed: large herbaceous shrub with heart shaped leaves

Phragmites or **Common Reed**: a tall grass that forms dense stands

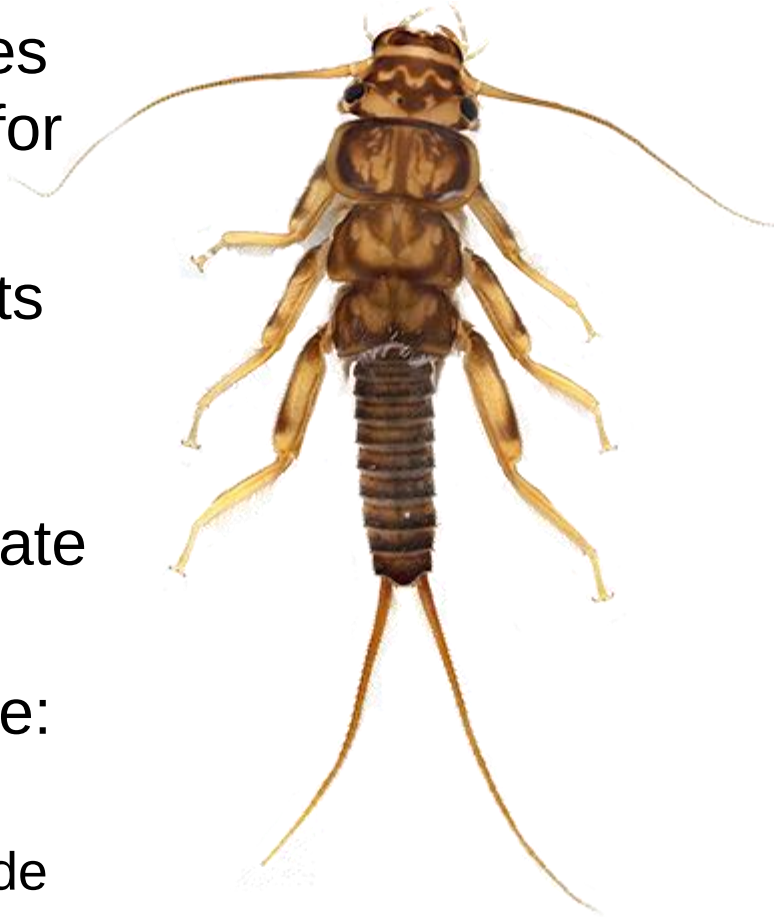
Purple Loosestrife: purple-flowered herb that colonizes marshy areas

Multiflora Rose: large, thicket-forming armed shrub

Garlic Mustard: herb with leaves that smells of garlic and produces compounds that inhibit seed germination

Macroinvertebrates

- Certain macroinvertebrates species require high stream water quality for survival.
- Others can survive in environments with low water quality.
- Presence or absence of certain macroinvertebrates can help indicate water quality
- Resources for identification include:
  - Table 2 in StreamWatch Protocol
  - StreamWatch Macroinvertebrate Guide
  - http://www.macroinvertebrates.org



Common Stonefly image from Macroinvertebrates.org

Common Macroinvertebrates

Caddis fly

Damselfly

Scud

Sowbug

Red midge larva

Crayfish

StreamWatch – Precautions!

- Volunteers must collect data in pairs for safety.
- Consider wearing water-resistant clothing and footwear, or a personal flotation device if streams seem too vigorous or deep.
- Stay hydrated!
- Know when not to wade; if the current is even remotely strong, use caution or skip wading. When wading is a possibility, your monitoring partner should be close by and aware.
- Consider weather conditions and be aware of approaching bad weather.

StreamWatch – Precautions!

- Be cautious walking on streambanks.
- Read through instructions before you reach the site.
- Avoid excessive contact between hands and, eyes, nose, or mouth after touching sample materials.
- Use all equipment responsibly.
- Some stream locations require longer hikes to get to, while others are directly accessible by car; use good judgment in considering how far you can comfortably hike.

Contact Information

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Hudson River Estuary

New Paltz
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Mohonk Preserve
…saving the land for life

Thank you!