



The Stream Watcher

Winter - December 2008

Watershed Management Mission

Protecting and enhancing our watershed through chemical, physical, and biological monitoring, restoration, appropriate action, and education. Volunteers are the key!

WATERSHED MANAGEMENT STAFF

Jim Waltman
Executive Director

Jennifer M. Coffey
Director of Policy

Beth April
Watershed Specialist

Alyse Greenberg
Watershed Institute Program
Coordinator

Nick Ho
GIS Specialist

Joan McGee
Policy Specialist

Peggy Savage
Science Director

Anneli Terry Nelson
Watershed Watch Coordinator

Amy Weaver
Watershed Stewardship Specialist

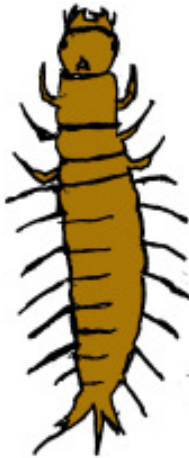
Richard Anthes
AmeriCorps Watershed
Ambassador

Stony Brook-Millstone
Watershed Association
J. Seward Johnson, Sr.
Environmental Center
31 Titus Mill Road
Pennington, NJ 08534
Phone: (609) 737-3735
Fax: (609) 737-3075
Web Site:

www.thewatershed.org
Email:
bapril@thewatershed.org

Biological Data Identified with Great Accuracy!

Mayflies, stoneflies, craneflies, scuds - who can keep them all straight? According to Normandeau Associates, our Biological Action Team (BATs) volunteers can. Every year, Normandeau performs a Quality Assurance/Quality Control check on a sample of macroinvertebrates identified by BATs volunteers. Watershed staff randomly select 15% of the year's samples to be identified by a professional aquatic biologist at Normandeau, a lab specializing in macroinvertebrate identifications. Normandeau checks for accuracy in both identifying and counting the organisms in the sample.



This year's results show that overall, the volunteers are doing a good job of identifying and counting their samples. In general, the volunteer's counting was off by two to eight percent, while identification was off by zero to seven percent.

Accuracy at or below 5% is considered excellent, while accuracy up to 10% is considered good. Volunteers had the most difficulty with several caddisfly families, while some damselflies, stoneflies, and beetles were also misidentified. Watershed staff will review the misidentified families at the next identification day, and continue to provide assistance with identifications to achieve the greatest accuracy possible.

This year, Watershed staff decided to take the Quality Assurance/Quality Control check a step further and have the samples identified down to the genus and, when possible, species level. The data shows that we have thirteen species of midges, two species of caddisflies belonging to the *Hydropsychidae* family, four species of mayflies belonging to the *Heptageniidae* family, four

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UPDATES AND HAPPENINGS

As an added dimension to our Chemical Action Teams, Watershed staff collected water samples and sent them to a lab to be analyzed for nitrates and phosphorus. These samples were collected in early September at five sites on the Stony Brook, Honey Brook, Harry's Brook, Beden Brook, and Millstone River. The results allow us to measure nutrient levels outside the limits of our testing kits. For example, if a volunteer normally finds levels of phosphate that are less than 0.2 ppm, lab analysis allows us to determine how much below 0.2 ppm the levels actually are. The results indicate that the water quality is healthy in terms of nitrate. For phosphorus, the water quality standard was met at some of the sites (BD4 and SB5) and slightly exceeded at others (HA1, HO1 and MR2). The results are summarized below.



Site	Nitrate (ppm)	Phosphorus (ppm)
Beden Brook (BD4)	0.32	0.09
Harry's Brook (HA1)	0.63	0.12
Honey Brook (HO1)	0.35	0.18
Millstone River (MR2)	8.29	0.19
Stony Brook (SB5)	1.26	0.07
Water Quality Standard	10.0	0.10

MAKE A DATE WITH YOUR LOCAL STREAM

Save the date for the 2009 Watershed-wide Stream Clean-ups! We are planning our third annual watershed stream clean-ups and hope to build upon the success of previous years. In 2008, we partnered with nine municipalities to remove five tons of trash from local waterways. In 2009, we hope to expand the number of towns, bringing people together from all parts of the watershed in a united effort to clean up our lakes and streams. Clean-ups are currently being scheduled for April 25th and 26th and May 2nd and 3rd. Participating municipalities have included Hightstown Borough, West Windsor Township, East Windsor Township, Franklin Township, Cranbury Township, Millstone Township, Monroe Township, Princeton Township, and Lawrence Township. Stay tuned for more information, or contact Rick Anthes at (609) 737-3735 ext. 30 or americorps@thewatershed.org to find out how you can get involved. We hope to see you there!



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species of riffle beetles (*Elmidae* family), and two species of water pennies (*Psephenidae* family) in our watershed. This information is helpful in determining the extent of diversity in our streams. It also allows us to submit our data to the New Jersey Department of Environmental Protection in a way that is comparable to their data, since the Department recently began determining water quality ratings based on the genus and species level of identification.

Biological monitoring is important to gauge the ecological health of our waterways. Macroinvertebrates are great indicators of water quality because they are usually abundant in streams and are relatively easy to collect and identify. They also have known tolerances to pollution that allow us to infer the level of pollution in the waterway based on the types of macroinvertebrates living there. Due to their short life cycles, changes in water quality can be seen quickly.

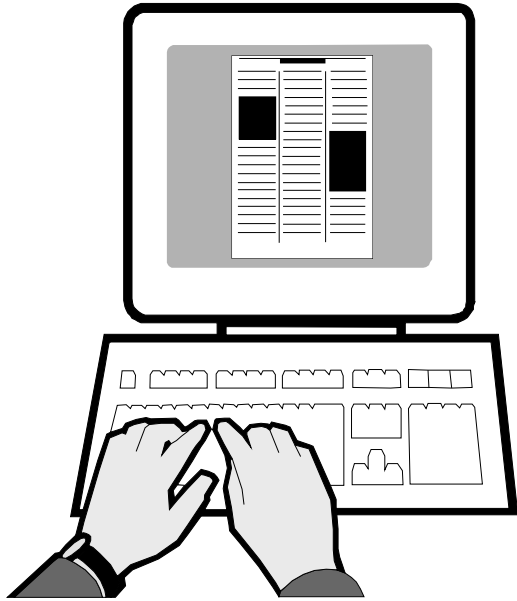
Once a biological impairment is identified, the next step is determining the cause. Causes include excess nutrients, excess sedimentation, pesticides, pharmaceuticals, and bacterial pollution. While point sources of pollution, such as discharge from a pipe, are easy to regulate and control, it is much more difficult to pinpoint the source of non-point source pollution, such as runoff containing fertilizers, pesticides, pet waste, and sediment. Therefore, it is the responsibility of all those that live and work in a watershed to control their individual actions to reduce pollution.



The water quality rating is based on a combination of the organisms' tolerance to pollution; the number of different families in the sample; the number of families and individual organisms belonging to the Orders *Ephemeroptera* (mayflies), *Plecoptera* (stoneflies), and *Trichoptera* (caddisflies); and the percent dominance of one family. In general, a non-impaired stream has a diversity of different families, organisms with low tolerances to pollution (those generally belonging to *Ephemeroptera*, *Plecoptera*, and *Trichoptera*), and a low percent dominance, which is an indicator of diversity. A moderately impaired stream may be experiencing low species diversity due to a lack of diverse habitat and/or a majority of organisms with high tolerances to pollution. A sample must contain at least 100 organisms to be analyzed for statistical purposes. Causes of pollution in our streams include runoff containing high amounts of fertilizers, pesticides, oil, sediment, and/or pet waste.

October Biological Sampling Results

• Big Bear Brook (BB1)	• Too few to analyze
• Beden Brook (BD1)	• Moderately Impaired
• Beden Brook (BD3)	• Too few to analyze
• Beden Brook (BD4)	• Non-Impaired
• Back Brook (BK1)	• Non-Impaired
• Cranbury Brook (CB2)	• Moderately Impaired
• Millstone River (MRB)	• Too few to analyze
• Stony Brook (SB1)	• Moderately Impaired
• Stony Brook (SB2)	• Moderately Impaired
• Stony Brook (SB3)	• Non-Impaired
• Stony Brook (SB4)	• Moderately Impaired
• Stony Brook (SB5)	• Moderately Impaired
• Six Mile Run (SM1)	• Moderately Impaired
• Ten Mile Run (TM1)	• Moderately Impaired



The StreamWatcher is now available online at

www.thewatershed.org/wm_library.php

Click on Newsletters to view recent and past issues of the newsletter. If you would like to view the newsletter online exclusively and no longer receive a paper copy, please contact Beth April at bapril@thewatershed.org or (609) 737-3735 ext. 17.



Happy Holidays to you and your families! As 2008 draws to a close, I would like to take this opportunity to thank all of the StreamWatch volunteers for their hard work and dedication this past year. Thanks to their sampling, we have collected vital biological, chemical, and visual data used to monitor and improve the health of our local waterways. We currently have 20 residents and seven businesses in our River-Friendly program, which works with them to change their land use practices with the goal of improving water quality. Improvement starts with assessment. Thank you very much! From the staff at the Watershed Association, have a wonderful holiday. We look forward to working with you again for a productive year in 2009!



Reasons to Celebrate 2008

It's hard to believe that 2008 is almost over. There is much to celebrate in accomplishments from the past year, and also much to look forward to in 2009. Some of the many accomplishments include:



- ◆ The addition of a biological monitoring site on the Millstone River in Millstone Township. This is the first biological monitoring site on the Millstone, and provides important data on the health of the river near its headwaters.
- ◆ The creation of an interactive map on our website showing the StreamWatch sites and associated data. Data is now available for all chemical parameters monitored, with annual averages for each parameter and the data behind the graphs. Check it out at www.thewatershed.org by clicking on StreamWatch Water Monitoring.
- ◆ Nine new volunteers were trained to collect data on the Millstone River, Devil's Brook, Carnegie Lake, Ten Mile Run, Beden Brook, Duck Pond Run, and Cranbury Brook.
- ◆ Watershed staff initiated lab testing at a select number of sites to gauge if state water quality standards are being met or violated. See page two for more on this. Staff hope to continue this effort in 2009.
- ◆ A volunteer in West Windsor helped detect a leaking sewage pipe on Duck Pond Run as a result of his StreamWatch monitoring. A problem was suspected when nitrate levels were high and dissolved oxygen levels were low compared to other readings on Duck Pond Run. After a fish-kill was also reported in the stream, the Township Department of Public Works investigated and discovered the broken sewage pipe. After repairs to the pipe, the nitrate and dissolved oxygen levels returned to normal.
- ◆ Site locations have been mapped using a Global Positioning Systems (GPS) unit. This allows us to more easily map our sites and share our data with the New Jersey Department of Environmental Protection through their statewide water quality database.
- ◆ Data was shared with the New Jersey Sustainable State Institute for use in the creation of a sustainability plan for Princeton Township and Borough. Staff supplied data from Harry's Brook, the Millstone River, the Stony Brook, and Mountain Brook.

Looking forward to 2009, staff plan to continue updating the website with our biological data, continue lab testing, and report to municipalities on water quality in streams in their town. The Watershed Association looks forward to a productive 2009, which would not be possible without the help of our many volunteers. Thank you!

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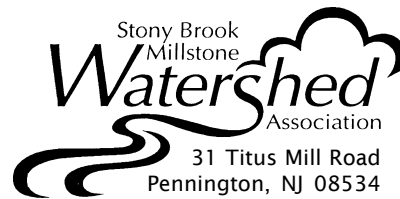
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DATES TO REMEMBER

December 27 th	CATs testing weekend.
January 10 th	CATs testing weekend.
January 24 th	CATs testing weekend.
February	RAT Month! Time to walk your stream beats! Contact Beth April at (609) 737-3735 x.17 or bapril@thewatershed.org for more information.
February 7 th	CATs testing weekend.
February 21 st	CATs testing weekend.
March 7 th	CATs testing weekend.
March 21 st	CATs testing weekend.
March 28 th	BATs Identification Day from 9:30 am - 4:00 pm at the Kingsford Community Room. Remember that your macroinvertebrate sample can be collected up to two weeks before the identification day! Contact Beth April for more information or to pick up your sampling equipment.
April 4 th	CATs testing weekend.
April 7 th	CATs QA/QC Session from 6:00-8:30 pm. RSVP to Beth April at (609) 737-3735 x 17.
April 11 th	CATs QA/QC Session from 9:30 am to 12 pm. RSVP to Beth April at above number.
April 18 th	CATs testing weekend

Funding for the StreamWatch program is generously provided by Janssen Pharmaceutica, the Mary Owen Borden Foundation, the Rita Allen Foundation, and the NJ Water Supply Authority.