



Missouri Department of Natural Resources  
 Monitoring News and Notes  
 Priscilla Stotts, Editor  
 P.O. Box 176  
 Jefferson City, MO 65102

PRESORTED STD  
 U.S. POSTAGE PAID  
 Jefferson City, MO 65102  
 Permit No. 440



# MONITORING NEWS & Notes



The Missouri Water Quality Monitoring Newsletter

2009 Summer Edition

## Stream Team Celebrates 20 Years!

### Did you know the Stream Team program is now 20 years old and still going strong?

Stream Team celebrated its 20th Birthday on June 13-14 in Waynesville at the City Park. There were activities for everyone, including a river cleanup, float trip and educational events. Saturday night featured a barbecue dinner with live entertainment and the world premier viewing of the 20th Birthday Stream Team commemorative video.

The Department of Natural Resources would like to thank all of the Stream Teams in Missouri for their hard work and dedication. The volunteers are the reason Stream Teams are a success.

For more details on the celebration or to find out how you can become part of a Stream Team, visit the Missouri Stream Team Web site at [www.mostreamteam.org](http://www.mostreamteam.org).



Stream Team #1: Roubidoux Fly Fishers Association formed the first Stream Team in 1989. Now they are joined by the Fort Leonard Wood Seabees.

**Wanted:** The Volunteer Water Quality Monitoring Program is seeking volunteers interested in doing a special project of tracking temperatures in cool or cold water streams. We will be using temperature data loggers that automatically take readings every hour during the recreational season, April through October. The project will look for changes in streams over a five-year period. If you would like a list of streams of interest in your area contact Wayne Maresch at [wayne.maresch@dnr.mo.gov](mailto:wayne.maresch@dnr.mo.gov) or 660-438-2805.

**Wanted:** Are you interested in working at the Missouri Department of Natural Resources display at the Missouri State Fair? We are looking for dedicated Water Quality Monitors to share their knowledge of aquatic macroinvertebrates with interested citizens at the state fair. The fair runs Aug. 13 to 23 and the Department of Natural Resources' building is open from 9 a.m. to 5 p.m. each day. If you can help for a day or even part of a day, please contact Priscilla Stotts at 573-526-3406 or [priscilla.stotts@dnr.mo.gov](mailto:priscilla.stotts@dnr.mo.gov).

**Wanted:** The Volunteer Water Quality Monitoring Program is looking for more level three candidates. The weather is just right to spend a day at your site proving your monitoring skills in a relaxed atmosphere. The proficiency you will demonstrate will give your data submissions that much more validity. Spring is a busy time of year for everyone, staff is available weekdays or weekends. If you are interested in scheduling an audit contact Wayne Maresch at [wayne.maresch@dnr.mo.gov](mailto:wayne.maresch@dnr.mo.gov) or 660-438-2805.

### Monitoring Tips

Store your forceps in a plastic travel case for toothbrushes. This keeps them organized and ready for use.

Keep a scrapbook of your site -including dated pictures- and let Volunteer Water Quality Monitoring staff know if you have one. It may come in handy in the future.

*Monitoring News and Notes is available on the Departments' Web site at [www.dnr.mo.gov/pubs/newslet.htm](http://www.dnr.mo.gov/pubs/newslet.htm).*

**Sponsors**  
 Conservation Federation of Missouri  
 Missouri Department of Conservation  
 Missouri Department of Natural Resources

**This is YOUR Newsletter**  
 Please send monitoring tips and nominations for Stream Teams You Should Know to *Monitoring News and Notes*.  
 Send e-mail to [priscilla.stotts@dnr.mo.gov](mailto:priscilla.stotts@dnr.mo.gov) or write to:  
 Missouri Department of Natural Resources  
 Water Protection Program  
 Attn: Priscilla Stotts, Editor  
 P.O. Box 176, Jefferson City, MO 65102-0176

**Monitoring News & Notes**  
 Please fill out and return the following for new subscription or address correction:

Name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 City/State/Zip: \_\_\_\_\_

New Subscription  
 Address Correction

## Lake Monitors Needed

The Department of Natural Resources' Water Protection Program is seeking monitors who live near a lake for a new lake monitoring program. "Sedimentation and eutrophication are the two the biggest problems we see in Missouri lakes," says Department of Natural Resources' Environmental Specialist John Ford. "We would like to have a group of volunteers willing to monitor the smaller lakes that are not already being monitored by the Lakes of Missouri Volunteer Program."

Monitoring would include taking temperature and Secchi disk measurements. The requirements include having a boat or other means to monitor the deepest part of the lake and be willing to monitor once or twice a month during the warm season. Staff will come to your site to train you and will provide the Secchi disk and other monitoring equipment.

If interested contact Susan Higgins at 573-526-1002 or [susan.higgins@dnr.mo.gov](mailto:susan.higgins@dnr.mo.gov).

## Nitrogen in Stream Water - Good or Bad?

By Priscilla Stotts

Nitrate as Nitrogen, or NO<sub>3</sub>- N, can produce negative impacts, but it is a benefit to aquatic life in low amounts. The average level of NO<sub>3</sub>- N reported by Volunteer Water Quality Monitors is less than 0.5 milligrams per liter or greater than 0.5 parts per million. As this nutrient increases, so does the amount of algae. Photosynthesis by algae pumps oxygen into the water column during daylight hours. At night oxygen is taken up by aquatic plants and animals. Nitrate is highly soluble and very mobile in the water column, keeping algae growing. An overabundance of plant growth can cause too much oxygen to be removed from the stream. When the NO<sub>3</sub>-N is depleted, algae begin to die. Bacteria thrive on the organic decaying matter using oxygen to convert the nitrogen back into NO<sub>3</sub>-N. This is all part of the nitrogen cycle. Studies show that 25 percent of aquatic endangered and threatened species are impaired because of nutrients. Walter Dodds of Kansas State University found that the United States spends \$4 million every year to protect these species from the impacts of excess nutrients in water.

Level one, two and three volunteers: please continue to monitor for Nitrate four times per year. Be sure to check the date on the small brown bottle of Nitrate Reducing Reagent to see if it is out of date. Never use old, off color, or clumped reducing reagent.

## Urban Storm Water and Sedimentation

Sedimentation is an important factor influencing the physical and biological properties of streams. A certain amount of sediment is natural and even beneficial. Undisturbed streams contain a natural level of sediment delivered from soil erosion and runoff from the surrounding watershed. However, an increased rate of sedimentation brought on by human activities can degrade stream conditions quickly. Human input of sediment comes in many forms and is considered a major pollutant in the waters of Missouri. Because urbanization is known to alter sediment inputs, it is especially important that stream monitoring in urban areas includes an evaluation of stream sedimentation.

The impact of urbanization can have many detrimental effects on water quality and stream habitats. Some of the main contributors to degraded water quality in urbanized areas are excessive sediment input from land disturbance, increased flow and flow velocity from greater amounts of impervious surfaces, nonpoint source runoff of nutrients and chemicals, and elevated bacteria levels. Even when developers of urban areas comply with official storm water policies, they often have struggle because they treat hydrology as a problem and not as a natural system. The typical approach to site planning is to clear it, grade it and pave it; then collect up all the storm water and dispose of it through a series of pipes to the nearest stream.

Low impact development technology, also known as green infrastructure, provides a comprehensive approach to storm water management. These practices can be as simple as employing rain barrels and rain gardens to reduce residential runoff or as complex as developing permeable paver parking lots and green roofs on large commercial buildings. The low impact development approach improves water quality, minimizes the need for expensive pipe-and-pond storm water systems, and creates more attractive developments. As a result, aquifers are recharged, streams and rivers are cleaner and the development has a more natural appearance.

## Stream Teams You Should Know Loving Labarque Creek/ Stream Team 2991

Story and Photo by Susan Higgins

Bob Coffing has brought Stream Team 2991 a long way since it was formed in 2006. What started as one man with a passion for protecting the 8,400 acre Labarque Creek watershed has now grown to 170 members.

Coffing moved to the Labarque Creek area in 1978 and began exploring the area by hiking with his son. At the time, however, he was travelling a lot with his career and had little time for new projects. When he retired, Coffing became a tour guide at Shaw Nature Reserve. While conducting tours, he became very interested in water quality issues and was inspired to start the Friends of Labarque Creek Watershed Association.

In 2006, Coffing formed Stream Team 2991 and attended Volunteer Water Quality Monitoring Workshops, becoming a level two monitor within the first year. He recruited his friend and neighbor, Claire Meyners, who also became involved with the Volunteer Water Quality Monitoring program. Now, Coffing and Meyners have identified nine monitoring sites they believe are critical to their watershed.

When asked about their favorite aspect of the Stream Team Volunteer Water Quality Monitoring program, Meyners said, "I love to get outdoors in the stream and do something I know has a purpose." Coffing chimed in that he loves to see the enthusiasm people have when they become involved with the program. No matter how you look at it, this "dynamic duo" is making a difference in their watershed.



Claire Meyners (left) and Bob Coffing meet to monitor the Labarque Creek watershed.



NABS ([www.benthos.org](http://www.benthos.org))

## C.L.A.M. Update

### Citizens Learning About Macroinvertebrates

## Scuds

There are approximately 150 species of scuds found in North America. They are primarily found in shallow waters but many live underground. Scuds are laterally flattened, which forces them to swim on their sides. They breathe through gills under their legs.

Not counting the tail or antennae, scuds are 5-20 millimeters in length when fully grown. Scuds live about one year, are usually found near aquatic vegetation and are most active at night. They usually hide during the day. Scuds are omnivores, eating both plant and animal matter. Their main foods are microscopic plants, animals and debris found on plant leaves and stems.

Scuds can breed from February to October, depending on the temperature. A male scud carries the female on his back for about one week. The female sheds half her exoskeleton, which is then used to carry the incubating eggs. After mating, the female scud carries her eggs under her body for up to three weeks. The eggs are hatched the first time the female completely sheds her exoskeleton after mating. Females can have anywhere from 15 to 50 young at a time. After hatching, young scuds become mature adults after molting eight or nine times.