# Butler County Stream Team
## March News - 2013

Volunteer Stream Monitoring in Southwest Ohio
Next Sampling Day - May 11th - Tomorrow!

**Help needed in lab**
- if you've been waiting to help in lab when you're needed, this busy weekend would be a great time to start!
**Open Lab and report on Butler County streams** - hope you can come!

## Coming up ...

### Lab Tour and Stream Report - tomorrow

Stream report - 10-11 a.m.
Lab tour - 11 a.m.
Room 217 Boyd Hall, Oxford

Please join us this weekend if you've wondered what happens to your sample after you drop it off. Last spring, we put off our normal open lab, thinking we would have a tour of our **new** lab in the fall. However, our move was put on hold, probably until **this** fall. So we wanted to make sure our new volunteers have an opportunity to tour the lab.

We also will show you what we see in our 2012 data. So come hear about the state of our Butler County streams!

**To find our lab** with the construction going on, turn left from Rt. 73 and left again on the **second** street, rather than the first. It will wind you around to the front door of Boyd Hall, where you can turn right, then left to get to the closest parking area.

### Renovated Retention Basin tour - June 4th

- Potluck at 5 p.m. at Beckett Park (B below) - 8588 Beckett Ridge Rd
- See rain gardens installed by the Engineers' office

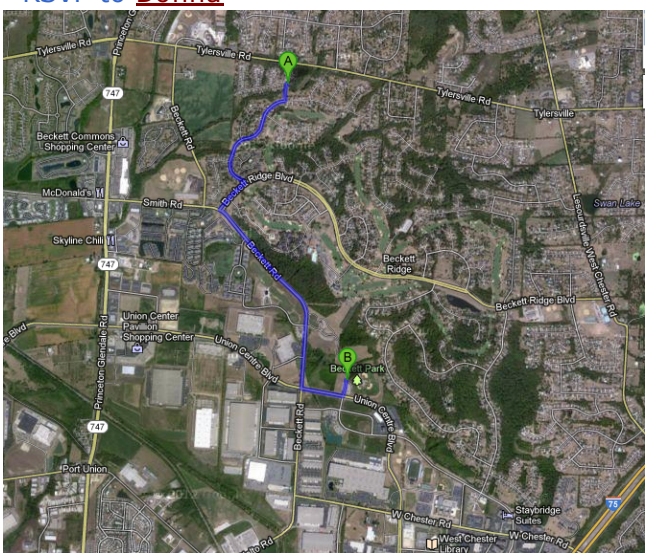
## Volunteer Spotlight
### Our 2013 sampling trainees!

We just wanted to say a quick thanks to the folks who made it out to the Edge of the Farm Conservation Area for our annual training of samplers. We had 6 volunteers along with Donna and Lynn, so thanks to Randy and Isabel Ely, David Burcham, and Brent, Kara, and Jesse Kolibob. So thanks to you who were able to attend!

We had a great time, with a pot luck dinner, a presentation of the Ohio Credible Data program, training at the stream, and a hike back to the wetland/prairie/forest complex that is Donna's back yard. We got to see hatching streamside salamanders (adult below from Ohio Amphibians.org)


which are fairly common in our local streams but have a fairly limited range. Notice below the concentration in the OH-IN-KY tristate area. So what a

- Drive a mile to the renovated urban retention basin and creek (A below)
- If you need sampling training, we'll do that also
- RSVP to Donna




In 2006 the Stream Team and its partners helped on a pilot project of an innovative approach to retention basins. A typical suburban retention basin was renovated so that storm water runoff, even from small rain events, is purified naturally in an ecologically functional system. It has been a tremendous success, both for residents and the Mill Creek. Feel free to join us for the pot luck or be at the park by 6:00 to head to the wetland.

Beckett Park is off Beckett Rd in West Chester only a few minutes away from Rt. 747. We have the shelter reserved on the opposite side of the road from the barn. The entrance is alongside the firehouse.

# Rain Gardens

One of the things you will get to see if you join us on June 4th at Beckett Park is rain gardens. So what are they, and where and why would you make one?

We have talked before (see May 2011 newsletter here; scroll to bottom) about the importance of keeping storm water runoff where it falls instead of shunting it as quickly as possible to the nearest stream or storm water drain. By letting rain water infiltrate into the soils on our own properties or in our neighborhood retention area, we keep our runoff from contributing to flooding downstream.

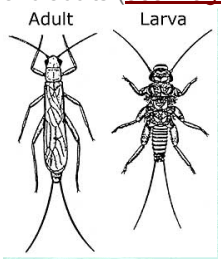
special treat!

It was a great night all 'round, including that we now have five newly and one renewed level 2 samplers! Terrific! If you were unable to attend, we are going to include sampling training at the June 4th tour of the wetland retention basin and rain gardens, so we'd love to have you there.

## Spring Macroinvertebrates - Stoneflies

You may have seen some small, clumsily-flying insects around your stream sites recently. If so, you might be lucky - they may have been stone flies, a very intriguing and ancient group of insects that has existed since the dinosaurs were around in the early Tertiary period (about 65 million years ago).

Stone flies are in the order Plecoptera, characterized by having 2 cerci, or "tails", and two long antennae as both nymphs and adults (see image below).




Adults have two pairs of finely-veined, clear membraneous wings that close over their backs. They are weak fliers, so one way to identify them is by noting how they flutter crazily for short distances. Because of this trait, they are seldom seen very far from streams. In fact, if not for making themselves obvious by hatching all at once, these diminutive insects would hardly be noticed at all. For a comical rendition of "discovering" stoneflies, check out this Soul of Streams

Although streams naturally flood, humans have contributed to higher and more frequent floods. Urban and suburban areas have lots of "*impervious surfaces*", such as roofs, roads, driveways and parking lots, that don't let any water soak into the soil. To keep water from standing in our roads and yards, we have engineered wonderfully effective storm drain systems that collect runoff and send it downstream. Urban/suburban areas also generally have lost their wooded riparian areas (areas next to streams or lakes) that would help runoff sink into the ground before it gets to the stream. In agricultural areas, the situation is little better; in order to have time for crops to grow, most farm fields in Butler County have "*field tiles*" that collect and move rainwater along much like storm drains do in cities.

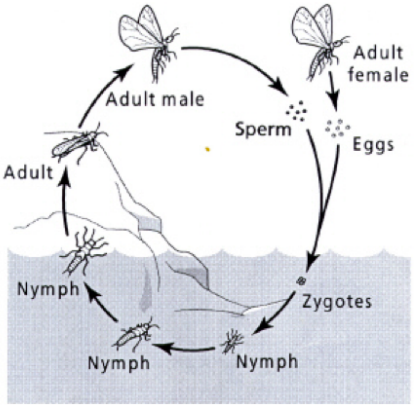
One answer to this problem of too much runoff being shunted downstream is to develop systems to keep the water where it falls; that's why every new housing development must have a plan to retain runoff onsite. One of these systems, especially in urban and suburban areas, but also for houses and farms in rural areas, is rain gardens. A rain garden is, simply put, a shallow bowl filled with vegetation that lets rain water collect and infiltrate into the ground instead of running off into local streams. Because the water is filtered through soil into the deep groundwater, rain gardens also remove contaminants from that runoff. Below are some pictures of rain gardens in different settings - notehow different they can be!
(photo from Gresham Rain Garden Showcase)

The Cincinnati Zoo's Education Center garden helped them receive LEED gold certification for green building

article!

Stonefly nymphs are well-renowned as sensitive to pollution. They need highly-oxygenated water, so are usually found in the riffle areas of streams, where the water bounces over rocky substrate.

Like many aquatic invertebrates, stone flies live most of their lives as nymphs. Insects that have incompletemetamorphosis develop in many stages that look increasingly like their adult forms (pic below), rather than



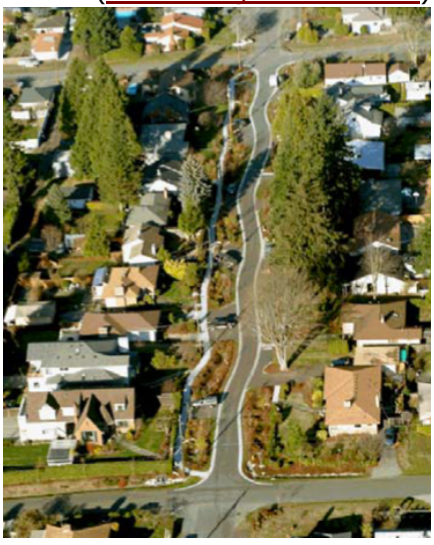

maturing in the 4 stages we know as complete morphosis - egg, larva, pupa and adult. While most stone flies in Ohio develop into adults after a single year as a nymph, others may take 2 to 3 years.

From now until late in the summer you might see stone fly larvae crawling out of the water on sticks or stones to emerge from their cases as adults. Once adult, these insects live a very short life, usually only a week or two. As might be expected, in that short time, they have one goal - to reproduce! Adult stoneflies engage in an unusual behavior called "drumming". Similar to a woodpecker banging its beak on a tree, male stoneflies will bang the last few sections of their abdomens on the substrate, pounding out a "Morse code" unique to each species. Females, if "interested", will drum their response as both male and female use the vibration to move closer and closer.

Ohio has at least 102 species of stoneflies and worldwide there may be more than 3,400. These large numbers may be directly tied to the close ties stoneflies have with "their" streams, as this leads to local speciation. In a study of Ohio's plecopterans, 20% to 70% of

Placement of rain gardens varies from individual homes and buildings, as above, to near parking areas, as shown to the right. The "right" place is wherever there is a surface that rain water will run off of. That could be your roof, sidewalks, roadways, or parking areas. They should be placed in a location downhill from the area you want to catch water from and some method of capturing or routing that water should be provided. This may be as simple as detaching your downspouts so water can flow overland into the rain garden or sloping a parking area or driveway so water will go through a curb cut into the garden. If overflow of the rain garden would be problematic, overflow chambers or connection to storm drains once the water level reaches a certain point could be built in.

There are several projects around the country that have used rain gardens to control storm water runoff. Kansas City, MO has an initiative to establish 10,000 rain gardens. Last year, Clermont County, offered small grants to homeowners to establish rain gardens as a way to educate people in the community about the value of rain gardens. And Seattle's SEA Street (Street Edge Alternative)



(treet Edge Alternative) project has documented a 98% reduction in pollutants and a 20% reduction in storm water flow on their curvilinear SEA streets that incorporate rain gardens along their length.

The great thing about rain gardens, as noted in

the species were considered rare or extremely rare. So if you do get lucky enough to observe the mass hatching of one of Butler county's species, just remember - you are probably seeing a species that occurs in only a small area of the map. How cool is that!

## Lending Library Titles

We all have lots of books that we would love to share with someone who has similar interests. So we thought this might be a way to share them with people we know like streams! If you have books, DVDs or other things - especially about water - that you would like to contribute, feel free to bring them along anytime. Or, if there are particular books you would like us to buy, let us know and once a year or so we can add a few to our collection.

**Here's our list to date:**

*A Guide to Common Freshwater Invertebrates of North America
*A Guide to Ohio Streams
*After the Storm - DVD
*An Introduction to the World's Oceans
*Bugs of the Underworld: a fly fisher's guide to the natural history of aquatic insects (DVD - available on request)
*Exploring the World Ocean
*Fostering Sustainable Behavior: An introduction to community-based social marketing
*Guide to Aquatic Insects & Crustaceans
*Gulf Hypoxia: Action plan 2008
*Handbook for Developing Watershed Plans to Restore and Protect Our Waters

*Introductory Oceanography
*Life in the Soil: A guide for naturalists and gardeners
*Marine Ecology
*Migratory Shore and Upland Game Bird Management in North America
*Monitoring Guidance for Determining the Effectiveness of Nonpoint Source Controls
*Oceanography
*Ohio Vernal Pools: Diamonds in the Rough (DVD - available on request)
*Our Waters, Our Health
*Pond and Brook: A guide to nature in freshwater environments
*River of Words
*Stemming the Tide of Coastal Fish

the pictures above, is not only that they can be placed almost anywhere (very little area is needed for a typical roof or driveway) but they can look however you want them to look. They can be well-sculpted as at the Oregon Convention Center or this beautiful Sarasota bioswale.

Or it could be a little more "fuzzy", with a general layout like the one below, put in at Edgewood College in a gently curving line to fill in a wet area (pics below from Sue's Rules for Rain Gardens).

Although there is not that much involved in creating a rain garden, our space here is too small to get into the details. So instead, here are a bunch of web sites that will help you learn about how to put one in, why they are important, and what they do. If you are interested in doing your part for slowing down runoff, there is a lot of help available. Check out the websites below, then contact any of the Stream Team partners (Butler Soil and Water, IES, or Butler Storm Water) to see what they can help you with.

How-to Manuals:
University of WI Extension

Habitat Loss
*Swamp and Bog: Trees, shrubs, and wildflowers of eastern freshwater wetlands
*The Colorado: A river at risk
*The Evolution of North America
*The Face of the Deep
*The Mill Creek: An Unnatural History of an Urban Stream
*Watersheds: A Practical Handbook for Healthy Water

### Crisis Spot

If you notice a funny smell (sewage), or lots of new trash, or anything that seems wrong as you do your sampling, be sure to note that on your label in the let us know. You can always write it in the comments section of your sample label and/or let Bob, Lynn, or Donna know by email. You are our eyes on the ground - you see much more than the folks in charge could possibly see because there are so many more of you than of them.

## River Reflections

In keeping with the rain garden theme, here is favorite quote from my great aunt's house - it hung by the door heading out into her garden:

The kiss of the sun for pardon,
The song of the birds for mirth, --
One is nearer God's heart in a garden
than anywhere else on earth.

Dorothy Francis Gurney wrote these lines as part of a longer poem, but for me ... this says it all!

**If you have any comments, concerns, or suggestions, please contact us at mccollds@miamioh.edu.**

Ohio State University Extension
Geauga County Soil and Water

General info:
The Rain Garden Network
University of CT Extension
Gresham Rain Garden Showcase
Rainscaping.org
Chesapeake Bay Trust

Ohio Native plants:
Ohio Prairie Nursery
Rain Garden Alliance

Rain garden workshops:
Cincinnati Civic Garden Center

To see some rain gardens in action, don't forget to join us at the June 4th tour of the Beckett Park rain gardens and renovated suburban retention basin project. We hope to see you there!



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