Email not displaying correctly? View it in your browser.

Butler County Stream Team
December News - 2012

Volunteer Stream Monitoring in Southwest Ohio
Next Sampling Day - December 8th - **Tomorrow!**

A HUGE thanks! - Attendance in lab has been great recently and we want to thank all of you who have helped out. We're averaging about 15 people - WOW! We've been able to analyze 140 samples and not be there until bedtime - WOW! So thanks to everybody who has been helping in lab and we hope to see you Saturday - we expect a lot of samples and many hands will make the work light!

Don't forget: New bottle procedure - We are moving to the use of plastic sleeves rubberbanded to each bottle for labels, instead of taped bottles with stick-on labels. **If you do not have preprinted labels, be sure to grab a bottle with a label in the sleeve**. If you have preprinted labels, you will have to fold or cut those labels to fit - sorry, next time we print we will use labels that fit!

One more announcement - We have purchased small, **foldable coolers for all our consistent samplers to use when they are out collecting**. If you are going to be by the lab tomorrow, stop in and we'll get it to you! If not, Donna will contact you and arrange a way to deliver yours.

Holiday cooking and healthy streams ... are they connected?

So what happened to your Thanksgiving turkey leftovers? I'm sure the meat wound up in all kinds of other dishes - turkey salad, pie, soup, etc. - but what about all the fats, oil and grease (FOG) in the drippings? What about other thick wastes like gravy, sauces, salad dressings, butter, etc. Did they get washed down the drain, thrown away, or fed to the dogs?

If they got washed down the drain, that's really too bad! Believe it or not, FOG may cause an obstruction to wastewater flow and interfere with normal operation of our sanitary sewer systems. According to our own Bob Lentz, Butler County Stormwater District Director, FOG should never be disposed of down kitchen drains, sanitary sewers, or storm drains. It accumulates over time and may lead to

Citizen Scientists - Look what you're a part of!

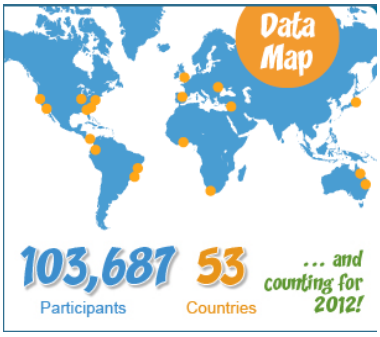
Back in October, the Stream Team posted in the newsletter that we were going to participate in the World Water Monitoring Challenge. Samples collected by Stream Team volunteers in October, have been analyzed and now will be shared with the World Water Monitoring Challenge's users. So in keeping with our article last month on citizen science, we wanted to let you know that your efforts have contributed not only to local efforts but to a much larger effort as well.

clogged pipes - maybe in your house, costing you time and money to clean up, or maybe under the street in pipes that take the wastewater from your house to the treatment plant.

If that happens, the wastewater can back up and come to the surface, allowing untreated sewage to run into our streets and storm drains. Sewage in the streets is obviously a human health hazard. Sewage in storm drains can cause significant environmental damage and impact aquatic life because storm drains flow directly to creeks and rivers, not to the wastewater treatment plant.

Unclogging drain lines and cleaning up sewer overflows is very expensive, for both homeowners and local municipalities. **You can help** avoid unnecessary expense and damage to our streams and the sewer system by doing your part to:

- **Wipe it up.** Soak up small amounts of cooking oil or drippings with a paper towel and throw into the trash.
- **Reuse it.** Decide whether the oil needs to be discarded. Oil used for deep-frying can be reused several times. After it has cooled, filter and freeze used cooking oil to be reused for another meal.
- **Trash it.** After it has cooled, pour the used cooking oil into a sturdy closed-lid container, like a coffee can, and dispose of it in the trash. Large amounts can be taken to a local landfill.
- **Recycle it.** Dispose of large quantities of cooking oil and grease by contacting your nearest solid waste district to find out if used cooking oil and grease is accepted for recycling. Alternatively, recycle large amounts



We chose to participate with this organization because of its similarities with Stream Team. The World Water Monitoring Challenge is "an international education and outreach program that builds public awareness and involvement in protecting water resources around the world by engaging citizens to conduct basic monitoring of their local water bodies."

We thank all participants and would like to let you know that your samples are helping protect our most precious resource!

Volunteer Spotlight

Our long-term volunteers

As we thought abut who to highlight this month, we realized that all the wonderful volunteers who have been with us for as much as 5 years would be a good choice. We decided to start highlighting people who have achieved 1, 3, and 5 years (at least) of volunteering with us. So look for your name and how long you've been involved below!

5 Years

Anne Morris Hooke	April-07
Chelsea and Jean-Ann Obrebski	June-07
Dave Christman	June-07
Charlie Saunders	October-07
Teresa Barnes	January-08

3 Years

B. Thomas	May-08
Carol Jones	May-08
David Burcham	May-08
Dick Haid	May-08
Kent Ernsting	June-08
Karen Gaker	October-08

of used cooking oil with the help of a cooperative local restaurant. Most restaurants have used grease bins. Ask if you can add your used oil to their grease bin.

Holiday food preparation creates a lot of fats, oil, and grease (FOG), but cooking regular meals throughout the year does too, just in smaller amounts. Apply the same tips and practices year round to protect your house, your health, and your environment.

Data Analysis

This month we are going to begin to look at the effect of seasonal variation on what's happening in Butler County streams. In the July to October newsletters we've examined how water quality varies with watershed size and how it differs among the 3 large watersheds in Butler County, the Great Miami River, Mill Creek and Whitewater watersheds. What we have found so far is we have the normal stream conditions associated with a human-dominated landscape:

- high bacteria counts, so creek walking and fishing are fine but you may not want to swim frequently
- high nutrient levels, especially phosphorus which is high in all three watersheds but highest in the Great Miami and Mill Creek
- conductivity and TDS averaging around normal, with the Mill Creek watershed higher than other watersheds
- turbidity averaging much below the construction site level, but highest in the Great Miami watershed and with 0.5% of our measurements higher than that
- pH on the high end of normal due to our limestone bedrock, but significantly higher in the Mill Creek watershed

To review what the OEPA standards mean, scan on down to the bottom of this article. Rather than repeat the background information on each test, though, we'll let you refer to the past 2 newsletters. If you need copies, please email Penny. Due to computer misfortune, I couldn't put the letters above the columns show whether the averages were different from each other; we'll see if it can be fixed by next month.

Bacteria

As expected from previous analyses, bacteria are

Terry Stephens	December-09

1 Year

Barb Reisenauer	February-10
Mitch Otto	September-10
Walter Leap	September-10
Ben Coffey	November-10
Elisa Jones	April-11
Emma Jones	April-11
Troop 40269	May-11
Troop 48332	May-11
Mary Brooks	May-11
Sandra and Rob Tyler	September-11
Suzi Zazycki	September-11
Travis Drury	September-11
Al Schneider	October-11

THANKS LONG-TIME VOLUNTEERS! There are others who have sampled with us for a year or more but are not sampling now - **Susan and Nathaniel Coffin, Bill Jackson, Mark Boardman** - WE THANK YOU ALSO!

Stream Team has now been in existence for over 6 years - the first samples were taken in June of 2006. The first months were more exploratory - the number of samples averaged only 20 per month through 2006. But by 2007 we had determined which protocols were appropriate and were beginning to work on a project study plan to submit to the Ohio EPA. That took a l..o..o..ng time! But now we have an approved Project Study Plan, are well on our way entering data on to the OEPA website, have our website up with a searchable database - all of which would be impossible without the dedication of the great folks who contribute their time on Saturdays to collect samples or help analyze them. So .... **Thank you EVERYBODY!**

Caddisflies

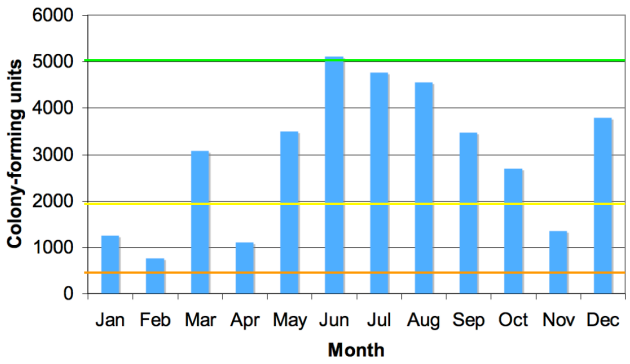
By Amy Cameron

Have you ever picked up a stone in a stream and found a cluster of tiny pebbles or pieces of wood adhered to the bottom? If so, you found the shelter of a caddisfly, which constructs a cave-like shelter from

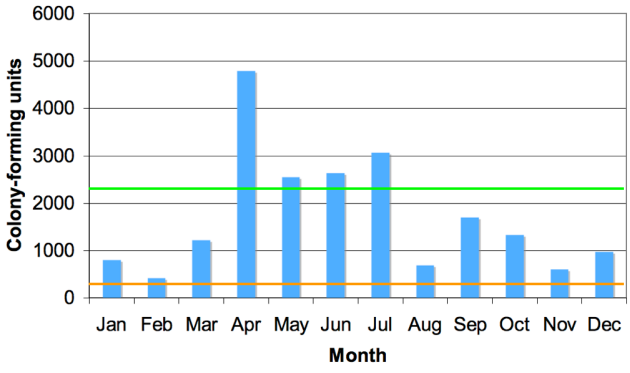
plentiful in Butler County streams. The count is higher in all months than the primary contact standard for *E. coli* (orange line) and higher than the former bathing standards for total coliforms (orange line). The green lines below are standards or former standards for secondary contact, and those are exceeded in the early spring and summer. The gold line for total coliforms is for frequent primary contact - that is, direct contact with the water. These data reinforce that our streams are great for walking in, fishing, hunting for macroinvertebrates, but you might not want to swim a lot.

Also as might be expected, bacteria is higher in the spring and summer than in deep winter, both for total coliforms and *E. coli*. Broadly, the two graphs below show the same pattern - lowest in Jan and late winter, higher in spring and summer, a drop in the fall, then a rise in December. So what could be the cause of this general pattern and some of the individual nuances?

Total coliform bacteria



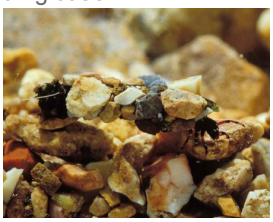
E. coli



The main reason for the broad pattern above is that coliform bacteria are specially adapted for living in mammal intestines. That means they like it toasty warm! We incubate them in the lab at 35 degrees C, which is 95 degrees F - whew! So when the

self-produced silk and "building materials" found in the stream. Check out some of their magnificent construction ...

Pictures show a smooth sand case (right), a larger gravel case (below), a leaf twig case



(below right) and a case made of evenly spaced pieces of bark or wood (below left). (Click on links above for

connection to pic sources.)

Caddisfly larvae can be identified by how they build their cases, as well as by their elongated bodies that resemble small caterpillars. As seen below, some caddisfly larvae appear to have many legs down the length of their bodies... but don't be fooled ... since caddisflies are insects, they have only six legs, three pairs near front of their bodies.

The featherlike extensions, if present, are actually gills used to absorb oxygen from the water. Some caddisflies don't have gills; they absorb oxygen through their skin tissues. In streams, most

temperature of the water cools in the fall and winter, coliform bacteria don't do well, and when it gets close to freezing, they can't survive. Despite that, there is a rise in December in both total coliforms and *E. coli*. This might be because wastewater treatment plants are not required to chlorinate their effluent November through February and the temperature in December is usually not fatal yet for coliforms.

The peak in *E. coli* in April, with several months of high levels afterward, could be due to the use of sludge as fertilizer on farm fields. Sludge is the semi-solid waste left from our treatment of wastewater at sewage treatment plants. It is often used as fertilizer on farm fields, usually applied in late winter or early spring. An increase of *E. coli* after application of sludge has been documented, but there is some question as to why it increases; when sterilized sludge is applied, containing no *E. coli*, *E. coli* levels in the field still rise. This suggests it is not the addition of bacteria, but the nutrients that spur *E. coli* growth.

How does the Ohio EPA evaluate streams?

Basically, the EPA evaluates streams according to their primary uses into Aquatic Life Use (AQL) and Human Health (HH) categories. In Butler County, AQL standards are classified as Warmwater (most streams), Modified Warmwater (impaired streams) or Exceptional Warmwater (best) Habitat. HH standards are divided into water supply use (drinking, agricultural, or industrial) and recreational use (bathing, primary and secondary contact). Obviously, not all standards apply to our Stream Team samples; no one is drinking our stream water and we don't measure habitat or biota. OEPA standards are noted above where they are applicable.

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:

caddisflies are found in riffles, where the water is oxygenated bouncing over rocks and then flows around their bodies so oxygen can be absorbed.

All caddisfly species are completely aquatic as larvae and terrestrial as adults. And wow, are there a lot of species! Caddisflies are the largest order of totally aquatic insects - 1,400 species in North America! This diversity is likely because they can survive in lentic (relatively still) or lotic (flowing) waters. The use of silk to construct mobile dwellings allows caddisflies to easily move about in all habitats. They also can use their silk to latch on to stable structures in the stream, to avoid being swept away where currents are strong.

Even though caddisfly larva can survive in multiple habitats, they are considered one of the most reliable indicators of biological water quality because most species are sensitive or intolerant of pollution. Though some caddisflies build a mobile dwelling and can escape harmful conditions, some caddisflies such as the “rock rollers” build a stationary structure to protect pupae. This type of caddisfly cannot escape polluted areas, contributing to their sensitivity and making them good water quality indicators. Caddisflies are a part of the **EPT index** used by scientists to biologically assess water quality. EPT stands for three pollution intolerant orders of macros, **Ephemeroptera (mayflies), Plecoptera (stoneflies), and Trichoptera (caddisflies)**.

Caddisflies are rarely considered pests. They might be a nuisance where large numbers of adult caddisflies emerge from an aquatic habitat - especially if you're a fisherman trying to get fish to bite **your** bait! There also have been allergic reactions in humans, caused by tiny hairs from the caddisfly body transported in the air. Normally though, caddisflies benefit

*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 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 anything wrong as you collect samples. please b sure to record it on you sample label. And if you come to lab, mention it to us, as well. That way we can either check it out or get the attention of someone who can.

Crisis Spot emails can be sent to Donna McCollum at mccollds@muohio.edu.

ecosystems by feeding on debris in water and providing food for other species. The next time you're collecting samples, take a look under some stones. If you are not lucky enough to see caddisfly larvae, there is a good chance you will find a sturdy lump of pebbles or other debris glued to the underside!

Mark Your Calendars!

Butler Soil and Water Conservation District's Annual Open House
Join the Conservation District to

BC Storm Water - Webinar Series
If you are interested in learning more about how storm water affects streams, don't miss the 2012 webcast series produced by the Center for Watershed Protection, hosted by the Butler County Storm Water District. Each webcast will air from 12 - 2 pm at the Engineers Office, 1921 Fairgrove Ave., Hamilton. Cost to you is $0! That's FREE! For more info, click here.

Customizing Your Stormwater BMP Design for Specific Pollutants
Wed. Dec. 12th

If you have ideas of things you'd like to see the Stream Team do, please let Donna know at mccollds@muohio.edu. For instance, if enough people are interested, we can open the lab up for macroinvertebrate identification again, or run another morning session to get people started knowing what bugs are in our streams.

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

Butler County Stream Team Monthly Newsletter

Unsubscribe from this list.

Our mailing address is: 102 Boyd Hall, Institute of Environmental Sciences, Miami University, Oxford, OH 45056

Phone: 513-529-5811
Fax: 513-529-5814

E-mail: ies@muohio.edu / Website: www.butlercountystreamteam.org

Forward this email to a friend
Update your profile