February 2015

Grant Supports Total Watershed Restoration

A $3 million National Fish and Wildlife Foundation grant will allow Stroud Water Research Center to restore the upper subwatershed of the Brandywine River in Pennsylvania known as Sharitz Run.

Stroud Center watershed manager Dave Montgomery installs a staff gauge at one of our discharge and water quality monitoring stations in the Sharitz watershed. Photo: Steve Hicks

Scientists and watershed restoration professionals at Stroud Water Research Center will restore Sharitz Run, a tributary to Doe Run in the headwaters of the Brandywine Creek near Coatesville and Unionville, Pennsylvania. The project goal is to reduce flooding to downstream communities and improve the stream ecology so that it will once again support a breeding population of native brook trout and other coldwater fish species.

FLOODING AN INCREASING CONCERN

The Brandywine Creek, which supplies the city of Wilmington, Delaware with its drinking water, floods almost annually, with half of the 10 largest floods having occurred in the past three years. These events often cause serious property damage, disrupt traffic and force the closure of schools and businesses in nearby towns.

Much of the land is deed restricted under conservation easements by the Brandywine Conservancy, a partner in the agreement, to preserve open space. However, a large portion of the watershed is actively farmed. During storms, even the best managed fields and pastures generate more water, sediment, nutrient and bacterial runoff than natural mature forestlands do. That runoff then rushes downstream during storms, increasing flood heights and reducing water quality. And without the protective shade of streamside forests, streams are exposed to the sun; they heat up dramatically in the summertime, stressing stream fishes that require cold water.

When completed, the three-year project, funded by a $3 million grant from the National Fish and Wildlife Foundation, will reduce flooding to downstream communities and restore the health of

14.4 miles of streams — currently designated as "impaired" for aquatic life by the Pennsylvania Department of Environmental Protection. Melinda Daniels, Ph.D., associate research scientist at Stroud Center, says the restoration project is unprecedented in its scale and scope.

"This is not the standard small restoration project that works on a few hundred feet of stream channel to try and fix problems that are actually generated up on the hillslopes. We are putting in 14,000 feet of infiltration berm to intercept and infiltrate surface runoff from fields," says Daniels. "And we're not just planting a few trees; we're putting in almost 80 acres of riparian forest buffer to improve stream temperature and water quality."

Numerous studies have shown that streamside forest buffers absorb stormwater runoff and filter pollutants before they can reach a stream. Moreover, a mature forest canopy provides shade, cooling the stream and returning it to a cold water temperature suitable for fish. Falling leaves provide essential food for aquatic microbes and insects. Fallen trees and branches improve the physical structure of the stream and slow the flow of floodwaters during storms. Since it will take years for the forest buffer to mature enough to provide this ecosystem benefit, Daniels' team will accelerate that process by placing large woody debris in the stream as part of the restoration effort. "This gives the streams a head start while the forest catches up. The watershed will only continue to improve as the riparian forests matures."

Fallen trees and branches improve the physical structure of the stream and slow the flow of floodwaters during storms. Photo: David H. Funk

During each stage of the process Stroud Center researchers will measure the before-and-after results. A study analysis will be written and submitted to peer reviewed freshwater science journals for review and publication.

BEYOND THE BAND-AID APPROACH

Daniels says the effort is unique because most other stormwater mitigation projects don't attempt to restore a watershed ecologically. Instead, she says, they install infrastructure, such as stormwater detention basins or created wetlands in a "piecemeal, Band-Aid approach."

"Communities all over the East Coast are struggling to find solutions to reduce stormwater flooding. This will become even more urgent with the anticipated intensification of storms due to climate change," she says.

"When completed, this project will serve as a regional demonstration site for watershed restoration," Daniels says. "It will show that it's best to address flooding and pollution control issues at their source — often that can mean on rural agricultural lands upstream rather than having cities and municipalities deal with the problem downstream where it's much more expensive to remedy."

Join Us at the Wild & Scenic Film Festival and Be Inspired!

Thursday, February 26 ***and***
Friday, February 27
6:00 to 9:00 p.m. Films begin at 7:00 p.m.

Chester County Historical Society, 225 N High St, West Chester, PA 19380

The Wild & Scenic® Film Festival is a call to action that inspires people to heal the earth. Attendees enjoy environmental and adventure films that illustrate the earth's beauty, the challenges facing our planet and the work communities are doing to protect the environment.

The 2015 Wild & Scenic Film Festival features a great lineup of inspiring films. The ticket price is $25 for one night or $45 for both nights. Admission fees include food and beverages thanks to generous donations from our sponsors.

Trail Creek Outfitters, in Glen Mills, Pennsylvania, hosts the regional two-day event. Proceeds from the event equally benefit The Land Conservancy for Southern Chester County and Stroud Water Research Center.

The 2015 theme is "A Wild Life" and features stellar filmmaking, beautiful cinematography and first-rate storytelling to inform, inspire and ignite solutions and possibilities to restore the earth and human communities while creating a positive future for the next generation.

The ticket price is $25 for one night or $45 for both nights. Admission fees include food and beverages thanks to generous donations from our sponsors.

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Media Sponsor: Fig Magazine

Stroud Science Lecture Series

Where: The Meeting House at Stroud Water Research Center

When: Thursday, March 19.

Education Open House: From 6 to 7 p.m., our educators will hold an open house for teachers, students, scout leaders and parents to answer questions about our stream programs including a tour of our indoor and outdoor classrooms.

Lecture begins at 7 p.m.

Common netspinner caddisfly (Hydropshychidae)

Natural Stream Engineering – How Plants, Animals and Insects Structure our River Systems

Presented by Melinda D. Daniels, Ph.D., Associate Research Scientist, Fluvial Geomorphology

We all know that beavers build dams, but did you know that they also build floodplains and valley bottoms and cause carbon to be stored for thousands of years?

Did you know that grasses, shrubs and trees can cause islands to form in rivers? Did you know that some rivers export more fine sediment overnight than they do during the day because of nocturnal crayfish, fish and animal activity?

Did you know that tiny insects, called caddisfly, spin sticky webs that glue gravels together and help them stay put on the stream bed during floods?

If not, come listen and learn about the amazing ways in which living organisms influence the way our rivers look and behave with examples from both near and far river systems.

Lectures are ***FREE*** and open to the public, ages 12 and up. No registration is required.
Questions? Contact Kay Dixon, 610-268-2153, ext. 303, kdixon@stroudcenter.org

Getting Our Boots Ready for Spring Stream Programs

By Tara Muenz

Known for boots-in-the-water programs, our 20-year-old education department goes above and beyond to share the latest in global freshwater knowledge with thousands of students each year. *This spring we have two open houses scheduled and will be offering FREE programs to Pennsylvania public schools. Read on for details!*

Winter temperatures make it a bit too cold for getting students out into streams, but that's when we're at our busiest. "There's no down time when it comes to the education department at Stroud Water Research Center," says Tara Muenz, education programs manager.

We're constantly in creative mode to enhance the programs we offer — we create experiences that foster a sense of place, opportunity and freshwater stewardship. And of course, we want our programs to be fun — to provide an experience they won't forget!"

With our unique laboratories, our LEED Platinum green building that demonstrates best management practices and a nearby Wild and Scenic River, visitors leave with the tools and knowledge they need to care for our waterways.

Stroud educators look forward to seeing you streamside this spring! Left to right: Tara, Kelly, Jennie, Mike, Libby, Sherman, Mike

MEMORABLE EXPERIENCES

Stream programs typically range from two to four hours, covering a variety of topics such as aquatic macroinvertebrates (water critters), the Leaf Pack Network, dichotomous keys, Trout Grow on Trees™, stream chemistries and health assessments, environmental leadership, and Water Conservation 101.

We fulfill content needs for school coursework and can tailor our programs for the teachers and students, grades 4 through 12, we serve. We host programs here at Stroud Center, and we can come to your school.

FREE PROGRAMS

Through the Pennsylvania Educational Improvement Tax Credit Program (EITC), we are able to offer programs at no cost to Pennsylvania public schools.

NOT SURE WHERE TO BEGIN? COME SEE US AT OUR OPEN HOUSE!

On March 19 and April 15, coinciding with our public lectures, ***we are hosting two open houses for teachers, students, scout leaders and parents***. From 6 to 7 p.m., our educators will be available to answer questions about our stream programs including a tour of our indoor and outdoor classrooms.

SCHEDULE YOUR SPRING AND FALL 2015 PROGRAMS NOW!

To learn more or to schedule a program, contact Tara Muenz, (610)268-2163, ext. 301 or tmuenz@stroudcenter.org

Are you our secret admirer?

If you've included the Stroud Water Research Center in your will, please let us know.

Too often we find out when it's too late to say ***Thank You***, and we would like to be able to say ***Thank You*** for many years to come.

Please…. Tell us your secret!

By naming Stroud Water Research Center as a beneficiary in your estate plans, you are creating a legacy to protect fresh water for future generations.

And for that, *We Admire You*

— there's no secret about that.

We would like to warmly welcome you into our new ***Headwaters Society***, created so we can recognize our planned giving supporters for their generous intentions. If you prefer to remain anonymous, that's fine too. We just want the opportunity to say ***Thank You!***

Headwater stream. Photo: David H. Funk

Please let us know if you have included the future of fresh water in your estate plans, or if you are interested in learning more about the many different ways you can do so. Contact Kristine Lisi, Director of Development, 610-268-2153, ext. 304, klisi@stroudcenter.org

Volunteer with Us

Looking for a way to get more involved in freshwater stewardship?

Whether you live near or far, we have lots of opportunities for you to help protect, preserve and restore our streams.

For more information, please contact Kristine Lisi, Director of Development, 610-268-2153, ext. 304, klisi@stroudcenter.org

- Volunteer Coordinator: Oversee all volunteers and serve as a liaison to the Director of Development.
- Event Support: Assist with evening or weekend events throughout the year.
- Photography/Videography: Assist with natural landscape photography work for Stroud Center projects, as well as

Assisting with tree is a great way to get involved with the Stroud Center. Photo: Kristine Lisi

event photography. Videographer would assist in capturing moments from programs in all departments.

- Graphic Design Work: Assist with designing brochures, fliers, posters, and other promotional materials.
- Clerical Support: Assist with mailings and other office work.
- Writing: Assist with writing articles about the research being done at Stroud, the education programs, and the restoration efforts.
- Stroud Center Docents: Assist with providing tours of our LEED Platinum building, the labs and, if weather permits, the research projects along the White Clay Creek.
- Grounds Stewards: Assist with the beautification of the Stroud Center grounds. This would include flower plantings, weeding, plant identification, and trail maintenance.
- Regional Tree Plantings: Assist with local tree plantings by volunteering to plant, recruit other volunteers, and promote tree plantings.
- Tree Stewards: Assist with the monitoring of tree plantings after they have been completed.
- Watershed Ambassadors: Assist as a liaison between Stroud and your local watershed organization. This is a great opportunity for those at a distance.
- Watershed Stewards: Assist with watershed monitoring. Again, this is a great opportunity for those at a distance.

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Concerned About the Future of Fresh Water? Your donation, large or small, helps us ***restore*** rivers and streams, ***educate*** the next generation of watershed stewards, and ***share our knowledge*** with land owners, policymakers, and the public at large. Donate online at www.stroudcenter.org/donate, or call Kay Dixon, 610-268-2153, ext. 303.