

JUNE 2015

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Spotlight on Stephanie Eisenbise

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Bernard W. Sweeney, Ph.D., director of Stroud Water Research Center, received the Berks County Conservation District’s Conservation Individual of the Year Award April 27, in Shartlesville, Pennsylvania.

Sharing Our Science

Our ability to disseminate our findings to a broad audience allows us to increase awareness and create a public dialogue centered on the protection, preservation, and restoration of watersheds everywhere.



Headwaters Now Better Protected

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THE BATTLE IS FAR FROM OVER

On June 10, the Senate Environment and Public Works Committee advanced a bill to kill the EPA’s waters of the United States rule and limit which waterways the EPA can regulate. This measure is similar to a bill the U.S. House of Representatives passed in May that would require the EPA to withdraw its regulation and draft a new one based on consultation with state and local officials.

Also on June 10, the House Interior Subcommittee passed an appropriations bill that would cut EPA funding by 9 percent, and cap the agency’s staffing levels. This follows a fiscal 2016 Energy and Water appropriations bill the House passed in May that aims to prohibit the

EPA from using any appropriated funds for its Clean Water Rule.

Many legislators are responding to industrial interest groups who oppose the EPA’s rule on the belief that it is an “overreach” and “land grab.” The EPA responded that it included numerous exceptions to the draft rule after listening to the concerns of farmers and others. Indeed, many freshwater scientists disapproved of several stated exceptions that are now part of the EPA rule.

Prior to the vote, Senate Environment and Public Works Committee ranking member Sen. Barbara Boxer, of California, issued a statement stating:

“Members of this Committee should understand that when we weaken the Clean Water Act, we are putting people in danger.”

THE CLEAN WATER ACT AND THE STROUD CENTER WERE BORN SIMULTANEOUSLY

In the late 1960’s, our water resources were in trouble. In Ohio, the Cuyahoga

River caught on fire; bacteria levels in the Hudson River were 170 times safe levels; pollution from food processing plants in Florida killed a record 26 million fish; and two-thirds of the nation's waters were too polluted for fishing or swimming.

During that same era, Dr. Ruth Patrick and the Stroud family created the Stroud Water Research Center in Avondale, Pennsylvania to understand how natural streams work and enable us to measure the damage caused by all of this pollution.

Citizens and politicians joined forces in 1972 to create the U.S. EPA and pass the Clean Water Act. The law declared that all waterways would be “fishable and swimmable” in the next decade.

While we didn't reach that goal, our waters did get cleaner after the law's passage. The rapid loss of our wetlands slowed and rivers and lakes began to recover. The number of rivers and lakes clean enough for fishing and swimming doubled.

During this time, Stroud Center built

again in 2006, created loopholes that left 20 million acres of wetlands and more than half of America's streams without guaranteed protections under federal law.

This happened despite the fact that Stroud Center scientists, along with others in the freshwater scientific community, had clearly made the case that all surface flowing waters formed a “continuum” from the headwaters to the estuary. Further, the scientific community has clearly demonstrated that pollution upstream translates into deterioration downstream.

EPA'S RULE IS BASED ON PEER-REVIEWED SCIENCE

Before proposing the Clean Water Rule, scientists in EPA's Office of Research and Development compiled a survey of peer-reviewed literature. The agency and its collaborating freshwater scientists (including Stroud Center staff) examined the ways in which upstream waters influence downstream water conditions.

that these water bodies are enormously important. Specifically, the final report found:

- The scientific literature unequivocally demonstrates that streams, regardless of their size or frequency of flow, are connected to downstream waters and strongly influence their function.
- The scientific literature clearly shows that wetlands and open waters in riparian areas (transitional areas between terrestrial and aquatic ecosystems) and floodplains are physically, chemically, and biologically integrated with rivers via functions that improve downstream water quality. These systems act as effective buffers to protect downstream waters from pollution and are essential components of river food webs.
- The literature strongly supports the conclusion that the incremental contributions of individual streams and wetlands are cumulative across entire watersheds, and their effects on downstream waters should be evaluated within the context of other streams and wetlands in that watershed.

THE BOTTOM LINE

The bottom line is that the EPA's Waters of the United States rule to restore guaranteed protections to tributaries and nearby waters, and to allow for the protection of other waters based on a more localized analysis of their role in downstream water quality, is based on credible, peer-reviewed science.

This science has been the hallmark of Stroud Water Research Center since its founding and since the beginning of the Clean Water Act.

We can all drink to that.



The number of rivers and lakes clean enough for fishing and swimming doubled after the Clean Water Act was passed. Photo: Sarah Pate

some of the first artificial streams in the world so that our scientists, working with the EPA, could conduct experiments to determine the direct effects of various pollutants in our waterways.

But before long, polluters were violating their permits. They filed lawsuits to weaken the Clean Water Act. Decisions by the U.S. Supreme Court in 2001 and

After further peer review of their draft report, the independent Science Advisory Board issued a detailed review and the EPA incorporated this feedback into a final “Connectivity Report” released in January. The report relies on more than 1,200 publications and provides the scientific foundation for the final rule.

Not surprisingly, this review found

Volunteers Protect White Clay Creek Headwaters By Planting 500 Trees

Kristine Lisi, development director at Stroud Water Research Center, was delighted to learn that the nonprofit received 500 tree saplings, but there was a catch. They had to be planted ASAP, otherwise they would probably die when summer's heat set in.

AN URGENT CALL FOR VOLUNTEERS

Fortunately, she recalled a recent conversation with Hugh Lofting, founder and president of Hugh Lofting Timber Framing, who told Lisi that he would like to help with any upcoming forest buffer planting opportunities as part of his company's corporate social responsibility.

Lisi knew she could also count — once again — on Dansko, a footwear company headquartered in West Grove, Pennsylvania. Dansko co-founders Peter Kjellerup and Mandy Cabot have been generous friends of the Stroud Center. They, together with company employees, have volunteered to plant forest buffers for Stroud Center for more than a decade. Kjellerup also serves on Stroud Center's board of directors.

More than 45 shovel-toting volunteers responded to the call to plant the trees.

PROTECTING A WILD AND SCENIC RIVER

“We have the trees and the volunteers to plant them, but now we need to find them a good home,” Lisi said.

Stroud Center Director Bernard Sweeney, Ph.D., knew exactly where he wanted those trees to go. He called Cathie and Michael Ledyard, on whose West Grove farm the headwaters of the White Clay Creek trickles out of the ground. The Ledyards happily agreed to have the trees planted on their property.



The headwaters of the White Clay Creek trickle out of the ground on a farm near West Grove, Pennsylvania. Photo: Beverly Payton

The White Clay Creek is the first, and only, creek in the United States on the National Wild and Scenic Rivers System that is so designated along the entire length of its watershed, instead of just a section.

Planting forest buffers is a key component of Stroud Water Research Center's Watershed Restoration Group that helps farmers and landowners get state and federal grants that offset the

costs of making improvements and keeping the land in its natural state.

Streamside forest buffers protect water quality and help maintain a stream's natural structure and wildlife habitat. Forest buffers should be at least 100 feet wide on both sides to adequately protect freshwater ecosystems from human activities.

“Most pollutants enter river systems in streams that are narrow enough to jump across, so it's vitally important that we protect their function,” said Sweeney.

A NEW RECORD

On June 4 the volunteers planted, staked and installed tree shelters on 500 trees on the Ledyard farm. To everyone's amazement, the work was completed within two hours — a new record for the Stroud Center.

Now the stream, and the trees, will live happily — and healthfully — ever after.



Spotlight on Stephanie Eisenbise

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A WELCOME ADDITION

Having worked on land and water conservation throughout Pennsylvania during the last nine years, Eisenbise, with her experience, skills and enthusiasm for making a difference, is a welcome addition to the Watershed Restoration Group.

“Steph’s ability to build trust with farmers and landowners along with her understanding of conservation work and programs make her a tremendous asset to our team,” says Matt Ehrhart, watershed restoration director.

Eisenbise notes that she’s “looking forward to opportunities to apply Stroud



Eisenbise joined the team in February. Photo: Kay Dixon

Center’s science and research on farms and in watersheds throughout the region,” adding that she wants to make “a big impact on improving water quality by providing farmers with information

and tools so they can adapt their farm management to improve environmental performance and sustainable farming.”

INSPIRED BY HER SURROUNDINGS

Since joining Stroud Center’s staff in February, Eisenbise has found the work refreshing.

“To be at a research center that has such a bright and dedicated team, situated in the beautiful White Clay Creek watershed and surrounded by the stream, wildlife, and plants, is inspiring on a daily basis.”

Eisenbise recently completed her master’s degree in forest science at Penn State University, focusing on riparian forest buffers in Pennsylvania. She grew up in northern California and received her bachelor’s in environmental science from University of Colorado in Boulder, Colorado. She is married, lives in Middletown, Pennsylvania, and enjoys a variety of outdoor activities, including traveling, surfing, cycling, hiking in the woods, and growing vegetables.

Stroud Water Research Center Honored With Two Conservation Awards

The Berks County Conservation District gave Stroud Center Director Bernard W. Sweeney, Ph.D., its Conservation Individual of the Year Award, and the Lancaster County Conservation District gave Stroud Center its Cooperating Agency Award.

Last year, Sweeney, and Denis Newbold, Ph.D., conducted an extensive scientific literature review in which they concluded that streamside forest buffers, long considered a best management practice, should be 100 feet wide on both sides to adequately protect freshwater ecosystems from human activities.

However, current standards for a minimum forest buffer width vary from state to state and even from program to



Sweeney accepts the Conservation Individual of the Year Award from Piper Sherburne, Berks County Conservation District. Photo: Tammy Bartsch

Berks County Conservation District is applying Stroud Center’s research findings by supporting the installation of wide forest buffers in its programs.

In addition to planting trees along stream banks, Stroud Center replants forests in previously cleared land as a key component of its watershed restoration efforts.

That’s among the many reasons why the Lancaster County Conservation District honored Stroud Center with its Cooperating Agency Award on March 19.

Stroud Center, in partnership with local conservation districts, has presented many workshops in Berks and Lancaster counties to help farmers and landowners learn how they can access state and federal incentives that offset the costs of making improvements and keeping the land in its natural state.

Sharing Our Science

SCIENTISTS ORGANIZE SPECIAL SESSION AT SOCIETY FOR FRESHWATER SCIENCE ANNUAL MEETING



In May, Stroud Center scientists attended the weeklong annual meeting of the Society for Freshwater Science (SFS) in Milwaukee, Wisconsin.

In keeping with this year's meeting theme, Our Freshwater Futures, Melinda Daniels, Ph.D., Stroud Center's fluvial geomorphologist; Lindsey Albertson, Ph.D., postdoctoral researcher; and Daniel Allen, Ph.D., assistant professor at Arizona State University, organized a special session about how interactions among species, such as competition and predation, affect physical processes and biological communities in aquatic and adjacent forest habitats.

“We hope to encourage more research related to the impacts of biodiversity loss, shifts in the presence or absence of common ecosystem engineers, such as beavers, introduction of invasive species, and food-web dynamics on physical processes related to hydrology and geomorphology,” said Albertson.

The session drew oral presentations from colleagues around the world.

Albertson and Daniels presented their own study of how crayfish influence the movement of sediment in streambeds.

In other business, Bernard Sweeney, Ph.D., Stroud Center director, and David Arscott, Ph.D., assistant director, both associate editors for the of the society's scientific journal, *Freshwater Science*, met with the editorial board at the meeting.

Also, Sweeney, who has been taking art classes for many years, donated a painting of an adult mayfly he had worked on throughout the previous year to the society's auction.

The auction is a fundraiser that supports graduate-student participation in the society.

LEAF PACK DRAWS CROWD AT UNIVERSITY OF WISCONSIN-MILWAUKEE'S SCHOOL OF FRESHWATER SCIENCE

On a sunny day, Stroud Center's Education Programs Manager and Leaf Pack Network Administrator Tara Muenz led a Leaf Pack Experiment workshop along the Mukwonago River, one of the cleanest and most biologically diverse streams in southeastern Wisconsin. The May 16 workshop, sponsored by the Society for Freshwater Science, drew more than 20 people.

The abundance of freshwater mussels and aquatic insects made the Mukwonago River an ideal location for a leaf pack workshop.



Sweeney; Matthew McTammany, Ph.D., Bucknell University; and Jerry Kaster, Ph.D., University of Wisconsin-Milwaukee's School of Freshwater Sciences, gave special presentations

and provided hands-on assistance in identifying the various aquatic insects and animals workshop participants found.

“Freshwater mussels and aquatic insects are abundant in the Mukwonago River, so this was an ideal location,” said Muenz. “All the workshop participants were passionate about rivers, so they were eager to see how leaf packs are deployed and retrieved, and to practice identifying aquatic species. We also taught them a how to incorporate leaf packs into middle school and high school curricula.”

Participants also enjoyed a tour of the school and its world-class laboratories that included large vessels and special lake-monitoring equipment. Presentations introduced Leaf Pack Experiment methods and protocols, as well as freshwater ecology with macroinvertebrate life history.

WATERSHED RESTORATION OUTREACH

Public outreach and training events continue to be an important component of our Watershed Restoration team activities. So far in 2015, the team has hosted or participated in more than 10 events that have reached more than 500 individuals.

In January the team hosted a meeting in Honey Brook, Pennsylvania, in partnership with the Chester County Conservation District.

February was busy with a meeting in Kempton, Pennsylvania, in partnership with Berks Conservancy and Partnership for the Delaware Estuary; and presentations at the Pennsylvania Association for Sustainable Agriculture's 24th annual Farming for the Future Conference in State College, Pennsylvania and at the Berks County Agriculture Innovation Workshop.

April brought presentations to erosion and sediment control engineers

in Lancaster County, Pennsylvania; to the Berks County Canoe Club; and training on marketing buffers to farmers for the Berks County Conservation District. Bern Sweeney presented a webinar on stream and buffer ecology in conjunction with Penn State Extension; and Lamonte Garber and Tara Muenz provided stream education workshop with the Old Order Mennonite School in Tulpehocken watershed.

In May, Dave Wise presented a webinar on Forest Buffer Maintenance in conjunction with Penn State Extension and the team held stream and buffer ecology and implementation workshops

for 95 people representing five states, three federal agencies, six state agencies, and numerous non-governmental organizations and private organizations.

NEW PUBLICATIONS

Stroud Center scientists in bold.

- **Mosher, J.J., L.A. Kaplan**, D.C. Podgorski, A.M. McKenna, and A.G. Marshall. 2015. Longitudinal shifts in dissolved organic matter chemogeography and chemodiversity within headwater streams: a river continuum reprise. *Biogeochemistry* 124(1-3):317-385.
- Ruffing, C., **M. Daniels**, and K. A.

Dwire. 2015. Disturbance legacies of historic tie-drives persistently alter geomorphology and large wood characteristics in headwater streams, southeast Wyoming. *Geomorphology*, 231:1-14.

- Walter, K.D., Gido, K., While, M.R., **Daniels, M.D.**, Grudzinski, B.P. 2015. The stream biome gradient concept: controlling factors of streams across broad biogeographic scales. *Freshwater Science*, 34(1):1-19.

EVENTS

FIND FULL EVENT INFORMATION AT
WWW.STROUDCENTER.ORG/EVENTS

Save These Dates!

SEPTEMBER

25 MOONLIGHT STREAM STROLL

Adults, come out and enjoy an evening on the White Clay Creek as we take a stroll along the stream and listen for our nightly visitors. Then join us at the bonfire for refreshments and a nightcap.

OCTOBER

18 JOAN AND DICK STROUD MEMORIAL LECTURE **LAST CALL AT THE OASIS**

A documentary film about the importance of being a good steward of our most precious resource — clean fresh water.

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