SPRING 2002

News from the
Stroud Water Research Center

UpStream

Trees for Streams

STROUD WATER RESEARCH CENTER

IN THIS ISSUE

SPECIAL SECTION

From the Director

Bern Sweeney

WHY AN UPSTREAM FESTIVAL

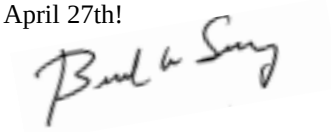
An "Upstream Festival!" Why, you might ask, would anyone want to celebrate being or going upstream? After all, no one goes on vacation to paddle up the Susquehanna River or to fish for stunted brook trout in the tiny upstream tributaries of a river system. Doesn't "Up a creek without a paddle" mean that you are upstream, want to be downstream, but can't get there — hence you're in trouble? Let's face it, most folks like to celebrate, as the old round says, rowing their boats "gently down the stream . . . [where] life is but a dream."

Alas, we know that it isn't only singing boatmen that end up downstream. Everything on the river ultimately ends up there; and since rivers have been the flowing disposals of human waste for centuries, the farther downstream you are, the dirtier the water you inherit. It's no wonder that "everyone lives downstream" has become the rallying cry for fighting pollution in streams and rivers around the world.

So why should the Stroud Center have an Upstream Festival? It's simple. For us it is a day to celebrate and publicize the fact that "everyone lives upstream" as well. And living upstream carries with it an enormous responsibility. Every bad upstream deed will impact our downstream neighbors, even if only scientists can measure it. Each thoughtless act makes the water a little dirtier and the fish a little less abundant. On the other hand, each good upstream deed helps us, our downstream neighbors, and our network of rivers that flow into the oceans. Quite a payoff.

During the Upstream Festival, the Center tries to give the visitors both the reasons and the means to act responsibly - to act, if you will, in an "Upstream" manner. Through hands-on and fun-filled activities based on the Center's science, our "open house" becomes an "open invitation" for visitors to learn about and practice public stewardship in their watersheds.

See you at this year's Upstream Festival on April 27th!



STROUD WATER RESEARCH CENTER

UPSTREAM

UpStream, the magazine of the Stroud Water Research Center, is published in the spring and fall each year.

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Can carbon13 solve water mysteries?

With rivers delivering tons of dissolved organic matter to the sea, why is so little terrestrial organic matter found in the oceans? What is the value of small headwater streams to the ecology of large, downstream rivers and what would it mean if these streams were destroyed? How can the biological processes measured in small laboratory systems be related to processes in a natural stream? These are among the questions being addressed in a new research project funded by the National Science Foundation.

The answers have long eluded scientists because tracking and measuring dissolved organic matter (DOM) in natural streams is extremely difficult. To trace DOM in streams, researchers need to be able to some how put a marker on the molecules, or label and identify DOM as it moves down the stream. And that is precisely what the Stroud team seeks to do in this project. Stroud scientists will follow DOM as it flows through the White Clay Creek watershed. As the primary food source for aquatic microorganisms, DOM is critical to the health of the stream – and critical also to stream research. As it works its way down a stream, DOM is constantly being absorbed, eaten, digested, released, replaced and recycled. Fully half of this dissolved material is carbon – specifically the isotope carbon 12 (^{12}C), which makes up 99 percent of all naturally occurring carbon. The task of the research team is to find a way of creating identifiable DOM samples and labeling them clearly enough to be distinguished as they go through the natural processing system of a stream.

The project involves the work of three Stroud Center scientists, Lou Kaplan ,Denis Newbold, and post-doctoral scientist Tracy Wiegner, plus two colleagues, Robert Findlay of Miami University and Peggy Ostrom of Michigan State University. The project involves five disciplines — ecological theory, biogeochemistry, microbial ecology, geochemistry and hydrology.

The work so far

The team took 32 tulip poplar seedlings that they obtained from Jim Plyler, a nursery owner from southern Chester County, Pa. who specializes in native plants, and sent them to Duke University. There they were grown in the summer of 2001 in special chambers in Duke's Phytotron, a large federally funded greenhouse complex.

Automatically watered, fed and lighted in the sealed chambers, the young trees thrived in an atmosphere enriched with carbon dioxide in which the carbon atoms are the stable isotope, carbon 13 (^{13}C). The trees were thus labeled with ^{13}C.

At the end of their summer growth period, the trees were harvested by Phytotron staff who separated leaf, stem, and root material into old and new growth. The dried plants were sent to Stroud and ground into samples and sent to Ostrom for analysis of ^{13}C content. As expected, the new growth was rich in carbon 13 – 200 times more than natural trees.

The scientists are now preparing to age the material in soil microcosms to allow natural soil processes to transform the fresh plant material into a mixture of complex organic matter that will behave like natural DOM (or ^{12}C) in a stream. The difference will be that, as they follow the DOM downstream, the scientists will be able to identify the molecules they introduced from their 13C earmark. From this work, the Stroud scientists hope to understand what organic molecules support the activity of microorganisms in the stream, and how far these molecules travel downstream before they are metabolized.

Lou Kaplan

PROJECT ^{13}C

Title: Application of Scaling Rules to Energy Flow in Stream Ecosystems

Scientists involved:

From Stroud: Louis A. Kaplan, J. Denis Newbold and postdoctoral scientist Tracy Wiegner.

Outside collaborators: Robert H. Findlay of Miami University and Peggy H. Ostrom of Michigan State University.

Funding: National Science Foundation

Denis Newbold

Schuylkill River Basin

PROJECT GOALS

The project had three scientific and educational goals:

- To assess water and habitat quality in the Schuykill River basin based on aquatic macroinvertebrates collected from 19 sites.
- To make the study available to local education outreach and community groups to encourage their involvement in improving and protecting water quality in streams and rivers.
- To provide local college students with field and lab experience in ecological study.

Study finds dramatic differences

A five-year study by the Stroud Center found that water and habitat quality varies dramatically in the main streams that supply the Schuylkill River.

The 2,000-square-mile Schuylkill River Basin begins in the mining areas around Pottsville in the northwest. The river runs about 127 miles through a variety of forested, agricultural, and urban and suburban areas before emptying into the Delaware at Philadelphia. (See table for details). The river and its tributaries are a critical source of drinking and irrigation water for the communities through which they run.

In most cases the study findings reflected the land use in the stream basins. The creek sites that scored highest for water quality were the West Branch of the Perkiomen and the Manatawny, both predominantly forested and rural. Among the lowest scoring were the Wissahickon, which runs through Philadelphia and its suburbs, and the Tulpehocken, which runs into Reading. The one with the lowest score, the Little Schuykill, is mainly rural, but it is in the anthracite mining area.

The study, which was done by the Stroud Center with the help of students from local colleges throughout the watershed, sampled 19 sites between 1996 and 2000.

	MAIS Water Quality Score	Watershed Area (Sq. miles)	% Urban	% Agriculture	% Forest	% Wetlands	% Mining**	% Other*
Perkiomen, West Branch	12.7 (A)	14	0.3	26	72	1.5	-	0.3
Manatawny	12.7 (A)	59	1	37	60	1.2	0.5	0.4
Perkiomen, Upper	11.8 (A)	36	2	43	54	1.3	-	0.2
Maiden	11.8 (A)	105	0.3	51	47	0.6	-	0.6
Pickering	11.4 (A-)	28	0.6	44	55	0.1	-	0.1
French	10.5 (A-)	46	1	29	68	1.4	-	0.7
Angelica	9.9 (B)	6	1	15	84	0.7	-	0.1
Northkill	9.9 (B)	17	2	76	22	0.1	-	0.1
Perkiomen, East Branch	9.5 (B)	49	2	52	46	0.3	-	0.1
Perkiomen, Lower	9.5 (B)	310	3	40	54	2.7	-	0.4
Hay	9.1 (B)	22	2	43	54	1.3	-	0.2
Valley	7.3 (C)	24	27	18	49	0.3	2.4	3.0
Unami	6.6 (C)	37	3	40	54	2.7	-	0.4
Skippack	6.3 (C)	58	22	39	37	0.1	-	1.0
Schuylkill, HMS+	4.4 (D)	11	1	1	80	0.7	14.4	2.9
Schuylkill, West Branch	4.1 (D)	51	4	3	79	0.9	11.4	3.1
Wissahickon	4.1 (D)	55	40	15	40	0.3	-	4.7
Tulpehocken	3.7 (D)	208	30	35	56	0.8	2.8	2.3
Schuylkill, Little	3.4 (D)	127	2	17	73	1.4	4.2	2.5
Basin		1979	11	37	48	0.7	1.1	2.3

+ Headwater Main Stem
* Includes quarries, strip mines and gravel pits.
** Transitional land stripped of vegetation by either natural or human disturbance, urban recreational land that is not forest (golf courses, urban parks) and open water.

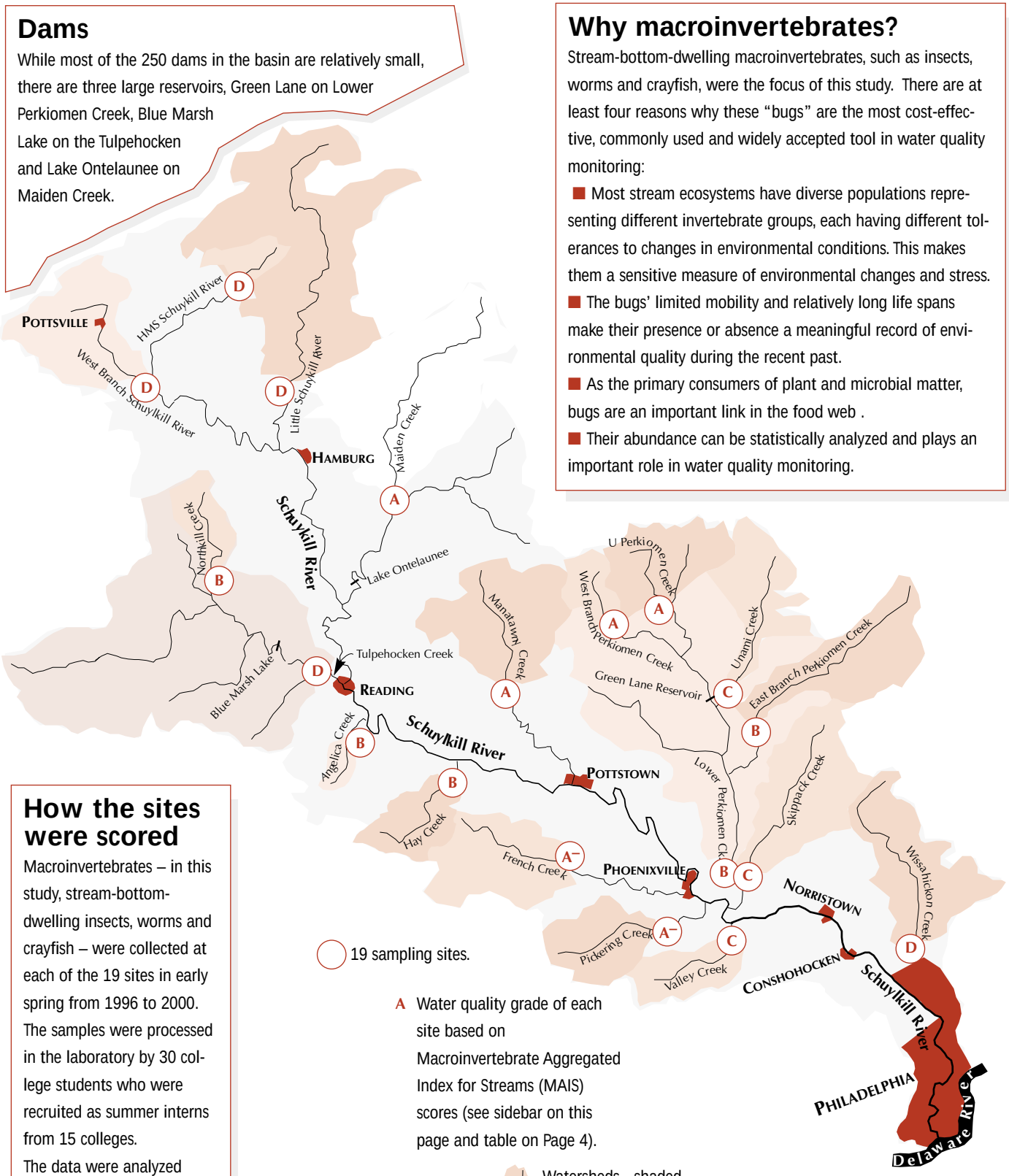
Dams

While most of the 250 dams in the basin are relatively small, there are three large reservoirs, Green Lane on Lower Perkiomen Creek, Blue Marsh Lake on the Tulpehocken and Lake Ontelaunee on Maiden Creek.

Why macroinvertebrates?

Stream-bottom-dwelling macroinvertebrates, such as insects, worms and crayfish, were the focus of this study. There are at least four reasons why these "bugs" are the most cost-effective, commonly used and widely accepted tool in water quality monitoring:

- Most stream ecosystems have diverse populations representing different invertebrate groups, each having different tolerances to changes in environmental conditions. This makes them a sensitive measure of environmental changes and stress.
- The bugs' limited mobility and relatively long life spans make their presence or absence a meaningful record of environmental quality during the recent past.
- As the primary consumers of plant and microbial matter, bugs are an important link in the food web .
- Their abundance can be statistically analyzed and plays an important role in water quality monitoring.



19 sampling sites.

A Water quality grade of each site based on Macroinvertebrate Aggregated Index for Streams (MAIS) scores (see sidebar on this page and table on Page 4).

Watersheds - shaded areas around the streams and rivers.

Main towns and cities on the Schuylkill River.

How the sites were scored

Macroinvertebrates – in this study, stream-bottom-dwelling insects, worms and crayfish – were collected at each of the 19 sites in early spring from 1996 to 2000. The samples were processed in the laboratory by 30 college students who were recruited as summer interns from 15 colleges.

The data were analyzed using the Macroinvertebrate Aggregated Index for Streams (MAIS), a method that summarizes collected data and assigns a score.

VOLUNTEERS

Frank Kline

Formerly: DuPont chemical engineer

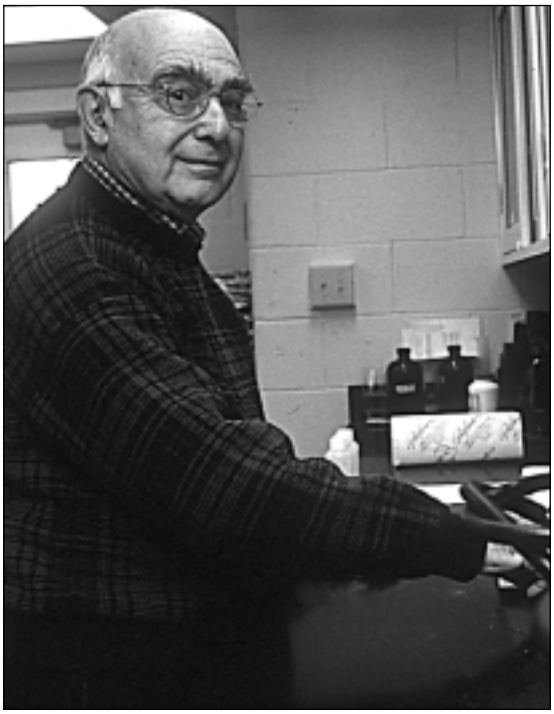
Specialty: Chemical process safety and explosion prevention

Harry West

Formerly: DuPont chemical engineer

Specialty: Chemical process research and development

'Win-win' for all



Frank Kline at work.

For former DuPont Company chemical engineers Frank Kline and Harry West, their volunteer work at the Stroud Center helps keep their minds active in their retirement.

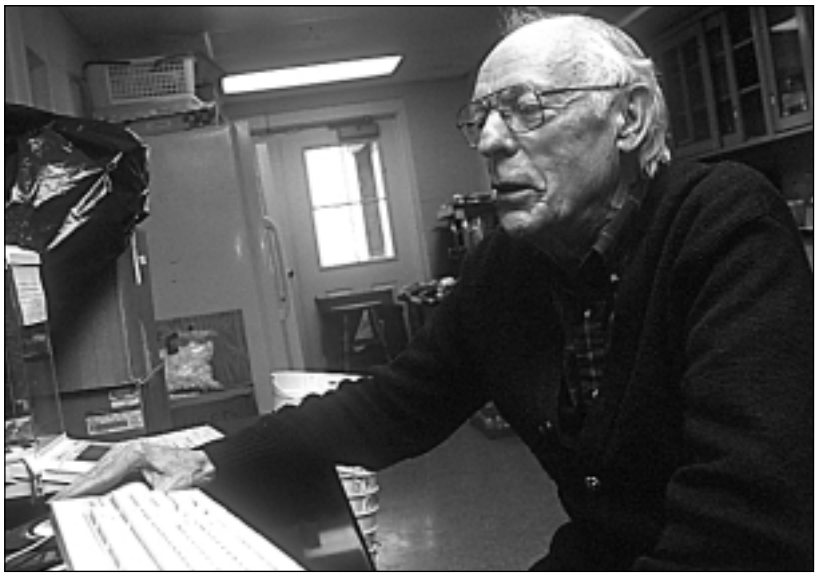
For the Stroud Center, their work is indispensable and much appreciated.

Both men work one day a week in Denis Newbold's ecosystem processes lab, where their tasks include chemical analysis, instrument calibration, data analysis and input, and other hands-on lab work.

"My day here is a very important part of my week," says Kline, who lives in a retirement village in Newtown Square.

"I thoroughly enjoy this. I'm dealing with very nice people and my contact with them is a real pleasure."

Kline says he is delighted to be able to contribute the experience he acquired in his years with DuPont.



Harry West at the computer.

"I'm allowed to make mistakes and correct them, and I really feel my work is appreciated," he says.

Harry West, who worked at the DuPont Experimental Station and now lives in the Jenner's Pond retirement community not far from the Center, says, "I really enjoy [the work at Stroud] because you get interaction with younger people and you keep learning new things.

"And it keeps my mind from rotting."

And it's a great benefit to the Stroud Center says Director Bern Sweeney. "Our research benefits greatly from the wisdom and years of experience that both Frank and Harry bring to the Center. It's a win-win for all parties."

UpStream Festival 2002

April 27, 2002

10 am - 4 pm

Rain or Shine

$5 per car

Wonderful Lives

Whirligigs, Stinkpots, Peepers and More

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STROUD WATER RESEARCH CENTER

UpStream

Whirligigs, Stinkp

COMMITTEE

Diane Belnavis, Co-chair
Julia Loving, Co-chair
Claire Birney
Kay Dixon
Karen Dow
Jami Harry
Lara Martin
Jim McGonigle
Christina Medved
Reggie Painter
Jen Roth
Carol Urbanc
Fred Wanner

CALLING ALL VOLUNTEERS

The Upstream Festival needs volunteers to help with the event set up, parking, crafts, the Stream View Café and clean up after the festival. Meet new people, make new friends. Join us for a fun-filled day.

CONTACT

Kay Dixon
Phone: (610) 268-2153 x 247
E-mail:
<kdixon@stroudcenter.org>.

Special Events & Workshops

Celebrate stream and riparian lives at this year's UpStream Festival. Join us for a fun, educational family day. Learn about creatures large and small that live in our local freshwater ecosystem.

Lois Young - Puppeteer, ventriloquist, singer, and storyteller Lois Young present a magical blend of sing-along and laugh-along fun for all ages. Copies of her CD's will be on sale. (11:30.-12:10 and 1:30-2:10)

Lenape Stories - Clan Mother Doris River Bird Woman and members of her group will tell traditional Native American stories accompanied by drumming and songs in English and in Lenape. Learn how fire came to earth and how the bear lost his tail. (11-11:30 and 2:30-3)

MasCar Races - Madagascar cockroach racing. Win craft tickets for choosing the winners in these neck and neck races. Watch world class racers Pepe le Roach, Lightning, Mario Bugetti, Speed Roacher, Buggy Stewart, and others. Races throughout the day. (10:15-11; 11:45-12:30; 1:15-2:00; 2:45 -3:30)

Baking Bugs - Many cultures include insects as part of their traditional cuisine. Insects are extremely plentiful, high in protein, and delicious. Join Diane Belnavis as she makes Cricket Cookies and Meal Worm Munchies. Yum! (12:15.-1:15)

Why Rain? - Steve MacLaughlin, WB17 News meteorologist will present a program on weather and the importance of rainfall in maintaining the balance of our planet. (12:30 and 1.)

The Natural Step: An Introduction to Green Design - Ed Snodgrass, a local business consultant, will present a workshop on "The Natural Step", a guide to thinking and acting in harmony with the earth's cyclical processes. It provides a pragmatic framework that can be used to guide social, environmental and economic actions. Recommended for ages 15 and above. (2:30)

Birds and their Habitats - Nancy Parsons, a conservation biologist, will help you discover why habitat, season, time-of-day, song and bird behavior are all important. Bring your binoculars for a walk along the White Clay Creek for a look at native and migratory riparian birds. (3)

Family Get-Away Drawing - Winner of the $200 family gift certificate for equipment rental from Eastern Mountain Sports will be announced at 2:15 at the information booth. Bring your parking tickets. You may be the winner!

Festival

ots, Peepers and more

Ongoing Exhibits

Pests, Pets, or Dinner? - Longwood Gardens entomologist Diane Belnavis will present a wonderful exhibit of insects and answer questions regarding natural insect control in the garden. Don't miss her cooking demonstration at 12:15! Cricket Cookies and Meal Worm Munchies! Lunch, anyone?!

Snakes Alive! - Delaware Nature Society and the Pennsylvania Fish and Boat Commission have teamed up for a day-long presentation of venomous and non-venomous snakes, frogs, salamanders and turtles.

Our Bird Neighbors - Tri-State Bird Rescue will be on hand with some of their rescued avian residents including Katea, the red-tailed hawk who made headlines last year when she was stolen and later found.

Roots & Shoots - Learn about the Jane Goodall Institute's international humanitarian and environmental program for all ages. Through community service projects, Roots & Shoot members promote care and concern for the people, animals and environment around them. ***Help us start a local chapter!***

Canine Partners For Life - Learn about this wonderful life-enhancing program. Meet working dogs and their trainers and discover how you can help.

Savage Ancient Seas - Steve Reynolds of the Delaware Museum of Natural History will discuss the food chain from the Miocene Seas focusing on the producers and consumers that inhabited Delaware's ancient seas.

The Joy of Fly Fishing - Anglers of the White Clay Fly Fishermen Association will identify insects and tie flies to match as well as demonstrate fly-casting in the pond.

Water Snapshot 2002 - Join Delaware River Basin Commission staff along the banks of the White Clay Creek to participate in the 7th annual Water Snapshot, the popular water quality sampling event that takes a "snapshot" of the health of the Delaware River Basin waterways.

Native Plant Sale - Dale Hendricks, assisted by other native plant experts will have a wonderful spectrum of perennials, grasses, trees, and shrubs, good for establishing natural habitats in your garden.

Stream View Café - Relax and replenish with hot beverages, juices and pastries for a morning break, as well as a hearty lunch of healthful salads, soups, sandwiches and snacks, overlooking the White Clay Creek. Prepared by Jenny Armitage and "Catering to You."

Craft Corner - Make gnomes, critters, whirligigs and more with artists Terry Anderson and Jefferson Bole. Buy craft tickets at the information booth.

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Great Pumpkin Health Foods
Seven Stars Yogurt
Big Sky Bread Company

GATE

Parking $5 per car. Be sure to fill out the back of your parking tickets and enter the drawing for $200 of EMS rental equipmental

Rain or Shine 10 a.m.-4 p.m.
so dress for the weather.

UpStream Festival 2002

SCHEDULE OF EVENTS

Morning 9:00 a.m. - 12 noon

	10:00	10:30	11:00	11:30	12:00
Native Plant Walk (Meet at the Plant Sale)		10:30 - 11:30			
Doris River Bird Mother (Meeting House)			11:00 - 11:30		
Lois Young & Puppets (Meeting House)				11:45 - 12:20	
Walk with a Scientist (Meet at fish sculpture)				11:15 - 12:15	
Cockroach Racing (Below stream side of deck)		10:15 - 11		11:30 - 12:15	

Afternoon 12 noon - 4 p.m.

	12:00	12:30	1:00	1:30	2:00	2:30	3:00	3:30	4:00
Why Rain? (Behind Information Desk)		12:30 and 1							
Native Plant Walk (Meet at the Plant Sale)				1:30 - 2:30					
Lois Young (Meeting House)				1:30 - 2:10					
Doris River Bird Woman (Meeting House)						2:30 - 3			
Cooking with Insects (Meeting House)		12:15 - 1:15							
EMS Drawing (Information Desk)					2:15				
Natural Step (Library)						2:30 - 3:30			
Bird Walk & Habitat (Meet at the Plant Sale)							3 - 3:45		
Walk with a Scientist (Meet at fish sculpture)		12:15 - 1:15		1:30 - 2:30			2:45 - 3:45		
Cockroach Racing (Below stream side of deck)			12:45 - 1:30		2- 2:45			3:15 - 4	

Come Join Us!

Artwork by Bonnie Timmons © 2002

Mission

The Upstream Festival is a celebration of the Earth, the natural world, the White Clay Creek, and the vibrant community of its watershed. Through education, music, ritual, sharing and family fun, we seek to promote community awareness for the Stroud Water Research Center and the ecology of fresh water systems as well as to awaken a sense of reverence for the natural world around us. The goal of the festival is to create a bridge of knowledge between those in the community working to promote earth consciousness and those seeking to increase their environmental awareness, inspiring them to become stewards of the Earth, its watersheds, and its most precious natural resource – water.

Balancing science with martial art

Even in the eccentric atmosphere of the Stroud Center, a visitor may be startled in the evening to see a man in white brandishing a sword on the banks of the White Clay Creek. He moves in slow motion, seeming to joust with an invisible opponent.

But those who work late at the Center have become used to these habits of their colleague Xianhao Cheng. When he's not deeply absorbed in his work as a visiting post-doctoral research scientist, Cheng likes to take time out to practice Tai Chi, an ancient Taoist martial art of his native China. Besides the weaponless form of Tai Chi that is better known to Westerners, Cheng also practices with the sword, saber and spear.

Over a cup of green tea – which his family sends him from his homeland – Cheng tries to explain the complexities of Tai Chi Ch'uan, which he has studied for at least 20 of his 47 years of life.

Meditative and confidence-building, Cheng says Tai Chi also develops health and physical strength, which he demonstrates by lifting to shoulder height his 7-foot-long spear. He uses only his thumb and two fingers, while keeping his arm straight.

Cheng works in Lou Kaplan's biogeochemistry section at the Stroud Center on a three-year project funded by the National Science Foundation.

It is a research study of the biomes – the complex biotic communities of animals and plants – of the White Clay and other local creeks, plus the New Jersey Pine Barrens and Costa Rica.

He is also working to improve analytical methods and other research procedures in the lab.

Cheng grew up in the east coast city of Hangzhou, China. He studied geochemistry at Zhengjiang University, which he described as one of the largest and most prestigious universities in his country. He finished in 1982 in one of the first classes to graduate after the end of China's Cultural Revolution, which lasted from 1966 to 1976. After that he taught and did research in marine chemistry and helped build an Antarctic research station in his field.

He is a permanent resident of the United States, who, when he's not staying in the Stroud Center's visitors' cabin, lives with his wife and 17-year-old daughter at their home in Hampton, Virginia.

Xianhao Cheng demonstrates Tai Chi with a sword

Xianhao Cheng

Post-doctoral research scientist

Section: Biogeochemistry

Ph.D: Chemical oceanography, Old Dominion University, Va. Undergraduate: Zhengjiang University, Hangzhou, China

Project: Three-year NSF biomes research on interaction between organic compounds and microbial communities in streams and watersheds.

COVER PHOTO: Under the watchful supervision of Chesapeake Bay retriever Solo, Jessie Farrell, Salamon Romero and Javier Tinoco plant a river birch in the Stroud Preserve study stream buffer.

Tree buffers

Planting of trees along streams moved into high gear last year with the launching of the federally funded riparian buffer project (PL-566) to restore woodlands along 50 miles of the White and Red Clay Creeks.

By year's end about 6,000 new trees were growing along four miles of stream on half-a-dozen properties.

This year, the season has barely started and work is already underway for planting 5,000 new trees on a property on the Red Clay Creek, says Jessie Farrell, the native landscape designer who is coordinating the project for the Stroud Center.

She hopes that planting will soon start on the Tulpehocken Creek near Reading in Berks County, Pa., where she recently met with landowners to encourage their participation.

Under the PL566 project a variety of cost-sharing plans for planting trees are available for properties along the White and Red Clay Creeks in Pennsylvania and Delaware and the Tulpehocken Creek. Landowners may apply through Farrell.

CONTACT:

Jessie Farrell

Phone: (610) 869-4285;

e-mail: jessie@taprootnativedesign.com

Stroud Preserve

The 10-year-old riparian buffer on the Stroud Preserve in the Brandywine Creek watershed got a quick-fix planting of 13 large balled-and-burlapped, and potted trees last fall. The existing riparian buffer was suffering from deer munching, among other problems. The five river birches, five green ashes and three tulip poplars are fast-growing trees which are expected to fill the gaps immediately.

New York project Year 3

The Stroud Center's New York City watershed monitoring project is now in its third year. Winter sampling is finished and the main spring and summer fieldwork is expected to begin on time. Although there are concerns about the severe drought throughout the Northeast, project coordinator Charles Dow said, "We plan on going in drought or not."

The second year of the project finished on schedule despite a brief pause in the field work due to the security alert following the Sept. 11 attack on the city.

From left, Lara Martin, Dave Montgomery and Charles Dow prepare for a spiraling experiment on the Muscoot Creek in New York.

50 plus

Administrative Assistant Shelby Von Till reports that the Stroud Center staff complement is up to 51, including nine part-timers.

Scientist turns advocate

Laurel Standley, Ph.D., the research scientist who headed the Stroud Center's organic chemistry section for 12 years, left last fall to study environmental policy at the University of Delaware.

Standley, who has a doctoral degree in her field, is studying for a master's degree at University of Delaware Center for Energy and Environmental Policy.

She said she decided on this course because she wanted to play an active role in cleaning up the world's fresh water resources.

"I have been trying to do both [science and advocacy] for several years, but found that policy has become my preferred path for addressing freshwater issues," she says.

She plans to finish her studies in June 2003 and then work as an advocate for a nonprofit conservation organization, probably in Washington, D.C.

"I love policy," she said, adding that she has applied for a summer internship this year with a conservation group.

Meanwhile she remains on staff at Stroud part time, wrapping up several research projects that she hopes to complete by June.

Laurel Standley

LOST SOLE

When Stroud Center entomology technician Dave Lieb lost his wading shoe sole during a week-long field trip last fall he resorted to Duct tape. It happened at the beginning of the week when he and the Center's assistant director, Dave Funk were collecting aquatic insect samples in the Savannah River along the Georgia-South Carolina state line. The federally funded work is part of a long-running project to monitor the river up- and downstream of the Savannah River Site, a nuclear labratory.

Photo by Dave Funk

Rare event

A few inches of snow briefly blanketed the White Clay Creek early in the year, making it the only snowstorm of the winter by the time "UpStream" went to press in the first week of March. The lack of precipitation this season is raising fears throughout the East Coast. Water rationing and even more drastic conservation measures may be in store this summer if the dry spell continues much longer.

Kay Dixon, who started in August last year as public relations and special events manager, has since been appointed associate development director with responsibility for annual giving.

Nancy Parsons began in August as a research technician in microbiology. She also heads the committee for the Stroud Center website, www.stroudcenter.org.

Thy Truong, who hails from Australia, started Jan. 14. She is doing post-doctoral work in the organic chemistry section.

Tracy Wiegner started Jan. 3 as a post-doctoral researcher for the two-year NSF-funded project on carbon 13. (See Page 9).

Jamianne "Jami" Harry began work on Feb. 1 as events and public relations manager.

Amanda Christian started work on Feb. 4 as a lab technician in the organic chemistry section.

Elizabeth Gregg started Dec. 13 as a system network administrator.

LEAFPACK NETWORK

New features

The Stroud Center's Leafpack Network, which was launched two years ago in response to the increasing use of Leafpacks by school teachers and students as well as citizen conservation groups, has been upgraded and expanded.

The Center's education director, Jim McGonigle, reports:

■ With funding from the William Penn Foundation, more teachers in New Jersey and Pennsylvania have been trained to use Leafpacks and participate in the network, a database on the Stroud Center website through which users in many different watersheds can share and compare information.

■ New features have been added to the network that allow users to call up Leafpack data from any participating school or group and compare it with data from other stream or watershed sites.

■ Links have been established to a macroinvertebrate website guide where these tiny aquatic bugs can be identified by comparing them to a series of pictures. The guide was developed by the Hudson Basin River Watershed organization and the New York State Department of Conservation.

WEBSITES & LINKS

Leafpack: www.stroudcenter.org

BUG GUIDE

www.state.ny.us/website/dow/stream/index.htm

Pledge your gift to fresh water

The "Friends of the Stroud Center" was started in 1992 to support the research and education programs at the Stroud Water Research Center. The 750 households that make up the "Friends" now raise over $250,000 annually. The funds support research programs such as land-use management and the impact of reforestation on water quality, and education programs such as watershed courses for middle schools, summer internships for college students, teacher scholarships and public outreach efforts.

Each contribution is fully tax-deductible. No tote bags or free passes to dilute your gift. As a "Friend" you receive our twice-yearly newsletter, *UpStream*, which keeps you up to date with our latest research findings and notifies all "Friends" of upcoming events such as:

- Stream Evenings
- Joan M. Stroud Memorial Lectures
- UpStream Festival

You may also consult our website, www. stroudcenter.org, for information about scheduled events, educational programs and volunteer opportunities.

CONTACT

Kay Dixon

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Friends of the Stroud Center Annual Fund

I/we wish to participate in the "Friends of the Stroud Center" to meet the future environmental research and educational challenges of water. Enclosed is my/our fully tax-deductible gift to the "Friends of the Stroud Center" at the following level:

___$	10+	Every drop counts!	___$	500+	Streamkeepers
___$	50+	Rainmakers	___$	1000+	Riverwatchers
___$	100+	Headwaters Sponsors	___$	5000+	Watershed Protectors

Name(s). . . . . .
(As you wish it/them to appear on the donor list)

Address . . . . . .

City . . . . . State . . . . Zip. . . . . .

Phone. . . . . (h). . . . . (w)

E-mail . . . . . .

Please make checks payable to the Stroud Water Research Center.

A copy of the Stroud Water Research Center official registration may be obtained from the Pennsylvania Department of State by calling toll free, in Pennsylvania, (800) 732-0999. Registration does not imply endorsement.

OUR MISSION

The mission of the Stroud Water Research Center is:

- to advance knowledge of stream and river ecosystems through interdisciplinary research;
- to develop and communicate new ecological ideas;
- to provide solutions for water resource problems worldwide;
- and to promote public understanding of freshwater ecology through education programs, conservation leadership, and professional service.

UpStream Festival 2002

April 27, 2002 — 10 am – 4 pm

Rain or Shine — $5 per car

Wonderful Lives

Whirligigs, Stinkpots, Peepers and more

Read all about this fun event in the four-page pullout in this issue.

UpStream

NEWS FROM THE STROUD WATER RESEARCH CENTER

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