BACK BY POPULAR DEMAND:
THE RUSSIAN EXCHANGE

By Rob Berns

Following the success of its predecessor, a second exchange program of Russian and American scientists took place this past summer and for a week in October 2002. The first program, "Fostering Successful Partnerships in Watershed Protection in the US and Russia," took place from August to September of 2000, with ALLARM's own Dr. Candie Wilderman as one of its participants. Dr. Wilderman and several others, including Dan Boward and Charlie Conklin, also participated in this year's exchange. One of the new members of the program was ALLARM director Lauren Imgrund. The program was funded by the Trust for Mutual Understanding, which hopes to foster successful partnerships between Russia and the U.S. in environmental decision-making. The program was sponsored by Dickinson College and the St. Petersburg, Russia Center for Independent Social Research.

'Third' continues on page 13
Some watershed monitoring groups form because of a specific issue that surround their watershed. Such groups can sometimes hastily rush together while they have a battle to fight, and then disband once they have succeeded in their goals and lack incentive to pursue further issues. The Chiques Creek Watershed Alliance underwent careful planning and thought in its founding. One of its founders went to a conference on the Chesapeake Bay Watershed, where he learned about watershed monitoring and maintenance. He returned from the conference with the desire to begin his own watershed group for the Chiques Creek.

The Chiques Creek Watershed Alliance has a diverse membership, consisting of people involved with municipalities, a state legislator, engineers, an employee of the Pennsylvania DEP, an attorney, and an elected town official. According to Nancy Haliwell, one of the founders, the Chiques Creek Watershed Alliance has "a nice cross-section of people."

In an interview, Haliwell described some of the Alliance's original goals, stressing the importance of community education and action. As written in its mission statement, the Alliance was organized to "promote good stewardship of land and to protect and preserve the Chiques Creek for future generations." The Alliance has social goals to further community relations and protect the creek. The Alliance also wants to unite local residents who have an interest in the creek, providing each individual with the means to express their sentiments and concerns.

The group is working with ALLARM through C-SAW to develop a monitoring program. Some monitoring goals of the Chiques Creek Watershed Alliance include: documenting problems of erosion and current stream bank conditions, evaluation of effects of sedimentation and nutrients in streams, and combining forces with local farmers to protect their animals as well as preserve general stream health. Each of these goals will help to create a database the group can use to document any changes in water quality and identify stream conditions at specific locations on the Chiques Creek.

Flow will be measured at several sites and at all sites a visual assessment will be performed. Collected data will be used as a basis for funding requests involving future watershed improvement projects.

The Chiques Creek Watershed Alliance has begun to plan the study design of its Mummau Restoration Project. The area of concern for this project is Mummau Park, previously privately-owned, through which the Chiques Creek runs. Now a public area, the Alliance proposes to restore stream quality, reduce erosion, and relocate the creek through its natural stream channel in order to improve aesthetic appearance at the park. The restoration project will act as an educational opportunity for the Alliance to share its goals with park visitors. Nancy Haliwell tells us that the Alliance wishes to "basically just make it nice place to sit." The project does not need to be fancy, it just needs to work well enough to make local residents content with Mummau Park.

The Chiques Creek Watershed Alliance strives to improve community relations surrounding the creek in its every action, and should be applauded for these efforts.

AN AMAZING STORY IN OZ

By Patrick Sutton

It is only my third day in Australia and the rest of my group has abandoned me. I was left alone to walk the streets of an isolated small dairy town called Malanda where the locals claim to speak English, but I had my doubts. Assignment #1: Drop off students in the middle of nowhere to interact with the community and develop a sense of environmental awareness and local issues. The thought of interacting with complete strangers to bug them about the environment while they're trying to work made me terrified. I couldn't imagine walking into a Starbucks Cafe back home and trying to accomplish the same task without being kicked out for not asking my question in the form of a "Tall, Grande or Venti" infrastructure. Luckily, in Malanda, there were no Starbucks or other American franchises in view. 'Oz' continues on page 3
I spent half the day striking up conversation with storekeepers and employees from a dairy factory and never once did I feel unwelcome. Naturally, I found my way to the local pub by the end of the day, ordered myself a refreshing pint of Guinness, and then met a man who taught me the most important lesson of the day. He was half Aborigine and what he told me was this: “Out here in the Tablelands, the color of your skin does not matter.” I was really taken back by the sincerity of his statement, but the true extent of his statement, held in context with the rest of Australian culture, became clearer as my semester continued.

I came to Queensland, Australia to study natural and cultural ecology through the School for International Training (SIT) from February to late May 2002. We based our studies out of Cairns, which is ideally located in the tropical, lowland rainforest region of the continent and alongside the renowned Great Barrier Reef. “This interdisciplinary program investigates the unique environments of Queensland through lectures and activities that weave together current and historical natural and cultural ecology topics to increase our understanding of the region’s complex environmental issues.” I copied that program description from the SIT official web site at http://www.SIT.com. However, in my own words I would have to describe the program as this: “An education that transcends any classroom, teachers who are heroes in their field but hold nothing back on the dance floor, a journey that takes you through some of the most amazing rainforest and marine landscapes, cassowaries that are always trying to tear your stomach open when you’re lucky enough to see them, a chance to step away from our European roots and perspectives and begin to look at life from the beautiful philosophies of Aboriginal Culture, meet fellow classmates who become some of your closest friends for life, and, no matter how hot it may get, there is always a river nearby you can jump into after lunch as long as there are no crocodile signs around.” That, and my complete lack of sentence structure when talking about this life-changing experience, would describe my semester in a nutshell.

Unfortunately, we do not live in nutshells and so my story cannot simply end there. In fact, as I have come to understand it, my story began long before my time. European culture developed roughly 30,000 years ago and began with the transition from the nomadic lifestyle to the agricultural lifestyle. Agriculture brought people together, created the need for specialized roles within the community, monarchies developed, populations boomed and wars became common. Religion and politics manipulated the people toward “a greater good” as much, and perhaps more, than the people manipulated the land.

Today, I think most Americans and other major industrialized nations take our land and the resources we consume for granted. A good example of this began in 1770 A.D. when Captain James Cook landed in Botany Bay, Australia. Following Cook’s arrival was the colonization by the English and the imposing of European lifestyles onto a foreign landscape.

The soils in Australia are a lot thinner than the farming soils in Europe, and early farmers ran into problems such as salinization and nutrient depletion. Aboriginal lifestyles were dismissed as primitive and barbaric not only during this time period, but currently this remains a stereotype in many parts of the world, including parts of Australia. The fact that Aborigines are the oldest living culture in the world, with evidence supporting anywhere from 40,000 to possible 150,000 years, was not acknowledged by these early settlers and today is often not recognized with any significance globally.

The Aborigines successfully lived in natural balance with their land and maintained a semi-nomadic lifestyle up until the British colonization. Aborigines managed rainforest growth by setting controlled burns every year. Burning provided habitat for many other species and created hunting grounds for the Aborigines. Clans were dominated by neither males nor females, monarchies were non-existent, people’s beliefs were respected as their own and knowledge was never forced unwillingly onto others. Their culture evolved in a completely different light than that of the Europeans. Their way of life was full of seamless attributes, where elements such as religion and philosophy were never seen as separate entities. In fact, the Aborigine method of thought is a complete paradigm shift away from European thinking and, in my opinion, is far superior towards achieving happiness in life and living in tune with the environment.

Thinking back to the conversation I had with the man at the pub
On October 3, 2002 at Dickinson College, Dr. Jocelyn Bell Burnell received the highly-esteemed Priestley Award in recognition of her accomplishments in the fields of astronomy and physics, and more specifically, for her discovery of pulsars. The annual Dickinson Priestley Award celebration honors "a distinguished individual who has made scientific discoveries contributing to the welfare of mankind." The award commemorates Pennsylvania scientist and scholar Joseph Priestley, the man who discovered oxygen and a friend of Dickinson College.

Before being honored with the award, Bell Burnell presented a summary of her scientific discoveries, and explained that the term "Pulsar" is derived from an abbreviation for "pulsating radio star," a term first coined by the British newspaper, the "Daily Telestar." Since the "Daily Telestar," the word pulsar has also represented such products as the brand-name watch line "Pulsar" and the horticultural name of a flower.

Bell Burnell discovered pulsars in 1967 as a research student at Cambridge University, England under the supervision of her staff advisor Anthony Hewish. Bell Burnell began work on a radio astronomy project designed to examine the interplanetary scintillation, or "twinkling," of compressed radio waves. Her study was performed using an 81.5 megahertz radio telescope Bell Burnell had helped to construct--fabricated from 2000 TV antennae--which she single-handedly operated and monitored.

On August 6, four months after the initial operation of the radio telescope, Burnell noticed small, unusual signals, or "blips," on the printout reports, measuring less than a quarter of an inch (on a daily printout report of about 100 feet per day.) These markings were distinctive enough for Bell Burnell to take note, even though she first hypothesized they were produced by a manmade source. Further investigation informed her that the markings kept pace with the stars (operating on a 23h 56m rotation) and were coming from a source located 200 light years away. For their work, staff advisor Hewish was presented with a Nobel Prize (1973), the first given for work in observational astronomy.

Bell Burnell has received numerous awards for her professional contributions, including the Michelson Medal by the Franklin Institute, and the J. Robert Oppenheimer Memorial "Pulsars" continues on page 5.
The Americans started their trek through Russia in Moscow, staying in the apartment of Russian participant Natasha Fath. Among the festivities in Moscow was a tour of its university for a view of the formal traditional education system in Russia, and a visit to the Russian Greenpeace office, which focuses on sustainable agriculture/forestry. The next stop was St. Petersburg, which next year will be celebrating its 300th anniversary of being founded as a city.

A point of interest was the Russian housing, which primarily consists of high-rise apartments. Apartment owners often also own "dachas," which are plots of land outside of the city, which are used for vegetable gardens. Also intriguing was the Russian public transportation system, which included metro systems, trains, and taxies.

Another destination of travel during the exchange program was Sokol. The American group toured Sokol's paper mill, which has been a point of conflict between the mill's ownership and the community for several years. Community activism against the mill led to it being defined as having an impact upon water quality in the area. As a result, a network of stream monitoring programs was established. Using ALLARM as a model, the stream monitoring network uses Russian students, instead of adults, as the monitors, in order to be incorporated into the education system. The monitoring leaders were trained by ALLARM during the first Russian exchange. The data from these monitoring groups has since been used to promote environmental action in the community against the mill.

The second leg of the exchange program took place from Sunday, October 6 to Saturday, October 12. Russian participants included Dr. Maria Tysiachniouk (chair of the Department of Environmental Sociology at the St. Petersburg Center for Independent Social Research, professor at Smolny College in St. Petersburg, Scientific Advisor for several Non-
Government Organizations (NGO), Ivan and Antonina Kouliasova (Center for Independent Social Research), Svetlana Pchelkina (NGO activist and affiliate of the Center for Independent Social Research), Ludmila Katrenko (Center for Independent Social Research affiliate in Volgoda, Russia and community member near the Sokol mill), Vladimir Samohin (videographer for both legs of the Russian exchange) and Johnathon Reisman (an American working in Russia).

The Russians arrived in Carlisle, PA on October 6, after spending some time in Maryland, as they had done in the first exchange. The next day, Monday, they traveled to Lancaster for an Amish farm and house tour. On Tuesday, they visited Harrisburg for a tour of the state capital, the State Museum, and a factory farm rally. They also went on a guided tour of Harrisburg. Wednesday included a visit to the Glatfelter Plant, which had similarities to the Sokol paper mill plant the Americans toured in Russia. The Russians also toured the company's nearby forestry operations, and met with the Codorus Creek activists for dinner. The Codorus Creek activists were interesting company for the Russians, because they had filed a successful lawsuit against the Glatfelter plant over pollution of the water. On Thursday, the Russians toured the Bedford County watershed, and also met with

**POPULATION DECLINE OF THE WOOD THRUSH COULD BE LINKED TO ACID RAIN**

*By Pamela Cowher*

The effects of acid rain on aquatic life and systems have always been a concern to the staff at ALLARM; it is the cause for which ALLARM was founded. Recently there have been studies performed showing that acid rain has not only affected the waterways of Pennsylvania, but may also be having an adverse impact on terrestrial animals. The wood thrush, a species of bird known for its beautiful and haunting song, may now have reason to blame its rapidly declining population on the acid rain phenomenon.

The eastern United States has one of the largest problems with acid rain in the world, as many people have come to realize. This area is also where the wood thrush prefers to breed. Recent studies from a Cornell Lab Study of forest fragmentation show a very strong relationship between a wood thrush's likeliness to breed and the amount of acid rain in the area. This came as a surprise to many scientists who had begun to regard acid rain as a non-issue. Not only is acid rain still impacting aquatic systems, but its impacts are growing.

Though the Clean Air Act has helped control some of the emissions that cause acid rain, the eastern United States is still having many problems. One of the long term effects may be calcium depletion in soil, which may not recover. For
All was sunny and peaceful on Saturday morning. The birds were chirping, deer were grazing, and bugs were buzzing in the Reineman Wildlife Sanctuary (RWS). Humans were also in the RWS this beautiful morning as fifteen watershed enthusiasts gathered to learn a new way to evaluate the health and water quality of a stream through looking at the stream's inhabitants—this case macroinvertebrates. The group was led by Professor Candie Wilderman and included members of the board from the Sherman's Creek Conservation Association (SCCA), volunteers, ALLARM staff, and a few children.

In addition to gathering for the workshop, members of SCCA and ALLARM came together to welcome Dave Hess, Secretary of the Department of Environmental Protection (DEP). Mr. Hess represented the DEP and presented a Growing Greener Grant to SCCA and ALLARM for $32,108. Growing Greener is a five year program in which $650 million is invested in local groups working to clean up Pennsylvania's land and water. Examples of supported activities are preserving farmland, cleaning abandoned mines, and restoring watersheds. SCCA and ALLARM will use this grant over the next two years to undertake a watershed assessment of the Sherman's Creek Watershed in Perry County via expanding and strengthening the local volunteer monitoring programs and educational efforts. The macroinvertebrate workshop is just one example of the trainings that SCCA and ALLARM are going to provide to their volunteers.

After the check was presented, the volunteers gathered inside the Reineman field lab and heard an introduction to how the day was planned. Not many of the attendees knew the exact definition of macroinvertebrate: an animal that is visible to the naked eye (macro) without a vertebral column (invertebrate). Examples are insect larvae, snails, and crayfish. Professor Wilderman also explained the kick-net collection method, where one person stands down stream with a large, flat net while a second person kicks up the first few layers of sediment where macroinvertebrates are found. The momentum of the flowing water carries the macroinvertebrates downstream where they are caught in the net. Kicking is done for about one minute in an area about three feet by three feet. The net is then lifted and carried onto flat dry land, where the macroinvertebrates are collected for examination.

The next step was to return to the lab for examination of the bugs. The samples were split among four tables with three to four volunteers at each table. They enthusiastically looked at their specimens under microscopes and separated them into dishes according to type. Each group had at least seven different species, and everyone enjoyed playing with and keeping their bugs from crawling away. About an hour later, Professor Wilderman gave a talk on macroinvertebrate taxonomy, which helped the volunteers to classify their samples.

Now the big question began to bubble in people's minds: what does it all mean? Professor Wilderman explained to the volunteers how one can determine both habitat and water quality from examining what species of macroinvertebrate are living in the stream or river. Macroinvertebrates are indicators of the impacts of pollutants over time. Macroinvertebrate testing is easy to do in wade-able waters, and a large number of different organisms can be used. The way macroinvertebrates are used is through understanding that, much like larger animals, some species of underwater insects tolerate and therefore survive and thrive in poorer water quality. The type of insect that is in abundance, whether it is pollution tolerate or more sensitive, reveals the overall quality of the water over a long period of time. An abundance of insects that are more sensitive indicate a higher water quality, whereas an abundance in pollutant tolerant insects indicates lower water quality. Overall, the day was both fun and educational for the volunteers as well as for the ALLARM staff. Members of SCCA can use this knowledge (along with the) DEP Growing Greener grant to continue to monitor the Sherman's Creek Watershed and will help in training community outreach in the future.

*See workshop photos page 17*
breeding birds that need a calcium rich diet, like the wood thrush, this is quite a substantial loss. Female birds that are producing a clutch of eggs may require fifteen times more calcium than a pregnant mammal. Without this calcium the eggs laid may be thin, brittle and unable to meet the rigors of incubation. Even if they survive incubation and become hatchlings, the parents are unable to find foods with enough calcium to feed them.

Slowly we are finding out that the impacts of acid rain are spreading to relatively unknown and pristine locations. The lack of breeding places for the wood thrush, such as the Adirondacks, is just the beginning, and Cornell researchers say there is the potential to find similar effects on many other songbirds. The researchers at Cornell claim that more focused studies need to be done in order to understand the processes leading to these patterns and links to calcium depletion from acid rain and the effects it is having on species like the wood thrush. Studies such as the ones being done at ALLARM on the effects of acid rain will hopefully help in this research. This new knowledge of terrestrial effects gives a new importance to the acid rain problem.

The Mully Grub Restoration Project is finally complete! The last step, the construction of the stormwater retention wetland, was started in the spring, and with the rain this fall it has finally become a wetland. As one of the coordinators of SMART (Students Monitoring Aquatic Resources Together) this year, I helped prepare a presentation about the Mully Grub Restoration project and discussed basic wetland functions with Carlisle High School students in November. I became excited about these unique ecosystems through an internship this past summer, near my home in Western Pennsylvania. The experience I gained guided me through my semester’s work at ALLARM.

Aquascape Wetland and Environmental Services is a small environmental consulting firm located in Grove City, Pennsylvania. With only four full-time employees, it was a great place to do an internship because I was able to be involved with all the projects that Aquascape participated in over the course of the summer. Through reading and writing reports, identifying and planting wetland vegetation, digging soil pits, and getting

**THE ENVIRONMENTAL CONSULTING INTERNSHIP**
*By Maggie Allio*

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**PAXTON CREEK WATERSHED AND EDUCATION ASSOCIATION**
*By Colleen Haney*

ALLARM’s new C-SAW partner group, the Paxton Creek Watershed and Education Association (PCWEA) was formed in August 2001 to “solve watershed problems, to protect and enhance watershed resources, and to facilitate hands-on environmental education.” The group’s focus is the Paxton Creek Watershed, located in Dauphin County, Pennsylvania. The watershed drains 27 square miles and is part of the Susquehanna River Basin, which eventually feeds into the Chesapeake Bay. PCWEA was established in order to address the problems created by a history of use and abuse of the streams in the watershed.

**History of Paxton Creek**

During the early urban era of the Harrisburg area Paxton Creek watershed functioned as an open sewer. This spread many diseases, such as dysentery and typhoid, to people throughout the watershed. Later, in the early 1900’s, a dam was constructed along Paxton Creek to control flooding. Wildwood Lake and Park were created as a result of the dam. However, the area became degraded and served as a garbage dump for some time until Harrisburg Area Community College (HACC) was built on the property and efforts were made to remediate and improve the land.

In recent years, increased rates of development of farmland and forest to commercial and residential properties in the watershed have resulted in an increase in the amount of stormwater runoff. This runoff can be harmful to streams because stormwater is not able to penetrate into the earth due to pavement and therefore travels across these surfaces picking up pollutants and higher temperatures as it travels. All these contaminants get dumped into the streams because the development does not allow for stormwater to be filtered adequately through soil or plants before the water enters the streams. As a result, the 27-square mile watershed produces over twice the amount of nutrients and ten times the yields of suspended sediments released by typical forested basins (http://www.paxtoncreek.org).

**Paxton Creek Rangers**

The concern for the effects of stormwater runoff was one of the main reasons that the Paxton Creek Watershed and Education Association (PCWEA) was formed. The group was organized on August 1, 2001. The Association formed a
monitoring team called the Paxton Creek Rangers to document and mitigate the problems outlined by the PCWEA. The objective of the Rangers is to collect data that can affect policy decisions concerning urban and suburban development. They believe that uncontrolled development is negatively impacting the watershed.

A study design was developed by the Ranger’s leader in June 2001 and then revised in February 2002 after a study design workshop given by ALLARM and other service providers. PCWEA then applied for assistance from The Consortium for Scientific Assistance for Watersheds (C-SAW). ALLARM was designated as the lead C-SAW provider for PCWEA, and is assisting the Rangers in reviewing their study design and will provide necessary monitoring training and quality control after the study design is complete. A member of the Rangers also attended ALLARM’s GIS training on September 28.

ALLARM’s Involvement

ALLARM has had three meetings with the Paxton Creek Rangers to review their study design and to provide all the monitors with an opportunity to express their individual concerns about the watershed and their goals for the monitoring program. To help with this process, ALLARM—along with fellow C-SAW partner, the United States Geological Survey (USGS)—provided the group with summaries and a preliminary qualitative analysis of all the available past studies performed on the watershed. ALLARM created an accompanying GIS map of the studies’ sampling sites to reveal any geographical patterns in the findings, along with other GIS maps including land use in the watershed and the location of permitted dischargers.

Through reviewing the summaries with ALLARM, the monitors could see what aspects of the watershed had been assessed by other agencies and where the major problems seemed to lie. The goal was to help the Rangers focus on and prioritize what they want to study based on the information available from past monitoring. The group is currently making final decisions about the parameters to study based on their monitoring goals and the suggestions of ALLARM and USGS. ALLARM has been available to make recommendations throughout this process.

On October 2, 2002 ALLARM attended a stakeholder meeting held by PCWEA. The purpose of the meeting was to bring together representatives from all the commercial, non-profit, and governmental agencies that have an interest in the management of stormwater in the Paxton Creek watershed. PCWEA wanted to bring together all the involved groups to recognize that a stormwater management problem exists and to work towards a solution. A potential outcome of the meeting may be the creation of a residential and a commercial model development project to demonstrate how stormwater can be managed effectively in new and existing developments. The demonstration projects would focus on lessening the impact of stormwater runoff by allowing stormwater to penetrate through the surface to recharge groundwater and to be treated for pollutants in the process. The group plans to reconvene in February 2003 to further discuss the model projects and decide where to move from there.

Beyond Watershed Restoration

The heart of PCWEA and the Paxton Creek Rangers goes beyond watershed restoration to a vested interest in bringing together members of the community to engage in the process of improving their surroundings. The group believes that when community members participate they are more likely to share common visions and are more likely to support the efforts of the group. They have also been able to incorporate the involvement of government agencies and consulting firms in their effort to reduce stormwater runoff. The PCWEA is working not only to tackle long-term environmental problems of the area, but is actively encouraging the involvement of people from all viewpoints to participate in the process. With community and governmental support the efforts and ideas of PCWEA are likely to become realities.

small pub in Malanda, two things remain clear to me. One, any time is a good time for a Guinness. Two, the world is too complex to generalize it into categories of cultural origins. The word “Aborigine” alone refers to over 250 tribes that spoke different languages and lived different lifestyles. The mentality of the traditional Aboriginal cultures may have been swallowed up in the expansion of European power, but the world of thought can never be physically restrained. We all have the power to think for ourselves and once we learn to abandon the false assumptions of judgment, we will be that much closer to finding a lifestyle that brings us closer to true happiness.
On July 1, 2002, the Shermans Creek Conservation Association (SCCA) and West Perry High School began the first step of an on-going collaboration with ALLARM under a grant funded by the Environmental Protection Agency (EPA) to provide students with a co-curricular and hands-on scientific research project focusing on the Shermans Creek watershed. The EPA grant covers funding for ALLARM workshop design programs and need-based assistance to teachers and students during the academic year. EPA will also allocate monies for workshop supplies and the purchasing of scientific equipment required for the study.

As part of this project, West Perry High School teachers are working with ALLARM and SCCA to integrate biological, chemical, and geological watershed science and history of Shermans Creek into their lesson plans. Students are creating projects conducting watershed investigations, developing self-designed testing procedures, and compiling oral histories from local residents, fishermen, farmers, and business people.

Teachers will be equipped with monitoring kits, GIS and topographic maps, and other scientific equipment, which will be readily available for direct use by students. West Perry High School students will examine the current status and ecological health of the Shermans Creek watershed by analyzing issues such as residential development, agricultural and industrial practices, local regulations and zoning. By providing students with current and relevant facts on pertinent local environmental issues, teachers will transform students into distinctive Shermans Creek watershed problem solvers and valuable critical thinkers.

Final project results will be presented April 27 in a town-meeting setting designed to distribute educational information to student peers and the community. The project will be evaluated based on the extent to which the Pennsylvania Department of Education, Environment, and Ecology Standards were met. Finally, a meeting will be organized to assess overall project success by analyzing student achievement, and the town meeting outcome, and amendments will be made to the projects in future years based on recommendations.

This summer, I had the privilege of attending the River Network’s third annual River Rally as a representative of ALLARM. This year’s Rally was held on May 17-21 in Asheville, North Carolina, at a beautiful hotel overlooking the city and the surrounding the Great Smokie Mountains. As I debarked my plane in Asheville, I was greeted by a remarkable scene – swarms of watershed activists from all walks of life, all talking excitedly, waiting to be transported to our convention site on the rotating shuttle buses. Whether it was the obligatory travel mugs swinging from every third bag, the promise of a field trip, or the multitude of discussions I could hear before setting foot in the terminal, I knew immediately this would not be your garden-variety conference.

River Rally Nuts and Bolts

The River Rally is the only national conference for all those working to understand, restore and protect rivers. It is a unique, four-day intensive training geared toward new organizations and those which have been around for years, and seeks to provide directors, staff, volunteers, and board members with an opportunity to learn new skills (from fundraising and organizational development to monitoring strategies, river land acquisition and cutting-edge restoration techniques), build excellence in existing programs, and meet colleagues with common interests. An additional, overarching goal is to “renew and reinvigorate participants for the work ahead” (River Network website, www.rivernetwork.org). In short, the Rally brings together 400+ river conservationists working in the non-profit, public, private and tribal sectors to support and learn from one another in four information-crammed days. River Network’s staff – based in three offices in Oregon, Vermont and Washington, DC – works year-
Stream of Consciousness

'T Rally' continued from page 10

round to line up presenters for the 100+ workshops that will comprise the 10 or so thematic tracks of each year’s Rally. This variety allows the Rally to meet people at whatever level of experience they may be operating, and to provide learning opportunities for the newest volunteer and the seasoned leader.

Tools, Strategies, the Two-Step and a Lot of Talking: The Highlights

I arrived on Friday in the late afternoon, and the sessions were in full swing by Saturday morning, and would continue until Tuesday afternoon. Although I wished I could be in five places at once, I was particularly interested in three tracks: Protecting and Restoring Urban Watersheds, Assessing Watershed Health, and Wellness Within: Healthy Staff Create Healthy Organizations, as well as the sessions dealing with environmental health and justice. Over the course of conference, I learned strategies for leading from the heart; protocols for monitoring bacteria in waterways; success stories, challenges and cutting-edge best management practices for stormwater management; and current applications of the Clean Water Act related to habitat Total Maximum Daily Loads (TMDLs). I was given tips for talking with funders and foundations, ideas for improving local development rules, and I listened at-length to the challenges facing communities who are struggling with environmental contamination.

After the first full day of workshop sessions, we all gathered on the French Broad River on Saturday night for an “old-fashioned Carolina pig-pickin’” (known outside the Rally as a barbeque.) Although the portabella mushroom sandwiches were definitely tempting, I opted for the organically-raised pork from a local college farm. Eating pork is a rarity for me, but I must admit it was delicious. Many participants brought their musical instruments to the conference, so dinner was followed by the annual “River Jam,” which lasted several hours. Following Sunday morning’s sessions, we all participated in one of a multitude of field trips offered that afternoon. I opted to return to the French Broad for a flatwater canoe trip, which was wonderfully relaxing after the energy of the sessions I had been attending. (Plus, I learned how to do “eddy turns,” a skill I happily flaunted later in the summer.)

Sunday evening we had dinner on our own, and after another full day of sessions on Monday, we were rewarded with local bluegrass music and dancing after dinner. I was delighted to discover that many people were familiar with folk dancing, and a huge crowd spent the after-dinner hours having fun with the two-step, waltz, contra-dance, and even a little bit of salsa. After 10 wonderful sessions and all this merry-making, I was quite sad to leave.

Bringing the Rally Home

I believe one of the predominant reasons for the Rally’s continued success – and a major draw for the hundreds of people who gather at the conference every year – is the opportunities it provides for meaningful, sustained interaction with other participants. Breaks and networking time are structured into the schedule at intervals and locations that lead to easy, unrushed conversation. Social events are scheduled in the evenings, an afternoon is devoted to group field trips, and many sessions focus on small-group activities and large-group discussion. Finally, the Rally location is selected such that workshop sessions, social events, eating and sleeping can take place in the same setting, allowing for greater interaction and less time spent in your car.

Although other conferences may offer a range of different sessions, they often fail to stimulate substantive discussion because the location, logistics, or timing do not allow for much more than small talk and card-swapping. Consider this comment by a woman at the James Creek Watershed Initiative in Colorado: “I came away from the National River Rally feeling inspired and recharged to continue my commitment to protecting James Creek. Small watershed groups like ours need to form partnerships with regional and national groups to stay sustainable. We may be one of the smallest groups in the country,

‘Rally’ continues on page 15
AQUATICS CLASS STUDY:
TRINDE SPRING RUN
By Nicole Vecchione

Only a hundred or so feet down the hall from the ALLARM office sits the laboratory that hosts the Analysis and Management of Aquatic Environments class three days a week. The class consists of about twenty Environment Studies/Science majors (five of which are ALLARM student employees) and is taught by Dr. Candie Wilderman.

The Aquatics classroom is not confined to the laboratory, but rather, it uses the Trindle Spring Run watershed as an outdoor classroom where the students investigate aquatic habitat, fauna and flora. This fall, the class undertook research in this vast classroom with the goal of producing a general overview of the watershed.

Much like the LeTort Spring Run, Trindle Spring is a limestone tributary of Conodoguinet Creek located in Cumberland County. Trindle Spring supports a breeding rainbow trout population. Two sets of natural springs feed the stream flow: Trindle Springs constitutes the headwaters, and Silver Springs replenish the Trindle Spring further downstream.

Like most streams in this area, Trindle Spring suffers from agricultural and suburban runoff. However, Trindle Spring Run is faced with three unique issues that make this study even more interesting. These issues are as follows: (1) the Navy Depot in Mechanicsburg contaminated an unnamed tributary of Trindle Spring Run with PCBs, (2) over the past several decades, many sink holes have developed and a large section of the stream no longer holds any water, and (3) situated near the mouth of Trindle Spring is the decaying gristmill dam known as Smith Dam which will be removed within a year.

Wilderman choose to research Trindle Spring Run because of the overwhelming community interest in the watershed. "Everywhere I went," Wilderman said, "people asked about Trindle Spring Run."

Aside from general public interest, there are three groups who have particular interest in Trindle Spring Run: Conodoguinet Creek Watershed Association (CCWA), Trout Unlimited and American Rivers. CCWA is interested in the impacts of intense development in the Trindle Spring Run Watershed. The interests of Trout Unlimited focus more on the rainbow trout population. Finally, American Rivers is the main proponent behind the dam removal. Wilderman described the combined interest of these groups as a "great opportunity" for students and the community to mutually benefit from each other.

The students underwent training similar to that of an ALLARM volunteer monitoring group in each of the three realms of monitoring: biological, chemical and physical. One of the first lab experiences the class shared was study design training. The students worked together to define the purpose of their investigation and what sort of measure would be taken to reach that goal. This session culminated with the class determining their own goals for the Trindle Spring Run study.

The class decided to collect baseline data with special consideration of critical areas. The class strived to produce useful data for the community, emphasizing pre-dam removal baseline data and a preliminary outline of stream quality.

Participants in the Aquatics class have an opportunity to explore more chemical parameters than an average ALLARM volunteer. Students were trained to collect and test water for nutrients, pH, alkalinity, hardness, conductivity and metals including copper, iron, aluminum, magnesium and lead. The Aquatics class used analytical techniques more sophisticated than the standard field kit. Because students had an entire semester to do their research, they were able to learn advanced techniques such as working the atomic absorption spectrometer. Each student became an expert in testing for a specific parameter and shared his/her findings with the rest of the class. Akin to the methods used in completing the analysis of chemical parameters, some students became experts in fecal coliform.

The Aquatics students were also trained in biological parameters including macroinvertebrate surveying. Professor Wilderman's initial lecture directly reflected those techniques used to train ALLARM monitors. However, Wilderman exposed the Aquatics students to more detailed macro identification and quantification in an additional lab. The class was instructed in the EPA's Rapid Bioassessment Protocol and taught to identify macros down to the family level rather than
the broader order level.

The third area investigated by students was the physical habitat present in the Trindle Spring watershed. Using the EPA’s Rapid Bioassessment Protocols, the class broke up into groups and evaluated all of the monitoring sites. The technique employed by students in doing this habitat evaluation was quite similar to those an ALLARM volunteer would be trained to use. Like any watershed group that works with ALLARM, the students came together with a unified goal: to further their education. The project, however, constituted more than just an educational tool for applying classroom knowledge. Students had an opportunity to use their newly acquired skills to improve a community. And there is no more valuable lesson in environmental studies than seeing how your education can change the world around you.

Be sure to check the next issue of Stream of Consciousness for the results of the Trindle Spring Run study!

conservation groups, the scientific community, and state and federal dam removal decision makers.

Two dams being removed are the focus of our preliminary monitoring efforts. The first is Black Dam, which is located on the Conodoguinet Creek in Cumberland County near the town of Newville, PA. The dam was constructed in the early 1900s and provided a water source for feed mill and small-scale hydroelectric generation. The Conodoguinet Creek is a major tributary of the Susquehanna and a priority site for shad restoration by the Chesapeake Bay Task Force. This dam was targeted for removal because once removed, it will help to open up the entire upper watershed of the Conodoguinet for American shad and other anadromous fish. Smith Dam, which is located just off the Conodoguinet on Trindle Spring Run, is the second dam that will be removed. It is an old breached mill dam that is currently blocking the local migration of naturally reproducing Rainbow trout. The Trindle Spring Run is a limestone stream in a heavily urbanized area near Harrisburg, PA that contains one of the few naturally producing populations of Rainbow trout in Pennsylvania. In addition, the altered flow regimes and sedimentation caused by the dam and impoundment are significantly impairing fish habitat. Once the dam is removed, miles of stream habitat will be opened to seasonal migrations of resident and, potentially, diadromous fish.

The collaboration of service providers to integrate volunteer monitoring into dam removal efforts enables ALLARM to work with a new technical support provider, American Rivers. American Rivers is a national non-profit conservation organization dedicated to protecting and restoring healthy natural rivers and the variety of life they sustain for people, fish, and wildlife. American Rivers has a Dam Removal Program that focuses on removing dams that are no longer providing a purpose to the community, are hazardous to people, and create ecological problems. They provide technical assistance to communities and conservation groups on small dam removal efforts and they have an extensive library of related reference material on the subject.

Their goals with this project are to help fill a data void surrounding ecological impacts of dam removal using volunteer
stuck in the mud, I learned first hand what a wetland looks and smells like. As an environmental assistant, my main duties were to assist in office and fieldwork. I became familiar with the wetland delineation procedure, monitoring mitigation wetlands, and planting several different passive treatment systems for abandoned mine drainage.

So, what exactly is a wetland? The Army Corps of Engineers developed a 130 page manual in 1987 to define a wetland through a delineation process. Boundaries of a wetland are determined by three criteria: vegetation, soils, and hydrology.

Hydrophytic vegetation is specially adapted for wet conditions and is classified by the percent probability of occurring in a wetland or upland. Obligate species (OBL) are found almost always in a wetland (greater than 99% probability) and rarely found in uplands (less than 1% probability). Species that occur 67 to 99 percent in wetlands, but also occur in non wetlands (one to three percent chances), are considered Facultative Wetland Plants (FACW). Other categories are determined the same way and incrementally get drier from Facultative and Facultative Upland to Obligate Upland.

Wetland soils are another important part of a wetland and delineators must look for dark, hydric soils that indicate the presence of a wetland. Soils of darker color are evidence of soil saturation. Grey colored soils develop in anaerobic conditions, when chemical reductions of iron, manganese, or other elements occurs. The structure of the soil is also important to the condition of a wetland. Most wetlands have a clay lining below the soil surface that is impermeable, trapping the hydrology in the upper layers of soil and in standing water.

Regardless of the source of hydrology, wetlands must be inundated with standing water or saturated during the growing season. Wetland hydrology is assessed by searching for primary and secondary indicators. Delineators look for drainage patterns, drift lines, sediment deposition, watermarks on vegetation, and visual observation of saturated soils in the field. In the office, they research flood predictions, historic records, and other secondary data. Due to the subjectivity of these parameters, hydrology is the least exact of the three wetland indicators.

A large part of environmental consulting is preparing permits for a variety of construction projects. In order for a developer to receive a construction permit, delineation is necessary to determine if wetlands will be impacted. If wetlands are found on the project site location, a mitigation plan must be presented in the project permit to the appropriate government agency. This permitting and mitigation process is necessary to maintain the "no net loss" goal adopted in the federal government in 1987, "to prevent further degradation of wetland ecosystems" after more than half of our country's wetlands had been destroyed.

However, this permitting process also raises an environmental debate. Wetlands represent another example of the balance between development and preservation of our natural environments. Although the paperwork is cumbersome to destroy wetlands, it can be done with the aid of a consulting firm and/or some political ties. I was relieved that Aquascape had a reputation for its integrity and our work was respected by clients, regulators, and the public.

In addition to preparing permits and mitigation plans, Aquascape is also involved with the actual construction and planting of mitigation wetlands. I spent many days in the hot summer sun bending over and planting wetland vegetation. One site in particular was in McCandles Township, a rapidly developing area north of Pittsburgh. The constructed wetland was mitigating for adjacent wetlands impacted by a new road. This was an interesting experience because I observed all the steps of the mitigation process.

Aquascape is an integral partner in the construction and design of the many passive treatment systems to mitigate for abandoned mine drainage. During my internship I had the opportunity to be amidst this prevailing technology. The funding for most of these projects comes from Pennsylvania Department of Environmental Protection Growing Greener grants and mining bonds.

Passive Treatment systems usually involve a series of vertical flow ponds and limestone drains. The natural physical, biological, and chemical processes of the vegetation and micro-organisms in these wetland ponds filter the mine seepage before the water enters our streams.

Pennsylvania is known historically for its coalfields and the mining industry. In the area I worked, it is hard to find a piece of land untouched by deep mining or surface mining. For those of us who focus on water quality, we know the effects of acid mine drainage on aquatic environments. However, it is encouraging that Pennsylvania is now the leading state in passive treatment systems to remediate for abandoned mine drainage.

Overall, my internship at Aquascape was a great experience.
but our dedication to, and love of, our river is right up there with the largest groups" (Colleen Williams, River Rally 2002 brochure).

Many of you may be thinking that it is not feasible for you or your group members to take five days out of your schedule (and your budget) to attend the River Rally. However, if you can find the resources to attend, the Rally far surpassed many conferences I have attended, both in the tools and skills I obtained and the renewed energy with which I left. Keep in mind that the River Rally "bang for your buck" is unsurpassed and will serve you long after the money is spent. The sessions I attended were thoughtfully prepared and as on-target as any conference I have been to, and I left empowered with significant insights. I interacted with folks from all over the country, from an intertribal council in the Alaskan Yukon Basin to community organizers in the Appalachian coal belt, with activists in border colonies in New Mexico and Texas to coalitions working to protect wild salmon in the Pacific Northwest.

The important thing, however, was not the number of people I spoke with (although anyone who knows me will believe I talked to the vast majority of participants), but the sense of shared action, commitment and responsibility these conversations generated. In a world faced with growing environmental, economic and political challenges, it was reinforcing for me, in the deepest sense, to be reminded of all the work to which so many hundreds of people are dedicating themselves. We can all use a dose of infectious enthusiasm now and again to keep us motivated for the work ahead. And for those whose prospects for attending are not strong, know that I continue to work hard to find ways to incorporate all I learned into my work with all of you.

For more information about River Rally 2003 (May 9-13 in the Columbia River Gorge, Stevenson, Washington), and to inquire about scholarship and financial possibilities, see the River Network website at www.rivernetwork.org.
that gave me a better understanding of the methods and opportunities in the environmental field. Working helped me apply the concepts I have learned in coursework at Dickinson and work with ALLARM. It also gave me insight to the diverse options I will have in my environmental career.

What is a Wetland?

An ecosystem with saturated soils and standing water (at least during part of the year) and vegetation adapted for growth in wet conditions.

Wetland Functions:

- Diverse and productive wildlife habitat
- Breeding and nesting grounds
- Short-term and long-term water storage
- Improves water quality
- Sediment and nutrient retention area
- Ground water recharge

The Russians are particularly interested in developing science shops. These shops provide independent participatory research support to community groups. The shops occur in the form of equitable partnerships between the social “client” and researchers, but they may also be in response to concerns expressed by the community. There are three models for these science shops: 1) community members are the workers, and a university sets the agenda; 2) community members can set an agenda, which is known as science for the people; 3) community-based science research, which is known as science by the people. ALLARM is the third type, and has been used as a model for the Russians, beginning with the first Russian-American exchange program.

The Russian environmental movement has increased in recent times. This is a result of the liberation of the Baltic States and the Chernobyl nuclear incident. International organizations focusing on the environment, such as Greenpeace and the World Wildlife Fund, have grown powerful in recent years. These groups are particularly interested in forest protection. Since most Western countries have destroyed their old-growth forests, these groups are interested in protecting the remaining large forest reserves in Russia.

The Russian environmental movement is developing a more grassroots base in recent years. Professor Wilderman noted a shifting public opinion between her first and second visits. On her first visit, the people she met with were not sure of their ability to influence government policy. On her second visit, there was a stronger interest and commitment to working to influence government and regulatory decisions. As a result of the partnership between Russia and America, both sides have benefited from each other’s experience, with the Russians using ALLARM as their model for watershed monitoring, and with ALLARM learning new methods of explaining its work and applying it to a whole new population of people.
Photos from the October 5 2002 Macroinvertebrate Workshop

MEET THE STAFF Fall 2002:

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Lauren, director

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Colleen, sophomore
Julie, senior
Pam, senior
Alissa, assistant director

Pete, sophomore
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