

Spring/Summer 2006

# Stream of Consciousness

It's Our Birthday! .....1

Top Polluters .....4

EV Streams .....5

Group Spotlight: LRA .....6

Endocrine Disruptors .....7

Wetlands Go to Court .....8

SMART Update .....9

Internship at SRBC .....11

Student Research .....12

Dickinson Goes Green .....14

ALLARM's Big Move .....15

Costa Rica .....16

Study Abroad in India ..17

Luce Semester Update ..20

Meet Dawn Thorpe .....21

Where Are They Now? ....23

Senior Reflections .....26

a publication of the Alliance for Aquatic Resource Monitoring

**Celebrating 20 years**



**You Say It's Your Birthday...  
ALLARM Celebrates Our Twentieth  
Anniversary  
By Becki Walker**

At our data-to-information workshops, one of the goals we ALLARMies have is teaching participants to “find the story” in their data. Finding the story means looking at evidence, in this case data points, and using it to construct a tale of what’s gone on where, and why this happened. This semester, I had the opportunity to find the story of ALLARM through reviving our archives project, sifting through boxes of past bank statements, letters to monitors, and thank-you cards in an attempt to tell the tale of the little service provider that could, and did, make a difference. The following is the story of ALLARM, as I’ve constructed it.

Not so very long ago and not so very far away, there lived an environmental science professor named Candie Wilderman. Candie was passionate about the environment, and dedicated much of her time to teaching her students, often staying at school late into the night to do her work. One day in 1986, Candie was approached by a State Representative, John Broujos, who told her of an idea he’d had: normal people could collect scientific data on streams faced with acid deposition, and scientists could use this data to help convince legislators to make stronger acid deposition control laws. Candie was skeptical, though: why would a person want to collect scientific data for fun? Would it really be usable?

**“Birthday” Continued on Page 2**



educate. engage. empower.

### *"You Says It's Your Birthday"* *Continued from Page 1*

The next day, after teaching a class, Candie discussed the concept with a student, Lisa Hovis. Lisa immediately decided that the idea was worth giving a shot, so the two wrote an article for the *Pennsylvania Angler* about a new organization: the Alliance for Acid Rain Monitoring. Many volunteers responded to the article very quickly, and the dream of an acid rain monitoring organization became a reality.

As ALLARM grew, more students began working out of the tiny office off of James Center Room 18. Some of these students were very creative. One decided that ALLARM needed to educate students as well as adults, and created Students Monitoring Acid Rain Together (SMART). Students also worked together to create a newsletter for monitors

in June 1987, naming it *Stream of Consciousness*.

However, Candie realized the stream monitors were growing restless. Over coffee and doughnuts at meetings, they would ask questions about agriculture, point source pollution, and stormwater runoff. Acid deposition was not the only issue these people were concerned about – they wanted to save their streams from a multitude of negative effects. As a result, they started forming groups known as watershed organizations that were dedicated to studying all the problems a stream could face.

By 1996, Candie and the students realized that it was time for a change. ALLARM wasn't just about acid rain anymore, it was about watershed protection, and those rowdy students needed someone to look after them while Candie was in class. ALLARM moved to an office in the Biddle

House, Lauren Imgrund was hired as Director of ALLARM, and the acronym was changed to mean "Alliance for Aquatic Resource Monitoring."

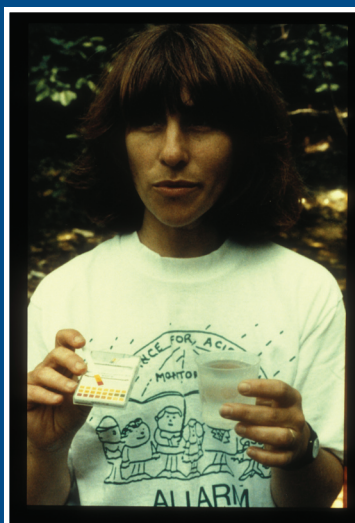
The years flew by as our organization's reputation and number of participating volunteer watershed groups grew. In 2000, ALLARM moved back into the newly-renovated James Center, and Assistant Director Alissa Barron was hired a year later. Lauren and Alissa made a great team building community relationships and protecting water quality. In 2003, Alissa bid a fond farewell to ALLARM, and Julie Vastine was hired in her place.

Our fearless leaders were now up to their hip waders in data. Thanks to more than 500 volunteers, some of whom monitored once a week for 15 years, we had amassed the largest pH and alkalinity database in PA. In 2003, we realized that

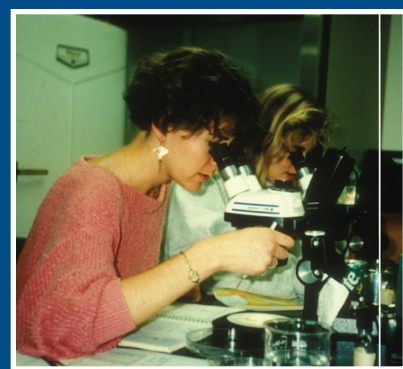


*First Logo  
1986*

## FLASH BACK



*Founder Candie Wilderman  
1988*



*Volunteer Monitors  
1996*



we were devoting far more time to our watershed partner groups than our acid deposition volunteers, and it was time for ALLARM's mission to alter again. We closed out the acid deposition project, celebrated with a Common Hour Presentation featuring our monitors in 2005, and our acid rain volunteers lived happily ever after, as did Julie Vastine, who is continuing her work with the environment in Washington, D.C.

2005 also brought another exciting moment for ALLARM – we learned that the Environmental Studies Department had been awarded a grant from the Henry Luce Foundation to create an Integrated Watershed Field Semester. Through this program, participating students would have an opportunity to complete an independent research project

for a local watershed group, examining an issue the group might not have time or resources to otherwise address. 2005 also brought another character into our story – new Project Coordinator Dawn Thorpe.

This year, ALLARM will finish another chapter of our tale. 2006 will be our last year in the James Center, which will be demolished this summer. As ALLARM prepares to bid farewell to the last twenty years and look forward to the next twenty, I thought an appropriate way to conclude this story would be with a few facts about what a difference ALLARM has made thanks to our dedicated volunteers and staff.

During our history, ALLARM has had two acronyms and two logos. We've employed approximately 100 students, and four professional staff. Volunteers have collected 39,815 different points of data

from 717 different sites. Students in the lab have analyzed about 5,000 samples, and we've visited the Letort 96 times to collect water from our local stream. Something that can't be counted, measured, or analyzed, however, is the impact that ALLARM and our watershed groups have had on the community and the people who live there. I can tell you from personal experience that moments like hearing a middle school student explain the concept of non-point source pollution or watching a volunteer successfully analyze a sample for nitrate is priceless. This notion is what we should celebrate on ALLARM's twentieth birthday: the idea that even if ALLARM hadn't survived for this long, our groups would still be alive and kicking, because we've taught them how to do everything without us. Now, that's what I call a happy ending.

### *Director Lauren Imgrund 1997*



### *SCCA Youth Day 2005*



### *A new beginning in the Kauffman building 2006*



*a glimpse of ALLARM history*

# ***The Worst of the Worst: Top Water Polluters in Pennsylvania and the U.S.***

*By Adrian Broderick*

## ***Top United States Polluters***

*Water Releases of all Toxic Release Inventory chemicals by all reporting sectors.*

<b><i>Rank</i></b>	<b><i>Company</i></b>	<b><i>Location</i></b>	<b><i>Pounds Released</i></b>
1	AK Steel Corp. (Rockport Works)	Indiana	22,693,591
2	BASF Corporation	Texas	15,945,533
3	IBP Inc.	Nebraska	6,000,250
4	Smithfield Packing Co., Inc. (Tar Heel Div.)	North Carolina	5,448,599
5	Excel Corporation	Colorado	4,484,820
6	DSM Chemicals N.A., Inc	Georgia	4,197,140
7	AK Steel Corp. (Coshocton Works)	Ohio	3,905,117
8	Tyson Foods, Inc. (Sedalia Complex)	Montana	3,398,516
9	IBP, Inc.	Illinois	3,001,250
10	USS Gary Works	Indiana	2,971,479

## ***Top Pennsylvania Polluters***

*Water Releases of all Toxic Release Inventory chemicals by all reporting sectors.*

<b><i>Rank</i></b>	<b><i>Company</i></b>	<b><i>Location</i></b>	<b><i>Pounds Released</i></b>
1	Taylor Packing Co., Inc.	Wyalusing	1,918,948
2	Carpenter Tech Corporation	Reading	1,131,208
3	Osram Sylvania Products, Inc.	Towanda	1,000,795
4	Allegheny Ludlum Corporation	Leechburg	911,260
5	Allegheny Ludlum Corporation	Brackenridge	700,220
6	J & L Specialty Steel L.L.C.	Midland	515,313
7	Allegheny Ludlum Corporation	Vandergrift	485,515
8	Dairy Farmers of America, Inc.	New Wilmington	466,394
9	AK Steel Works	Butler (Route 8 S.)	382,000
10	AK Steel Works	Butler (Bantam Ave.)	330,380

Source: Toxic Release Inventory Reportings, available at [www.scorecard.org](http://www.scorecard.org).



## Exceptional Value Streams

### By Micah Weintraub

For the past semester, I have been investigating Pennsylvania's Water Quality Standards using Geographic Information Systems (GIS) and the Department of Environmental Protection's (DEP) eFACTS web database. There has been speculation that even though Exceptional Value classification is supposed to protect streams from ANY future degradation, in practice, new permits have been, and continue to be, issued to facilities that impact protected streams. While the project is still underway, this article presents my findings thus far.

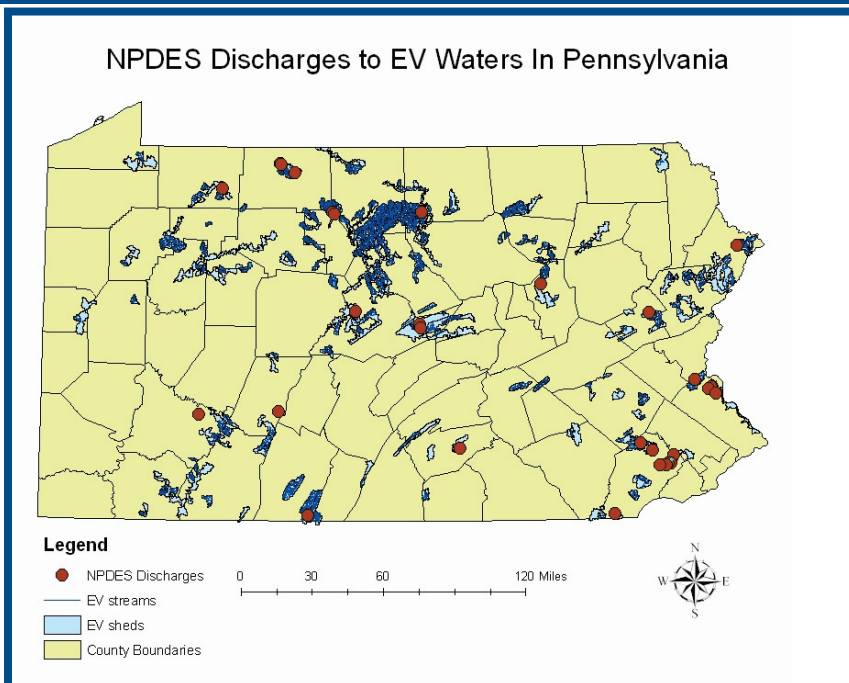
Pennsylvania's Chapter 93 Water Quality Standards are implemented through DEP. The stated purpose of the standards is to enable DEP to protect, maintain, and restore water quality in Pennsylvania's rivers and streams. Under Chapter 93, water bodies are assigned "designated uses" - denoting the level of protection that must be maintained.

Rivers and streams with the most outstanding water quality are designated as "High Quality" (HQ) or "Exceptional Value" (EV). According to Chapter 93 Standards, both HQ and EV waters *shall be maintained and protected*, indicating that no new discharges will be permitted if they adversely affect water quality. The only written exception to this rule is for HQ waters, where discharges may be approved

in instances where the person seeking a permit can successfully demonstrate that lower quality is necessary to accommodate an important economic or social development. With EV there is no such exception. Thus in an EV watershed, if a prospective discharger is unable to demonstrate a non-discharge alternative or that the proposed discharge will maintain and protect existing water quality, DEP must deny the requested permit or approval.

Designated use is determined using a peer-reviewed, biological assessment procedure that considers physical habitat data, benthic macroinvertebrates, fish data, or long-term chemistry data. To qualify for HQ designation, a waterway must achieve a score of at least 83% on the biological assessment and must surpass DEP water quality criteria at least 99% of the time (based on a one-year assessment of chemical

parameters). To qualify for EV classification, a river or stream segment must meet the HQ criteria and at least one of the additional criteria listed below. If a water is located in a national wildlife refuge or state game propagation and protection area, a designated state park or state forest, national natural landmark, federal or state wild river, federal wilderness area or national recreational area it can be classified as EV. Because of its stringency, EV classification is afforded only to the most pristine waters in Pennsylvania. Additionally, if a water is an outstanding national, state, regional or local resource, achieves a score of at least 92% using the biological assessment procedures, is of exceptional recreational significance, is designated as a "wilderness trout stream" by PA Fish and Boat Commission, or is of exceptional ecological significance



**"Exceptional Value"**  
Continued on Page 24

# *The Letort Regional Authority: Uncommon Protectors of Carlisle's Uncommon Treasure*

*By Adam Wickline*

This issue's watershed spotlight highlights one of ALLARM's nearest neighbors and partners in the fight to protect the aquatic resources of Pennsylvania. ALLARM's home watershed of the Letort Spring Run is protected by this unique, quasi-governmental organization: The Letort Regional Authority.

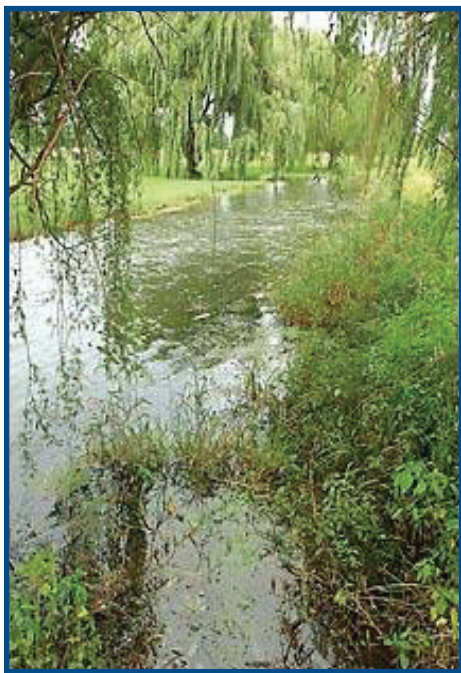
The story began in 1973 when a group of local residents met to express their concerns over the future of the Letort Spring Run. They knew that many local entities had an interest in preserving the Letort for numerous reasons. As a result of these meetings the Letort Regional Authority was established in 1974. The Letort Regional Authority (LRA) was created in cooperation with five municipalities within the Letort Spring Run wa-

tershed to develop "recreation and flood control in the Letort Spring Run watershed. This includes the improvement of water quality and flow and the preservation of the environment by removal of natural and man-made pollutants and the restoration of the natural conditions and amenities" (from the Articles of Incorporation). The LRA represents officials from the Borough of Carlisle, Cumberland County, South and North Middleton townships, and Middlesex Township. The US Army War College also has a position in the organization. It prides itself on being the only incorporated municipal authority with a watershed-specific objective in Pennsylvania. Unlike most watershed organizations, the LRA was mandated by local governments and receives annual funding from these governments.

But what is so special about the Letort Spring Run that it would warrant the creation of this municipal authority? The local citizens knew that this was a loaded question because the Letort is important for numerous reasons. The LRA knows that the Letort's significance is not because it's a huge, rushing, Rocky Mountain-type stream that is great for kayaking. The reasons why the Letort are important are much more intricate and complicated. The Letort is a product of the complex geologic connections between these different municipalities that form as a result of the limestone bedrock. Point sources,

storm drains, and septic systems are all connected through both the underground and above-ground movement of water throughout the watershed. The Letort represents the health of the entire watershed, whether it be clear, cold, and untainted or fouled and degraded. Presently, it represents a healthy watershed from the headwaters to Carlisle since it has obtained Exceptional Value status for this reach. It has also obtained Scenic River designation for the entirety of the stream. Finally, the Letort is famous for its naturally-reproducing trout population, and the trout fishing that follows. Some call it the graduate school of fly fishing because of how challenging it is to get a bite.

The LRA has been very active protecting the Letort's waters. They have established streamside trails on old railroad beds through the "Rails to Trails" program so that people could have a place to appreciate the Letort for its beauty as well as access the stream for fishing. In 2000, they established a river conservation plan that intricately detailed all the issues within the watershed based on scientific observations as well as landowner surveys and land use mapping. Based on these data, they have established multiple management strategies to mitigate current threats and prevent future threats from occurring. The LRA also played a significant role in the restoration of the Mully Grub, one of ALLARM's



*The Letort Spring Run*

largest projects. This included improvements, such as handicapped fishing platforms and embankment reconstruction, to the Letort itself in the highly visible Letort Park, where the Mully Grub meets the Letort.

Most recently, the LRA is launching a new program entitled "Friends of the Letort" that would give volunteers the opportunity to work with the LRA to conduct future physical improvements along the nature trail. Some projects include new signs, educational areas, and improvements for the trail such as widening it and adding new stone dust to stop the growth of encroaching vegetation. In addition to widen-

ing the trail, it will be lengthened as well. A new segment from Harmony Hall Road to Post Road in the lower reaches of the Letort has been approved along a new housing development in which the LRA has obtained riparian land. Another expansion from Letort Park to Harmony Hall (through the town of Carlisle) is also being considered in a feasibility study. The money for these projects will hopefully come from a grant issued by Cumberland County's Land Partnership Grant Program, which funds efforts to preserve open space and other initiatives to protect natural and cultural heritage in the county. However, the LRA will have to wait until this summer to know if their proposal is accepted. In addi-

tion to providing labor, the Friends of the Letort would aid the LRA's goal of improving public outreach and increasing public involvement.

The LRA is working hard to keep an eye on the Letort Spring Run so that this precious resource can be appreciated by many future generations. Thanks to their foresight, they have realized the importance of this beautiful and unique stream that runs through our backyards. Let's hope that their current and future programs will be successful in their goals of protection, restoration, and public appreciation.

## ***Endocrine Disrupters***

### ***By Danielle Cioce***

**W**hile listening to plenary speaker Tom Benjamin, president of the Environmental Alliance for Senior Involvement (EASI) at the Volunteer Monitoring in the Mid Atlantic conference this past November in beautiful Canaan Valley, WV, I was alerted to an environmental issue that I had not considered previously- the effect of endocrine disrupters and pharmaceutical products in our waters. Since 1938 when a synthetic estrogen named diethylstilbestrol (DES) was used to treat pregnant women for a variety of problems, there has been concern about the potential harm from endocrine disrupting chemicals. Over four million women took DES between 1938 and 1971, and numerous health problems have been discovered in both these women and their

children. Endocrine disrupters are a current issue of debate among scientists, as both humans and aquatic life are affected by these chemicals. New monitoring techniques have emerged which may now allow widespread assessment of the problem, possibly followed by regulation as this new science develops.

In order to understand how these chemicals work, some background in biology is necessary. The endocrine system regulates development, growth, reproduction, and behavior in animals. Endocrine glands (such as the pituitary, thyroid, pancreas, and adrenal glands and the testes and ovaries) produce hormones, which travel into our bloodstream and act as chemical messengers. These hormones travel to tissues and organs trigger-

ing certain responses in the corresponding tissues where they bind to receptors. Endocrine disrupting chemicals (EDCs) interfere with this process by either mimicking or blocking natural hormones. EDCs cause harm by preventing the creation of hormones, binding to hormone receptors, or preventing the natural breakdown of hormones.

Many chemicals are thought to be endocrine disrupting, including perchlorate, dioxin, arsenic, DDT, polychlorinated biphenyls (PCBs), and atrazine (a popular pesticide). These chemicals enter our environment in several ways. Pesticides run off into streams, industrial by-products are released into the water and air, incompletely metabolized pharmaceuticals from both animal and human waste end

***"Endocrine Disrupters"***  
***Continued on Page 19***



## Wetlands Under Fire: Habitat Protection Heads to Court

By Lindsay Hunt

<http://www.climate-science.gov/infosheets>



**A view of a forested wetland similar to the one disputed in the Carabell case**

“Wetlands are among the most productive ecosystems in the world, comparable to rain forests and coral reefs” according to the U.S. Environmental Protection Agency (EPA). They act as a critical link between water and land; combining the cycling of nutrients, the energy of the sun, and the flow of water to create a distinctive ecosystem. Wetlands are critical features of a watershed.

There are several classifications of wetlands including non tidal and tidal marshes, swamps, fens, and bogs. All are extremely valuable for filtering pollutants, water storage, biological productivity and retaining sediments. Wetlands play an essential role in creating habitats for many species, housing 31 percent of plant species in the United States and provide nesting and feeding grounds for around one half of North American bird species.

Although these ecosystems are so valuable, there is concern about their destruction. Around 60,000 acres of wetland are lost each year in the United States. The loss of this essential environment is due to a variety of human and natural causes including dredging and stream channelization, drainage, damming, runoff, logging, mining, changing nutrient levels, erosion, storms, droughts and rising sea levels.

One of the main contributors to wetland destruction is development and construction. In 2001, a Supreme Court decision regarding the Clean Water Act limited the regulation of wetlands by the Army Corp of Engineers. Intrastate wetland protection is dependent on state regulations, resulting in the decision to limit and isolate wetland protection.

The Clean Water Act (CWA), was established in 1972 by the EPA as the Federal Water Pollution Control Act, and this legislation has become the basis for water quality protection in the United States. The CWA works to reduce direct pollutant discharges and its goals include the protection and proliferation of wildlife and recreational ability. The establishment of the Wetlands Reserve Program (WRP) is another effort created to protect wetland habitats. This program was reauthorized in the 2002 Farm Bill to provide technical and financial assistance to individuals to

protect, restore and enhance wetlands on their property.

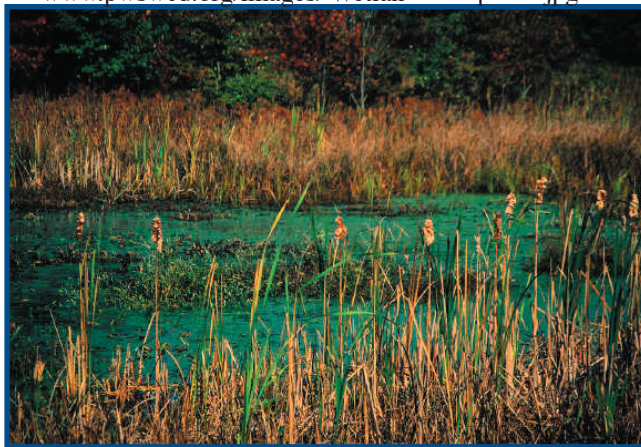
However, the strength of these laws may be tested. The ruling of two current Supreme Court cases, *John A. Rapanos v. United States of America* and *June Carabell v. United States Army Corps of Engineers*, could potentially have a significant impact on wetland protection. Both cases are a test of the federal government’s authority in the regulation of “headwaters of traditionally navigable lakes and streams, along with the wetlands connected to those waters” (Watson). The government has no set law for what constitutes a navigable waterway, and as a result, the determination must be made on a case-by-case basis.

The premises of both cases center around the filling of wetlands for development purposes. In the case *John A. Rapanos v. United States of America*, Mr. Rapanos, who owns land in various Michigan counties, planned to construct a shopping center. He attempted to obtain this permit, however it was determined that the location was most likely a regulated wetland. Choosing not to comply with the EPA, he began filling the wetland. He is now charged with illegally discharging fill material into protected wetlands. In the case *June Carabell v. United States Army Corps of Engineers*, Mr. Carabell along with other individuals planned to construct a multi-family condominium

[www.pwswcd.org/images/Wetlands%20photo.jpg](http://www.pwswcd.org/images/Wetlands%20photo.jpg)

development. However, the location is one of the few remaining forested wetlands in Macomb County, Michigan. This area is located within close proximity of Lake St. Clair, which is part of the Great Lakes drainage system. The agency determined that filling of the wetland would result in significant environmental effects. These effects include an increased chance of degraded water quality, sedimentation and erosion; all important factors in the maintenance of this location.

With the appointment of Justice Alito, as the



**Wetlands**

***For more information check out:***

<http://www.epa.gov>

<http://supreme.lp.findlaw.com>

Watson, Pat. "DEQ Director Urges U.S. Supreme Court to Protect Michigan's Waters" Department of Environmental Quality

head of the Supreme Court and the increased number of conservative justices, problems may potentially arise regarding environmental protection. Many now worry that wetlands protection will be limited or neglected. The decisions of the Rapanos and Carabell cases may have a significant impact on future Supreme Court decisions, establishing a new precedent for the protection of bodies of water.

## ***How'd You Get So SMART?***

***By Matt Freedman and Meghan Klasic, SMART Coordinators***

**T**his has been the busiest year ever for the Students Monitoring Aquatic Resources Together (SMART) program, and it's been quite an adventure! Not only has SMART reached more schools than ever before with a record number of presentations, but SMART has also changed the lives of its coordinators. Meghan Klasic, a senior, began working with SMART in 2003. At that point, SMART gave a few programs throughout the year and was just beginning to integrate Pennsylvania's academic standards. In 2005, sophomore Matt Freedman joined SMART as co-coordinator and quickly became acquainted with

the ins and outs of the program. Together, they gave a new whole new meaning to what it means to be SMART. In order to get a better understanding of what goes into the program, here's a look inside the minds of the SMART coordinators:

When we first accepted our position as coordinators for SMART, neither of us had any idea what we were getting ourselves into. With our combined efforts and total dedication, we've been able to help the program grow in some new directions. At the same time, it's helped us grow as well. In past years, SMART did about two to three presentations a month. This simply wasn't enough for us, so we set

out to spread SMART throughout Cumberland County and beyond. For the academic year, we've orchestrated and completed over thirty hands-on presentations with more than ten different schools and youth organizations—eighteen of these events were in the spring semester alone! At staff meetings each week, there are always some groans (of excitement and anticipation, we're convinced) when it's our turn to report on SMART, as there is never a drought for us!

Over the first few weeks of the school year, we sat down together to see how we could reshape

***"SMART" Continued on Page 10***



**“SMART”**  
*Continued from Page 9*

SMART and give it a boost. Our personalities clicked immediately, as we both shared an infectious enthusiasm and a problem with saying “no.” We discussed at length all of the things we wanted to accomplish, the programs we wanted to create, and the variety of presentations we wanted to take part in over the semester. This opportunity to branch out and take SMART to a whole new level was more that we could have ever asked for. We changed SMART from a more-or-less strictly “water-based” program and have incorporated other aspects of environmental education such as “living versus nonliving.” By expanding the program, we’ve opened new doors and worked with many incredible classes.

**Matt Freedman**

This past August I was just beginning to learn the many steps involved in making a SMART presentation. From the initial contact with teachers to the self-evaluation forms after the presentation, everything was new to me. Nine months later, however, SMART and I have become almost synonymous around the office. I’ve always enjoyed working with kids, and was planning to pursue a career writing and illustrating environmental children’s books. After working with SMART for a year, I’ve decided to focus on environmental education—specifically aquatics, of course!

In creating a presentation, I always try to make it as interactive and hands-on as possible. I’ve learned that a chance to get up and play a

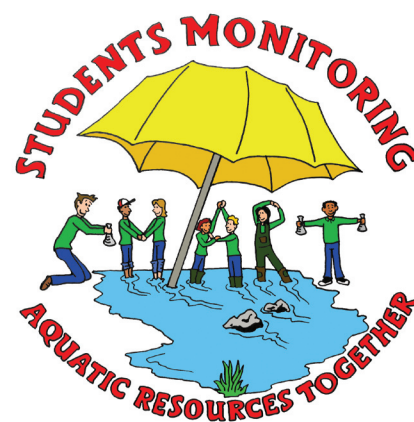
game or get your hands muddy in the stream is the best (and most entertaining) way to introduce environmental concepts. I’m constantly amazed at how much information younger students not only retain, but also entirely comprehend after just a short presentation. Their minds are more than just sponges; they are like wetlands that absorb and refine knowledge and pass it on to someone else. I think that programs like SMART are essential in the classroom, as it introduces kids to environmental concepts in a whole new way. If a school doesn’t have stream access on site, no problem! We don our trusty waders, collect macroinvertebrates, grab water samples, gather our chemistry kits and bring the stream into the classroom. I know that the skills I’ve developed, the hidden talents I’ve discovered, and the lessons I’ve learned from SMART will help me for years to come.

**Meghan Klasic**

Perhaps one of the greatest elements of being a SMART coordinator is not only seeing the program change and transform itself to become a more integral part of ALLARM, but also the realization that the SMART program has changed my life and helped me to grow. I have had the opportunity to work with community youth of all ages, from kindergarten all the way up to college, on a variety of environmental issues. I have mastered the art of lesson planning, hands-on activities, and arts and crafts. I have also gained so much respect for all teachers—the hard work, stress, and dedication that must be put into a single class are unfathomable.

Working for SMART has been one of the best experiences of my life and I truly believe that. The ability to fill young minds with any amount of environmental knowledge is so fulfilling. The best part of teaching is when you see a look of complete comprehension in the students’ eyes. The “cherry on top,” so to speak, is when a student who understands the material is able to help another student who is struggling. As the teacher, it makes me feel as though I’ve actually gotten through to the students and that they really do care that I am taking the time to teach them a new idea or concept. It is without hesitation that I say the following: SMART was the most rewarding job that I have ever had and I will continue to use the concepts and experiences that I learned while employed by ALLARM in all of my future positions.

We’re so proud of what we have been able to accomplish this year, but none of it would have been possible without the constant support, gusto, and patience of ALLARM’s irreplaceable staff. We hope that SMART will continue to expand for years down the road—or rather, downstream!





## The Susquehanna River Basin Commission

By Audrey Fisher

This past summer, I interned at the Susquehanna River Basin Commission (SRBC). Each day I caught a bus from my home in East Petersburg to the train station in Lancaster City. Forty-five minutes later I would arrive at the station in Harrisburg and walk another 30 minutes to the SRBC office along Front Street. From the window in my office, I could look out over the beautiful Susquehanna River: a constant reminder of the importance of the work we were doing.

The Susquehanna River meanders 444 miles from its origin at Otsego Lake near Cooperstown, New York, until it empties into the Chesapeake Bay at Havre de Grace, Maryland. This watershed encompasses some of the main population centers of the east coast, and for this reason the waters are threatened by pollution and over-withdrawal. To address these problems, in 1970 New York, Pennsylvania, and Maryland came together to form the Susquehanna River Basin Commission. The Commission's role in Pennsylvania is to protect water quality and quantity throughout the state. The Water Resource Management Division is responsible for drought coordination, flood management protection, and ground water management. The division in which I worked was the Watershed Assessment and Protection (WAP) Division. One task of this division

is monitoring and assessment for such programs as Chesapeake Bay Monitoring, Interstate Streams Water Quality Network, and State Surface Water Assessment for the Department of Environmental Protection (DEP). These projects involve collecting samples for nutrient testing, as well as performing physical and macroinvertebrate sampling in the field.

The most exciting part of my time with the SRBC was the Total Maximum Daily Load (TMDL) project for the Conestoga River Watershed. A TMDL is the amount of a specific pollutant a body of water can withstand without further degradation (this can be thought of as a pollution budget). The calculation of the TMDL for a body of water implies appropriate limitations on all discharges into the water. As a resident of Lancaster, I was excited to study my home watershed. With waders, flow meters, and kick nets in tow, we explored

the streams I have seen all my life but never really understood or appreciated. I came to know so much more about the threats to my watershed from agriculture, industry, and sewage treatment. With knowledge also comes empowerment to act by voicing concerns to local decision makers and someday joining a monitoring group. Along with a healthy dose of optimism however, came an equal amount of pessimism at the daunting task of restoring this watershed, which is increasingly being populated and developed. I took comfort in the fact that, although we encountered many setbacks, we were taking steps in the right direction. Field studies involved detective work in order to locate the discharge point as well as scientific know-how (and athletic prowess) to collect water chemistry and macroinvertebrate data. Data collection is only the beginning.

*"SRBC" Continued on Page 25*



www.tifft.com/ulsteriver.jpg

*A view of the Susquehanna River*

## Luce Semester Research Summary

By Meghan Klasic

With the end of the fall semester at Dickinson in view and a trip to Louisiana just on the horizon, all 15 students of the Luce Semester worked to put the finishing touches on their semester-long research projects. The Luce Semester was unique in the fact that all 15 students completed a project on a topic of their choice which also met the needs of ALLARM's partner watershed groups (in most cases). The projects ranged from dam removal to invasive plant species to volunteer recruitment plans. A few of these projects were introduced in our previous issue of *Stream of Consciousness*, and this article will discuss conclusions which students came to at the end of the semester. Two of the projects have actually been extended into year-long projects and are described as such below.

I am completing a year-long study on the use of aquatic plant communities in Letort Spring Run (Cumberland County, PA). The idea was sparked by the Codorus Creek Improvement Partnership (CCIP) and the research is trying to

provide evidence as to the feasibility of using aquatic plants as bio-indicator of stream health. This past semester I was able to collect water column, distribution, visual, and past sediment data at six sites. The six sites encompassed all major land uses in the Carlisle area (farming, residential, urban, trucking). It also included a site currently undergoing development. This site will be used as a comparison of before and after data. At the end of last semester I was able to map and proportionately depict the reaches and abundance of various aquatic vegetation at each of my sites. This semester, with the help of the Pennsylvania Department of Environmental Protection (DEP), I will be collecting sediment samples for analysis, adding four more sites to my study, and shifting my main focus to book research, in order to better understand the relationships between various environmental parameters and the aquatic plants. The aim for the end of the year is to develop further evidence of the viability of using different types of submerged aquatic vegetation as bio-indicators of stream health.

Julia Hyman conducted research on effectiveness of a liming project on two sites on Mountain Creek. She worked alongside the Yellow Breeches Watershed Association to complete an analysis of pH, alkalinity, flow, and nitrate concentrations both above and below the location of lime addition to the stream. The purpose of the lime addition is to mitigate the high



levels of acidity in the creek due to acid rain. Her research found that the lime sand was only slightly effective at low flows where pH at her two sites raised from 3.2 to 4.61 and 5.02 to 5.92, respectively. The lime sand is being added for three years, and when the project is over, close monitoring of water chemistry and macroinvertebrates will still be required. Julia also suggests using diatoms as a bio-indicator because they would show negative impacts of pollution before macroinvertebrate populations.

Adam Wickline worked with Ridge and Valley Streamkeepers (RVS) to examine three methods of benthic macroinvertebrate collection and analysis, based on: ease, scientific accuracy, and practicality of use. He compared the EPA volunteer monitor's Environmental Alliance for Senior Involvement (EASI), the Virginia Save Our Streams Index (SOS), and the EPA Rapid Bioassessment Protocol (RBP), to determine the "best" collection method for RVS. Adam found that EASI was indeed the best protocol because of its simplicity of use and close correlation with the RBP,



ALLARM Photo Database

*Shrimp from Louisiana*



which is a more professional-type macro assessment method. Upon completion of his research, Adam traveled to RVS and presented his findings, which the group happily adopted and put it into effect. When questioned on what he learned the most through this project, Adam responded that, "...there are a lot of different protocols and ways to do [macroinvertebrate collections]. There's no one type that all groups should use; they need to base it on their research goals."

Becki Walker examined faith-based environmental activism by conducting interviews with the watermen of Smith and Tangier Islands (on the Chesapeake Bay). Although numbers of those interviewed were not statistically significant, based on those interviewed she did conclude that religion can be a motivation for environmental involvement. However, she found that this motivation must come from the community: an outside source attempting to start

an environmental group may seem successful while the source remains present, however upon departing, involvement will decrease. In other words, environmental involvement must be a community action based on its own initiative. Becki is continuing her research this semester with a slight shift in topic. She will again be researching motivations for volunteer environmental activism, however this time her focus will be on the members of the Coalition Against the Incinerator, a volunteer group fighting the operation and proposed retrofit of a municipal solid waste incinerator in Harrisburg, PA.

The final research project this article will discuss is the effect of diesel engines on airshed quality, as well as the surrounding watershed. The student researcher, Alex Coyle, worked to determine how heavy-duty trucks are contributing to air pollution in Middlesex. Through interviews with truck terminal operators, examination of air monitoring data by PA DEP, and reviewing previous studies on stormwater runoff, the data was compiled

and used by Conodoguinet Creek Watershed Association (CCWA) to understand air quality impacts on the larger watershed. He concluded that the air quality in Cumberland County is very poor and one major reason is the high volume of diesel trucking traffic. He states that because there are no air monitors around, one cannot determine how much pollution is being emitted by the trucks. He also made two suggestions to CCWA including 1) a push for reinstallation of real-time monitoring devices, and 2) for the citizens to monitor air quality through use of the "bucket-brigade" methodology or to simply become more involved in local air quality issues. In addition, he suggests that ALLARM and the Clean Air Board (CAB) seek to get more citizens interested in helping with the cause.

The Luce Semester provided students with hands-on opportunities to study a topic of interest which also met the needs of various partner watershed groups. In this way, students worked on projects that have made a difference in the local community. Whereas most students are usually researching subjects and writing papers which are discarded or abandoned once a grade is assigned, these projects were completed and sent to watershed groups in an effort to allow them to achieve their long-term goals. For more information about the student research topics, feel free to contact us at [allarm@dickinson.edu](mailto:allarm@dickinson.edu).



ALLARM Photo Database

*Sunset on Smith Island in the Chesapeake Bay*



## Sustainability Takes Dickinson by Storm

### By Jack Treichler

Lately, people around Dickinson College have been seeing a new slogan everywhere: “The Red Devil Is Going Green.” For those of us keeping track of this sort of thing, it is hard not to notice that a whole slew of new initiatives are popping up around campus to encourage sustainability and environmental awareness in the campus community.

There is a wide range of reasons for this college-wide wave, but the primary impetus is an economic one. In the fall of 2005 the college projected that utilities expenditures for the winter would exceed the budgeted amount by \$637,428 because of rising fuel costs. The College administration decided that the situation presented a perfect opportunity to lessen the college’s ecological footprint and to help us become more environmentally friendly. To this end a Sustainability Task Force made up of students, faculty, administrators and staff was created. In November of 2005 they reported to the President’s staff, along with Dickinson’s Commission on the Environment (COTE), and developed a series of measures to promote sustainability on campus.

One of the Task Force’s most visible initiatives is a series of sustainability contests on campus. Residence halls have been challenged to reduce their past water and electricity consumption by 15 percent, with prize incentives. Academic and

administrative buildings have a similar challenge. Prizes have also been offered to the residence hall that does the fewest loads of laundry per resident. Finally, there is a challenge for the entire campus to reduce landfill trash, emissions, and utilities consumption by 15 percent. The Task Force has assigned twenty-five students, administrators and staff members around campus the position of “Sustainability Sheriff.” The mission of these sheriffs is to educate others in their buildings about sustainable practices, to make sure their building has proper recycling facilities, and to insure residents are not wasting energy. The Task Force has also staged a number of events to raise awareness, such as “Trash on the Plaza,” where volunteers—including Dickinson President William G. Durden—took 24 hours’ worth of trash generated from the Holland Union Building and spread it out on the ground. As students walked by the 378 pound pile of rubbish, volunteers sorted through the trash, and found that almost 50% could have been recycled.

Besides the efforts of the Sustainability Task Force, other groups on campus are working on their own projects. For instance, the Student Garden is working in conjunction with Dickinson’s Physical Plant and Dining Services to collect compostable leftovers from the Cafeteria. The material is collected and transported to the Student Garden’s compost pile,



***Dickinson's Green Devil Leads the Charge to Sustainability!***

where it will fertilize their soil. Also, Waidner-Spahr Library has created a display of the amount of paper wasted at its printers in two weeks; it is hard for students to ignore the ninety-pound pile of paper as they walk in and out of the library. Finally, the administration hopes to have all new buildings on campus LEED (Leadership in Energy and Environmental Design) certified by the U. S. Green Building Council. The new science building that will be constructed over the site of the current James Center is to be rated LEED Silver. In these and many other little ways, different organizations on campus are working toward sustainability.

All of these efforts have begun in the last year or so, but the college has been environmentally active to some degree for decades. Environmental Studies came to the college in 1970, our own ALLARM was founded in 1986, and COTE was founded in 1991. COTE continues to be a force for environmentalism and sustainability on campus, along with the student organization EarthNow!, founded in 1994.

Through these organizations, over the last several years Dickinson has participated in RecycleMania, a friendly contest between more than 90 schools in 33 states to see who can have the highest recycling rate per student. The college also has a Center for Sustainable Living called the Treehouse, a student housing facility where students live communally and encourage campus sustainability at a grassroots level. The Treehouse is currently being relocated and renovated, and is expected to be LEED certified like the new science building.

While economic concerns were the catalyst for many of these new efforts, it is important to remember that rising utility costs are merely a manifestation of widening global demand and narrowing resources. In the long term, this issue will not simply go away but will indeed escalate. Efforts like those Dickinson College is making cannot be viewed as temporary measures, but rather as permanent adjustments to cope with a changing global environment.

*Check out Dickinson College's sustainability efforts at <http://www.dickinson.edu/departments/sustainability>*

## ***ALLARM is On the Move!***

***By Matt Freedman***

As the semester quickly comes to a close, ALLARM is getting ready to pack our office into moving boxes and wave goodbye to our home in the James Center—where will we go from here? In preparation for the construction of Dickinson College's new biology, chemistry, and psychology building, this summer ALLARM (as well as the environmental studies, geology, and psychology departments) will be moving into the newly renovated Kauffman Building, formerly the Reeves-Hoffman crystal manufacturing facility. Looking back at the past twenty years, moving is nothing new for ALLARM—as we grow bigger and better, so have our offices and labs!

In the early days of 1986, when ALLARM was just a fledgling water drop, our staff of only a few students was located in the back room of Candie Wilderman's office in James Center. As we grew, ALLARM moved downstairs into two small offices—although slightly

more spacious, the students were separated from Candie's office. In 1996, Lauren Imgrund joined as our director and ALLARM grew even larger with the help of \$100,000 diverted from Clean Water litigation. Lauren also worked part-time with the Clarke Center, so ALLARM was able to have office space in Biddle House—our laboratory, however, was still located a few blocks away in James Center. At that time, our lab was set up in a closet-sized darkroom that the geology department no longer needed. It was a bit cramped, but that never slowed us down. As space shifted around throughout James Center in 2001, we had truly established ourselves as a secure program and ALLARM was able to obtain our current office as well as our Community Aquatic Research Laboratory (CARL) the funds for which were donated by R.F. Shangraw, one of the first Dickinsonians to graduate with an environmental science certificate.

The Kauffman Building, located on the corner of Cherry and Louthier

Streets, has almost 1,300 square feet reserved just for ALLARM, and will be our best location yet! Dickinson recognizes ALLARM as an important part of the Environmental Studies Department and set aside quite a bit of space for us. Lauren was consulted while designing our new offices in Kauffman to ensure they would meet our needs. At last, both our Director and Project Coordinator offices will be adjacent to our incredibly spacious student office and our lab, which will be twice the size of the original CARL. The building will also have a plethora of space for the Environmental Studies Department, including three roomy lab classrooms, student research labs, workspace for the student garden, and a rather comfortable student lounge and study area.

The site of the new building was once the Reeves-Hoffman facility and was classified as a brownfield when Dickinson purchased the property. A brownfield

***"On the Move"***  
***Continued on Page 25***

## Costa Rica: El país que lo tiene todo\*

By Meghan Klasic

*\*the country that has it all*

Exotic animals, a tropical climate, bright sunshine, verdant vegetation, smiling faces, a plethora of colors, and environmental issues as significant as they are diverse; *this* is Costa Rica. In September 2004, I packed two suitcases to the brim with Nalgene bottles, ziplock bags, organic shampoos and toothpastes, mosquito netting, and sunscreen (for winter?!?!). I embarked on a three month semester in Costa Rica through the School for Field Studies.

When I landed in the San Jose airport, I was greeted by smiling staff members holding up signs, a beat-up red pickup truck, a small bus, 24 unfamiliar faces and one fellow Dickinsonian. After traveling down bumpy dirt roads and the Pan-American Highway, past coffee farms and an old town, we arrived at our home for the semester— La Universidad de la Presa (the University of La Presa). We pulled up to a rather “used” building, where we dismounted, formed a chain and passed bag after bag into the common room of our “dorm.” There was a table full of fresh-squeezed star fruit juice, pineapple slices and a bowl of diced watermelon and cantaloupe. As we scrambled to put our names on mugs that would be ours for the remainder of the trip, our director announced that the following morning would be the only time we’d receive a wake-up call... and it would be at 6:00 am.

The next three months flew by in a haze. The things we saw, learned, and participated in and experienced were indescribable. We took turns cooking breakfast at 6:00 am. We slept outside in hammocks under the stars and swam in the pool almost every day. We went on field trips; including several overnights to coffee plants, organic and traditional farms and the mountains. We studied a variety of environmental, social, economic, and cultural issues. We visited the source of our town’s water supply, an area of lush green located within a one mile distance of a landfill, complete with burning tires.

In the mountains, we studied the dependence of wild hummingbirds on artificial feeders, which have been hung up to attract tourists. We set up mist nets, caught hummingbirds, carefully took them out of the nets, identified them by species, collected pollen samples from them using scotch tape, and painted their toenails before releasing them. We also collected a variety of flowering plants in the surrounding area, in order to analyze the pollen types and compare them to the samples taken from the hummingbirds caught in the past.

We compared active and dormant volcanoes and talked with locals who made their livelihood in a large trash dump. And that was not even half of the semester.

Our group of 26 also put on plays for community groups, played bingo with our neighborhood, took part in community pick-up soccer and basketball games, conducted community interviews on a variety of topics, volunteered in the nearby town and attempted to speak Spanish- which we did rather successfully, by the end. We kept journals, composted, cleaned, and gardened, all on a weekly rotational basis. We did not have Internet access on campus nor fancy accessories like phones, heat, air conditioning, or television reception in our dorm.

Our free time during the semester was spent traveling and really “getting to know” the country. We visited all sections of the country, in an effort to encompass all that is Costa Rica. We spent time on black and white sand beaches, we swam in the Pacific and Atlantic Oceans in under three days; we went over waterfalls of all shapes and sizes; and we packed all of our food and gear for a three-day hiking expedition into a pristine rainforest- up mountains and through rivers. Wildlife was everywhere, too. There were morpho butterflies, four species of monkeys, scarlet macaws, toucans, parrots, tapirs, coatis, bats, cloths, fur de lances, boa constrictors (right on campus!), and about seven different species of lizards and iguanas, including the Jesus Christ lizard, which walks on

*“Costa Rica”*

*Continued on Page 18*



## The Whole World is a Watershed: Lessons from India on Being a Global Citizen

By Audrey Fisher



Photo Courtesy Audrey Fisher

**Children in the village of Sivagangi.**

It was while reading *Stream of Consciousness* that I was inspired to study abroad in India. In the spring 2002 issue Julie Vastine, former Assistant Director of ALLARM, reported on so many wonderful aspects of this country that I decided to experience it for myself. Following in Julie's footsteps, I chose to study in the southern most state of Tamil Nadu through the South India Term Abroad (SITA) program. A wonderful host family, two tours to beautiful places, and exposure to the art of classical Indian dance made this a rich and rewarding experience.

Although the coursework for the program focuses on the religion and culture of the region, I was able to incorporate my interest in environmental issues into my independent research project. I conducted

ethnographic field-based research on environmental activism. I began by speaking with students at the neighboring women's college on their involvement with the campus environmental group, known as the Eco Task Force. The Task Force is responsible for educating the campus as well as the surrounding community on the importance of proper waste disposal and reduced use of plastic bags and other packaging. When speaking with members of this campus group, I was surprised by the similarity in mission and strategies to groups in the United States, such as Dickinson's own EarthNow! The respondents share with each other and their American counterparts a concern about behavior at the college and in the greater community as well as a passion for educating others. However, the challenges facing South Indian activists are quite

different from those that confront students in the U.S. vast poverty, especially in the rural areas, and lack of basic infrastructure such as water treatment and trash collection programs in the city.

To face these challenges, the students are not only involved in educating the city of Madurai, but also visit surrounding villages in order to teach people about sanitation and waste disposal. Since the villages seemed to be so important to these environmentalists, I decided to spend a bit more time there myself. I expanded my project to include nongovernmental organizations (NGO) operating in rural areas. On this path I met a man who works to preserve indigenous farming practices through Sustainable Agriculture Environmental Voluntary Action (SEVA) as well as a group of women who have struggled to protect the sacred grove in their village. The Madurai-based human rights organization People's Watch put me in touch with a man who successfully organized 15,000 rural people in a protest against the Coca-Cola Corporation. He explained to me that Coca-Cola was threatening to operate a plant that would use scarce water resources in the production of its soft drinks, thereby leaving even less water for irrigation and household consumption. To prevent harm to their environment and the community, the people of Sivaganga district came together. Although they are poor agricultural

**"India" Continued on Page 18**

***“Costa Rica”******Continued from Page 16***

water.

The semester opened my eyes to realize that many of the United States’ seemingly “simple” environmental issues are not necessarily “simple” in other countries. In addition, what the United States focuses on as an environmental issue is not what other places and people focus on. The program was powerful and full of enthusiasm. Everyone in my group was sincerely interested in the issues we were studying and discussions were plentiful and frequent. It is oftentimes hard to find a group of students, so ardent about a cause. Costa Rica gave me the chance to meet people from all over the world, hear their thoughts and opinions, question their assumptions, and applaud their passion. So, given the chance, would I do it again? In a heartbeat.

***“India”******Continued from Page 17***

workers and members of the lowest caste (the Dalits), their outcry stopped the plant from operating. Following the interview, I was able to visit Sivaganga and interact with the women and children gathered there. By walking through the village, practicing my Tamil with the residents, and taking photographs of the children, I got a glimpse of the reality of these people’s lives. The experience made a powerful impression about how interconnected we are across the world. It made me realize how ordinary behavior in the United States, such as the purchasing of a soft drink, can have consequences for people in other parts of the world.

Coca-Cola has become notorious in India for its abuse of India’s water resources and the people whose livelihoods depend on it. In states across the country, the corporation has been charged

with depleting vital groundwater resources, polluting water, and selling soft drinks with unhealthy levels of pesticides. As a result of these practices, people in India and other countries, including the United States, are refusing to consume Coca-Cola products until they clean up their practices. It’s not easy in this complex, globalized world to understand how our consumer decisions may affect others. However, living in India has reinforced my belief that we have a responsibility to educate ourselves about the indirect impacts of our purchasing behavior and be more conscientious when making purchases. As stewards of our local watersheds, we know what sorts of behaviors to avoid, such as dumping motor oil into storm drains or leaving trash on stream banks. However, as concerned global citizens we must not only care for our own watershed, but think about our impacts across the world on other people and their water resources. My interviews with students and NGO workers in India taught me how interconnected we are, and that environmentalists across the world face similar challenges, and that they share common goals. With this understanding comes the conviction that we must work together to achieve the safe, healthy environment we all need and deserve.

***To read more about problems created by Coca-Cola in India check out:***

[www.indiaresource.org](http://www.indiaresource.org)



Photo Courtesy Meghan Klasie

***A beach in Corcorada National Park, Costa Rica***



### ***"Endocrine Disruptors"*** ***Continued from Page 7***

up in our water, or through the most preventable way: flushing an unfinished prescription drug down the toilet. Sewage treatment facilities are not designed to remove these chemicals, and as a result, the products end up in our streams and our drinking water. There are currently no regulations concerning drinking water and endocrine disrupters.

There is a lot of debate over the effects of pharmaceuticals. Antibiotics, anti-depressants, birth control pills, cancer treatments, pain killers, seizure medication, tranquilizers, and cholesterol-lowering medicines have all been found in various water sources in the US. Some scientists believe that because the observed concentrations have been very low (45-80 parts per trillion for estrone, an estrogen compound, in Tulane University's tap water, for example) there is little cause for concern. Others fear that possible long term effects are unknown and believe some pharmaceuticals can interfere with hormone production in the endocrine system and advocate caution.

Most pharmaceutical studies to date have focused on the effects on aquatic animals. A British study showed that male trout living below sewage treatment plants had the female egg protein vitellogenin (which should only be in female fish) in their blood. It is thought that this estrogen from the female fish is altering the reproductive capacities of fish in the US as well, especially

since carp samples downstream from treatment facilities in Las Vegas and Minneapolis mimicked the British studies. There is also much evidence of EDCs affecting snails, oysters, alligators and other reptiles, and birds, including eagles and gulls. Research is needed specifically to determine the effect of EDCs on developing young children, as it is thought that small disturbances to the endocrine system may have lasting effects. A weak link between exposure to PCBs and harming the developing nervous system has been established through some studies, but much more research is needed to determine the scope of the effects of EDCs on children.

*Our Stolen Future*, published in 1996 and written by Theo Colborn, Dianne Dumanoski and John Peterson Myers, explains the problem of EDCs in the environment. The US EPA Office of Research and Development made EDC research one of six high priority areas in 1996, which has led to further research and study of the 87,000 chemicals thought to be endocrine disrupters. However, there is still not a clear consensus among the scientific community as to how vast the effects of EDCs are, nor a complete understanding of EDC presence in the environment and in humans. To this end, the EPA is developing a two-tier system that will both identify chemicals that impact the endocrine system and then analyze what each chemical causes and at what dose. The goal of this system is to develop effective ways to monitor for EDCs, which may eventually lead to standards and legislation limiting their use. Methods of quantifying presence of EDCs in the environment have

been relatively sparse until just recently, as new methods have emerged to measure these chemicals at the very low concentrations that are present in the environment. Some companies have developed kits for monitoring some EDCs. For example, Hach Laboratories offers a colorimeter that tests the presence of atrazine, which costs \$770. Hach, LaMotte and Quick II offer test kits for arsenic, with a cost of \$106, \$153, and \$220 respectively. In an independent study conducted by J. Mitchell Spear and colleagues at Penn State Harrisburg titled 'Evaluation of Several Field Test Kits for Determining Concentrations of Arsenic in Drinking Water,' researchers recommend that either the LaMotte or Quick II kit would be most suitable for testing at levels of below 100 micrograms per liter based on precision, accuracy, easy of use, no operator bias, and low price.

Abraxis LLC (based out of Warminster, PA) offers an Atrazine Strip Test Kit that for \$9 per test, determines if the level of atrazine in the water is at or below the EPA maximum contaminant level of 3 parts per billion. These kits require more extensive training, but have been used at the university and state level successfully. As more information is known about EDCs, more user friendly test kits can be developed that will allow for monitoring of these chemicals by volunteers.



## It's Got That... Je Ne Sais Quoi

By Meghan Klasic

ALL ARM Photo Database



*A shrimp boat in Louisiana.*

When the average person hears the words “New Orleans, Louisiana”, the first things that normally come to mind are “Mardi Gras, the French Quarters, and partying.” So, naturally, when my companions and I told people that we went to Louisiana on a three week field excursion for class, many of them were skeptical about the Luce Semester. My classmates and I would reply to their questions and judgements by simply laughing and saying, “you really have no idea. We learned more than most students learn during their entire undergraduate careers.”

For three weeks, we traveled via two 12-passenger vans from Carlisle, Pennsylvania to the Louisiana Gulf Coast. We studied everything from mountaintop removal (in West Virginia) to coastal wetland loss to Cajun culture to environmental justice involving fence line communities.

We talked with members of the U.S. Army Corps of Engineers and the Coal River Mountain Watch. We met with the Queen of the Dead Zone (Nancy Rabalais), the King of Oysters (Earl Melancon), the Atchafalaya River Basin Keeper (Dean Wilson), and the woman who helped bring change to Norco fence line communities (Wilma Subra). We attended the Louisiana Environmental Action Network and we visited an oil rig and talked with members of Shell’s PR group. We even had the chance to spend a few days at LUMCON (Louisiana Universities Marine Consortium) in Cocodrie, where we helped with a little clean up work, spoke with local watermen, explored barrier islands, and kayaked through grasses, identifying waterfowl. We did a little bit everything.

But was it worth it? Did we take anything out of it? During our time in Louisiana (and on the way

to and from Louisiana), we gained new perspectives on a wide range of environmental issues. Prior to our trip, we read about and discussed these issues and their possible solutions. When we left for Louisiana, we ‘knew’ how to solve the problems and we were ready to ask the people we would meet why the solutions hadn’t been put into effect already. Three weeks later, when we left Louisiana for Carlisle, we understood just how complex all of these issues are and how there really isn’t a single solution to any one problem. We finally understood how everything is intertwined and nothing is as simple as ‘black and white.’

All too often, students learn in a structured classroom setting. The professor lectures and the students listen. The Luce Semester offered students the chance to truly understand in-depth concepts by doing. By breaking down the walls of the typical classroom, Luce took learning to a whole new level. Instead of simply experiencing environmental issues in ‘black and white’ on papers, we had them thrown right in our faces. As students at a small liberal arts college in central PA, it was amazing that we had the chance to be exposed to such real world issues and concerns. The Luce Semester was truly a lifetime experience.

**Check out the summaries of Luce Semester Research on Page 12!**

## Meet Dawn Thorpe

### By Adrian Broderick

**D**awn Thorpe, ALLARM's new Program Coordinator, has an interesting perspective on her new position, as she is a former Dickinsonian herself. She is originally from northern New Jersey, but at age 2 she moved to Pennsylvania, just outside Hershey. Looking back at Dawn's childhood, it is easy to see why she chose to become involved with water quality and ALLARM.

Her grandfather was an avid fisherman, who would take her fishing with him when she was as young as two. Her summers were spent with her grandparents, playing on the beach and exploring the creek. At her home in PA, Dawn could be found digging in her sandbox, catching crayfish in the creek, visiting the pond behind her neighbor's house, or exploring for worms in the garden. She also collected snails and other water critters for her fish tank, and was always amazed at what would grow where, and ultimately, who might eat who. These playtime adventures would eventually lead her to focus on the natural world in her post-secondary education.

Dawn attended Dickinson College, where she was interested in medicine and received a B.S. in biology with a focus in chemistry and a minor in art history. Additionally, as a cellist, Dawn was drawn to Dickinson to study with Nancy Baun, an artist in residence at the time.

Eventually, Dawn realized that medicine was not in her future. She was offered an internship at an environmental lab, testing the toxicity of discharged water through studying how well minnows and ceriodaphnia (small aquatic organisms) could live and reproduce in it. Her experience helped to tie together her interest in biology with the importance of water quality, and she enjoyed the lab work. Dawn says, "after that, I was hooked."

After her internship, Dawn continued on to work for a few environmental labs, branching out into microbiology, quality assurance, and industrial hygiene, maintaining and expanding her knowledge of water quality. She worked for a consulting firm, where she utilized her water quality knowledge to address more complex issues on a watershed scale. Dawn also studied the potential environmental impacts of the generation of hydroelectric power. As a watershed coordinator in Maine, Dawn was able to improve her managerial and grant writing skills. All of these experiences helped to make her a perfect match for ALLARM.

Now back in PA, Dawn is living with her new husband Brad in Harrisburg and working as our Program Coordinator. Dawn's goals as Program Coordinator include seeing the current watershed groups that she is working with progress to the point where they no longer need

ALLARM's help. Working with students is a large part of her job description; she will assist in facilitating student interactions with watershed groups, supervising student projects, and helping students gain important experiences for future watershed careers.

In addition to working with watershed groups and student staff, Dawn is in charge of managing the ALLARM office and our quality control program. Dawn also provides technical assistance to ALLARM's community partners by attending watershed meetings and providing training for the groups through organizing and assisting at workshops. On top of these responsibilities, Dawn is a Board Member of the Stewards of the Lower Susquehanna, the nonprofit organization that sponsors the Lower Susquehanna RiverKeeper.

Dawn plans to continue working for ALLARM, and is excited to watch it grow over the years. She would also like to go back to graduate school and further her education. One thing's for sure, though – whatever path Dawn may choose to take, the little girl who loved to play with crayfish and explore the creek will never be far from her mind.

## Girls Just Wanna Have Fun Destination: New Orleans, Louisiana

By Meghan Klasic

After traveling, visiting, exploring, and discovering post-hurricane New Orleans, through the Luce Semester, a fellow classmate and ALLARM's new project coordinator, Dawn Thorpe, and I decided that we just *had* to go back and help out. So, on March 11, 2006, with a rented vehicle loaded to the ground (hey, we pack a lot), the three of us headed out on the spring break trip of a lifetime. Destination: New Orleans, Louisiana.

During our time in Louisiana, we were to be based out of the United Methodist Church on South Carrollton Avenue. While we were down south, we collected some more footage of the destruction and devastation. We also took some footage of the French Quarters, which was seemingly unaffected, full of visitors, and full of traffic (in contrast with our visit during November, when there was very little traffic). Electricity, for the most part, was up and running; however, traffic lights were down still and mock stop signs had been set-up in their place.

One of the projects we worked on while visiting New Orleans was gutting a home in East New Orleans. We did this with a group of graduate students from the University of Southern California. The home belonged to a police officer and his family, whom we never actually had the chance to meet. We arrived the first day decked out in suits, booties, heavy

work gloves, and disposable respirators, all supplied by the Louisiana Environmental Action Network. We also had hammers, crowbars, screwdrivers, and whatever other tools we could get our hands on. We were instructed to spend 45 minutes inside the house, followed by 20 minutes outside the house. We were also instructed to change our respirators at least twice during the day. That was it. The rest was up to us — gut the home, leaving only the frame.

So, we went to work. We carried out all of the clothing, dishes, glasses, silverware, carpets, toys, mattresses, shoes, cleaning supplies, furniture, and whatever else could be moved out. Everything was separated into piles; one for cleaning supplies, one for large furniture, one for household items. Once everything was out of the house, the walls and floors were dealt with next. Tiles were ripped up from floors, window frames were pried off, carpeting was pulled out, rolled up, and carried out to the pile. After that, hammers were taken to the walls in an effort to rip out all of the drywall siding, leaving just

the frames of the house. In all, the process took about two days. Although we were helping out a family and making a difference to them, we left with a feeling of frustration because there was so much to be done and so many houses that appeared untouched by relief crews.

But, all in all, the trip was a complete success and extremely worth while. It was especially interesting for me because I had been down to New Orleans before the hurricanes hit and we visited for three weeks in this past November, just after the hurricanes. Amazingly enough, it has been about 6 or 7 months since the hurricanes hit and the city is still a mess. The amount of work left to be done is tremendous and it will be almost impossible to finish anytime soon. A major concern



Photos Courtesy Meghan Klasic



now is the upcoming hurricane season which, we were told by locals, is predicted to be even worse than this past year's. New Orleans has less than two months to prepare for the next hurricane season and as far as it seems from our previous visits, they will not be ready in time. I encourage anyone and everyone who might have a few days to go down and help out in any way possible. Or, just send a couple dollars to help out!

Although there is so much devastation and so many people still missing, the residents of New Orleans and the surrounding parishes are optimistic. They are upbeat and happy, knowing that although horrible things happened, they, as a group, will overcome and prevail to rebuild an "even greater New Orleans" (as one billboard put it). Although the events were horrible, the residents are doing the best they can and as a few of them put it, "the storms were horrible but it made everyone realize that we're all equal... the blacks, the whites, the rich, the poor, when devastation hits, we're all in the same boat. We're all equals. We all have to deal with it." I really don't think there's a better way to put it. Their high spirits never ceased to amaze me and the general feelings of pulling together to help out are great. Louisiana will pull through. The question is, will it be in time?

## ***Where Are They Now? Catching Up With the Class of '96***

***By Caitlin DuPrey***

Last fall we introduced a series of articles where we interviewed ALLARM staff from past years. Because 2006 is the twentieth anniversary of ALLARM, this month we decided to catch up with alumni who graduated in 1996, to find out how their experiences here have shaped their lives after Dickinson.

### ***Jonathan Gourley***

Jonathan worked with ALLARM compiling data into a large comprehensive database, and is still putting his skills to good use as the Environmental Science Lab Coordinator for Trinity College in Hartford, Connecticut. He now looks to his experiences with ALLARM "as a model for developing similar projects" at the college. He has even begun a project to measure acid rain in the area, and students analyze rain samples from the city of Hartford and compare them with samples from rural areas.

### ***Suzanne Kahn***

Suzanne worked as the coordinator of the Students Monitoring Aquatic Resources Together (SMART) program, and now continues to work in environmental education for both children and adults. ALLARM was her first experience with environmental education, and it was the beginning of her desire to work with non-profit organizations. ALLARM was more than a great work experience; it also brought Suzanne "closer to a fantastic group of people." And now, almost ten years later, she's still friends with some of her fellow staffers!

### ***Melissa Russo***

Melissa was an Environmental Science and Geology major and, like many of us, she spent quite a few hours in the James Center during her time at Dickinson. That's how she first heard about ALLARM, but even ten years later her "interest in all things sustainable is as strong as ever." Working for a grassroots environmental organization, she says, gave her "skills that I have used in environmental and political campaigns." She now lives in Boulder, Colorado and is the co-owner of Boulder Plaster and Stucco Company, which provides earthen plaster materials for building straw bale homes. After getting her start with ALLARM, Melissa still enjoys working with non-profit organizations, because they "really make a difference."

Thanks to all our alumni for letting us know what they're up to, and we look forward to catching up with even more former ALLARMers in our next issue!

***"Exceptional Value" Continued  
from Page 5***

it can achieve EV status.

DEP has not developed an ecological scoring system or chemical baseline for non-wadeable streams, which are generally warm water fisheries. As a result, the majority of streams classified as HQ or EV are cold water fisheries. Across the state, there are several citizen-based watershed groups that are trying to get their warm water fisheries redesignated for greater protection. Hopefully their pressure will spur DEP into developing the necessary protocols for protecting these waters as well.

The Commonwealth of Pennsylvania is blessed with over 83,000 miles of rivers and streams. Of these, less than four percent are currently classified as EV (see inset map on page 5). I compared the spatial relationship of these EV waters to National Pollution Discharge Elimination System (NPDES) point source discharges. Of over 3500 surveyed NPDES permits, I found only 30 that fell within EV watersheds (less than one percent). Of the 30, a handful had violated their permitted discharge limits. In the next phase of my research, I plan to examine some cases of newly permitted discharges in EV watersheds to see how they weathered the permitting process, what special restrictions were placed on their discharges, and how well they are adhering their non-degradation commitment.

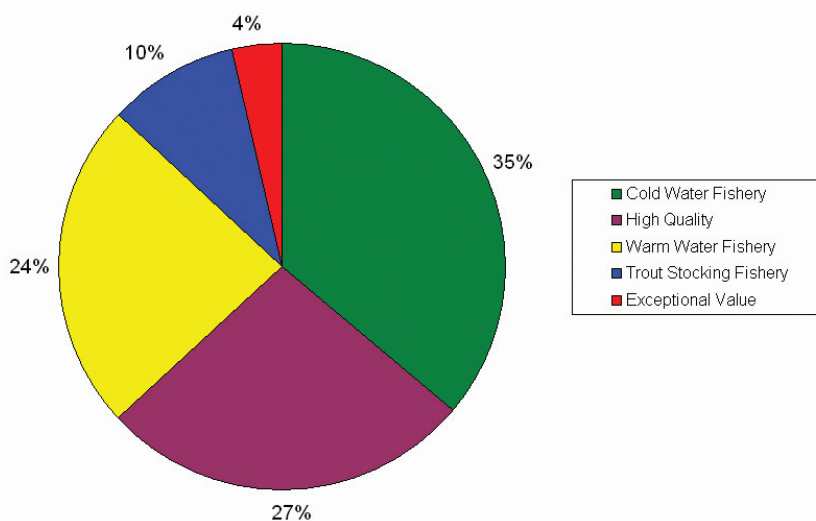
My research has been largely inconclusive as I have found it very difficult to get a clear picture of

what's going on in each watershed. This is due, at least in part, to the fact that resources are limited. I have been working with several incomplete data sets, including a statewide list of NPDES point sources and the eFACTS website, which is constantly being updated and expanded. I have been completely unable to find statewide data on non-point sources. Another stumbling block is that I have not been successful in obtaining data on the date of EV classification (or redesignation) or the date that discharge permits were first approved. With both these pieces of the puzzle missing, it has been impossible for me to build a timeline for each watershed. Thus, I have been unable to differentiate between new and pre-existing, grandfathered dischargers.

I'm not implying that there is an organization-wide conspiracy to cover-up exceptions to the EV

rule. In fact, I've contacted several people from DEP and they've all been forthright and helpful. I do, however, find it interesting that it has been so difficult to get a clear picture of what's going on. Permits are allowed in EV waters when two criteria are met: (1) the proposed discharger must demonstrate that there is no cost-effective and environmentally sound non-discharge alternative; and (2) the discharger must demonstrate that the proposed discharge will not degrade the water. Very few of these permits have been allowed, but a few have. If watershed activists don't know who the dischargers are, how can they fulfill their watchdog role? How can they guarantee that their most cherished water resources are being protected? The fact that most of Pennsylvania's EV waters are in such remote locations means that there may be nobody watching at all.

PA Designated Uses as a Percentage of Total Stream Segments



***“On the Move”***  
***Continued from Page 15***

is an abandoned industrial or commercial site that is often contaminated and requires environmental assessment and cleanup before it can be redeveloped. Before floor plans were even considered, Dickinson took the initiative in 2003 and hired a top-notch environmental consulting firm to test the site. After taking a series of soil borings, polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), and polynuclear aromatic hydrocarbons (PAHs) were found on site. Dickinson is working closely with the consulting firm in the cleanup process, and is currently using scarification, a process that grinds away the top layers of concrete to remove the PCBs. Although the site will be quite clean upon completion, explains Ken Shultes of Facilities Management, they are installing a separate ventilation system that works much like a home radon remediation system. Over 40 pipes on the site will draw air from below the sub floor and divert it out through fans in the roof—this way the possibility of any residual toxins reaching the surface is practically eliminated. The remediation process has been more expensive and time-consuming than originally planned, but Mr. Shultes feels that “at the end of the day, it was absolutely the right decision to buy the site.”

Initially, there was a bit of anxiety for those of us who will be spending extensive amounts of time in Kauffman,

but as the cleanup progresses, both faculty and staff are feeling more confident. “They’re doing a really good job cleaning up,” Candie explains, “and it is probably going to be the cleanest building on campus.” She also hopes Kauffman will have a consistent monitoring protocol and a maintenance program for the ventilation system. During the next two winters, the college plans on performing air quality tests at Kauffman—assuming the results are good, they’ll consider their options from there.

So, what will become of the James Center? Originally a church, the building was renovated and expanded in the early 1980s and has most definitely been put to good use. Although James is being demolished to make room for Dickinson’s massive new science building, Mr. Shultes assures us that they are reusing and recycling as much of the old building as possible to divert waste from the landfill. Almost all of the casework and furniture will be moved into Kauffman, and the James Center’s foundation will be reused as structural fill. The limestone from building is being reused as small walls in the landscape design for the new science building, so the James Center will still exist in many different forms—an appropriate fate for such an environmental building.

Next time you stop by ALLARM, we’ll be sure to give you a tour of our beautiful new facilities—after all, we couldn’t have gotten this far without your help!

***“SRBC”***  
***Continued from Page 11***

It must be followed by data analysis, TMDL development, public review and comment, and approval by the U.S. Environmental Protection Agency (EPA). After all this work, the task of actually determining how to reduce pollutant discharges is left up to state regulators.

Through my internship, I developed a new appreciation for the watershed in which I live, and, most importantly, I now have a better sense of the big picture. My understanding of the complexities of watershed management continues to come together slowly, like fitting together pieces in a puzzle. The first piece came with my position at ALLARM: an understanding of the community-based participatory science model and the partnerships between volunteer monitors and scientific facilitators that the model encompasses. My time at the SRBC brought another piece of the puzzle in to place: the role of government and scientific professionals in gathering data and formulating regulations. More than ever I now recognize what a challenge the protection and restoration of the Susquehanna poses. However I remain hopeful that if all the pieces, from federal, state, and local agencies, watershed groups, and private citizens come together, this puzzle can be solved.



## *Farewell to the Class of 2006*

**Adam Wickline**  
**Pittsburgh, PA**  
**Environmental Science Major**

I can remember going to my first meeting with ALLARM. It was a study design conducted by the newly formed Conococheague Watershed Association and I felt so out of place. I had just started working and Lauren expected me to contribute something to this meeting? What the heck did I know about facilitating a meeting, much less the specifics of monitoring kits? I sat in my seat thinking, "I'm not contributing anything and I'm just taking up some badly needed chair space." This year, after a year and a summer of work, I have been entrusted to lead workshops myself and also teach younger staff how to facilitate them. I have more in-depth projects and more responsibilities. I finally realize, now, that when I was hired for ALLARM, an immediate return was not expected. ALLARM made an investment in me and gradually gave me the skills to complete almost any task in this field and we both benefitted.

**Meghan Klasic**  
**Bedminster, PA**  
**Environmental Science Major**  
**Geology Minor**

One of the things which stands out in my mind over everything else has been my position at ALLARM. It has given me the opportunity to see my environmental work put to action. I had the chance to work both independently and cooperatively on a variety of issues. I also had the chance to coordinate ALLARM's SMART program. Through SMART, I was able to work with students of all ages on environmental concepts. I was able to develop creative hands-on learning techniques with my co-coordinator and create enjoyable and memorable experiences for all students involved in the learning process. But it was not just the work that makes ALLARM stand out in my mind. The talented individuals I've had the opportunity to get to know are absolutely one of a kind. They are independent, open-minded, motivated people, who want nothing more than to make the world better for everyone. Together, they have taught me how individuals as diverse as they come, sharing only one common passion (the environment) can come together to make a difference in the local community. I will never forget any of the people I have worked with, nor will I forget what they have taught me. They have prepared me more for the real world than I could ever have imagined. Working in college is an experience; working for ALLARM is the experience of lifetime.

# Senior Reflections

## Micah Weintraub

Lovettsville, VA  
Environmental Studies and  
Policy Studies Major

Like most seniors, I have been scrambling these past few weeks to find employment after graduation. Unlike many of my peers, I have been lucky enough to have had one job that gave me an amazingly broad range of skills and experiences. Working for ALLARM has improved my analytical skills, my ability to collaborate with others, and my confidence as a public speaker and leader. Moreover, it has been truly gratifying knowing that all of my hard work has helped members of the community outside of Dickinson. Just the other day, a woman stopped us outside of North Dickinson Elementary School and praised us for coming all the way out there to work with the students. For me, it didn't even seem like work. It was fun.

## Becki Walker

Linesville, PA  
Environmental Studies Major  
English Minor

If I had to choose one concept that working at ALLARM has really driven home for me, it's the importance of having hope in the environmental movement. While on the Luce semester, one person we had the opportunity to meet with said that "if you're not hopeful, you're not an environmentalist." If that's the case, I don't think I could have truly considered myself an environmentalist until I started working for ALLARM – so much of what we learn about the environmental movement makes it seem like a lost cause, or a bunch of radicals "fighting the establishment" in a battle they don't have much chance of winning. Through my involvement with community volunteers, I've seen that there are people willing to do good things for the environment without any desire for recompense. If the idea of people giving up their free time and energy in order to make their corner of the earth a better place to live doesn't instill a sense of hope in you, nothing will.

## Caitlin DuPrey

Lancaster, PA  
Environmental Science Major

Working at ALLARM has taught me that science, especially environmental science, is ultimately a cooperative effort. No individual person or group can tackle it alone; we have to work together if we want to find solutions to environmental problems. The combined efforts of so many community groups have shown me that when people combine their individual strengths they can create real environmental change. As Margaret Mead said, "Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it is the only thing that ever has."



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ALLARM, founded in 1986, is a project of the Dickinson College Environmental Studies Department. Our team of students, professional staff and faculty provides community groups with comprehensive technical support for locally-driven watershed assessments, protection and restoration. For more information visit our website: [www.dickinson.edu/allarm](http://www.dickinson.edu/allarm).