



# Environmental Science and Policy News



## Counting Salmon in Seattle

By Rachel Neurath ('09)



### Inside this issue:

Director's Corner	2
Understanding Pollution Transport in the Valley	3
Student Environmental Initiatives	4-5
Focus the Nation	5
Coral Reef Ed-Ventures	6
Smith Looks to the Future-Campus Environmental Initiatives	7
ES&P Faculty Advisers	8

“So, what did you do over the summer?” I asked Caitlin Burgess, a senior Mathematics major minoring in Environmental Science and Policy. She replied, “I counted fish.”

Caitlin spent the summer in Seattle, Washington, in an internship working with a National Oceanic and Atmospheric Administration scientist and Alex Webster, also a Smith senior and Environmental Science and Policy minor, who is majoring in Biology. Their internship focused on issues related to Pacific salmon recolonization of the Cedar River, a protected watershed that supplies drinking water to the city of Seattle. In the 1900's a diversion dam was constructed that blocked passage of anadromous salmon into the watershed. Then, in 2003, a fish ladder was built into the dam, selectively allowing the native species of salmon to pass safely around the dam.

Caitlin and Alex's internship was with scientists undertaking long-term research on the watershed to try to answer the question: “What are the population dynamics of native fish when salmon are re-introduced to the ecosystem that lies beyond the dam?” The question

involves not only scientific analysis, but also requires a careful consideration of ethics. When a population such as salmon has been absent from a



Photo courtesy of Roger Peters, US Fish & Wildlife Service

particular ecosystem for so long, is it right to re-introduce them?

Alex describes the work she did on the project as “a little bit of grunt work and a lot of learning.” She and Caitlin had several responsibilities



over the summer. Their main task was to count and microchip fish. In order to do this, they first had to catch the fish. This was done with a method called *electrofishing*, which is done with a taser (larger animals can also be fly fished). The fish were put into a bucket

filled with sedatives, and then weighed, measured, and identified. A fin clip of each individual was taken for genetic studies, which was of particular interest because the hybridization of species is a common phenomenon in the area. In order to keep track of each fish, a microchip was inserted. Gastric lavages were performed on each animal to allow study of their diet, and then the fish were allowed to recover. Finally, they were returned to the exact location from which they were taken.

Alex and Caitlin also helped a graduate student with a project involving the construction of experimental streams. His aim was to determine the importance of salmon carcasses on stream productivity, looking at the role decomposition plays in stream ecology. Alex and Caitlin also helped in the graduate student's lab, analyzing invertebrate diversity in the watershed.

Most of Alex and Caitlin's work, however, was outdoors. Throughout the course of the watershed project, regular habitat monitoring has been required. Alex and Caitlin performed systematic transects, snorkeling in dry

*(Continued on page 8)*

### Photo Credits

NOAA/National Marine Fisheries Service, Northwest Fisheries Science Center Cedar River, Washington  
<http://www.nwfsc.noaa.gov>



The Environmental Science & Policy Program Offices are located in Bass Hall:

Joanne Benkley, Coordinator  
 ES&P Program  
 Room 107  
 x 3951

Jon Caris, Coordinator  
 Spatial Analysis Lab  
 Room 109  
 x 3042

The Spatial Analysis Lab  
 Room 103



## DIRECTOR'S CORNER : An Environmental Major at Smith?

by L. David Smith



“Why doesn't Smith College offer a major in environmental science and policy?” This is a question I have heard many times. It also may soon be a question of the past, because the Steering Committee for the Environmental Science and Policy (ES&P) Program voted recently to move forward with the creation of an environmental major.

Since its inception in 1996, the ES&P Program has offered a minor that combines 6 environmentally oriented courses in the natural and social sciences and the humanities. In the past decade, student demand for a major has grown progressively stronger, but faculty hesitated for a number of reasons. Their concerns ranged from the pedagogical (an ES&P major offers breadth but insufficient depth of study) to the logistical (too few faculty or course offerings) to the practical (are ES&P majors employable?).

A combination of factors led to a change of heart and the decision to move to establish a major. These included (1) data from a study conducted by STRIDE student Laura Keir that examined environmental programs at peer institutions, (2) the decision by the College to establish a Center for the Environment, Ecological Design, and Sustainability (CEEDS), and (3) findings from a working group of ES&P members that looked into the feasibility of a major.

The upshot of Laura's study was that Smith College could still distinguish itself by creating an ES&P major because over half of the top twenty liberal arts colleges lacked an environmental major and none that offered one were similarly titled. She noted that

Smith offered a breadth and quantity of environmental courses comparable to peers that offered environmental majors. In particular, Smith had strengths in a number of traditional environmental disciplines (e.g., BIO, GEO, GOV), and it offered environmental training in areas less commonly found in a liberal arts setting, including sociology, engineering, and spatial analysis (geographic information systems, GIS).

The timing also seemed right. The decision to create CEEDS as part of the Smith Design for Learning indicated the College's environmental commitment in the next decade. CEEDS will serve to initiate, coordinate, and support all environmental endeavors at Smith, and a strong curricular presence, in the form of an ES&P major, was a logical extension of this larger college-wide effort.

Finally, a working group of faculty from Engineering, Sociology, Geology, and Biology met this summer to determine whether an ES&P major at Smith was desirable, and if so what form it might take. They assessed how the current minor compared to other programs; discussed the ideas and concerns of the Steering Committee members vis-à-vis a possible major; debated what knowledge and skill sets were important to an ES&P major; and attended a national conference of environmental educators to discuss challenges common to the field and to share ideas.

The working group determined that U.S. environmental programs are entering a new phase of development that stresses *integration* of concepts and methodologies across disciplines and effective *communication* across disciplines.

Accordingly, the working group designed a curriculum that combines existing courses from the natural and social sciences and engineering with four new courses that are explicitly integrative and developmental in nature. Using this prototype, the working group concluded, and the Steering Committee agreed, that a major in ES&P was feasible.

The four new courses form the intellectual and organizational core of the major. Each brings together frameworks, skills and information from natural and social sciences in an explicitly integrative fashion to explore and analyze important environment-related topics at local, regional, national and global levels. These courses are supplemented by training in the natural and social sciences and a set of electives that provide depth around a theme chosen by the student and her adviser.

To address the complex environmental problems we face, academic institutions need to train students to transcend disciplinary boundaries; combine analytical and communication skills with a well-rounded understanding of the environment; and translate this knowledge into meaningful action and innovative solutions in many different careers. The proposed major provides such a mechanism.

An outline of the major is included as an insert in the newsletter. We invite your thoughts, constructive criticism, and ideas about the design. Time is short, so please send them to the ES&P Program Coordinator, Joanne Benkley at [enviro@smith.edu](mailto:enviro@smith.edu).

Sign up for the ES&P e-mail listserv to get info about environmental events, internships, post-Smith opportunities and more! Contact us at [enviro@email.smith.edu](mailto:enviro@email.smith.edu)

## Understanding Pollution Transport in the Pioneer Valley

An interview by Rachel Neurath, '09



Joyce Cheung '09, an engineering major, spent the summer working on methods of understanding pollution transport with engineering Professor Paul Voss. The title of her project was "Development of an energy-efficient centrifugal blower for atmospheric sampling." Here's what she had to say about it:

*What led to your project?* In July 2007, Smith College opened an atmospheric research laboratory at the newly established Archibald and Ada MacLeish Field Station in Whately, MA. To enhance our understanding of pollution transport in the Pioneer Valley, the lab was set to extract air samples continuously from above the tree canopy through an 80-foot pipe by a centrifugal blower. During this data collection we discovered that the commercial blower was operating at only 4% efficiency and was consuming as much electrical power as an entire energy-efficient house (180 kW-hr per month).

*What was the goal of the project?* The goal of my project was to design a custom, efficient centrifugal blower by tailoring it specifically to the flow and pressure requirements of the intake pipe. Commercial blowers can be extremely inefficient because they must be designed to operate under a range of conditions (e.g. varying flow rate, pressure, temperature, space availability) that may not match requirements of a specific operating environment. Designing a custom blower had the potential to produce large gains in efficiency.

*What inspired you to get involved with this project?* I am very interested in environmental engineering and this project gave me a great opportunity to address an environmental concern by applying the principles and design of engineering.

*What did you learn?* I have applied what I learned in my fluid dynamics course into the design and fabrication of the impeller (rotating piece of the centrifugal blower). It was very satisfying to put theory into practice. I also learned a lot about atmospheric pollution in terms of chemistry and transport by working in the atmospheric research lab.

*What does the future hold?* The project is still ongoing. This semester, I will be working on fabricating an impeller from aircraft aluminum using a CNC milling machine to produce proper airfoil-shaped blades so that flow separation will be minimized.

Join us for our next Environmental Science & Policy lunchbag:

### "Groundwater Contamination Issues in the Barnes Aquifer: Should Northampton be Allowed to Expand its Landfill?"

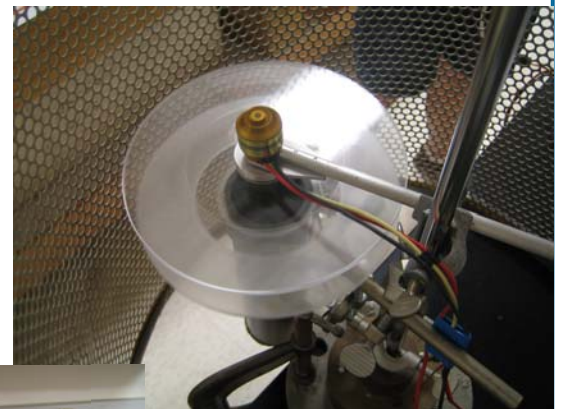
A talk by Professor Bob Newton, Geology  
Friday, November 9th at 12:15 p.m.  
Bass Hall room 102  
Lunch provided.

### Getting Involved in Research

As an undergraduate, pursuing research opportunities may seem intimidating. Who do you talk to and where do you go?

Generally the best way to get started is to talk to your professors. Smith is primarily an undergraduate institution, meaning that professors are there for you. Make an appointment with a professor you feel comfortable with who works in a field you are interested in. Often, professors have projects and ideas for research you can get involved in. If you want to do research off campus, professors often know of programs that Smith students have participated in before, and they can tell you whether that student enjoyed their experience.

You can also look online for research positions. Smith's Clark Science Center Website is a good place to start: [www.science.smith.edu](http://www.science.smith.edu). The National Science Foundation's Research Opportunities for Undergraduates also lists a range of options in many fields all around the U.S.



### PHOTOS

Joyce's Energy-Efficient  
Centrifugal Blower



## Green Smith: Join the Coalition!

Four orgs invite you to join to reduce Smith's impact on the environment.



### MassPIRG Update by Alana Miller ('10)

MassPIRG: Massachusetts Public Interest Research Group

The problems of the world often seem overwhelming and out of students' control: from global warming and hunger and homelessness, to escalating student debt and polluted water. Students have more power than they think, though, and MassPIRG students have proven more than once how youth can win against powerful interests. In the 1970's students at UMASS Amherst decided to pool their resources with a fee on their tuition bill to hire lawyers to fight for them against polluting corporations. And they started to win. Today the model has been expanded with student directed chapters all over the state combining small fees on tuition bills in order to hire professional lawyers, scientists, lobbyists and organizers to fight for students' interests.

This year's lead campaign for MassPIRG is "Stopping Global Warming." Climate change is the most pressing issue for our generation and by reducing carbon emissions on campus and cutting emissions across the state through grassroots efforts and legislation, students are leading the way towards positive change. Last year MassPIRG helped convince Governor Patrick to join the Regional Greenhouse Gas Initiative (RGGI), which places a cap on carbon emissions. On a state level this year, the group is focusing on passing the Global Warming Solutions Act, which would reduce global warming pollution to levels that scientists say are necessary – 80% reduction by the year 2050. MassPIRG is also supporting a bill on a federal level, the Safe Climate Act, which has the same greenhouse gas reduction target.

On campus, MassSPIRG puts on many events aimed at raising awareness and getting students involved. They have taken pictures of hundreds of students demanding that Congress supports bills to cut carbon 80% by 2050. We are continuing our campaign to reduce Smith's energy usage, urging President Carol Christ to sign the President's Climate Commitment with an eventual target of climate neutrality – that is, not emitting any global warming pollution through reductions and offsets – and sustainability integrated into curriculum. On Halloween, MASSPIRG will be putting on a House of Climate Change Horrors in the Campus Center, and will host other fun events like a clean car show and energy competitions throughout the semester. The immediate push of MassPIRG's Stopping Global Warming campaign is to bring hundreds of Five-College students to Power Shift – the first ever national student conference dedicated to solving the climate crisis on November 2<sup>nd</sup>-5<sup>th</sup>.

MassPIRG also has an environmental campaign called Water Watch, dedicated to addressing growing water concerns including pollution, water scarcity and overuse, and upholding the Clean Water Act to its highest standard. They work on river clean ups and education on campus about water issues. Upcoming events include a Water Banquet to demonstrate the vast inequalities in water distribution around the world.

### GAIA Update by Rebecca Staples-Moore ('08)



Gaia: Smith Students for the Environment has many ideas about how the campus can be more environmentally friendly. The group will be tabling throughout the year on issues such as turning out lights, putting computers to sleep instead of using a screensaver, unplugging or turning off appliances when they're not in use, taking shorter showers, washing full loads of laundry and dishes, using compact fluorescent light bulbs, using re-useable water bottles and tupperware instead of throw-away plasticware and paper goods, and turning car engines off instead of idling.

We have a few big events planned for this year. November 15th is America Recycles Day. We will be celebrating by having a recycled materials craft night. The month of March will once again be "Paperless Month," a time when the College, in conjunction with Gaia, encourages students, organizations and faculty to do as much as they can to reduce the amount of paper they consume. In April we will be hold a week full of fun activities -like panel discussions, tabling, and a movie screening- in celebration of Earth Day. For more information about Gaia come to a meeting any Thursday at 7:30 p.m. in the lower level of the Campus Center or email [gaia@email.smith.edu](mailto:gaia@email.smith.edu) or [rstaples@email.smith.edu](mailto:rstaples@email.smith.edu).

**Green Team Update** by Alana Miller ('10)

The Green Team is a coalition of faculty, staff, and students which works to educate and support the campus community and the college's sustainability committee in the efficient use of finite natural resources. Their work touches many areas of Smith's operations, including construction, transportation, purchasing, materials use, energy use, and waste management. They also coordinate with those who determine the college's curriculum and investment practices to increase awareness of the relationship between Smith policies and environmental concerns. Through incremental changes in everyday activities, the Green Team seeks to transform the college's practices so we can achieve the greatest possible efficiencies in preventing pollution and using natural resources. Join the team! Contact Todd Holland at tholland@smith.edu.

**Focus the Nation** by Alana Miller ('10)

Environmental groups on campus including the Committee on Sustainability, the Environmental Science and Policy Program, Gaia, the Green Team, and MassPIRG, have all teamed up to help Smith College "Focus the Nation" on global warming solutions for America on January 31, 2008. Nationally, over 1,000 colleges, universities, and K-12 schools are preparing events for the day to help focus their communities and policy makers on a serious discussion about concrete solutions for the climate crisis. Throughout this semester, Smith College has been holding events and lectures, creating dialogue, and beginning to integrate climate change discussion into classrooms. For example, on the Clark Science homepage, a new link each week features information about some aspect of climate change and a board on the first floor of Bass hall displays recent news articles relating to the problems and solutions of global warming. These efforts will culminate January 31<sup>st</sup> in a national day of symposia and teach-ins. The College is encouraging professors to release students to attend workshops and informational sessions planned around campus. Speakers and political leaders have also been invited to a round-table discussion where Smith and the surrounding community will present their five priorities for action against climate change.

We need YOU! Contact Joanne Benkley at jbenkley@smith.edu or James Lowenthal at jlowenth@smith.edu

**The Youth Climate Movement: Get Involved!**

By Alana Miller ('10)



By now you have probably heard, the science of global warming is clear - governments of the world must enact strong legislation to curb greenhouse gas emissions now. NASA climate expert James Hansen said, "we have less than 10 years to change our pattern of emissions. If we wait any longer, climate change will be unstoppable." As educated and passionate college students, we have the power and resources to influence the decisions of policy makers. Since students have realized climate change is *the* issue of our generation, a huge movement has begun, which will prove to be the largest grassroots movement the world has ever seen. This is a very exciting and promising time; events are unfolding all across the nation, culminating in hundreds of thousands of people raising their voice and demanding that humanity make positive changes to save our planet. I encourage you to get involved and partake in these historic events, to help shape the future, to really be part of something huge. As Sabina Carlson, a sophomore at Tufts University explains, "It is not enough to ask politely, there has to be political cost for action". It is time to show politicians that we are serious. If they won't do anything, we will.

**Power Shift: Nov 2<sup>nd</sup> – 5<sup>th</sup>.**

Washington, D.C.

The first ever national student conference dedicated to solving the climate crisis! Over 5,000 students are expected to attend and incredible speakers are confirmed.

[www.powershift07.org](http://www.powershift07.org)

Contact: [sregensp@smith.edu](mailto:sregensp@smith.edu)

**Focus the Nation: Jan 31<sup>st</sup> 2008**

1,000 schools around the nation.

A national teach-in engaging millions of students and citizens with political leaders to shift national conversation about climate change to solutions.

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

Help plan Smith's involvement!  
See above for contact info

**Step It Up 2007: Nov 3<sup>rd</sup>.**

Thousands of people all over the country will gather in historic places demanding that leaders pass legislation which:

- ~Provides 5 million green jobs
- ~Cuts carbon 80% by 2050
- ~Outlaws new coal-fired power plants

[www.StepItUp2007.org](http://www.StepItUp2007.org)

## Coral Reef Ed-Ventures

by Rachel Neurath, '09

*What better way to spend your summer than in San Pedro, Belize, scuba diving in coral reefs that are the second largest in the world, and then running a summer camp where you teach the children in San Pedro all about reef dynamics and systems so that they, too, know how essential a resource the reefs are? Last summer, six Smith students were able to do just this in a program called Coral Reef EdVentures which is run by Smith's Environmental Science and Policy program. For many of them, it was an experience they will never forget.*



### Background:

In 2000, Professors Al Curran (Geology) and Paulette Peckol (Biology) decided it was time for Smith to give back to the small community of San Pedro, Belize, where the two had been engaged in research for almost thirty years. They teamed up with Professor Susan Etheredge (Education and Child Study) and developed the Coral EdVentures program- a program designed to bring Smith students to San Pedro each summer to do research and teach local children about the remarkable coral reefs in their area. The idea was that if the children understood more about the dynamics and importance of the coral reefs they would be more likely to advocate for the reefs' protection in the future. This seemed particularly relevant since the Hol Chan Marine Reserve is just four miles off the coast of San Pedro and the local economy depends in large part on tourism associated with the reef.

The program, which is coordinated with the Hol Chan Marine Reserve, began with only about five children enrolled in a summer camp. Last summer, there were approximately sixty. Children return to the program year after year because it is fun and they learn a lot in a camp-like setting, which includes field trips and fun projects.

The Coral Reef Ed-Ventures team last summer was headed by Whitney Dorer ('07), who had participated in the program the previous year. Also on the team were Andrea Gohl ('08), Maya Wei-Haas ('09), Penny Luo ('08), Loretta Cheung ('09), and Stephanie Moore ('07).

### Research Week:

A week before the camp started in San Pedro, students on the team participated in field work, gathering data on several ongoing Smith research projects associated with the local coral reefs. The data they collected was primarily for Professor Paulette Peckol and Katie Morris ('07). Everyone had to get scuba certified before the trip in order to carry out their primary task of monitoring parrotfish and surgeonfish grazing rates on coral. The students also measured reef rugosity and made observations of sedimentation rates.

The main threats to the reef in San Pedro are tourism and over fishing. Tourism has become big business around San Pedro, with most of the local people operating restaurants, shops, and hotels for the tourists. While tourism is a good source of income for the community and reduces dependence on fishing, which can harm the reefs, too many tourists can also stress the reef.

### Coral Reef Ed-Ventures Camp

The Smith students in the Coral Reef EdVentures program ran camp for three weeks total: one week of "advanced" camp, for children who had been in the program previously, and two weeks of the regular program, which was designed for ages seven to eleven.



A favorite project is making edible coral polyps.

The Smith students also held free movie nights for the community at large, screening *Finding Nemo*, *Happy Feet*, and *Shark Tales* for anyone interested.

While camp was in session, Smith students ran a variety of activities from field trips to in-class, hands-on activities. While some projects and events carry on from year to year, like a trip on a glass-bottomed boat to see the reefs from above, most of the curriculum is developed each year to incorporate the interests and background of the students involved. The main goal of camp is to make it fun for the kids.

This year, a new event was developed called "Experiment Day." Each Smith student teacher ran a sta-



Identifying sea life: glass-bottom boat ride.

tion, while campers rotated through. The station topics included sonar, the Coriolis effect, determining the age of fish using their scales, water pressure and salinity of water and how they are related to density.

When camp was over, Smith students held a graduation ceremony. Ceremonies are a big deal in San Pedro, and the campers responded enthusiastically, singing songs and performing skits based on conservation. A poster session about conservation was held to which campers brought posters they had worked on at camp. Prizes donated from surrounding businesses were given out for all the posters. All

(Continued on page 7)

## As Smith Looks to the Future—Campus Environmental Initiatives

By Rachel Neurath ('09)



### The Cogen Project

While many students have heard of the Cogen Project, few who I talked to knew exactly what it is. I talked to Gary Hartwell, the Project Manager of Physical Plant, to learn more about cogeneration, also known as Combined Heat and Power (CHP), and what it will do to make Smith a greener campus.

*How does Smith get its electricity and heat?*

The electricity we purchase currently from the grid to power our lights, computers, etc. is generated by a mix of mostly coal, oil, nuclear and gas-fired power plants, with some hydro and a little wind and solar. The heat generated in this process is wasted. We currently heat our buildings with steam generated by burning #6 fuel oil, which is about as clean as coal—in other words, not clean at all. Our new cogeneration system will be much more environmentally friendly and efficient in two ways. First, it will generate power for electricity using natural gas (the cleanest fossil fuel). Second, the “waste” heat will instead be captured and used to make steam to heat our buildings.

*Can you explain it in a little more detail?*

The new gas fired turbine will drive a 3.5 megawatt electric generator. The heat recovery steam generator will receive the turbine exhaust and make additional "free" steam. The equipment will be commissioned (systems testing and tuning) in January and February 2008 and fully operational in March, making 90% of Smith's electricity and 40% of the steam to heat our buildings. Two of our older boilers will become reserve boilers, fired only during cold snaps or if one of the other boilers is shut down. Our agreement with the power company is that we will always purchase some electricity from the grid, never export power. In case the turbine shuts down we will be able to instantly purchase all our power from the grid.

*What are the environmental and economic benefits of this new system?*

The overall environmental benefit is an annual reduction in greenhouse gas emissions of approximately 35%. The system will also save Smith College approximately \$1.5 million per year initially and around \$2 million per year once we have completed other major infrastructure projects. The anticipated payback time for the \$13.7 million project is around 8 years.

*The Cogeneration Project at Smith is slated to be completed in November, 2007.*




---

### Other Environmental Initiatives - At a Glance

- ~ This Fall, Grab & Go in Chapin House stopped providing bottled water, encouraging students to bring their own container in order to reduce our use of plastic on campus. Just this October, Grab & Go phased out all paper cups.
- ~ During J-Term, Physical Plant coordinated a campus-wide temperature setback, turning down the heat an extra 5°F. This saved \$1,400, an estimated 2,300 million Btu, and reduced Smith's CO<sub>2</sub> emissions by 190 tons.
- ~ Smith only buys toilet paper and paper towels made from recycled products.
- ~ Beginning in 2005, Smith started a project with local contractor KLM to replace all missing and damaged insulation on steam pipes in manholes and tunnels throughout campus. The project is estimated to save 3,400 million BTU and \$18,600, and will reduce our greenhouse gas emissions by 275 tons of CO<sub>2</sub> each year.




---

### **CORAL REEF Cont'd from pg. 6**

graduates of the camp program received a “reef expert” card and graduates of the advanced camp program received certificates.

Andrea told me that you can really tell which kids have done the program before because they remember so much. They learn a great deal in the program, and have a lot of fun. Hopefully, in the future, they will find ways to advocate for the protection of the incredible reefs right off the coast of their homes.

*Coral Reef Ed-Ventures runs every summer. The program is six weeks long total, and students receive a stipend through ES&P. To learn more, contact Professor Paulette Peckol, ppeckol@smith.edu or Professor Allen Curran, acurran@smith.edu soon.*



**Counting Salmon**

*(Continued from page 1)*

suits because the water was so cold. As Caitlin said about the internship, “We learned a lot about everything.”

Caitlin and Alex, who had both worked as lab technicians previously, admitted that they were not sure about an internship at first. However, Alex told me everyone on the project understood that the interns were there to experience as many things as possible, and the scientists really made that happen. They were able to work with a team of high level researchers for the government and graduate students, allowing them a view into the inside. As Alex described it, “in a scientific journal, you only see the names of the principal investigators, but so many other people are involved.” Caitlin and Alex were able to see where all the research comes from and to be an integral part of that research. Once the two became comfortable with the work they were doing, they were even put in charge of leading volunteers for the project.

When I met with Caitlin and Alex, there was no question that this past summer was an incredible experience for them both. Not only was it a lot of fun, but they also learned a great deal. The experience, they agreed, helped them realize their interests and focus their future pursuits in the environment. While Alex has decided that she is more interested in forest ecology, for which she plans to pursue a PhD, it seems likely that there will be many more fish in Caitlin’s future.

These students internships were made possible by the generous support of the Agnes Shedd Andreae, ’32 Fund.

***The Environmental Science and Policy Program***

is an interdisciplinary program that ties together the natural sciences, humanities, and social sciences with a faculty steering committee from across these disciplines. Each semester, the ES&P program hosts a variety of events, ranging from film screenings to lectures.

***So Who’s Involved in the Program?***

Director: L. David Smith (Biology)  
 Program Coordinator: Joanne Benkley  
 Spatial Analysis Lab Coordinator: Jon Caris

Steering Committee/ Faculty Advisers:  
 Donald Baumer (Government)  
 Nathanael Fortune (Physics)  
 Maureen Fagan (Chemistry)  
 Elliot Fratkin (Anthropology)  
 Andrew Guswa (Engineering)  
 Virginia Hayssen (Biology)  
 Shizuka Hsieh (Chemistry)  
 Michelle Joffroy (Spanish and Portuguese)  
 Leslie King (Sociology)  
 David Newbury (History)  
 Robert Newton (Geology)  
 Paulette Peckol (Biology)  
 Jeffry Ramsey (Philosophy)  
 Amy Rhodes (Geology)  
 Paul Voss (Engineering)  
 Gregory White (Government)



**ES&P Student Editor:** Rachel Neurath, ‘09  
 We’d love to hear from you! Please send comments and contributions to [enviro@email.smith.edu](mailto:enviro@email.smith.edu)

**Environmental Science and Policy Program**  
**Smith College**  
 Bass Hall 107  
 Tel: 413.585.3951  
 Fax: 413.585.3786  
[enviro@email.smith.edu](mailto:enviro@email.smith.edu)



**TO:**