

ENVIRONMENTAL CONNECTIONS



Allison Baldwin, center, participated in river cleanup project during internship in Italy with Legambiente.

ENVIRONMENTAL INTERNSHIPS, CLASS OF 2006

MEMBERS of the Class of '06 have returned from their internships and shared their various adventures with Center staff, faculty and fellow students. They are now busy incorporating their summer experiences into their senior integrative projects (SIPs) which they will present in the spring. The following summaries are taken from their individual internship reflection papers (the entire text of each paper can be viewed on the Center's website at <http://goodwin-nieringcenter.conncoll.edu/Seniors>).

BEN ALANDER, a biology major, completed his internship at Save The Bay,

a non-profit conservation organization based in Providence, R.I. that specifically targets the Narragansett Bay portion of Long Island Sound. Alander conducted research on a Narragansett Bay salt marsh that was adversely affected by human construction projects. He investigated the effect of habitat infringement on the diversity and abundance of local invertebrate populations by conducting biological sampling, including soil core samples and surveys of macro and micro-invertebrate species in the marsh. He will apply these



methods to his senior integrative project, an investigation of macro-invertebrate biodiversity and richness in the Arboretum's Mamacoke Island salt marsh. "My experience with Save the Bay gave me an extensive amount of insight into how the research portion of habitat restoration groups function: the background research, field work and final restoration proposal. The collection of data required long hours, both in the marsh and in the laboratory. While extremely time intensive, the experience gave me the understanding that biology, especially field research, is —

continued on page 3



GOODWIN-NIERING CENTER
FOR CONSERVATION BIOLOGY
& ENVIRONMENTAL STUDIES

Connecticut College
Box 5293
270 Mohegan Avenue
New London, CT 06320-4196
Phone: 860.439.5417
Fax: 860.439.2418

E-mail: goodwin-nieringcenter@conncoll.edu
Web site: <http://goodwin-nieringcenter.conncoll.edu>

Robert Askins, *Director*
Glenn Dreyer, *Executive Director*
Gerald Visgilio, *Associate Director*
Diana Whitelaw, *Assistant Director*
Amy Cabaniss, *Campus Environmental Coordinator*

STEERING COMMITTEE

Phillip Barnes, *Zoology*
Anne Bernhard, *Biology*
Beverly Chomiak, *Physics*
Jane Dawson, *Government*
Ann Devlin, *Psychology*
William Frasure, *Government*
Manuel Lizarralde, *Botany & Anthropology*
Stephen Loomis, *Biology*
Arlan Mantz, *Physics*
Peter Siver, *Botany*
Douglas Thompson, *Physics*
Derek Turner, *Philosophy*
Scott Warren, *Botany*
Marc Zimmer, *Chemistry*

BOARD OF ADVISORS

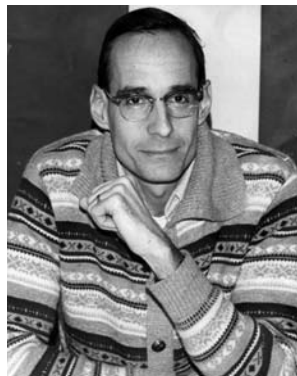
Wendy Blake-Coleman '75
Office of Environmental Information,
U.S. EPA
John Cook
The Nature Conservancy
David Foster '77
Harvard Forest, Harvard University
Richard Goodwin
Professor Emeritus, Connecticut College
Ralph Lewis
Connecticut State Geologist, Retired
Helen Mathieson '52
Trustee Emeritus, Connecticut College
Edward Monahan
Connecticut Sea Grant Program
Norman Richards
Mohegan Tribe Environmental Protection Department

Established in 1993, the Goodwin-Niering Center for Conservation Biology & Environmental Studies is an interdisciplinary program that draws on the expertise and interests of faculty and students in the liberal arts to address contemporary ecological challenges. The Center strives to integrate all areas of learning to deal with the issues of sustainability and the natural environment. Building on a scientific understanding of the natural world, the Center invites the social sciences, the humanities and the arts to help understand and solve difficult environmental issues.

FROM THE DIRECTOR

LEGACY OF PAUL FELL

THE CONNECTICUT COLLEGE COMMUNITY and the environmental studies program suffered a major loss when Professor Emeritus Paul Fell died on December 1, 2005. Paul retired in 2003, but he remained active on campus, working each morning in his office in New London Hall and continuing to work with students and colleagues on ecological research.



Paul Fell, Katherine Blunt Professor Emeritus of Zoology

After Paul arrived at Connecticut College in 1968, he initiated a study of the developmental biology of sponges. While he became well known for his research on sponges, he devoted an increasingly large part of his time to field work on the ecology of tidal marshes and estuaries. He joined William Niering and Scott Warren in a series of research projects that not only contributed to our understanding of marsh ecology, but also directly contributed to efforts to protect and restore coastal marshes. They showed how tidal marshes can be restored by removing barriers to tidal flow and they revealed how expanding stands of common reed (*Phragmites*) could change the ecology of a marsh.

At the time Paul joined the salt marsh research group, environmental studies was largely the province of the Botany Department. Paul was the first faculty member in the Zoology Department (later called the Biology Department) to concentrate on environmental research. He successfully worked to increase the importance of field biology and marine systems in the Biology curriculum.

Paul taught courses in marine biology and tropical biology that became an important part of the environmental studies program. Paul was a popular teacher even though his courses were considered to be among the most challenging in the biology curriculum.

Students and faculty were continually impressed by the breadth of Paul's knowledge in biology. On the first day in the field for the tropical biology course, for example, Paul could stride along the edge of a mangrove swamp in the Virgin Islands or the Bahamas, identifying the invertebrates and fish by both their common and scientific names while discussing their physiological adaptations and ecological significance. In the classroom he described complex structures and processes without wasting a word while simultaneously drawing elegant diagrams on the blackboard (sometimes with both hands). In the field he expressed a quiet delight in seeing new organisms, inspiring the enthusiasm and curiosity of students.

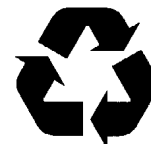
Over the years Paul worked closely with many dozens of undergraduate students on summer field projects, honors theses and independent studies. He taught students how to do careful and thorough field and laboratory work in order to answer important general questions.

Paul was an active member of the Goodwin-Niering Center and a central contributor to our ecology program. He helped build a program in marine and tidal marsh ecology that continues to attract highly motivated students to the college. The faculty and students who worked with him will always draw upon his teaching and enthusiasm.

Robert Askins

PLEASE HELP US CONSERVE!

In order to reduce our paper usage and general costs we would like to recommend that you read our newsletter on our Web site at <http://goodwin-nieringcenter.conncoll.edu>. Please contact us at 860.439.5417 or goodwin-nieringcenter@conncoll.edu to be removed from our hard copy mailing list. Thank you.



INTERNSHIPS

continued from page 1

simply put — hard work. I came away from the internship with the sense that I had contributed in quantifying a serious ecological problem associated with Narragansett Bay. My hope is that the data I collected and analyzed will be utilized as a basis for the future restoration of the Gooseneck Cove salt marsh area.”

ALLISON BALDWIN spent her summer working with Legambiente (League for the Environment), an Italian environmental NGO in Lombardia, Italy. As an environmental studies major, Baldwin worked on two different projects. The first was a nature camp for children, ages 7 – 11, which took place at Campsirago, a tiny, 20-person village on a hill in the Colle Brianza region of Lombardia. For the second project, Baldwin was responsible for an international work camp in the city of Lecco on Lake Como. Working with one of the other adults from Campsirago, she helped organize a project with 14 people between the ages of 18 and 28 from countries all over the world including Turkey, South Korea, France, Belgium, Latvia and Germany. The project entailed improving the river system of the city and her internship centered on organizing daily activities: transportation to and from the work site; daily food orders; collaboration with city officials and city volunteers; and general coordination of other volunteers. “I entered my affiliation with Legambiente with the main objective of learning how environmental activism is employed in other parts of the world and seeing if I could become completely immersed in a volunteer project abroad. The children’s camp was extremely useful in that I was able to help inspire an excitement for nature and the outdoors in children, as well as learn about the local environment myself. The international work camp was also inspiring in that, despite the fact that the work was physically challenging and relatively unimportant on a global scale, it was carried out with a passion and excitement that I could never have

foreseen. It was here that I truly understood the phrase ‘think globally, act locally’.” For her senior integrative project, Baldwin will explore the environmental side of Italian politics, focusing on the strength of the Italian Green party and the role of NGOs in defining environmentalism.

Environmental studies/economics major SELIN DEVRANOGLU interned in an environmental organization in Istanbul called Bumerang, a newly established organization that currently focuses on the problem of toxic substances in Turkey. The founders of Bumerang are also Greenpeace volunteers, working closely with Greenpeace Turkey. One of the short-term goals of Bumerang for the summer was to gather an information base for Turkey’s national implementation plan for the Stockholm Convention on persistent organic pollutants (POPs). During the

methods and possible improvements and future plans in Turkey. “This experience has been very valuable because there is no better way of learning about these issues than actually working actively in an environmental NGO in Turkey. Since I am continuing my education in the U.S. and not in Turkey, I have always felt the need to learn more about the environmental issues of my home country. For my senior project, I will focus on the environmental problems in developing countries and the environmental policies that are in place to deal with these problems. I plan to focus on the problem of increasing amounts of municipal and industrial waste as a result of economic development and the methods used for dealing with this problem, such as open-system waste incineration technology.”

For the first time in the history of the Center, two of our students interned with



Megan Lucy and Laurinda Wong led whale watching trips out of Gloucester, Massachusetts.

internship, Devranoglu’s main responsibility was to conduct research about the Stockholm Convention and about Turkey’s stance in regard to this convention. Devranoglu also worked on several Greenpeace campaigns, including the energy and oceans campaigns, and helped with preparations for fairs, translations, and general office work. She worked in the Recycling Fair that took place during the second week of July in Istanbul, and attended lectures about current recycling



the same organization, neither one knowing until the first day of the internship that they would be spending their summer together. MEGHAN LUCY and LAURINDA WONG, biology majors, working for Ocean Alliance’s Cape Ann Whale Watch,

continued on page 4

INTERNSHIPS

continued from page 3

a non-profit organization located in Gloucester, Mass., whose main goal is to promote the conservation of whales and their ocean environment through education and research. As field researchers and environmental education interns, Lucy and Wong spent four days a week aboard the whale watch vessel, Hurricane II, with the remaining day spent at the Ocean Alliance office. On the whale watch boat they became proficient with various teaching tools that were used to educate and engage passengers and were also responsible for collecting quantitative and qualitative data when watching the whales. For her senior project, Lucy will conduct research on many aspects of biodiesel fuel and prepare a proposal to present to Cape Ann Whale Watch outlining the advantages of turning Hurricane II into a completely “green” whale watch vessel run on biodiesel. The proposal will include modifications to the engine; locating mechanics in the area willing to support the project; sponsorship by other organizations; cost and vendors of biodiesel ingredients; advertisement suggestions for website and brochures; and much more. Wong’s senior project will be a study of the effects of military sonar on cetaceans. “My internship with Ocean Alliance was an incredibly valuable learning experience. I’ve never had any experience working with whales and this was the perfect opportunity. Not only did I learn about whales, but I also got to pass my knowledge along by talking with passengers on the boat. This internship also allowed me to learn about different aspects of the marine environment and conservation of marine mammals and was very helpful in preparing for my senior project. Weekly intern meetings allowed us to share environmental/marine-related interests.” (Laurinda Wong)

“My goals to connect with people and develop contacts in the field of marine research were met during the internship and were developed further through daily conversations with people from all over the country out on trips to see whales, which ultimately led me to finally settle on my senior project. Luckily, and surprisingly, I worked with Laurinda Wong this summer.

“I was able to put into context all of the environmental and biological systems work I have studied in my courses here at Connecticut College.” — *Alaya Morning*



Alaya Morning worked in West Oakland, Calif., on community-based, sustainable, urban farms.

We were both very influenced and moved by our experiences and discussions with the staff, and wanted to take these thoughts further in order to put something into action. With questions from passengers about boats’ effects on the whales, and seeing how whales behaved as we motored through their home, we pondered what we could do to help the situation. It is somewhat peculiar that we go out every day with our dirty diesel engine and noise pollution and circle around through the whales’ habitat. Having only been slightly familiar with biodiesel fuel before this summer, it is a

subject that I now find extremely interesting.” (Meghan Lucy)

ALAYA MORNING, an ethnobotany major, spent her summer interning for City Slicker Farms, a collection of six small urban vegetable gardens located throughout the West Oakland, Calif. area. The non-profit organization is committed to providing low-income residents of West Oakland with affordable locally and sustainably grown produce. One day each

week was spent working in the office and the rest of the week was spent at the garden sites: planting, watering, harvesting, fixing, washing, selling, singing, chatting and learning as much as she could from Ingrid, the farm’s year-round managing apprentice. The favorite days were Fridays. Starting in the afternoon and heading into late evening, Morning and Ingrid, often joined by many friends, harvested, washed and bundled fresh vegetables for the sliding-scale farm stand the next morning, eventually transporting the veggies from each of the smaller sites to the larger garden in a bicycle rickshaw created especially for City Slickers by a local cart-maker. “My internship with City Slicker Farms was an extremely important part of my education. I was able to put into context all of the environmental and biological systems work I have studied in my courses here at Connecticut College. Additionally, I was able to observe the trial-and-error process which is key not only in gardening but also in establishing and maintaining a non-profit, volunteer-run organization. I have also been exposed to the importance of this type of space in urban areas. Many of the members of the West Oakland community were black Americans with strong familial roots in the rural South (Louisiana) and had grown up on the farms of their parents and grandparents. They knew the most effective ways to prune tomatoes, why our okra failed, and how to keep the rooster from attacking when you went to collect eggs. From an ethnobotanical perspective, these garden plots in West Oakland became important spaces in transmitting and preserving knowledge from one

generation to the next.” For her senior project, Morning plans to focus on the importance of land access in building ecological identities and in maintaining the space in which more sustainable futures may be created.

Environmental studies major ADANNA ROBERTS interned with the New York City Department of Education (NYCDE) under the Office of Occupational Safety and Health (OOSH), whose mission is to ensure a safe and healthy environment for students and DOE employees. Robert’s duties included taking indoor air quality complaints; filling out the requisite indoor air quality logs and making computer entries into the database; conducting indoor air quality investigations; learning to prepare indoor air quality reports; learning how to use and maintain a variety of indoor air quality equipment; preparing training materials; assisting OOSH’s safety and health trainers during training sessions; scheduling the delivery and collection of medical waste kits from NYCDE sites; and performing clerical and administrative duties relating to the delivery of safety and health services. “My learning objectives for this past summer were to get hands on experience in the field of occupational safety and health. This internship was my first experience with this field, and, as a result, I was very excited and looked forward to what was in store for me over the summer. Specifically, I learned how to test indoor air quality, along with writing reports on my findings. This was an excellent opportunity for me because I was able to conduct tests outside of the lab/classroom. All of my original objectives for this internship were met and I was able to accomplish what I set out to do. Overall, this internship was an active learning experience and the progress that I made during the summer should be reflected in the success of my SIP.” For her senior project, Roberts will analyze the purposes of occupational safety and health and its relationship with indoor air quality.



JOEL SCATA, a government major, spent his summer working with the Atlantic Council of the United States, a foreign policy think tank based in Washington, D.C., whose mission is to promote constructive U.S. leadership and engagement in international affairs based

on the central role of the Atlantic community in meeting the international challenges of the 21st century. As a government major, Scata worked for the Program on Economics, Energy, and the Environment, focusing on two projects:



the “Clean Air for Asia Project” and “A Marshall Plan for Energy and Water Supply in Developing Countries.” Scata was involved in preparing for the Marshall Plan meeting, the concept of which is loosely based on the plan that was developed for the reconstruction of Europe after World War II. Scata helped research and select a group of applicable countries to be chosen for the initial test plan and prepared documents describing each country’s political status, economic background, and current energy and water sources. He also helped establish basic criteria to narrow the developing nations into a group of countries to be presented at the second meeting. Finally, Scata conducted research on energy security as a topic, specifically, the growing energy consumption by China and how it affects the United States. “Overall, I believe my summer internship experience was very advantageous. It helped me to gain a better understanding of a topic that interests me, an idea of future career aspirations, and to prepare for my senior project. I would recommend the internship program at the Atlantic Council of the United States to future Goodwin-Niering Center students.” For his senior project, Scata will research the short and long-term threats that the United States’ energy needs will present in the future, highlighting the nation’s oil dependency problem and how this makes the United States vulnerable in numerous ways. He will study whether changes in the transportation sector could be an effective solution.

Government major CEILEIGH SYME interned with the Wildlife Friends of Thailand Rescue, Rehabilitation and Education Center in Petchaburi, Thailand, an organization that promotes environmental education and the rights of animals, and strives to give animals a better life by providing a safe haven and re-releasing them if possible. Syme spent a great deal of time assisting in the spaying and neutering of local stray dogs, as well as helping other volunteers with many different types of animals, including a

binturong, civet cats, gibbons, ostriches and otters. The area that she concentrated on the most, however, was working with elephants. Many of the elephants at the Center had previously endured a difficult life; others came from tourist camps where they continuously gave rides to tourists who would sit on wooden contraptions strapped to the animals’ backs. The monotony and physical strain of a life like this can be very difficult for an elephant to bear and Syme’s job as a volunteer was simply to improve the lives of elephants, both physically and mentally. Daily feedings, washings, and river trips were her main responsibilities, as well as picking pineapple plants for the elephants to eat. Often she was required to sit atop an



“I never imagined my expectations to be so utterly fulfilled.” — *Ceileigh Syme*

elephant to better guide it on long forest walks or on walks to the river. “This internship only increased my passion for animal rights and also my interest in ecological connections. By being privy to seeing not only endangered but also common animals being viewed as simply a monetary commodity, I was often shocked and inspired to fully throw my energy into understanding why so much atrocity can happen to animals and how these actions then have environmental effects. I was even more reminded of the importance of cultural barriers and differences in understanding the values that are at the core of these problems. Working in Thailand with such wonderful animals on a day-to-day basis was beyond incredible. I never imagined my expectations to be so utterly fulfilled. It was a collection of experiences that has given me perhaps one of the most valuable learning opportunities I have ever had.” Syme’s senior project will grapple with the issue of economic development in Thailand, India, and Japan, attempting to understand the relationship between economic prosperity and the value placed on animals within these cultures.

— *compiled by Michele Crowley*



WELCOME TO THE CERTIFICATE CLASS OF 2008

THE GOODWIN-NIERING Center is pleased to welcome ten new sophomores into the certificate program. Students and their majors are listed below, left to right, front row first:

BIANCA KISSEL
Environmental Studies

LINDSAY MICHEL
Environmental Studies

KATHERINE SERAFIN
Environmental Studies

ELIZA GREENMAN
English

KATHRYN GUTLEBER
English/Environmental Studies

GABE SIDMAN
History/Environmental Studies

KELSEY JACOBSEN
French/Environmental Studies

JESSICA LECLAIR
International Relations/Environmental Studies

CARA DONOVAN
Hispanic Studies/Environmental Studies

CHRISTINA COMFORT
Biology

SAVING ENERGY ONE BULB AT A TIME



Using compact fluorescent light bulbs will reduce the College energy bill.

DID YOU KNOW that one compact fluorescent light bulb uses approximately 70 percent less energy than a standard incandescent bulb and lasts up to 10 times longer? Students in the Renewable Energy Club and Students Against Violence to the Environment (SAVE) Club are aware of the energy savings that can be gained and they're doing something to help the campus conserve energy this winter. Thus far they have purchased 1,400 compact fluorescent light bulbs (CFLs) and, with the help of the House Environmental Representatives, began a door-to-door distribution in November. Each student receives a free CFL in exchange for turning in a standard incandescent bulb. With the high energy costs, an estimated \$6,400 savings will be welcomed on campus.

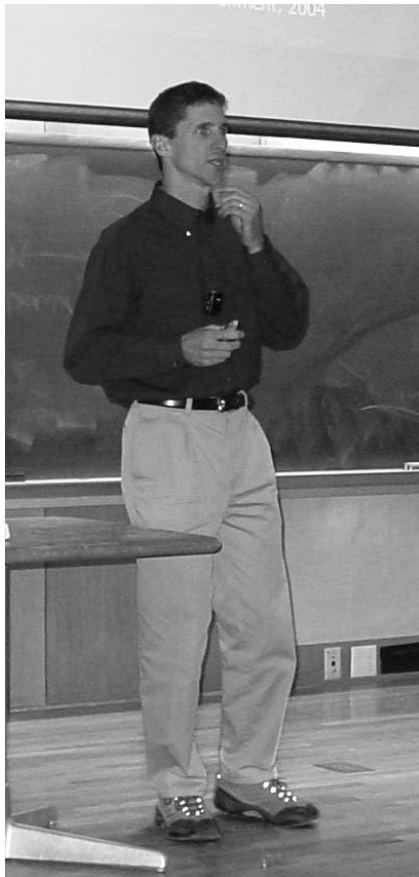
VENDING MISERS

Ten Vending Misers, devices to power down vending machines when not in use, were purchased last summer. The units reduce consumption of electricity by half. With the help of Peter Horgan, College Engineering Services Manager, the students in the Renewable Energy Club installed the Vending Misers on lesser-used vending machines on campus. With a refund from Connecticut Light & Power for using the devices, the club will be investing in more Vending Misers. For more information on these and other initiatives, please visit the Green Living web page at <http://greenliving.conncoll.edu>. — *Amy Cabanis*

GUEST LECTURER FOCUSES ON MISSISSIPPI RIVER FLOODING

IN NOVEMBER 2005, the Goodwin-Niering Center was pleased to welcome Doug Thompson, associate professor of physics, astronomy and geophysics at Connecticut College, as a guest speaker for the Certificate Program. Thompson addressed the entire campus community during the college's weekly Common Hour with a lecture titled "Life on the Mississippi River Delta: The Engineering Battle to Control the Largest River in the U.S." Because of the recent flooding in the delta region from Hurricane Katrina, this topic was particularly timely. In preparation, Center students read the chapter on the Mississippi in John MacPhee's classic book *Controlling Nature*.

The Mississippi River Delta covers an area that extends across the entire width of



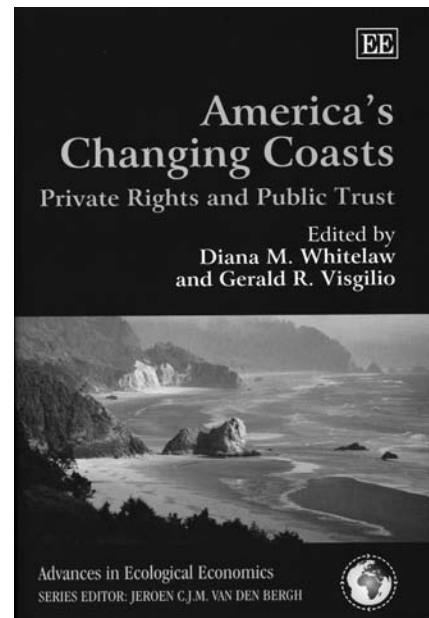
Associate Professor of Physics, Astronomy and Geophysics Doug Thompson spoke to the campus community about the dynamics of the Mississippi River delta.

the state of Louisiana. Throughout the geologic past, the river worked its way east and west across the state, creating a vast flat landscape of wetlands and river channels. The introduction of trade and industry to the area created a new need for flood control and navigation. Following a massive flood in 1927, the federal government stepped in as the main antagonist to the mighty Mississippi. Over the last 80 years, continued engineering attempts to control the river have created an environment that is no longer in equilibrium.

Focusing on human interaction with the Mississippi River Delta, Thompson stated that between 1929 and 1947 the river's length had been reduced by 35% near Baton Rouge through the creation of new channels to improve navigation. He also indicated that levees are not the best means to prevent flooding because they subside and constantly need to be rebuilt, noting that the New Orleans levees were built up to 15 feet high, but had sunk to 12 feet in less than 25 years. "Levees are not foolproof and, unfortunately, we saw that with Hurricane Katrina, in particular," said Thompson.

He concluded his talk by discussing the impacts of human and natural activity on the Mississippi River Delta. The accumulation of sediment deposits around the deltas has been curtailed by the closing of distributory channels. This alteration, combined with the loss of coastal wetlands and other changes in the landscape from human activity has increased erosion problems around the Delta. Estimates of the cost for saving the Louisiana marshes may be as high as \$15 billion.

Thompson's research falls within the discipline of geology and the sub-discipline of fluvial geomorphology. Geomorphology is the study of the landforms and the natural processes responsible for their formation. Many of the geomorphic topics of interest include the landforms and processes associated with rivers, glaciers, landslides, beaches and arid regions. Fluvial geomorphology includes the study of stream and river channels and the physical processes operating in these environments.



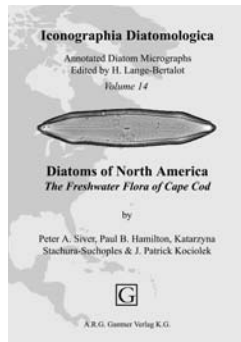
CONFERENCE PROCEEDINGS PUBLISHED

THE CENTER is pleased to announce that the proceedings of our 2003 environmental conference are now available from Edward Elgar Publishing, Inc. as *America's Changing Coasts: Private Rights and Public Trust*. Based on 13 presentations at the conference, the book was edited by Diana Whitelaw and Gerald Visgilio, associate directors of the Center. Following a comprehensive overview by the editors, this volume's expert contributors provide detailed discussions of important legal, ecological and social issues associated with coastal resource management, as well as the most significant challenges confronting land use planners and resource managers in coastal communities. Using an interdisciplinary approach to perplexing questions surrounding the issue of development versus protection, the book presents a broad approach to coastal issues involving private rights and the public trust.

CENTER FACULTY NEWS

This newsletter marks the beginning of a regular column that will provide updates on accomplishments by faculty associated with the Goodwin-Niering Center.

PETER SIVER, the Charles and Sarah P. Becker '27 Professor of Botany has published the first in a series of three works on freshwater diatoms *Diatoms of North America: The Freshwater Flora of Cape Cod*, published by Koeltz Scientific Publishers. The volume includes more than 1,000 micrographs of the organisms. Siver served as lead author with Paul Hamilton, a research scientist at the Canadian Museum of Nature. Junior authors from the California Academy of Sciences assisted. Along with Eduardo Morales, a research scientist from the Academy of Natural Sciences in Philadelphia, Siver and Hamilton are working on the next two volumes, which will focus on other parts of the eastern coast of North America. Siver is a noted expert in limnology, which is the study of lakes, and phycology, the study of algae. He has also focused his research on acid



rain and the effects of environmental stresses on aquatic ecosystems. Recently, he co-discovered 50 million-year-old fossils of a common freshwater group of algae,

which may unlock clues about the evolution and environmental degradation of freshwater lakes and the characteristics of lake ecology during ancient geologic time periods. Professor Siver also received a \$25,000 grant to monitor 20 Connecticut lakes to determine levels of nutrients and plant material, which can affect water quality, recreational use and aquatic health. The grant, which funds the first phase of a four-year project to monitor up to 60 lakes throughout Connecticut, was awarded by the Connecticut Department of Environmental Protection. The 20 lakes will be randomly selected and located throughout the state. The study will provide a baseline so that researchers will



Assistant Professor of Biology Anne Bernhard studies microorganisms in tidal marshes and estuaries.

be able to monitor changes in levels of plant material over time. Siver will determine if the lakes' biological productions are "oligotrophic" (lakes having low level of biological production) to "hypereutrophic" (lakes having high nutrient concentrations and significant algal blooms). "Property development, industry and agricultural practices can increase biological material in lakes," Siver said. "It's crucial to monitor Connecticut's lakes, which have scenic and recreational values and are used as sources of water for drinking and by industry," Siver said. "Increased biological productivity may result in murky water, low oxygen levels and stressed fish."

ANNE BERNHARD, assistant professor of biology, received state funding for a project that will study the impacts of salt marsh restoration on microorganisms in Long Island Sound. The \$23,440 grant comes from funds raised by the sale of Long Island Sound license plates. Bernhard will conduct her research at Barn Island Wildlife Management Area in Stonington, site of many previous Connecticut College research projects, and other undisturbed marshes in Stonington, Groton and New London. Results from this study will help clarify the impact of salt marsh restoration on microbial communities, and may have applications to future marsh restoration and management. Bernhard collaborates with scientists at Woods Hole Oceanographic Institute and the Marine Biological Laboratory in Woods Hole, Mass. Her work has been published in the scientific journals *Applied and Environmental*

Microbiology, Estuaries and Water Research. In her Connecticut College lab, Bernhard uses molecular methods to identify the microbes and study how the communities change under different environmental conditions by following changes in gene abundance and expression.

Professor Bernhard has also co-authored research on an elusive ocean microbe that is now considered to be a major link in the world's fragile nitrogen cycle. Her research has been published in the Sept. 2005 edition of *Nature*, considered one of the most prestigious research journals. Bernhard and the research team, which was headed by David Stahl of the University of Washington, successfully cultivated the tiny microbe *Crenarchaeota* in the laboratory and discovered some surprising facts about the diet and lifestyle of these microbes, which surf the seas in almost unimaginable numbers. *Crenarchaeota* survive by oxidizing ammonia to nitrite and the sheer weight of their numbers may make them big players in the world's nitrogen cycle — converting ammonia into other harmless nitrogen compounds. Additionally, their nitrogen-metabolizing genes look superficially similar to those of as-yet-uncultured terrestrial cold-living *Crenarchaeota*, which could indicate that a nitrogen-based lifestyle originated in these ancient organisms, rather than in bacteria. Bernhard, who joined Connecticut College in 2004, is a specialist in the role of microbes in marine and estuarine ecosystems and their interactions with other organisms as well as with their environment.

COMMON HOUR FOCUSES ON FOUR ACADEMIC CENTERS

FACULTY AND STUDENTS from the College's four academic centers shared their experiences in "The Four Centers: Faculty/Student Research and Collaboration" on Wednesday, Nov. 30, as part of the college's weekly Common Hour. The world is a web of interconnected cultures, issues and societal systems. Academic centers at Connecticut College help students "connect the dots" and are at the core of the college's acclaimed interdisciplinary approach to learning. Jane Dawson, Associate Professor of Environmental Studies in the Government Department, and a member of the Center's steering committee, and senior Ceileigh Syme, a Government major, represented the Goodwin-Niering Center at the event. Ceileigh spoke about her internship with Wildlife Friends of Thailand Rescue, Rehabilitation and Education Center in Petchaburi, Thailand, as well as plans for her senior project, which grapples with the issue of economic development in Thailand, India, and Japan, attempting to understand the relationship between economic prosperity and the value placed on animals within these specific cultures.



Senior Ceileigh Syme discussed her internship during a Common Hour presentation hosted by the campus' four academic centers.



Visna Ngov (l) and Andrew McCullough participated in field ecology research concerning early successional birds with Professor Askins.

STUDENT AND FACULTY RESEARCH COLLABORATIONS, SUMMER '05

EACH SUMMER, students have the opportunity to collaborate with faculty on research projects. The following are those conducted during the summer of '05 with an environmental theme:

Ecology and Conservation of Early Successional Birds on Powerline Rights-of-Way
Andrew B. McCullough and Visna Ngov
Professor Robert Askins (Biology)

Microbial Biofilm Diversity in New England Intertidal Zones
Jeff Bender
Professor Anne Bernhard (Biology)

Large Woody Debris and Salmon Habitat in Maine
Kevin Cooke
Professor Doug Thompson (Physics)

Biotic Survey & Inventory of Lakes and Ponds along Eastern North America
Sara Jayanthi, Lee Camfield, and Jeff Pelczar
Professor Peter Siver (Botany)

Taxonomy and Morphology of the Diatom Genus Stenopterobia in Waterbodies along Eastern North America
Lee Camfield
Professor Peter Siver (Botany)

Using a Paleolimnological Approach to Understanding Acidification of a small Cape Cod Pond
Sara Jayanthi
Professor Peter Siver (Botany)

The Genus Frustulia in North Carolina
Jeff Pelczar
Professor Peter Siver (Botany)

Production, Vegetation Patterns, and Fine Scale Elevation Changes in the Response to Experimental Nutrient Enrichment of a Marsh-Estuary System, Plum Island
Randy Jones, Megan Hoover, Andrea Brear, and Erin Miller
Professor Scott Warren (Botany)

CC'S NEW CAMPUS ENVIRONMENTAL COORDINATOR

THE ENVIRONMENTAL Model Committee (EMC) is a standing College committee responsible for developing programs and policies that integrate environmental sustainability into all aspects of campus life. Through efforts by the EMC, the



Campus Environmental Coordinator Amy Cabaniss

environmental coordinator position became a full time, administrative professional position this year. In September, Amy Cabaniss came on board to serve in this capacity.

Prior to coming to CC, Amy worked for six years as a regional recycling coordinator for a planning agency that assists nine towns in the Connecticut River Estuary Region. Her work included overseeing the construction of a household hazardous waste (HHW) facility, organizing HHW collections, providing town assistance, grant-writing, distributing compost bins regionwide, providing in-school programs, and more. Amy continues to serve her term as a member of the board of directors of the

North American Hazardous Materials Management Association.

Amy's background is in environmental conservation education. She has worked as an environmental educator for approximately 22 years. She is a doctoral candidate in environmental studies at Antioch New England Graduate School where her dissertation will focus on fostering environmentally-responsible behavior using community-based social marketing.

Her environmental sustainability efforts at CC include facilitating EMC and EMC Subcommittee meetings that address energy conservation, recycling, green building, renewable energy and communications. She enjoys working with staff, faculty and students on these issues and greatly appreciates everyone's interest and dedication to environmental issues. Welcome, Amy! Amy will be offering a column on campus sustainability efforts in each issue of *Environmental CONNECTIONS*.

SEEKING NOMINATIONS ALUMNI ENVIRONMENTAL ACHIEVEMENT AWARD

THE GOODWIN-NIERING Center is seeking nominations for its Alumni Environmental Achievement Award. This award recognizes and celebrates Connecticut College alumni who have made significant contributions in any area of environmental endeavor, including research, education, land preservation, conservation, communications, activism, and others. Past recipients are Dr. Linda Lear '62, environmental historian; Judy Irving '68, filmmaker; Dr. David Foster '77, forest ecologist; and Alexander Brash '81, urban park/natural area manager. This is an ongoing request with no deadline, but we do ask that nominations come with as much information about the person and their accomplishments as possible. Nominations may be sent directly to the Executive Director: glenn.dreyer@conncoll.edu.



JOIN THE RECYCLEMANIACS!

This spring semester, Connecticut College is participating in a friendly competition with 90+ U.S. colleges and universities. Recyclemania is a 10-week competition to increase campus awareness and participation in recycling. The institution that can achieve the highest recycling rate and least garbage generation and disposal wins the competition. Recyclemania runs from January 29 through April 8. Spread the word and recycle, recycle, recycle!

For more information, please visit <http://www.recyclemaniacs.org/> and contact Amy Cabaniss at 860-439-5218

CENTER PROMOTES RENEWABLE ENERGY DISCUSSIONS

CONNECTICUT COLLEGE has a Renewable Energy Policy thanks to a student-led initiative in 2001 that earmarked a \$25 per student annual fee toward purchasing electricity from renewable sources. The fee was originally used to purchase the "green power" option from the local utility then, when that opportunity was discontinued, Renewable Energy Credits (RECs) were purchased directly. When formulating a College renewable energy policy in 2004, the student Renewable Energy Club and the College's Environmental Model Committee (EMC) decided to become more proactive by setting the actual generation of renewable energy as a higher priority than purchasing RECs.

This fall, as a means of helping the EMC to sort through the issues and options related to various methods of renewable

to power crosswalks, street and bus stop lighting, telecommunications equipment and some buildings. The environmental impacts associated with solar power are negligible after installation. Important aspects of solar power on campus include:

Pros: zero emissions once installed; very low maintenance costs; can be inconspicuous; buildings can be designed for passive heating; options for small projects like individual street lights; possible state, federal and private opportunities for financial support.

Cons: high start-up and installation costs; very long "pay back" period; small amounts of toxins used in panel production; constructing and transporting PV equipment requires energy and produces air pollution and greenhouse gasses.



These photovoltaic panels, not visible from the ground, generate electricity atop Park Dormitory in "The Plex." The College Environmental Model Committee is investigating options for adding additional renewable energy generation capacity to the campus.

energy generation, students in the Center's Certificate Seminar formed groups to examine wind, solar and hydroelectric energy options. A fourth group worked specifically on recommendations for campus energy conservation. Each group wrote a report and gave a class presentation that evaluated environmental and economic pros and cons. Highlights of the students' findings, presented to the EMC in December, are summarized here:

SOLAR ENERGY

A growing number of colleges in North America, including Connecticut College, are using solar power to help meet their energy needs. For example, Clark College in Vancouver, BC has been using photovoltaics (PV) for the past three years

WIND ENERGY

Wind energy produced by large turbines is starting to be used on campuses as an environmentally friendly means to generate power. For example, both Carleton College and the University of Minnesota have installed wind turbines that produce about 5 million kilowatt hours per year. For Carleton, a liberal arts college similar in size to Conn, this represents about 40% of total electricity use.

Like Connecticut College, these institutions have some student funding, and their wind conditions are comparable to New London. The wind energy group recommended that wind speed tests be initiated on campus to assess the feasibility of a turbine, and that research should begin into outside sources of financial support.

Pros: zero emissions; low operational costs; faster payback than solar; "iconic."

Cons: viability based on amount of wind available; high initial cost; visual impact; noisy; potential threat to birds.

HYDROELECTRIC ENERGY

Hydroelectric power is produced when the energy of moving water is converted by a

turbine into electricity. Water power is usually harnessed by using dams on rivers and streams but systems which float in an estuary like the Thames, and use tidal energy to generate power, appear to be a lower impact option for the near future.

Pros: zero emissions; relatively fast pay back of investment; could utilize existing dam on local small river.

Cons: water fluctuations; harm to river and organisms; some discharge from turbine issues; liability of off-site facility; less educational impact due to off campus location.

ENERGY CONSERVATION

Energy conservation, i.e. energy not used, is by far the most environmentally friendly, and often most cost effective, solution to energy issues. The students working on this issue made the following recommendations for our campus:

Replace all incandescent light bulbs with compact fluorescents, including a continuation of the light bulb exchange program for privately owned student light fixtures.

Increase the use of motion sensors for lighting in as many locations as feasible within academic, administrative and residential structures.

Increase wall, ceiling and floor insulation in dormitories.

Improve/replace old windows with energy efficient models.

Install a green roof on an existing campus building.

RECOMMENDATIONS FROM THE CERTIFICATE SEMINAR STUDENTS

After group presentations on each of the four topics, students discussed the implications of the three renewable energy options, and were asked to make a collective recommendation to the EMC. There was no support for a hydroelectric project, moderate support for solar, and a significant majority of the class endorsed wind. The class recommendation was that EMC conduct feasibility studies for a wind turbine installation, and install some solar powered street lights for demonstration purposes.



CELEBRATE!

The Connecticut College Arboretum celebrates its 75th anniversary in 2006 with a display of historic photographs and documents in the Shain Library from May 15, to July 1. Believed to be from the 1920s, this is one of many photos depicting early student use of what soon became The Connecticut Arboretum.



Non-Profit Org.
U.S. Postage
PAID
New London, CT
Permit No.35

CONNECTICUT COLLEGE
GCBS Box 5293
270 Mohegan Avenue
New London, CT 06320-4196

