

Environmental Issues

Environmental Studies Program

Denison University

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President of the National Academy of Sciences Visits Denison

**Part one in a two part series of articles...*

This past September, Ralph Cicerone, President of the National Academy of Sciences, visited Denison to speak on the issue of Global Climate Change. Cicerone's convocation, "How Humans can cause Global Climate Change," sponsored by the Ronneberg Lecture Fund, was well attended, filling Swasey Chapel with students, faculty and Granville community members.

Cicerone began his speech by providing an overview of the relationship between the Greenhouse Effect and Earth's Climate, and how human activity has altered this natural cycle. The convocation provided a clear discussion of the scientific reasoning behind anthropogenic global climate change; Cicerone made terminology and concepts easy to understand by using a slide show that provided a clear, visual representation for people to follow along with – especially those not necessarily familiar with the scientific aspect of the topic at hand.

Simply put, the greenhouse effect refers to the fact that 1/3 of the sun's rays are reflected from Earth back into space, but the rest are trapped in Earth's atmosphere, warming the planet. The gases that we refer to as "greenhouse gases," chiefly carbon dioxide, methane, and nitrous oxide, are not inherently bad, as they serve to trap heat in our atmosphere and make Earth a hospitable temperature. However, as Cicerone explained, human activities (such as burning fossil fuels, clear-cutting forests, and cement production) have altered the natural concentration of greenhouse gases in the atmosphere. Measurements taken of atmospheric CO₂ levels since 1958 at the Mauna Loa Observatory in Hawaii have shown that CO₂ levels have increased every single year; in 1958 they were measured at 315 parts per million (ppm); today that number is 380 ppm.

Cicerone spoke of the adverse effects of global warming all over the world. He noted that



Ralph Cicerone, President of the National Academy of Sciences

the polar region of our planet has seen the most dramatic changes. Since 1955 the region has seen an increase in temperature of 2-3 degrees Fahrenheit, and satellite photos from 2003 show significantly less polar ice than from those taken in 1979. He also discussed how hurricanes in both the Atlantic and Pacific Ocean basins have increased over recent decades, mainly as a result of increased sea surface temperatures. This has been recorded by using the Hurricane Power Dissipation Index (PDI), which measures the energy of a hurricane.

"It is due to human activity," said Cicerone in explaining the climate changes that have occurred over the past 30 years. He likened the current levels of CO₂ being released into the atmosphere from human activities to filling up a bathtub with too much water and too small of a drain. "...If you have a drain the right size, it can flow out; increase [the flow of water] and it overflows. This is what we're doing," stated Cicerone.

The convocation ended on a hopeful note, though, with Cicerone stressing the importance of immediate action, especially with regard to energy efficiency – saving energy is a feasible solution in which everyone can participate.

**Part two of this series will provide a greater discussion of global climate change...*

Caiti Schroering '09

Swamp Girl

I began thinking about my first research experience when I noticed a small, colorful picture of a wetland on Dr. Spieles' lab door. It looked pretty and serene with lush, green buttonbush huddled within a forest of cottonwood and willow. Having no other plans for the summer following my sophomore year, I asked Dr. Spieles about his research and how I might get involved. I applied for the Anderson Summer Research Scholarship and set off to explore the unknown world of wetland ecology.

However, it ended up that the lush, green picture I saw so appealing on Dr. Spieles' door was not quite reflective of the summer I spent trudging around in hip waders fishing mesh bags of cattail out of the slimy, smelly mud and removing leeches to weigh the post-decomposition biomass.

Nonetheless, I decided that for the summer leading into my senior year I wanted to once again embark on summer research; this in turn extended into my senior research. I traveled across Ohio visiting sixteen active wetland mitigation banks, assessing the wetlands on three different spatial scales, landscape, ecosystem, and habitat. I had three objectives for my research: 1) Determine whether the mitigation banks are located within a suitable landscape based on the rate of urbanization, road density, and connectivity to other

natural areas, 2) Determine the success of the mitigation banks using the Ohio Rapid Assessment Method (ORAM) pinpointing the metrics which have common trends, and 3) Using Habitat Suitability Models for nine different waterbird species, determine whether the mitigation banks are providing adequate habitat for migratory birds.

For the first objective, the Landscape Scale, I obtained a USGS Digital Ortho-Quadrangle (DOQ) from 1988 to 2001 and an aerial photograph from 2004 to 2005 to compare the changes in wooded, agricultural, and urbanized area over time. I also was able to measure the buffer zones, connectivity, and road density. The second objective entailed visiting the wetlands and researching the plans to complete the ORAM. After completing each ORAM, comparisons could be made concerning the particular

metrics within the evaluation. In order to generate a Habitat Suitability Index (HSI) from the Habitat Suitability Models for each of the nine waterbird species, I examined the plant communities and ecosystem structure.

My senior research is far from complete. I look forward to next spring when the culmination of all my work comes together with some helpful and intriguing conclusions about the success of Ohio's wetland mitigation banks. I have enjoyed all my research experiences and would highly recommend anyone to seek out the many research opportunities offered on Denison's campus.

Jordan Mora '07



Jordan Mora, as she conducts wetland ecology research

ENVS Welcomes Two New Members to the Program

Bahram Tavakolian, Program Director



Hello, ENVSers. After 27 years in the Soc/Anthro Department at Denison, I have very much enjoyed my new role as Director of Environmental Studies this year. I hope to meet many more ENVS

majors, minors, and other environmentally aware/concerned students before I retire from Denison and move to Eugene, Oregon next summer. In addition to the courses I teach here at Denison, I also conduct research on the cultural ecology of nomadic pastoralism in Afghanistan, especially the revitalization of animal husbandry since the end of the Taliban regime. Once in Oregon I'll teach part-time at the University of Oregon and Willamette University, and I also plan to work as a field consultant for Drokpa, a grass-roots NGO focused on sustainable development among

pastoralists in Central and South Asia.

So, I'll certainly keep busy but I'm sure I will also miss the quality of the students and curriculum that we have in ENVS at Denison. Please drop by my office to talk with me about your own interests when you have a chance, and best wishes to you for a very successful conclusion to the fall semester.

Bahram Tavakolian

Grace Gordon, Program Manger



I am thrilled to be working at Denison in the Environmental Studies department as the Program Manager for the 2006-2007 academic year! Unlike all past Program Managers I did not

go to Denison, instead, I received my degree in Geography and Environmental Science from Miami University in May, 2004. The past two years since my graduation have been a whirl wind of adventure from working in the Great Smoky Mountains National Park as a seasonal Park Ranger, to wandering around India one summer, to traveling the country recruiting for the Student Conservation Association. I hope to use my experiences to help make students aware of the plethora of opportunities that exist for them.

I look forward to an amazing year here at Denison! Already, I have been incredibly impressed by the students and faculty involved in the program. They are so deeply concerned by serious local and global environmental issues and do everything they can to talk the talk AND walk the walk. My hope is that the activities I plan for the program this year will exemplify that same ethic. If anyone has any ideas for the program please feel free to stop by my office!

Grace Gordon

The Lowdown on Fireside

Continuing the tradition brought back to life last year, the ENVS department has in this semester hosted two "Fireside Chats". For those who don't know, they are informal chats designed to encourage campus dialogue on important environmental issues. Previous topics have included the impact of global warming on weather patterns, art and the environment, and the ever-popular screening of FernGully, a cartoon on rainforest destruction.

The first fireside of the year was lead by co-founders of Ohio Peak Oil Action: Theresa Bratton and Ryan Hottle. Bratton is an alumnus of Denison and a former resident of the Homestead while Hottle is a native of Granville. They reported on the predictions and consequences of global oil supply shortages caused by our dependence on it. Decreasing this dependency, bringing together communities and encouraging localization of resources can help slow-down the effects of possible shortages. This was the take-home message of the chat.

The October chat took place by a real fire—wood burning-stove at the Homestead! Trisch Mumme, the leader of a local Community-Supported Agricultural Systems (CSA), talked about CSA and local foods. The intimate talk included yummy

treats from local sources and addressed the debate about organic and local food. Issues of purchasing within season, gardening specifics, and problems with availability of locally produced foods were discussed with hot cider on the side.

Open discussion beyond the classroom is necessary to reinforce and raise awareness about environmental concerns. Strengthening the web of environmentally conscious folks across campus is important to be able to bring about bigger changes. So encourage your friends, enemies, professors, and neighbors to attend and exchange ideas. Submit your comments and suggestions for future firesides to ENVS fellows or Grace Gordon so that we can serve everyone's interests!

Lizzy Zultoski '07

Environmental Issues

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Meet the Program Fellows

The Environmental Studies Program Fellows this year are four very bright women who have demonstrated their strong leadership skills in the program. Below is an introduction to each of these talented Seniors.

Sarah Kafer, from Columbus, OH, has a self-designed concentration in Environmental Management. She has worked as a naturalist for three years at an environmental education center and interned with the Ohio Environmental Council. After graduation she plans to work and volunteer before heading to graduate school someday.

Jordan Mora, from Yarmouth, Maine, is an Environmental Studies and Violin Music Performance double major with a minor in Biology. She has

spent two summers researching restoration wetland ecology. After graduation, she plans to look for a job pertaining to ecosystem management of aquatic environments and/or water quality conservation.

Sarah Sorci, from Buffalo, NY, has a self-designed Sustainable Development concentration.

Last fall, she studied international development and Spanish in Ecuador through the MSID program. After graduation, she plans to spend one to two years volunteering.

Lizzy Zultoski, is from Cincinnati, Ohio and has a minor in Biology. She spent a semester in Costa Rica studying sustainable development and tropical ecology. She currently lives in the Homestead and will leave for law school or a rafting guide job after graduation.

Prachi Vakharia '10



From left to right: Sarah Sorci, Jordan Mora, Lizzy Zultoski, Sarah Kafer

ENVS alumni are doing great things all around the world.
Let us know what exciting things you are up to, we want to stay in touch:
email franksb@denison.edu

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