Dr. Sally Benson BC’77 Gives This Year’s Roslyn S. Silver ’27 Science Lecture

Sally Benson delivering her lecture “An Energy Plan for the 21st Century” in Sulzberger Parlor on November 17th

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Photo Credit: BCRW
This year the department along with the Barnard Center for Research on Women (BCRW) co-sponsored geology major Sally Benson ’77 as the Roslyn S. Silver ’27 Science Lecturer. The lectureship was established in 2004 to highlight the achievements of women in science and mathematics. We were delighted to be able to invite Sally back to give a presentation entitled “An Energy Plan for the 21st Century.” Sally is the Director of the Global Climate and Energy Project at Stanford University and a Professor in the Department of Energy Resources Engineering. She has become a leading expert in pathways to reduce greenhouse gas emissions. Most impressive is the piece of the 2007 Nobel Prize that Sally was awarded for being a coordinating lead author of a CO2 capture and storage report published by the Intergovernmental Panel on Climate Change (IPCC). Sally’s captivating lecture, which can be viewed at http://bcrw.barnard.edu/videos/sally-benson-an-energy-plan-for-the-21st-century/, took us through an energy plan that would transition the world to a low-carbon energy system. The discussion focused on three categories of energy game changers: those we have here and now, those coming soon, and those still on the horizon.

Sally originally came to New York and Barnard with the intention of becoming either a ballerina or a physicist. She quickly realized that ballet was not for her but did not start to question her path in physics until her junior year. At that time she took her first geology course and was hooked.

During this visit, Sally had a very busy day meeting with faculty, having lunch with students, giving her lecture, and sharing a lovely meal with the department following her talk.

It was an honor to be able to invite one of our own back to deliver her lecture, and educate us all on what the future of energy could look like.
Through the generosity of Professors David Krantz and Marybeth Shinn, an endowment has been established to support our majors’ senior thesis research. Professor Krantz, a statistician in the Department of Psychology at Columbia University, co-taught Environmental Data Analysis with Martin Stute for several years. Professor Krantz and his wife Professor Shinn, Chair of the Department of Human and Organizational Development at the Peabody College at Vanderbilt University, value undergraduate research opportunities that underlie the Senior Seminar theses that the students produce. This endowment is a major milestone in our efforts to provide our students with funding. The endowment will currently support one student each summer, but may one day ensure that every student wishing to pursue summer research will be guaranteed funding.

**Student Research Endowment Created!**

This summer Barnard held its second Summer Research Institute and highlighted two of our students in short videos on social media. Nathaly Santana ’17 and Daisy de Wolff ’17, spent 10 weeks working with Brian Mailloux in his lab. Nathaly investigated arsenic concentrations in Bangladeshi well water samples while Daisy worked on developing a technique that would allow arsenic concentrations to be quantified consistently in the field. Daisy has chosen to continue this project as the basis for her senior thesis. Search #barnardsri at www.instagram.com to see the these videos.

**Summer Research Institute**

**Presenting Research**

Karina Buhler ’17 and Alison Corley ’16 traveled to Vassar college to present their poster, *Enterococci in the Hudson River: Sources of Contamination at 125th Street*, at the annual conference of the Environmental Consortium of Colleges and Universities. Neida Vasquez ’16 traveled to San Francisco, CA, to present her poster, *Investigations of the Origin of the Magnetic Remanence in Late Pleistocene Lacustrine Sediments in the Mono Basin*, at the annual conference of the American Geophysical Union (AGU).

If you are interested in directly supporting our students’ research projects please contact Beth Mauro in the Development Office at emauro@barnard.edu or by calling 212-870-2535.
Cultivating Community

The Department has taken an active approach to building community this year. For the first time in recent years, we held a first-year student open house during orientation week, had our first annual overnight departmental retreat at Black Rock Forest, created a major’s student council (read more on page 9), redesigned a conference room to double as a study space for students, connected students with others in their classes so that they could create study groups, and held a study break featuring a presentation on turtle conservation efforts in Cape Verde by recent graduate Lissa Soares ’15.

Departmental Retreat to Black Rock Forest

The first annual departmental retreat was an overnight trip to Black Rock Forest in Cornwall, NY in late September. Twenty-two students and seven members of the faculty and staff spent the weekend together hiking, sharing meals, investigating green buildings, learning about the incremental history of the region, and getting to know one another around a campfire. Students loved having gourmet meals prepared by their professors–Terryanne Maenza-Gmelch prepped a wonderful BBQ and Stephanie Pfirman proved to be a waffle master. Taking a break from the city was not only relaxing, but a new experience for several on the trip who had never seen such colorful foliage or made s’mores! It was an amazing weekend and we are looking forward to next year!

Students hiking in Black Rock Forest with Martin Stute, Peter Bower, and Leslie Raucher
Top Row: (L) Stephanie Pfirman and Sedelia Rodriguez starting the camp fire. (R) Martin Stute Playing his guitar. Photos by Terryanne Maenza-Gmelch.

Center: Peter Bower making dinner. Photo by Tiana Wong

Bottom: (L) Students Hiking up Storm King Mountain. Photo by Tiana Wong. (R) Students enjoying a meal prepped by their professors! Photo by Martin Stute.
This fall, I was excited and honored to take the Intro to Environmental Science wheel and guide the students through my edition of the course. The setting for the semester was loaded with environmental news like California drought and wildfires, the Clean Power Plan, rejection of the Keystone XL Pipeline, Paris Climate Talks and a monster El Nino. We explored the basic principles of environmental science using these current local and global environmental news pieces as case studies so that students could learn the science behind environmental issues. Topics ranged from climate change, biodiversity, ecosystems, water resources, pollution and energy to sustainability. It was awesome to have almost every faculty member from the department give a lecture in their area of expertise. In lab we studied the Hudson River and its forested shorelines with hands-on, inquiry-based, and field experience approaches that involved data collection (on land and on the Hudson River), analysis and presentation, statistics, water chemistry, microbiology, microscopic and macroscopic life in the river, birds and plants in Riverside Park, biodiversity on a green roof, local geology, carbon sequestration in campus trees, topographical maps and museum studies.

-Terryanne Maenza-Gmelch
Carbon Storage in Barnard Campus Trees

Students in Terryanne Maenza-Gmelch’s Introduction to Environmental Science lecture have been exploring the science behind climate change. In labs taught by Terryanne and Sedelia Rodriguez, students collect and analyze data from the local environment—on the Hudson River and along its forested shorelines. One important topic is the removal of CO₂ from the atmosphere to combat global warming. In a carbon sequestration project, students did a complete inventory of Barnard’s trees, measuring the diameter of each tree. Using equations that relate tree diameter to biomass, the class calculated the kilograms of biomass stored in campus trees. They determined that the campus trees have stored between approximately 60,000 and 68,000 kilograms of biomass which translates to 29,700 - 33,660 kilograms of carbon. Barnard’s magnolia tree alone has sequestered 5500 kilograms of carbon (equal to about 20,168 kilograms of CO₂) in its lifetime. To put that in perspective, according to the EPA, burning one gallon of gasoline releases close to 9 kilograms of CO₂ into the atmosphere.

Announcements

Professor Brian Mailloux will be on a much deserved sabbatical this coming semester after being awarded tenure last year.

Professor Stephanie Pfirman has developed an educational card game that teaches players about the Arctic and Climate Change. It is now for sale at www.ecochainsgame.com.

As we continue work on our Academic Review we would like to thank the alums BC ’05—’15 who took our survey!
Waste Management Taught for the First Time Since 2010

For the first time in 20+ years Peter Bower did not teach the first semester of the introductory environmental science course. By handing over the intro reigns to Terryanne Maena-Gmelch, Peter, with assistance from Leslie Raucher, Program Manager, was able to dust off an old course that was in high demand. The course utilizes the municipal solid waste, sewage, and liquid waste disposal systems at Barnard as a basis for a real-life waste-management policy study.

Above: Students in front of the biodigestion eggs at the Newtown Creek Sewage Treatment Plant in Brooklyn

Left: Students in front of bails of paper at Action Carting’s Material Recovery Center in the Bronx

Peter Bower Awarded Funding from the Ohrstrom Foundation

The Board of Directors of the George L. Ohstrom, Jr. Foundation has awarded Peter Bower $10,000 to support student research opportunities at the Metropolitan Museum of Art and at Black Rock Forest, Barnard alumna Valerie Colas-Ohrstrom ’94, who majored in environmental science, continued on in the field at Brown University where she received her Masters in Environmental Studies, now serves on the board of directors at Black Rock Forest.
In our effort to create a more vibrant community, the department realized that it would be an impossible task without student help. Ten students volunteered to be members of the Student Council and liaise between the students and faculty and staff. They are in charge of deciding what issues they take up and what events they plan, and so far they have been great! One of the first things they did was rename themselves LEAF—The League of Environmentally Aware Friends. They have also run two successful events, the first, a lunch with Sally Benson and the second, a holiday party study break, which was a hit!

Students at the LEAF Holiday Party Study Break:

(L) Students playing EcoChains: Arctic Crisis (see page 7)

(R) Students destressing by making holiday and fall themed crafts

Internship Program set up with the Office of Environmental Remediation

A wonderful internship opportunity has come from Peter Bower’s involvement in the environmental remediation community. This year he started a pilot project to use Brownfield Action, his environmental remediation simulation software, to develop, train, and employ underrepresented women in the field of environmental site assessment. With a cooperative agreement with the NYC office of Environmental Remediation, student Amarelis Raudales was selected for a summer internship at OER based upon the Phase 1 and 2 site assessment reports she wrote for the second semester of the introductory environmental science course. Amarelis spent the summer assisting with technical reviews and project documentation, and providing outreach, planning, and support for brownfield workshops, events, and initiatives. Working for a city government agency was a lot of work, but had its perks. Amarelis was able to take a break from remediation work to help plan the ticker tape parade for the U.S. Women’s Soccer team.
From the Archives

Then and Now

Students sampling Hudson River water at 125th Street in Spring 1973 (Left) and Fall 2011 (Right)

The waterfront has seen many changes but the sampling methods remains the same!

Do you have photos we can add to our collection? Email them with a brief description to LRaucher@barnard.edu or call 212-854-7979.