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PEP Immerses Students in Science

The local beaches and bike path may have been popular this summer, but for students in the Woods Hole Partnership Education Program, the summer was all about science.

With backgrounds, experiences and aspirations as diverse as the colleges and universities they attend, 16 students from across the country learned about marine and environmental sciences, conducted research, and discovered the range of career opportunities that lie ahead. They also learned about each other, even taking turns preparing evening meals, and shared new experiences like a whale watch and a visit to MIT.

"This was a whole new world for me," said Angela Anorve, a junior biology major at the University of California, San Diego. "I've never had any marine science classes, so almost everything was new to me." Lucy Flores, a senior biology major at Nova Southeastern University in Florida, agreed. "It was eye-opening, scientific and motivating."

Now in its second year, the Woods Hole Partnership Education Program, or PEP, promotes diversity in the Woods Hole science community through a summer internship program for underrepresented groups. Aimed at college juniors and seniors who have had some course work in oceanography or marine and/or environmental sciences, PEP students participate in a four-week course focused on global climate change and then spend six-to-eight-weeks on individual research projects, culminating in a public presentation of their research results. The 2010 course began June 1 and ended with the research presentations August 13.

Participating PEP institutions are the Marine Biological Laboratory (MBL), NOAA's Northeast Fisheries Science Center (NEFSC), Sea Education Association (SEA), U.S. Geological Survey (USGS), Woods Hole Oceanographic Institution (WHOI), and the Woods Hole Research Center (WHRC). Course instructors and research project mentors are drawn from the staffs of these six organizations. Students earn four college credits for the program through the University of Maryland Eastern Shore.

Zachary Williams, a senior biology major at South Carolina State University interested in ecology, developed a method to rapidly measure the fertility of winter flounder, a flatfish. "When I was younger I didn't like flatfish at all, so it is ironic that I would work on them this summer," Williams says of his research experience working with mentor Rich McBride at NEFSC's Woods Hole Laboratory. "They're actually pretty cool."

A nationally ranked distance runner and geology major at the University of Arkansas in Fayetteville, Lane Boyer grew up in a small farming community in Kansas and had not participated in a scientific internship program before. "The PEP experience was much more than learning about science," said Boyer, who studied cold water coral habitats in Alaska's Glacier

Bay with research mentor Kathy Scanlon of USGS. “PEP has given me so many new opportunities.”

Christopher Cepero and Dolores Toledo collaborated on their research project, calibrating an acoustic backscatter system by the standard target method, under the guidance of WHOI’s Ken Foote. The system uses sound waves to detect and measure particles in the water column, a technique useful in fisheries and marine biological research to distinguish between objects, even species. Like many of the PEP students, neither had conducted a research project like this before.

“PEP has definitely opened doors to the research community, with which I had no previous experience before this summer,” said Toledo, a senior integrative biology major at the University of California, Berkeley. “Just being in the scientific community here has inspired and motivated me to continue to follow my dream of being a conservation biologist.”

Cepero, a spring 2010 graduate of Bridgewater State University in Massachusetts with a degree in physics, plans to work and apply to graduate school. He aspires to be an astronaut, but says he is certain he’ll work in the applied sciences. One of his favorite parts of the PEP was meeting students from around the country and learning about their backgrounds and experiences.

Emily Motz, a junior marine environmental science major at the State University of New York (SUNY) Maritime College, says the PEP experience has broadened her scientific knowledge and taught her skills which will be helpful when she graduates and is commissioned an ensign in the U.S. Navy.

Guided by research mentor Jim Manning, an oceanographer at the NEFSC’s Woods Hole Laboratory, Motz worked with high school students at the Cohasset Center for Student Coastal Research in Cohasset, Mass., studying the tidal flow in the town’s harbor using surface drifters they built and deployed from kayaks. She also developed a computer animation to visualize the relationships between sea surface temperatures and the path of the drifters.

“I learned a lot of new skills, especially using computers. I had never done modeling or worked with computer languages before, and although it was slow going at first, I learned, and I really like it,” she said of her research experience. “The best part was going into the field and applying what I learned.”

PEP director Ambrose Jearld, Jr., a fisheries biologist and director of academic programs at NOAA’s NEFSC, says getting the word out to students who might benefit from the PEP experience, including those not found in the traditional networks of underrepresented groups, is an opportunity for the program “to do even better”.

“Providing an experience that enables students to move beyond the narrow focus of their college majors and their own limited personal experiences into the wide-open opportunities of interdisciplinary science and a diverse society is challenging,” Jearld said. “I’m inspired by how receptive the students are in taking very complex ideas from a wide array of scientific disciplines, many totally new to them, and forming a basic understanding of how these concepts are connected. And it is gratifying to see students develop as individuals over the course of the summer.”

George Liles, curator of NOAA's Woods Hole Science Aquarium, serves as PEP manager and participates in the program by offering the students a writing seminar. With experience in student programs and a recent connection to the graduate education experience, Joniqua Howard, a May 2010 Ph.D. graduate in environmental engineering from the University of South Florida, joined Jearld and Liles this spring on a short-term basis to coordinate daily PEP activities with students and mentors. Ben Gutierrez of USGS recruited instructors and organized the PEP course, which included lectures and assignments on a wide range of marine and environmental science topics, as well as career development workshops.

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