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PEP Widens World View for Woods Hole Students, Scientists and the Larger Community

The village of Woods Hole is a very small place known worldwide as a leading center for marine, biomedical and environmental sciences research and education. Although researchers from around the world come to work at or visit the science institutions here, the local science community is widening its reach to attract a more diverse group of students, scientists and employees and become a more welcoming and inclusive community.

In 2004 the leaders of the six Woods Hole science institutions - the Marine Biological Laboratory (MBL), NOAA's National Marine Fisheries Service (NOAA Fisheries), the Sea Education Association (SEA), the U. S. Geological Survey (USGS), the Woods Hole Oceanographic Institution (WHOI), and the Woods Hole Research Center (WHRC) – formed a consortium and together committed to attract and retain a more diverse workforce, one that reflected the changing demographics of the nation and the international community. The Woods Hole Diversity Initiative was born. The leaders also signed a Memorandum of Understanding, which they reaffirmed in 2012, to create “pathways of opportunity” for members of traditionally underrepresented groups.

One of these pathways in science and education is the Woods Hole Partnership Education Program (PEP), a summer internship program aimed at college juniors and seniors who have had some course work in marine and/or environmental sciences. Cohorts of 15 or 16 students participate in a four-week course focused on global climate change, and then the students spend six-to-eight weeks on individual research projects, culminating in a public presentation of their research results. The 2014 course began May 30 and ended with the research presentations on August 9. Students earn four college credits from the program's academic partner, the University of Maryland Eastern Shore.

Many of the PEP students never heard of Woods Hole before their internship. Most learn about PEP through college faculty members or academic advisors, online through searches for summer internships, or by word of mouth and networking. The program provides housing, a food allowance, a stipend, and much more.

The world outside Woods Hole

Olamide Olawoyin is one of the 15 PEP students in the 2014 class. A junior with a double major in biology and chemistry at Philander Smith College University in Arkansas, she took the advice

of her advisor and applied, not planning to attend if accepted because she wants to be a physician, not an environmental scientist. But she was accepted, and is glad she came.

Olawoyin worked with MBL scientist Jim Tang on a research project examining the effects of nitrogen addition to salt marshes, and how soil properties of salt marsh change over time. The field work was a new experience for Olawoyin, who is interested in how changes in environmental conditions affect human health. She says PEP “has been a journey to self discovery. I’m more open to trying different things now. Interacting with various researchers and students from all over has made me understand that there is no formula to get where I want to be.”

Dion Kucera learned about PEP through his advisor and from fellow Humboldt State University students who had participated in past programs. A May 2014 environmental science graduate, Kucera was familiar with the PEP course content but not with his summer research project. With USGS research mentors Rob Thieler and Emily Himmelstoss, he developed and conducted usability tests to improve web content delivery of U.S. Geological Survey (USGS) coastal hazards science to the public. His tests will ultimately guide future portal developments to make them more user friendly.

“I didn’t know anything about usability testing, or that there was even published literature on it. It was totally new to me.” Shortly after the internship ended, Kucera began graduate school at Indiana University, where he is pursuing double master degrees in environmental science and geography, with plans to be an environmental scientist.

Alexandra Padilla had many new experiences this summer, including living with roommates for the first time, and learning about the different areas of ocean science. “I never fully understood how interdisciplinary ocean science is until this experience.” Padilla, a senior mechanical engineering major at the University of Puerto Rico, Mayaguez, plans to attend graduate school in ocean engineering with a focus on acoustics.

Padilla’s summer research project with mentor Anna Michel in the Woods Hole Oceanographic Institution’s Applied Ocean Physics and Engineering Department used Laser-Induced Breakdown Spectroscopy (LIBS) to verify possible heavy metal contaminants in ocean sediments in New Bedford Harbor. “Because I come from an engineering background, almost all of the course components were unfamiliar to me, except for physical oceanography which I had taken a class on,” Padilla said. “It has been a great learning experience.”

Luis Anthony Ortiz spent the summer of 2013 in Alaska conducting migratory bird research. This summer he studied black sea bass spawning behavior with Gary Shepherd at the Northeast Fisheries Science Center’s Woods Hole Laboratory. Ortiz hopes to be a wildlife biologist and work on protected species. Although his focus has been on terrestrial wildlife, he says working with fish was a new and rewarding experience.

“My favorite part of the internship was working side by side with professionals in my field and getting to know the different opportunities that this place has to offer,” said Ortiz, a senior wildlife

conservation major at the University of Massachusetts, Amherst. “PEP has allowed me to explore my career options as a scientist.”

A lot of new experiences

In addition to learning about marine and environmental sciences and conducting research, PEP students discover the range of career opportunities that lie ahead through seminars and social events. They also learn about each other and share new experiences, from cooking for each other and living together in SEA housing to a whale watch and a visit to Harvard's Museum of Comparative Zoology. Some learn to sail, or ride a bike for the first time in years.

Since PEP is a consortium, PEP students interact with scientists and students and attend events and social activities across the institutions. They also participate in informal summer sports like soccer, softball and basketball. Going to nearby beaches and riding on the bike path are favorite activities, but all students consider their research experiences - and the mentoring involved in helping them look ahead to their futures in science - the highlights of their programs.

Nkosi Muse is focused on a career as a broadcast meteorologist once he completes studies at the University of North Carolina at Charlotte. Interested in the weather from a very young age, Muse says he is more of an ‘up in the sky’ type atmospheric student, so working with the oceans with oceanographer James Manning at the NEFSC’s Woods Hole Laboratory was very new to him. “Before coming to Woods Hole for this experience, I did not appreciate that the ocean and the atmosphere behaved in very similar ways,” Muse said. “This has been an opportunity like no other.”

Daniel Utter, a senior marine science major at the University of South Carolina, Columbia, is interested in a career in biology and calls his PEP internship “the experience of a lifetime.” His research project with Mentor Jessica Mark Welch at the MBL on human microbial communities led to submission of a scientific journal article, with Utter as a co-author.

Samih Taylor, a junior ecology and marine biology major at Cheney University in Pennsylvania, described her summer experience as “inquisitive, awe-inspiring, rigorous, refreshing, and irreplaceable.” For her summer project, Taylor studied microbial community colonization of plastic marine debris with Erik Zettler of the Sea Education Association and Linda Amaral Zettler of the MBL. It was a field completely new to her, and has inspired her to do more research in the future.

Mentoring and networking are key

Since the first year of the program in 2009, PEP has attracted 90 students from 57 public and private colleges and universities in all geographic areas of the United States. Many have gone on to graduate school, participated in other programs offered by PEP institutions, or found employment in the marine and environmental sciences field. Some, like Shanna Williamson, a May 2014 geosciences graduate from Skidmore College, found employment at one of the science institutions when her 2014 PEP internship ended, landing a research assistant position at the Woods Hole Oceanographic Institution.

“Going into the seventh year of the program we have the numbers to show that there are students from populations underrepresented in STEM (science, technology, engineering and mathematics) who come to PEP with a diversity of scientific interest and perspectives,” said PEP program director Ambrose Jearld, a fisheries biologist and director of academic programs at NOAA’s Northeast Fisheries Science Center. “But we know that numbers are not everything, and are only part of what it takes to increase diversity in science in Woods Hole.”

“We are, however, beginning to see a turn for the better in the number of PEP alums who stay on to work beyond their PEP internship for longer-term work appointments, and some are returning a second summer for various student educational or research training opportunities,” Jearld said. “I think this is due to the strong caliber of students in PEP, and also to the program’s focus on building a strong mentoring culture across the six Woods Hole institutions, where we build a community of expectation that goes beyond the numbers.”

“Individuals from minority and underrepresented populations want the same thing as everyone else,” Jearld said. “That is, a good paying career with benefits and advancement, and equality of opportunity with a sense of belonging, which includes liking where you work and with whom you work.”

Other PEP staff members include: George Liles, curator of NOAA’s Woods Hole Science Aquarium, who serves as PEP manager and participates in the program by offering the students a writing seminar; Onjale Scott, with experience in student programs and participation in a Sea Education Association program at sea, who has coordinated the daily PEP activities with students and mentors during the past four summers; and Ben Gutierrez of the U.S. Geological Survey who recruits instructors and organizes the PEP course, which includes lectures and assignments on a wide range of marine and environmental science topics, as well as career development workshops.

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Related links:

Meet the 2014 PEP Students:

Partnership Education Program (PEP): <http://www.woodsholediversity.org/pep/>

PEP Broadens the Woods Hole Net: <http://www.mbl.edu/blog/pep-broadens-the-woods-hole-net/>