THE current

RESEARCH AND HAPPENINGS FROM RHODE ISLAND EPSCoR | SPRING 2009

The Marine Issue

A Well-Rounded Researcher: Bethany Jenkins
page 4

Who is Charles Watson
page 5

Marine Science in the Ocean State
page 6

LSAMP Serves as a Pilot for EPSCoR Marine Academy
page 9

SPOTLIGHT: Danielle Perley
page 10

NSF RI EPSCoR

THE current

Sam Costello
EDITOR-IN-CHIEF

Basics Group
DESIGN

Karen Phillippi
Sara K. MacSorley
Marcia Marston
Steve Paterson
PHOTOGRAPHY

Copyright © 2009
The Current.
All rights reserved.

RI EPSCoR

Jeffrey R. Seemann, Ph.D.
DIRECTOR

Edward Hawrot, Ph.D.
CO-DIRECTOR

Kenneth F. Payne, Ph.D.
ACTING ASSOCIATE DIRECTOR

Andrew Staroscik, Ph.D.
ACADEMY DIRECTOR

Daniel T. Carrigg
PROJECT DEVELOPMENT
AND ADMINISTRATION

Sara K. MacSorley
ASSISTANT EDITOR, OUTREACH AND
COMMUNICATIONS COORDINATION

Kristen Coogan
EVENT AND PLANNING COORDINATION

Megan Lane
SCIENTIFIC RESEARCH GRANT
ASSISTANT

The Current, RI EPSCoR
University of Rhode Island
College of the Environment
and Life Sciences
Woodward Hall
Rooms 133 and 134
Kingston, RI 02881
(401) 874-2481

stac.ri.gov/epscor/

On the Cover:
This photograph of two phytoplankton species (a chain of *Chaetoceros diadema* and a *Thalassiosira sp.)* from Narragansett Bay was taken by facilities manager Paul Johnson at the RI Genomics and Sequencing Center. The water sample was provided by Laura Windecker, the current research assistant for the long-term phytoplankton monitoring study through the Graduate School of Oceanography. Dr. Tatiana Rynearson currently supervises the study, which has been monitoring the plankton community of the Bay for over ten years.

Greetings From The Directors

Rhode Island is defined physically, culturally and economically by Narragansett Bay. Its extensive coastline, varied marine and estuarine environments, diversity of organisms, and location at the juncture of two distinct marine climatic regions make the Bay a natural laboratory for marine life sciences research.

The state's marine environment isn't limited to the Bay, it includes Block Island Sound. With over 400 miles of coastline, Rhode Island is positioned to be a nationwide leader in marine science, industry, and defense research. This panorama of activity is broad and deep, and in it there are specific fascinating things going on. This issue of The Current offers a window into a few of the marine life science activities occurring in the Ocean State.

Thanks to decades of research, Narragansett Bay is one of the best-understood models of estuarine ecology. Ongoing long-term studies provide researchers with an unprecedented opportunity to examine decade-scale changes in nutrient cycling, phytoplankton and zooplankton composition and fish community dynamics, as well as a solid basis for unique climate change studies.

RI EPSCoR is helping local researchers and scientists use Rhode Island's resources and natural advantages in the marine life sciences arena. To that end, EPSCoR is engaged in numerous programs and funds students and researchers alike. These efforts include fostering minority student participation in STEM fields (see page 5), supporting researchers (page 4), and enabling the creation of alliances between marine researchers and the marine industry (page 6).

RI EPSCoR-funded marine efforts include a statewide core facility, The Center for Excellence in Marine Life Sciences. This facility provides

About NSF

In 1978, the National Science Foundation founded the Experimental Program to Stimulate Competitive Research (EPSCoR). EPSCoR stimulates sustainable improvements in academic science and technology infrastructure in states that receive low levels of NSF research funds. These investments create a foundation for economic growth based on science and technology. Several other agencies have also developed EPSCoR or EPSCoR-like programs.

state-of-the-art environmental control systems that allow Rhode Island researchers to simulate climate-change scenarios by providing flowing seawater with control of temperature, salinity, and dissolved oxygen. The recently established specimen prep facility at the URI Graduate School of Oceanography allows investigators to move easily from live organisms to the preparation of DNA/RNA/protein samples for sequencing in the RI EPSCoR-funded Centers for Genomics and Proteomics.

Initiatives outside the EPSCoR funding structure include the Edna Lawrence Nature Lab at the Rhode Island School of Design, a museum packed with marine specimens designed to help the general public and students of all disciplines — not just art — better understand the form and function of the natural world. The Museum of Underwater Archaeology is a website (http://www.uri.edu/mua/) dedicated to sharing the underwater discoveries of archaeologists and sport divers. Though the museum's director is located in Virginia, the website is hosted, and has bandwidth costs covered, by the University of Rhode Island.

Historically, Narragansett Bay and the ocean have been significant to Rhode Island industry and culture. The combination of intellectual strength, a well-studied estuary on the verge of dramatic ecological change, supporting expertise in marine chemistry and geology as well as physical oceanography, provide an extraordinary opportunity for the state.

RI EPSCoR looks forward to our continued engagement with representatives of marine-centered activities in the Ocean State — from students to scientists to businesspeople — as we work towards realizing Rhode Island's full potential to become a nationwide center of excellence in marine life sciences.

Sincerely,

Dr. Jeff Seemann
RI EPSCoR
Director
University of
Rhode Island

Dr. Ed Hawrot
RI EPSCoR
Co-Director
Brown University

welcome

Please join us in welcoming Dr. Edward Hawrot

to the RI EPSCoR team as Co-Director. Hawrot is the Alva O. Way University Professor of Medical Science and Associate Dean of the Program in Biology at Brown University. As an internationally known biochemist and neuroscientist, he has maintained continuous funding throughout his career and his research lab has produced an extensive number of peer-reviewed publications. Hawrot's experience as a scientist and educator make him a great asset to our program.

We would also like to welcome Dr. Ken Payne as Acting Associate Director. Payne comes to us with a deep knowledge of Rhode Island and a long-standing commitment to bringing EPSCoR to the state and making it successful.

Thank you to Dr. Clyde Briant, former Co-Director, and Babette Allina, former Associate Director, for their years of hard work and dedication to Rhode Island EPSCoR. They have been instrumental drivers in our success and we wish them well.

About RI EPSCoR

RI EPSCoR's mission is to create lasting improvement in Rhode Island's research infrastructure by advancing statewide innovation through strengthening Rhode Island's basic science and engineering research capacity and addressing Rhode Island's workforce needs using enhancement of science and engineering training and education for students.

THE RI EPSCoR ACADEMY

The RI EPSCoR Academy fosters the integration of research, education, innovation and communication statewide. It works to (1) Develop the human capital necessary to support and sustain the growth of competitive research capacity in the life sciences (2) Broaden the participation of women and underrepresented ethnic and racial minorities in the STEM workforce and (3) Develop and maintain sustainable communication mechanisms to build and enhance a strong statewide network of the state's and region's scientists, institutions of higher education, and private and public sectors.

RI EPSCoR

A Well-Rounded Researcher: Bethany Jenkins

Dr. Bethany Jenkins, URI

In 2005, Bethany Jenkins came to the University of Rhode Island as an ADVANCE hire, an NSF program to increase the participation of women in science careers. Shortly after, she became an EPSCoR supported researcher to further a study of how marine microorganisms get and use nutrients. Her efforts to date exemplify EPSCoR's core mission: to engage in research, cross-institutional collaboration, and student mentoring in the life sciences.

Jenkins studies two microorganisms — carbon-fixing diatoms and nitrogen-fixing bacteria — that play important roles in the processing of elements through Narragansett Bay and into the larger ecosystem and environment.

Studying these organisms, their behavior, and the genes they express allows scientists to understand changes taking place in the Bay and how they affect the Bay's microorganism population. For instance, the microorganisms expressing a nitrogen-fixing gene may influence understanding of changes in the Bay's nitrogen cycle and how climate change affects that process.

"[The study of these microorganisms] lets us know if we need to pay attention to conditions in the environment that are changing the (marine) community," she says.

And she's not just studying these organisms on her own; she's also collaborating on two projects that unite researchers and life sciences companies.

Along with colleagues at URI and the Woods Hole Oceanographic Institution in Massachusetts, Jenkins is working on an NSF-funded genomics study of gene expression in diatoms under limited-nutrient conditions. She's also working with Illumina, a gene-sequencing company based in San Diego, and the Joint Genome Institute in California to study the genetic behavior of diatoms under similar conditions.

Jenkins cites EPSCoR as being instrumental in supporting this research, since the program has subsidized the cost of the DNA sequencing and technician time integral to her research.

In addition to research, teaching is also central to Jenkins' work. She team-teaches two classes and is impressed by the quality of students URI attracts to its science programs.

"In addition to research, teaching is also central to Jenkin's work."

"Some of the undergrads here at URI are as good as the best and the brightest anywhere," Jenkins says.

While Jenkins applies classroom learning to prepare students for advanced degrees and careers in the life sciences, she is equally committed to involving students in hands-on research.

One such student, Jolene Octavius, has been involved with hands-on research in the Bay, working with Jenkins on a Rhode Island Sea Grant-supported project. Octavius has also been involved in other EPSCoR programs for undergraduate and minority students.

Jenkins also takes part in the URI 101 program for incoming freshmen that uses weekly meetings to expose new students to the variety of academic disciplines the university offers.

"One of the nice things about talking to kids when they first get here is that they are exposed to things early on that they might not have been exposed to in high school," she says.

From that exposure, Jenkins has guided students to advanced degree programs in life sciences and medicine, thus helping to develop the next-generation of scientists and researchers.

Continued: Jenkins lab team is featured on the next page →

Who is CHARLES WATSON

Charles Watson is a man on a mission: to inspire minority students to get involved in science, technology, engineering, and math (STEM) fields.

As the new diversity coordinator for RI EPSCoR and the coordinator for minority recruitment and retention at the URI College of Engineering, he's in the perfect position — developing student programs, establishing relationships with related initiatives, and conducting community outreach — to build and sustain a support network for minority students in Rhode Island.

In doing so, Watson emphasizes action. Too much time is spent placing blame for the lack of diversity and not enough on improvement, he says. "I'm a doer."

He's also a URI alumnus. After high school, URI recruited and offered Watson the "true opportunity to gain the knowledge and experience" he needed to discover his calling as an educator and mentor. After earning a degree in Human Development, Counseling and Family Studies, Watson gained marketing, finance, and management skills as the branch manager for an international rental car company.

Despite his time in business, the pull to education and mentorship was always strong for Watson. As a fourth-generation educator, Watson finds his role comes naturally. "Academics is in my blood," he says, noting that his grandmother was the first African-American female principal in his hometown of Hammond, LA.

Continued on page 11

Graduate and undergraduate students Traci, Jolene, Shelley & LeAnn make up part of the Jenkins Laboratory team.

explainer

WHAT IS NITROGEN FIXATION?

Nitrogen is an essential element for life, required to build proteins, DNA, and other cellular components. Much of the nitrogen in the environment resides in compounds that render it inaccessible to most living things. For example, nitrogen gas (N_2) must be combined with hydrogen to form ammonia before it can be used by biological systems. This process is called nitrogen fixation.

Only microorganisms perform biological nitrogen fixation. Nitrogen is also fixed in the industrial production of fertilizers using the Haber-Bosch process, an extremely energy-intensive process requiring large amounts of fossil fuel to generate very high pressures and temperatures. Biological nitrogen fixation is also energy intensive, but the energy is obtained from the sun or the respiration of organic matter.

Microorganisms mediate many other transformations of nitrogen, including the conversion of ammonia back to N_2 gas, a process called denitrification.

Denitrification can help mitigate the impact of excess nitrogen introduced into ecosystems from sewage, pollution, and farm runoff. Understanding the entire nitrogen cycle is an important part of assessing human impact on marine systems.

Marine Science in the Ocean State

It's not for nothin' that they call Rhode Island the Ocean State. With over 400 miles of coastline and numerous scientists, businesses, and military facilities that depend on the sea, the Ocean State harbors substantial marine activity.

The state hosts a variety of programs and institutions in marine science, from the Edna Lawrence Nature Lab at the Rhode Island School of Design to the Roger Williams University marine biology summer camp to the undergrad and graduate education programs at Brown University, Roger Williams University, and the University of Rhode Island.

This cross-disciplinary collaboration has one goal in mind: establishing the state as a leader in all things marine.

"If you really want to bring the best and brightest, you really need to … coordinate with academia, the private sector, and other agencies around the same table to discuss the issues. It's amazing what happens when you do that," says John Riendeau, defense industry manager for the Rhode Island Economic Development Corporation.

"The strategy is clearly there that we want to be the place," he says, "to position Rhode Island as the center for undersea research and development."

With so much marine activity in the state, this article couldn't highlight all of the important and interesting endeavors (for instance, Riendeau's work with the defense industry is spotlighted at http://stac.ri.gov/epscor). Instead, it spotlights a pair of interesting people and programs affecting marine science at all levels – research to education, applied science to business.

THE FREELANCE TROUBLESHOOTER

When Rhode Island's shell fishermen have a problem only science can solve, they call Dale Leavitt.

Leavitt, an assistant professor and regional aquaculture extension specialist at Roger Williams University, came to Rhode Island from the Woods Hole Oceanographic Institute to boost industry via technology transfer and community outreach.

"That's mostly my role: to be a troubleshooter or to make connections, "Leavitt says. "If [an aquaculture] farmer needs help, I have expertise or [if I don't] I connect them to someone who does."

In the hard-hit New England shellfishing industry, applied science that solves problems both scientific and commercial is in high demand.

Fishermen have asked Leavitt to address shellfish health, to unite industry and researchers in developing disease-resistant oysters, and even to help a company develop a better nursery.

In that situation, the growers based their nursery on a raft in Wickford harbor and powered the operation with an in-water motor drawing electricity from the shore.

After concerns about electrolysis arose, the growers asked Leavitt to design a new system. Leavitt not only removed the motor from the water, but also created a solar-powered system that cut electricity use by almost 75%.

Leavitt grew up in a fishing family and has "a deep love for the applied technology and the knowledge that (shell fishermen) use."

Building on that fondness, Leavitt's biggest project - the Oyster Gardening for Restoration and Enhancement (OGRE) program – aims to reverse decades of pollution, disease, and overfishing to return Narragansett Bay to its early 1900s status as a thriving environment for oysters.

OGRE started in its first year with 18 volunteers, rising to 73 this summer, who are re-planting oysters. Leavitt expects that around 750,000 oysters will be planted this year and that 2010 could see over 1 million returned to the ecosystem.

"Oysters provide a large amount of ecosystem services in terms of indirectly removing nitrogen from the Bay," says Leavitt, explaining the benefits of the project. "From a commercial standpoint, they're worth money."

The oysters are not available for harvest, but if that changes, the project could provide an economic boost for the state: Leavitt estimates that next year's oyster crop could be worth a couple hundred thousand dollars. The immediate goal, though, is to revive the oyster population.

Continued on page 8

 (continued from pg 7)

"We would love it if we could get these things re-established and successfully reproducing themselves," Leavitt says.

But there's one problem standing in the way: finances. The project only has funds to sustain itself through 2009, though Leavitt is seeking new funding.

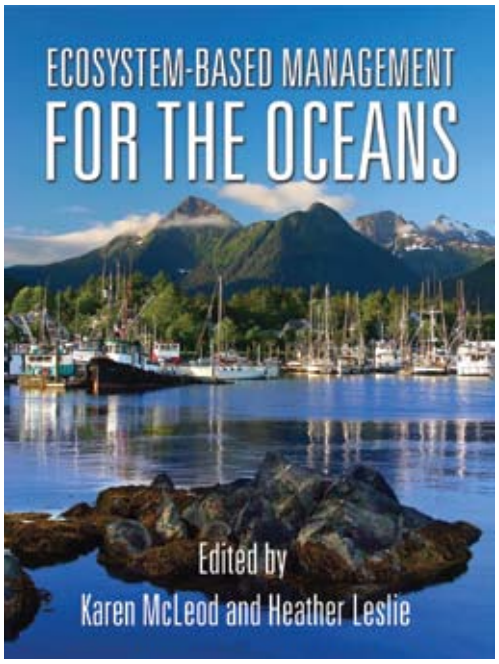
"The state should probably step up at some point and find ways to fund this program," he says. "What we're doing is replenishing a public resource."

In the meantime, Leavitt will keep serving as a public resource for Rhode Island's shellfishing industry.

SCIENCE INFORMING POLICY MAKING

Research in the Ocean State focuses on understanding Narragansett Bay; it also influences the way our marine resources are managed.

One local researcher tackling both aspects is Heather Leslie, the Peggy and Henry D. Sharpe Assistant Professor of Environmental Studies and Biology at Brown.



Heather Leslie's book, published in 2009

Leslie approaches her work using a framework called resilience science, which takes a holistic view of the systems being studied (in this case, the Bay and other coastal marine systems). Resilience science integrates techniques and understanding from disparate fields – including the study of ecosystems, the human body and engineered systems – in considering three things: the connections among species and the environment and how they influence each other; the multiple geographic scales, from local to global, at which these connections operate; and the possibility that ecosystems can exist in multiple, stable states and shift abruptly.

"A central contribution of resilience science is the recognition that ecosystems and human communities are constantly changing in ways that cannot be fully predicted or controlled. Understanding this, we are in a better position to develop management strategies that safeguard both ecosystem health and human well-being," says Leslie.

To that end, Leslie shares her research with policymakers and managers.

"As better scientific knowledge is available to inform decision making processes … hopefully, better decisions for both people and the environment result," Leslie says.

This May, her efforts extend into print, when the book she co-edited with Karen McLeod, "Ecosystem-Based Management for the Oceans," is published by Island Press. The book, which includes contributions from more than 40 scientists from around the world, illustrates how resilience science and related concepts can inform ecosystem-based management.

Leslie has worked with policymakers on both coasts. In 2008, she addressed the Massachusetts Ocean Commission on a first-in-the-nation plan to implement an integrated, ecosystem ocean management plan in state waters, and while a PhD candidate at Oregon State University, she advised regulatory bodies overseeing the development of marine reserves off the coasts of California and Oregon.

With her bicoastal experience as background, Leslie has kind words for her new home.

"Rhode Island has a long history of taking a very proactive and integrated approach to managing coastal and ocean systems," she says. "It was one of the first states to have a coastal zone management program, and continues to lead the way with innovative efforts like the Ocean Special Area Management Plan (SAMP) process."

These programs, and those overseen by other state entities like the Rhode Island Bays, Rivers, and Watersheds Coordination Team, demonstrate "how Rhode Island is at the forefront in many ways."

And though environmental issues may continue to pose challenges, Leslie sees these local efforts "as hopeful signs that people are interested in a more integrated management approach" that will unite science, government, and industry in finding new solutions.

To learn more about marine activities in Rhode Island, please contact the EPSCoR office, smacsorley@mail.uri.edu.

LSAMP Serves as a Pilot for EPSCoR Marine Academy

The University of Rhode Island Louis Stokes Alliance for Minority Participation (URI LSAMP) works to increase minority contributions to research & education in science, technology, engineering, and mathematics (STEM) fields.

Charles Watson with EPSCoR and College of Engineering undergraduates Jolene, Admir, Lilliana and Olga in one of the state-of-the-art laboratories in the new Center for Biotechnology and Life Sciences at URI.

Originally focused on undergraduate students, URI LSAMP has expanded to target students from the high school to graduate levels, with a goal of increasing the quantity and quality of students graduating with degrees, entering the workforce, or continuing to graduate studies in STEM fields.

The fruits of this partnership include LSAMP sponsoring new engineering programs and the organizations developing a week-long summer marine program for high-school students interested in STEM fields (the first program engaged 22 students).

"LSAMP employs a multi-faceted approach to increasing enrollment in STEM programs at URI."

LSAMP employs a multi-faceted approach to increasing enrollment in STEM programs at URI. First, a high-school engagement and recruitment process adds students to the "pipeline" of applicants. Second, undergraduate STEM majors receive counseling, mentoring, and research opportunities.

LSAMP also seeks alliances with Rhode Island's academic, government, and industry leadership. Because RI EPSCoR shares these goals and both programs recognize the value in aligning their activities, they have partnered to build on their established programs.

The partnership also provided research opportunities for three junior-year STEM students enrolled in the LSAMP program. They worked on individual research projects that provided motivation to complete their undergraduate degrees and consider graduate programs.

Future collaborations between LSAMP and EPSCoR will lead to more effective statewide pipeline development and more opportunities to increase minority participation in STEM fields. RI EPSCoR looks forward to collaborating to improve existing, and develop new, opportunities for students from Rhode Island's underrepresented populations.

Continued on page 11

Weekly Journal of the Marine Science Academy

Monday:

marine life presentation, hands-on hydrophone building and testing in Narragansett Bay, acoustic measurement demo, tour of Graduate School of Oceanography, GSO current research presentation

Tuesday:

marine monitoring lab module, salinity presentation and measurement, water analysis lab, spreadsheet use and data graphing

Wednesday:

oil-spill theory and spill measurements, desalination and evaporation labs, gas well siting presentation, tour of URI main campus, Microsoft Excel training

A volunteer showing off oysters from the Bay.

Thursday:

Mystic Aquarium & Institute for Exploration trip, Marine Animal Rescue Program presentation, guided exhibit and behind the scenes tour, sea lion show, Deep Sea 3D simulation

Friday:

solar power, marine power, evaporation and light in the ocean presentation, carbon dioxide absorption lab, data graphing, college admission and marine careers presentation, final program ceremony and certificates

Who is Charles Watson (continued from pg 5)

Watson got his first taste of developing STEM programs as director of Enrichment and After School Programs at Times2 Academy, a charter school in Providence. Through Times2, other opportunities with diversity initiatives developed, including a relationship with Dr. Harold Knickle, a chemical engineering professor at URI. Knickle and Watson piloted a program through the Louis Stokes Alliance for Minority Participation that has served as the foundation for several successful diversity programs, including RI EPSCoR partnerships. (LSAMP; see page 9).

"My job as an African American — my obligation — is to give back to the community and to show students that they can also achieve these goals," he says.

Serving as a resource to minority students is important, he says, because minority mentors weren't readily available to minority students of his generation. "I'm already a resource by just being me."

"These students need to continue to learn about the opportunities available in the environmental sciences, marine sciences, and engineering so they can come back to serve the community and to help our planet survive," says Watson. He hopes to leverage existing programs in the state to achieve these goals.

As he moves into this new role, Watson is optimistic, and quick to acknowledge the path that brought him here.

"I'm looking forward to the opportunity of working with EPSCoR on a regular basis because there is so much to offer," he says. "I couldn't have gotten here or do what I do without the support of President Carothers, Dean of the College of Engineering Dr. Raymond Wright, Dean of the College of Environment and Life Sciences Dr. Jeff Seemann, and the EPSCoR staff. We are all in this together and that is the only way we are going to achieve sustainable increases in the participation of minority students in STEM fields."

spotlight

Over the past two years, EPSCoR has sponsored 40 undergraduate students in the Summer Undergraduate Research Fellowship (SURF) program. SURF prepares students for careers in science by providing them research experience, laboratory training, and career-building workshops.

Using ultraviolet light to read the DNA tracks on an electrophoresis gel

Host range plates used to determine which cell types podoviruses can infect

Danielle Perley, a recent graduate of Roger Williams University (RWU) and a 2008 SURF participant, is a great example of the ambitious students EPSCoR supports. Originally from Rowley, MA, Perley fell in love with RWU as soon as she stepped on campus and learned about its programs.

At RWU, Perley met Dr. Marcia Marston, her SURF mentor. "I had taken three classes with Dr. Marston and that was a good indicator that we would work well together. She is a great mentor: she teaches you so much. If you have a problem, she'll help you through it, but won't solve it for you."

Marston is a virologist who has been studying Narragansett Bay's ecologically important marine viruses for more than a decade. Her focus is on viruses that infect cyanobacteria, small photosynthetic cells that contribute to primary productivity – the rate at which food energy is generated via photosynthesis - in marine ecosystems. These viruses, also called cyanophage, regulate the abundance of their hosts, but can also influence the movement of nutrients through the food web.

Perley undertook a project to isolate and characterize a new type of cyanophage from the Bay. She began working in Marston's laboratory prior to SURF and continued her research the semester following the program.

After sorting through hundreds of viral isolates, Perley identified a handful of cyanophage from the family Podoviridae. Her findings not only established that the viruses were indeed podoviruses, but also confirmed that they were genetically different from all other known podoviruses — meaning she'd discovered two new podoviruses.

To add to the excitement of the discovery, Perley also found that both carried genes that code for proteins used in photosynthesis, probably acquired from their hosts. These genes may help increase the energy output of infected cells, illustrating the ecological importance of cyanophage in marine environments.

"The SURF program allowed me to develop my own research project and gave me the ability to control the budget, which was a great learning experience," says Perley.

Perley's aspirations involve a continued interest in research science. The knowledge and laboratory techniques Perley employed for this project are broadly applicable across many areas of the life sciences and her SURF experience has prepared her to pursue a variety of career paths.

"Hopefully by 2010 I'll be pursuing a higher degree," she says. "I'm really interested in developmental genetics. I may also explore genetic counseling because I enjoy interacting with people."

Where Perley pursues that advanced degree is still in question, but where she wants to land after that isn't.

"If I was going to move away, graduate school would be the time to do it. I may go out west for a while, but I would definitely come back."

New England would be lucky to have her.

Rhode Island's collaborative research network is represented by the state's two standing governance and advisory committees:

RI Science and Technology Advisory Council (STAC) provides oversight and governance for the program. Its Governor-appointed membership includes key leadership from government, local industry and institutions of higher learning. STAC ensures that EPSCoR-funded programs are integrated and aligned with the state's research infrastructure and economic development objectives.

RI EPSCoR Advisory Council serves in an advisory capacity to the RI EPSCoR program and STAC. The Council is composed of individuals representing all 11 Rhode Island institutions of higher education who have expertise in life-science research, K-16 education initiatives and workforce development.

Dr. Edythe Anthony
Chair, Department of Biology,
Rhode Island College

Dr. John Costello
Department of Biology,
Providence College

Dr. William Ferrante
Associate Provost,
New England Institute
of Technology

Dr. Laura Galligan
Science Department Chair
Johnson & Wales University

Pamela Harrington
Director, Corporate, Foundation
and Government Relations,
Rhode Island School of Design

Dr. Dan McNally
Chair, Department of
Science and Technology,
Bryant University

Dr. Lonnie Guralnick
Assistant Dean of Math
and Natural Sciences,
Roger Williams University

Dr. Jacqueline F. Webb
Professor & Coordinator,
Marine Biology Program,
University of Rhode Island

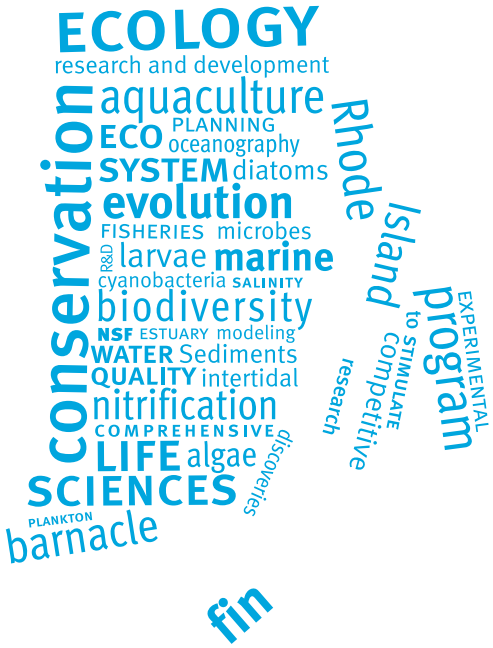
Dr. Valerie Wilson
Associate Dean, Graduate School
& Director, Leadership Alliance,
Brown University

Dr. Peter Woodberry
Dean of Business, Science
and Technology,
Community College of Rhode Island

Dr. Lisa A. Zuccarelli
Chair, Department of Biology and
Biomedical Sciences & Department
of Chemistry,
Salve Regina University

RI EPSCoR
Experimental Program to
Stimulate Competitive Research

RI EPSCoR
University of Rhode Island
College of the Environment and Life Sciences
133 Woodward Hall, Kingston, RI 02881



MOHAWK
manufactured with windpower

The Current is created with paper manfactured
with windpower and containing 15% PCW.