DEPARTMENT WEB SITE HAS A NEW ADDRESS AND A NEW LOOK

The department’s web site has moved to a new server with a new URL address. It is now located at http://www.rider.edu/gems. The “gems” stands for Geological, Environmental, and Marine Sciences, naturally. You also can reach the web site through the “Academics” section from Rider’s home page.

Because our web site was fully integrated into Rider’s newly revised site, the look of it has changed dramatically, as has its organization. The first thing you’ll notice is that the requirements for all our majors and minors are immediately accessible from the department’s home page. Links to our faculty and staff, and our news and information pages are also accessible from the home page.

On the faculty and staff page you’ll find a listing of all present faculty, including adjuncts and emeriti, and staff along with their contact information. Details about each member of the department can be accessed by clicking on their name, either in the index of names on the right, or in the main listing. Some faculty members have links to their own personal web sites on their details page.

On the news and information page you’ll find a listing of recent Surf and Turf newsletters, which can be downloaded in pdf format, and current news items of interest. On the right, you’ll find links for information on facilities and equipment, student research, alumni information, web links, and requirements for graduating with departmental honors.

One thing you’ll notice missing from the department’s web site is the section on the Centennial Lake Watershed Restoration Project. Those pages were migrated to the Science Teaching and Learning Center’s (TLC) web site, whose director is Kathy Browne, one of the driving forces behind the Centennial Lake Project. The home page for the lake project is located at http://tlc.rider.edu:16080/centennial, and the TLC is responsible for the content.

So, despite the changes, we think you’ll agree that the department’s web site is still your prime location for learning about, keeping track of, and staying in touch with the ever-changing face of the Geological, Environmental, and Marine Sciences at Rider University. Please continue to visit, use, and enjoy it.

RIDER’S NEW WEATHER STATION

For the first time Rider now operates a weather station. The station is located atop the science building, and the data are displayed on a computer monitor located near the west building entrance on the first floor.

The instrument is a professional-grade Davis Vantage Pro station. Among its various functions, it records temperature, humidity, wind speed, wind direction,
precipitation, wind chill, dew point, and atmospheric pressure data. The data are downloaded from the instrument to the computer console every 2.5 seconds. These data are subsequently stored and displayed on a moving graph allowing the data to be viewed over time. The station represents a new direction in the collection of environmental data, and the teaching of atmospheric processes.

The weather station also allows the incorporation of atmospheric data into various courses. Using real-time and local data will enhance the inquiry-based activities that are part of each course. The display of information will also serve as a focal point for other faculty and staff, enrolled and prospective students, and their parents. An explanation poster and other educational items are planned to be displayed next to the monitor.

Students will now be able to incorporate atmospheric data into their research projects. One ongoing Rider project involves monitoring Centennial Lake for water quality and shoreline vegetation changes. Atmospheric processes can be related directly to changes in dissolved oxygen in the water, water discharge rates, water turnover events, and sedimentation rates, among others.

Eventually the weather station will be connected to the internet, allowing our site to become part of the statewide climate data source. This will also allow information from other weather stations throughout the country and/or world to be displayed on separate monitors providing a direct comparison with the weather here in Lawrenceville. An internet connection will also allow the data to be displayed, not only in our own classrooms, but also in classrooms in elementary and secondary schools throughout the county.

Overall, the weather station provides a unique opportunity to not only gather atmospheric data, but to also disseminate the information by creating a teaching and information gallery, with monitors actively displaying changing weather conditions, and by providing these data to other classrooms and schools through the internet.

GABRIELA SMALLEY: HER RESEARCH IS NO SMALL THING!

Next time you’re at the shore, scoop up a bucket of water and take a close look. You might find a small comb jelly floating in the water, or a larval fish. But unless you have a microscope, you will miss the thousands of small organisms that are undoubtedly in your bucket: phytoplankton, responsible for most of the primary productivity in the world’s oceans; zooplankton, consuming other planktonic organisms, thus transferring energy and matter to higher levels in the food web; and planktonic larvae of countless marine organisms, drifting with tides and currents until they grow strong or old enough to escape them.

In this microscopic world, it is not always clear who eats whom, how much energy is passed on to higher levels in the food web, what cues regulate the organisms’ interactions, and what implications this has on population and community structure. Gabi explores these interactions using both plankton cultured in her lab and those collected from marine waters. These are the organisms, unnoticed by beach-goers, that are the subject of Gabi’s research.

One current project investigates nutrient limitation in various phytoplankton species. Much like terrestrial plants, phytoplankton need certain nutrients in order to grow and thrive. When one of these nutrients is in short supply, the phytoplankton growth is slowed even if the other nutrients are available. Such a decrease in the growth will lead to a decrease in food supply for higher levels within the food web, which may slow the growth of these organisms. Alternatively,
slowing the growth of a harmful species may have a positive effect on the food web. It is important to understand which species are limited by what nutrient and how this affects the structure of the marine food web. Gabi has begun to study the response of various phytoplankton species to nutrient limitation using molecular probes to detect changes in enzymes that are involved in nutrient uptake. Her goal is to determine which nutrient limits an individual plankton cell, allowing differences among the various plankton groups to be detected.

Another topic of interest to Gabi are the feeding relationships in the planktonic food web. Planktonic organisms are usually divided into two groups: the plant-like phytoplankton capable of photosynthesis, and the animal-like zooplankton that eat to survive. Just as in terrestrial environments, where plants are eaten by animals, phytoplankton are grazed by zooplankton. However, there are exceptions to this rule in the terrestrial world (think of the Venus Flytrap), as well as in the microscopic realm of plankton. Many planktonic organisms are capable of both photosynthesis and feeding and are referred to as “mixotrophs.” While you may be tempted to think of the Venus Flytrap as an interesting but unimportant oddity, this is definitely not the case with mixotrophic plankton. Many such species exist in the marine environment, including numerous toxic and bloom-forming phytoplankton (e.g., “red tides”). Just how important these organisms are in terms of energy transfer in the food web, or what role they play in population and community dynamics is not fully known.

Furthermore, Gabi is investigating the chemical ecology of planktonic interactions. Both terrestrial and aquatic organisms use chemical signals to interact with each other, be it to attract mates, scare off invaders, deter predators, or for other reasons. Planktonic organisms are no exception. Some produce unpalatable or even toxic chemicals to deter predators. Others produce chemicals to slow the growth of competitors, such as other algae. Very little is known about these interactions and the nature of the chemicals involved. Consequently, she is investigating a number of these interactions, and the ecological consequences for individuals and for the food web structure.

Overall, Gabi’s first year in the department was very productive, from developing new lecture and lab courses, to establishing her own research projects and supervising student independent projects. She has certainly accomplished a lot this past year, and we’re looking forward to what she’ll do next year!

JONATHAN HUSCH RECEIVES THE 2005 FRANK N. ELLIOTT AWARD FOR DISTINGUISHED SERVICE!

At the 2005 faculty and staff convocation, Provost Phyllis Frakt awarded Jonathan Husch the faculty Frank N. Elliott Award for Distinguished Service. Dr. Frakt’s introductory remarks outlined Jon’s service to Rider University over the past 25 years. The following is a portion of Dr. Frakt’s comments.

"Jonathan did field work with the U.S. Geological Survey and as a visiting graduate fellow with the Lunar and Planetary Institute in Houston, Texas. He joined Rider’s faculty in 1980, rising through the ranks to become Professor in 1990. In addition to his many fellowships and research awards, Jonathan has published extensively in his field, and has even written for the Rider magazine.

Jonathan cares about education at all levels. He has served in an advisory role with the Lawrence Township Public Schools and the West Windsor-Plainsboro School District middle school, and as a trustee of the Lawrence Township Education Foundation. He has participated in Rider’s BRIDGE faculty development program and as a
manuscript and program reviewer for a number of other universities and professional journals.

Jonathan loves athletics and has served as the Faculty Athletics Representative for nearly nine years. In this capacity, he is the faculty support person for Rider’s 340 Division I student-athletes. He ensures that the student part of the term “student-athlete” is made meaningful and that academic integrity and performance are maintained. Recipients of each semester’s “Husch report” know that high academic standards are maintained in our athletics program. Jonathan attends all athletics department meetings and has served on numerous coaching search committees. He participated on the NCAA Certification Self-Study team, leading the governance and rules compliance subcommittee. And Jonathan serves a vocal cheerleader of our student-athletes at competitions throughout the year.

Jonathan has assisted a number of committees and events at Rider, including the Strategic Planning Facilities Task Force, the Freshman Convocation Planning Committee, and Athletics Hall of Fame celebration. He has served as a marshal at the Lawrenceville Commencement since 1992."

From the entire department, CONGRATULATIONS! Your enthusiasm and passion for teaching and mentoring students (and faculty!), not to mention developing and maintaining the department’s web site, are alone worthy of a service award.

A NEW INTEGRATED SCIENCE/MATH MAJOR

Beginning this academic year, the department will begin to administer a new major: Integrated Sciences. This major will satisfy the newly established New Jersey certification requirements for middle school endorsement. The requirements for the major were developed by the IDEAS (Inquiry, Design, Exploration And Study) group, part of the TLC’s SELECT program, which consists of science, mathematics, and education faculty. This group regularly works together to revise or create new courses that better incorporate an inquiry-based approach.

Education students who want to teach science or math at the Middle School level will be required to double major in Integrated Sciences. Students will concentrate in one of four areas: Earth Science, Life Science, Physical Science, or Mathematics. They will need to complete at least 15 credits in their concentration (see [http://www.rider.edu/172_2413.htm](http://www.rider.edu/172_2413.htm) for details). Two new interdisciplinary science and one new mathematics course were developed to enhance the integrated nature of this major.

This new major will likely increase the number of science/education and mathematics/education double majors at Rider, and will help students complete their education program in four years. It is expected that this new major will attract more education students to the sciences. Consequently, the impact on the sciences will be a positive one, with more students majoring in science, more interested in science, and more participating in science projects across the campus, such as poster sessions and professional development for area in-service teachers.
ANOTHER NEW MAJOR – LIBERAL STUDIES: ENVIRONMENTAL EMPHASIS

Students who are interested in teaching interdisciplinary science at the elementary school level will find our new Liberal Studies: Environmental Emphasis (LSEE) major attractive. The LSEE major is available to students starting this fall (2005). LSEE offers an interdisciplinary approach to the natural sciences, including geology, marine science, biology, chemistry, and statistics. It is designed primarily as a second major for students in the CLAES School of Education interested in teaching elementary school science. LSEE consists of 48–50 credits spread out over 17 courses in environmental sciences, geosciences, marine sciences, biology, chemistry, and mathematics. Three additional courses also must be taken as electives.

This new major compliments our other liberal studies major: Marine Ecological Emphasis. Now, education majors have a choice of either concentrating in the environmental or marine sciences. Although neither of these majors is designed for students interested in pursuing graduate degrees or professional careers in the natural sciences, they do allow education students to complete their double major degree over a four-year period. Along with the new Integrated Sciences major, LSEE also is likely to attract more students to the sciences. To learn more about this major, please visit the LSEE web page: http://www.rider.edu/172_2414.htm.

RENOVATIONS AT RIDER’S FIELD STATION

The Lease between The Natural Resource Education Foundation, Inc. and the New Jersey Department of Fish and Game officially occurred on June 25, 2005. But well before that event, Rider, with Dr. Alexander serving on the Board of Directors of the NREF, was active in the rehabilitation of the former camp for the blind that will become the Department’s field station affiliate.

The Lighthouse Center on Barnegat Bay in Waretown, NJ, includes 190 acres of maritime forest, a freshwater pond, tidal creeks, salt marshes, a brackish water impoundment, a gravelly-sandy beach, and a shallow-water, muddy-sandy bay. The department will sublease three cabins that will serve as dormitories and a marine aquarium room. Dr. Paul Falkenstein, Rider alumnus and Associate Director of the North American Market and Venous Access and Safety Products, currently serves on the Rider Science Advisor Board, and graciously contributed to a fund, matched by his corporation, for the annual rental of three Rider cabins at the Lighthouse Center.

Two of these cabins can house eight persons each, with four bunk beds and a hot water-heated bathroom and shower. Ceiling ventilation fans are planned for each cabin. The third cabin will be used as a marine aquarium room for experimentation on temporarily held marine organisms captured from the bay.

Rider now stores its 12-foot, 5 passenger Achilles inflatable raft with 7.5 hp motor at the Lighthouse Center Boat House beside the canal, which will be dredged to accommodate small research vessels.
Spring and fall overnight field trips in terrestrial ecology, sedimentology, soils and surficial processes, marine processes, marine biology, botany, marine ecology, plankton ecology can be based there. Senior theses and independent student research, as well as summer marine field courses may also be based there. Cooking facilities and a dining room in the main lodge can accommodate around 80 people.

Currently the Lighthouse Center has a marine field station building with two air-conditioned classroom equipped with microscopes, dissecting tables, and displays. Rider’s OIT recently installed an air-conditioned computer laboratory equipped with eight Macintosh iMacs, four Dell PCs, and a Macintosh G3 that operates an LCD projector, portable screen, tables, chairs, overhead projector, VCR, and TV monitor.

The facility has four instructional field sites with detailed educational signage for discussion of shore wading birds, diamond back terrapins, maritime forest, and bay marine life. A 100-foot pier with a roofed teaching dock at the terminus is being rebuilt with a $300,000 grant from Amergen Corporation.

Rider is currently joined by Drexel University in rental of facilities at the Lighthouse Center with plans to base college courses at the field station. Dr Walt Bien, a former Rider adjunct in our department, and who has team-taught field marine courses with Dr. Alexander, represents Drexel University on the Board of Directors of NERF. Also represented on the board, are a former college dean, marine/environmental secondary school educators, directors, and management personnel from Rutgers University, the Marine Academy of Science and Technology of Mommouth County (MAST), Ocean County Vocational-Technical Schools, Marine Academy of Technology Academy (MATES), Amergen Corporation, and the Ocean County Parks and Recreation.

STUDENT ACADEMIC ACCOMPLISHMENTS

Congratulations to the Class of 2005

Bethany Eden maintained a 3.93 GPA that enabled her to graduate summa cum laude and with honors in the marine science major. An Andrew J. Rider Scholar, she was inducted as a junior into the Honor Key Society. Bethany also received both the Datatel and ADP (Independent College Fund of New Jersey) scholarships her senior year. Her senior thesis was entitled “Water Temperature Effects on the Growth and Development of Blue Crab (Callinectes sapidus) Larvae.” Concurrently, Bethany completed an independent student research project on “A Protocol For Culturing Food Chain Organisms, Brine Shrimp, and Algae, in Small Laboratory Settings,” under the supervision of Dr. Paul Jivoff. As a consequence of her stellar research productivity, she was inducted in to Sigma Xi, the National Scientific Research Honor Society. Bethany accepted a Research Fellowship to the graduate marine science program of Virginia Institute of Marine Sciences where she plans to pursue research on zooplankton.

Jeff Zola graduated with honors in marine science. In the fall semester of 2004, Jeff was the first marine science major to take advantage of the recent articulation
agreement with the Bermuda Biological Station for Research under Rider’s Study Abroad program. There, Jeff took courses in coral reef ecology and marine invertebrate zoology. He returned in the spring of 2005 to graduate cum laude. In recognition of his thesis on “Recruitment To A Coral Reef Within Castle Harbor, Bermuda, 2004,” Jeff was inducted into Sigma Xi.

AND CONGRATULATIONS TO THE CLASS OF 2006

Alison Golinski, a two year Andrew J. Rider Scholar, was awarded an ADP (Independent College Fund Of New Jersey) scholarship and was inducted into the Honor Key Society as a junior. She is currently working with Gabi Smalley on plankton ecology.

Harmony Liff, a double major in marine science and dance, was inducted into the Honor Key Society. Melissa Tresselt, a double major in marine science and biology, received the 2005-2006 “Annual Giving–Connecting Generations” scholarship.

ALUMNI UPDATE

Department alumni continue to stop by to visit or contact us with their latest news. If you haven’t done so recently, please feel free to tell us about what is going on in your life and of those close to you. You can find more alumni news, including specific contact information, on our alumni web page, located at http://www.rider.edu/172_1711.htm (note the new address). We look forward to hearing from you.

Greg Dietl '95 and Joanne Gore '95 are the proud parents of daughter, Samantha, and son, Alex. Greg completed his Ph.D. in Zoology at North Carolina State University where he studied predator-prey interactions between whelks and clams. Dr. Dietl (sort of rolls off the tongue, doesn’t it?) now has a post-doctoral appointment at Yale University’s Department of Geology and Geophysics working on Cambrian predation and biodiversity.

Megan Tutera ’98 is now a Marine Mammal Trainer, working with dolphins, at the National Aquarium in Baltimore. Previously, Megan was a parrot trainer (!) at the Rain Forest Cafe in Las Vegas, Nevada.

Kim Kessler '99 is a Senior Geologist for the New Jersey Department of Environmental Protection, Bureau of Inland Regulation, in Trenton. She reviews all kinds of construction permits that may impact wetlands, open waters, floodplains, and waterfront areas. She also works on identifying and delineating freshwater wetlands. In addition, Kim completed a Master’s degree in Environmental Policy at the New Jersey Institute of Technology.

Pamela Neeb Wade ’99 and her husband, Patrick, celebrated their second wedding anniversary in October 2004. They live in Monterey Bay, California where Pam is an education specialist at the Monterey Bay Aquarium.

Ruth Obergfell Leing '00 and her husband, Peter '01 (CIS), live in Ewing, NJ. Ruth is a lab technician at Medical
Diagnostic Lab and Peter is a Webmaster at Cenlar Inc.

**Lori Roth '00** recently defended her Master’s thesis at the University of Maryland. She also has a new job as a Research/Lab Technician at the Cancer Research Institute in Honolulu, Hawaii. Lori’s project there involves the impacts of micronutrients on the prevention of cancer. She also applied to teach chemistry, oceanography, or environmental science at Honolulu Community College.

**Tanya Brown ’03** is a graduate student in the Biotechnology Department at SUNY Buffalo’s School of Medicine. Her Master’s thesis will deal with the genetic cues for the branching of gorgonian corals. Tanya also continues working at the Niagara Falls Aquarium where she says the best thing is that she gets to dive with the sea lions.

**Rob Croskey ’03** switched jobs recently and is now working for Aqua Survey, Inc. in Flemington, NJ as a field/laboratory technician.

**Nicholas Masi ’04** and his wife, Zenda, are now living in Piscataway, NJ. Nick recently started working there for ENSR Inc. Rumor also has it that their first child was born recently. Congratulations on all accounts!

**Bethany Eden ’05** received a full Graduate Research Fellowship (tuition and stipend!) from the Virginia Institute of Marine Science (VIMS) of The College of William and Mary. Recently, Bethany completed a three-week cruise in the Sargasso Sea on the RV Oceanus conducting MOCNESS (Multiple Opening and Closing Net Environmental Sampling System) tows down to a depth of 700 meters. According to Bethany, MOCNESS is a system of 10 zooplankton nets that can open and close at discrete depth intervals. She said that when they were doing two tows a day, the work was pretty much around the clock.

Between that, trying to pick out the gelatinous worms from the nets, and trying to avoid Hurricane Irene, it sounds like Bethany had a hell of a good time!