

December 8, 2011



From the Dean's Desk

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## Novozymes Biologicals Names Laboratory in Center for the Sciences

International bio innovation company Novozymes Biologicals has made a \$50,000 gift to Radford University for a laboratory in the new Center for the Sciences building.

The Novozymes Biology Lab will be a teaching laboratory for introductory biology courses for undergraduate students.

"We are grateful to Novozymes Biologicals for their support and proud to partner with them in creating this wonderful learning space," said Radford University President Penelope W. Kyle. "The introductory courses taught in this laboratory will lay the foundation for a successful career in science for many of our students."

Construction on the Center for the Sciences is expected

to begin in fall 2012 with a tentative completion date of fall 2014. In addition to teaching and research laboratories, the \$49 million, 115,000 square foot building will include faculty and staff offices, a vivarium to offer climate-controlled zoology research opportunities and a new Museum of the Earth Sciences and RU Planetarium. EYP, one of the nation's top-performing green design firms, is in charge of the project.

The Novozymes Biology Lab is the second Radford University program supported by the company. It has supported the Summer Bridge Program for the previous three years and has made a \$10,000 gift to the 2012 event. The program is offered free of charge to rising sophomore, junior and senior female high



school students from across Virginia to study science, technology and mathematics with Radford University professors.

"We are pleased to be part of unlocking the passion for science to ensure the next generation of thought leaders," said Patrick Patterson, president of Novozymes Biologicals. "I strongly encourage students to pursue a career in science, technology and math as a way to be part of creating the future."

## Geospatial Science Students Launch GTU Chapter

Geospatial science students have reactivated the RU chapter Kappa Omicron of the Gamma Theta Upsilon international geography honors society.

Geospatial science major Joseph Rudolph, a member of the group, says the organization will invite speakers to

campus to address environmental and geography awareness topics, conduct research to present at statewide and national conferences, and assist and encourage geospatial science students to reach their full academic and career potential.



L-r: Society members Allison Mitchum, Joseph Rudolph, Chad Rogers and Chelsea Richardson

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### Upcoming Events:

- Winter Commencement, Dec. 17 at 1 p.m. in Bondurant Auditorium

# Letter to Faculty, From Dr. J. Orion Rogers, Dean

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December 8, 2011

Dear Colleagues,

On Saturday, December 17, 2011 at 1 p.m. in Bondurant Auditorium, the College of Science and Technology will participate in the Radford University Winter Commencement ceremony, and approximately 47 of our students will conclude their studies at RU and begin the next phase of their lives as alumni and contributing members of society. I hope that you will join us to acknowledge this significant event in the lives of our graduates.

As we pause to conclude the fall semester, I would like to thank you for all of the success that our college has collectively achieved during the 2011-12 academic year. The work of our Building Committee and the architectural firm EYP continues as the Center for the Sciences moves further into the planning process. As the design plans are finalized during the spring and summer of 2012, we look forward to construction starting in the fall of 2012. The beautiful plans for our new building have already generated excitement that has resulted in gifts to name facilities within the Center for the Sciences. Your dedication to teaching and mentoring has transformed the lives of our students, and many of our college's alumni and friends have contributed gifts to support the teaching, research and service missions of the CSAT. During the 2011 calendar year thus far, 63 individuals, including 12 CSAT faculty members, as well as nine corporations have contributed \$119,293.08 to the CSAT in gifts and pledges to departments, scholarships, programs, the RU Planetarium and the Museum of the Earth Sciences.

A significant professional contribution being achieved by CSAT faculty is submission of external grant proposals. Since July 1, 2011, 14 external grant proposals totaling \$921,469 have been submitted by 13 CSAT faculty members, and five CSAT faculty members have been awarded \$295,482 from seven external grants. These impressive results are evidence of progress towards achieving our college's fiscal year 2012 goals of 30 external grant submissions and 16 external grant awards.

Your dedication to scholarship, service and teaching excellence have resulted in presentations, publications, funded grant proposals, science education outreach, special events on campus and most importantly, the academic success of our students in our classrooms, laboratories and field sites. Thank you for all of your contributions to our students' achievements, and best wishes for a restful and well deserved Winter break.

Sincerely,



J. Orion Rogers

Dean

# Geology Faculty Receive Grant for Research of Mountain Lake

Geology professors Skip Watts and Parvinder Sethi were awarded a \$19,979 university-wide grant to investigate the cause leading to the erratic drainage of water in Mountain Lake, Giles County, Va.

Mountain Lake is one of only two natural lakes in Virginia. "Mountain Lake is a wonderful outdoor hydrogeologic laboratory as well as a geological mystery," says Watts. The lake drained completely in 2008 and came close to emptying again during the fall of 2011.

"Sediment core studies performed in the past indicate that the lake has dried up numerous times during its geologic history," adds Watts.

In addition to directing RU undergraduate students in research there, Watts is advising Luke Joyce, a hydrogeology graduate student at Virginia Tech, in his research into the landslide dam and its relationship to the overlapping lake sediments. "Dr. Sethi and I became interested in using SCUBA diving based techniques to study the drainage holes through which water is escaping from the bottom of the lake. We're delighted to have received this university-wide grant enabling us to place underwater flow meters on the lake floor to provide data for detailed analyses," says Watts.

In preparation for the next phase of study, RU students are already actively engaged in hydrogeologic research at Mountain

Lake. According to Watts, during the fall 2011 semester, four teams of students undertook studies to map adjacent watersheds for other potential sources of water, create a detailed map of the latest landslide movement near the natural dam; perform geophysical studies to generate images of subsurface water passages, and create a bathymetric map of the lake bottom using side-scanning SONAR. Their results will be presented as posters at professional meetings like those of the Geological Society of America.

Beginning this winter and through the summer, the research will involve a SCUBA team placing flow meters near the drainage holes identified by the undergraduate research teams in order to quantify the rates at which water leaks from the lake bottom. The study will also involve tracking the water with harmless tracers to determine where it goes once it leaves the lake.

Watts and Sethi hope that studies like this will lead to a better understanding of the natural processes and eventually to the development of strategies for working with nature to bring the lake back to full water levels.



Mountain Lake at full pond—  
Courtesy of Mountain Lake Hotel



Above: Ben Perdue dragging the OhmMapper array under Rhett Herman's watchful eye as part of subsurface resistivity survey

Bottom left: Geology major Jenny All rappelling over colluvium at southeast end of drain hole #2 to set cable for Sting array

Bottom right: Water levels during lake recession on 10/21/11



## The RU Wildlife Society Assists the Mussel Recovery Program at Claytor Lake State Park

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On November 11 and 12, the RU Chapter of the Wildlife Society assisted with a mussel recovery program at Claytor Lake State Park. Approximately 25 students assisted park manager Matt Wright in the two-day effort.

Claytor Lake was experiencing its annual lowering of the lake level by AEP, which exposed thousands of native mussels. Society members helped place more than 2,000 mussels back into the water.

During the work, the group found evidence of a state-threatened species, the Pistol Grip mussel, along the shoreline.

According to Karen Francl, biology faculty member and group advisor, this was the first sign that this threatened species was inhabiting the Claytor Lake shoreline.

Biology student and member of the RU Wildlife Society Jackie Jacob holds a mussel from the mussel recovery program at Claytor Lake State Park.



## Information Technology Associate Professor Hwajung Lee Presents in China

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Information technology associate professor Hwajung Lee and Drexel University professor Shuyuan Mary Ho presented their paper "Group Attribution of Human Betrayal in a Virtual Collaborative Context" at the 2011 Workshop on Information Security and Privacy in Shanghai, China. This workshop is held in conjunction with the 2011 International Conference on Information Systems.

The paper discusses an experimental study that simulates human betrayal in an online collaborative environment.

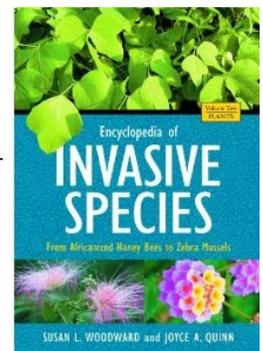


## Woodward Publishes Invasive Species Encyclopedia and is Honored by National Council for Geographic Education

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Professor Emerita of Geography and Research Faculty member of the Geospatial Science program Susan Woodward has been chosen as a 2011 National Council for Geographic Education Distinguished Mentor for her work mentoring students of geography and contributing to the professional development of geography teachers in Virginia. She was lauded for her work with the Virginia Geographic Alliance, for which she has co-lead summer institutes in Ecuador and Brazil and helped develop a website. She also has served as a member the National Geographic-affiliated non-profit organization's steering committee for 15 years and currently sits on the strategic planning committee. Additionally, Woodward was singled out for her long term advice and encouragement to Radford geography majors as well as to students in the geography program at the Federal University of Pernambuco, Brazil.

In late September 2011, Greenwood, an imprint of ABC-CLIO, released the two-volume *Encyclopedia of Invasive Species: From Africanized Honey Bees to Zebra Mussels*, co-authored by Woodward and Joyce Quinn, professor emerita at California State University, Fresno. The encyclopedia discusses varieties of non-native plant and animal species that have become established in the United States and are associated with actual or potential ecological or economic harm. Each species account provides a description of the organism and any other species with which it might be confused, its habitat preferences, life history, introduction history, probable impacts and management strategies. Distribution maps of the native and introduced ranges and at least one photograph accompany each entry.



# Geospatial Science Program Puts Latest Technology To Use

Radford University geospatial science graduates have an advantage over graduates from other programs across the state. They are able to gain first hand knowledge and use the latest technology in the field, including the most recent addition to the program's quiver — the \$95,000 battery powered Light Detection and Ranging System (LiDAR).

LiDAR is a lot like radar, however radar measures radio waves and LiDAR measures light waves. The LiDAR system can create a 3-D image of a surrounding area by bouncing light waves off of stationary "set-ups" or detectors placed in the area to be measured.

"A full 360 degree scan takes a little over 30 minutes. We take a laser scan of the area and combine it with a digital photo afterward to get a full picture of the area," says Coordinator of the Geospatial Science Program Bernd Kuennecke.

This device can be used inside a building or outside. CSAT faculty and students trained on the equipment for a week in November.

LiDAR can be used to create detailed topographical maps for land use applications. It also has applications in anthropological sciences, surveying, geology, environmental biology, construction and engineering.

Anthropological sciences faculty member Jake Fox and geology lab coordinator Paki Stephenson participated in the LiDAR training on campus. They see opportunities to use the technology in their research and classes, in addition to giving their students a "leg up" in experience and knowledge of LiDAR technology.

"I come from the energy industry and I know they use LiDAR extensively," says Stephenson. "Geological investigations such as volcanic, earthquake and sinkhole hazards studies, landslides, slope stability studies of highway road cuts, and overburden and resource extraction are just a few important uses of LiDAR," says Stephenson.

"I think hands on learning of this technolo-

gy is the only way to really learn how to use it. This is such a wonderful tool and gaining experience using it is good for students who need to list experience on their resumes. Even though the experience is not with a corporation, it is experience using the technology which often will be a deciding factor in recruitment of employees — especially for the high paying energy industry jobs," adds Stephenson.

Kuennecke knows that geospatial science majors will benefit from using this technology in their classes. "This system interfaces with GIS. There seems to be a very fast growing market for this type of knowledge," he says.

Kuennecke says that RU's geospatial science program is one of the only geospatial science programs in the nation to have a LiDAR system bought specifically for undergraduate student training and use.

"Radford University is primarily a teaching institution," says Kuennecke. "It is important for us as a university to train our students in knowledge and skills that make them more competitive for employment and in graduate school applications."



Top: Geology lab coordinator Paki Stephenson and geospatial science major Joseph Rudolph scan a room in Cook Hall as part of the LiDAR training session

Middle: Students and faculty analyzed data collected on campus during the training session

Bottom: The team set up several stations on campus to take measurements of the area



# The CSAT STEM Club News

## From the Dean's Desk

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Innovation Inspired

The CSAT STEM Club would like to thank everyone who participated in our canned food drive. We received more than 600 cans and about \$90 from our bake sale and donations from professors. We donated all of the proceeds and food to the Radford Fairlawn Daily Bread on Friday, November 18.

During our last meeting on Tuesday, November 29, the club discussed different volunteer activities that it would be participating in during the Spring semester. Some of those activities include: volunteering for Science Exploration Day, Super MACC competition, and helping out with the CSAT Open House. Community service projects and global service projects are also well underway within the club, and members have been encouraged to think of new ideas for Earth Day, in addition to a general service project.

The club will once again host faculty guest speaker talks on the second Thursday of every month. An off-campus guest speaker will also be giving a talk; however, a date for this has not yet been set.

We hope you all have a wonderful holiday.

Jasmine Jackson

Secretary of the CSAT STEM Club

[www.radford.edu/csat](http://www.radford.edu/csat)



The CSAT STEM Club participated in a canned food drive for the Radford Fairlawn Daily Bread. Club president Erin Fowler and secretary Jasmine Jackson counted more than 600 cans the club collected from CSAT faculty, staff and students for those in need.

