

From the Dean's Desk - - May 9, 2014



In this edition:

PAGE 2 – FIVE RU CSAT STUDENTS RECEIVE RU OUTSTANDING STUDENT AWARD

PAGE 5 – MORE THAN 130 RU CSAT STUDENTS PRESENT RESEARCH PROJECTS DURING FORUM

PAGE 8 – RU CSAT STEM CLUB MEMBERS ATTEND USA SCIENCE AND ENGINEERING FESTIVAL

PAGE 10 – CSAT STUDENTS PRESENT AWARD-WINNING RESEARCH DURING NATIONAL FESTIVAL

PAGE 11 - RADFORD UNIVERSITY TO HOST CAMP INVENTION JUNE 23-27

PAGE 12 – BIOLOGY ALUMNI COMPLETING GRADUATE WORK

PAGE 13 – GROUNDBREAKING BRINGS RU COMMUNITY TOGETHER FOR GARDENING PROJECT AT SELU

PAGE 14 - RADFORD UNIVERSITY TO HOST SUMMER BRIDGE PROGRAM JULY 13-18

FIVE RU CSAT STUDENTS RECEIVE RU OUTSTANDING STUDENT AWARD

Five students from the College of Science and Technology received the RU Outstanding Student Award on Friday, April 25, 2014. The Outstanding Student Award is the Highest Academic Honor bestowed on Radford University students.



This year, eight total students were selected for the award from both graduate and undergraduate nominees. Four of the eight are CSAT majors and the fifth has a CSAT minor.

The students are Jacob Vaught, Halle Edwards, Hannah Gullickson, Daniel Metz, and Analise Roccaforte.

Jacob Vaught is from Williamsburg, VA and is a sophomore General Biology Major. Jacob has given back to the community through mentoring at Belle Heth Elementary School in a third grade classroom, and in the assistance of building the "Run for Hope" 5k with the Pre-Dental and Pre-Med Clubs. At home he is a waiter in Colonial Williamsburg, but at Radford he serves as a Lead Peer Instructor for the New Student Program's Office. He assists in the selection of Peer Instructors for University 100 and helps lead their training. He will also be teaching his own section of University 100 again this fall. On campus he is a member of Radford University's Honor's Academy, Captain and Vice President of Radford Men's Club Soccer, Former Inner Chapter Relations Committee Head and Current Rush Committee Head for Phi Sigma Pi National Honor Fraternity, Member of the Pre-Dental Club, associate member of Beta Beta Beta National Biological Honor Society, and active member of Cru Campus Ministries. He aspires to attend Dental School upon his graduation, and will be applying next spring.



Halle Edwards is a sophomore Chemistry major from Fincastle, VA. She is Editor-in-Chief of the Beehive, Radford University's student-run yearbook magazine, as well as Secretary for the Student Media Committee. She also works with the Office of Undergraduate Research and Scholarship to create marketing materials. She has made the Dean's List for three semesters, and is a member of the Honor's Academy. Outside of school, she works with the youth group at West Side Church of Christ to enhance the Christian relationships of teenagers. Her hobbies include traveling, skiing, kayaking, and sewing.

Hannah Gullickson is a junior from Augusta, Georgia. She is a chemistry major and biology minor. She gives back to the RU community through volunteering at alumni and campus outreach events through the Radford University Ambassadors. She participates in undergraduate research in a biochemistry laboratory. She is secretary of Radford University Ambassadors, vice president of Radford University's Pre-Med Club, and a member of Radford University's Honors Academy. She worked as a teaching assistant for the Summer Bridge Program through the College of Science and Technology last summer and plans being a teaching assistant again this summer. She recently presented her research at the local American Chemical Society meeting and the undergraduate research forum and is currently striving to get her work published.



Dan Metz grew up near Radford University, on a beef farm bordering Claytor Lake. A senior biology major and mathematics minor, he has been fascinated with the life sciences since childhood, when he first encountered an illustrated guide to marine life in his elementary school library. Parasites have become his primary research interest, and he will be traveling to the University of California, Santa Barbara over the summer to conduct research on behavior-modifying parasitic worms. This year, Dan was one of three students in the nation to be awarded the Ecological Society of America's SEEDS Undergraduate Research Fellowship, the highest honor bestowed upon undergraduates by the ESA. Beyond academic interests, Dan is an avid weather buff, a fiction writer, a decent cook, and a very enthusiastic microscopist. There are no forms more beautiful than those revealed under high magnification, and no friends more loyal than those who will follow one into a drainage ditch to collect a

vial full of questionable fluids for later examination. Dan is currently the tutor and TA for genetics, and uses his long-suffering and good-natured polydactyl dog as a teaching prop when talking about inheritance and development.

Analise Roccaforte is from Point Pleasant, NJ and is considered a senior but will be here another year finishing up the requirements for her minors. She is a psychology major with minors in statistics, sociology, interdisciplinary forensic studies, and dance. She gives back to the RU community by volunteering for the Women's Resource Center, the RAFT Crisis Hotline, and the Big Brothers Big Sisters Organization. She was also the leader of an alternative spring break at Possumwood Acres Wildlife Sanctuary. She is involved in research that analyzes the effects of alcohol and nicotine on neurogenesis in the hippocampus. She also does research on polyvictimization and the longitudinal ADD health study. She is a recipient of the Summer Undergraduate Research Fellowship Grant and will be staying at Radford this summer to continue doing rat lab research. This past year, she has served as the President of the Honors Academy Student Organization, the President and Co-Founder of RU Students for a Positive Change, the Vice President of the International Psychology Organization, Ambassador for the College of Humanities and Behavioral Sciences, RU Representative for the State Council of Higher Education, Sponsorship Chair for the St. Jude's Up Til Dawn Event, and President of VA 21. She is also involved in the Phi Sigma Pi Honor Fraternity, Pi Gamma Mu, and National Society of Collegiate Scholars.



In addition to the Outstanding Students from the College of Science and Technology, junior Nina Chambers, and two graduate students, Mary Dickerson and Katherine Donaldson, were recognized with the award.

Also honored during the ceremony were additional students from throughout the College of Science and Technology and across the University Community. Participating in the LEAD scholar program were Madelein Ford, Kaleice Green, Olivia Hilton, Victoria Scott, and Kayla Smith.



The LEAD Scholar Program which stands for Leadership through Excellence, Academics and Development. Through hands-on experience, the program aims to promote active involvement and community engagement through creative and critical thinking, problem and solution analysis, and discovery and growth of individual leadership styles.

Left to right: Victoria Scott, Kaleice Green, Olivia Hilton, Madelein Ford and Kayla Smith.

Students were also recognized for inclusion in Who's Who Among Students in American Universities and Colleges. Founded in 1934, the program inducts members based on academic achievement, participation in co-curricular activities, citizenship and demonstrated leadership.

This year's inductees are: Rebecca Boxler, Nina Chambers, Amber Ehrett, Jessica Frazelle, Sarah Gaunt, Emily E. Grant, Kaitlyn Hall, Nikki Holland, Brenna Ishler, Adrienne Keith, Katrina Koussis, Ashley Light, Lauren Markey, Daniel Metz, Analise Roccaforte, Kelsy Rupp, Cristina Spicher, Thomas Turner, Scott Werts, James Calvin Whorley, and Erica Wilkening.

MORE THAN 130 RU CSAT STUDENTS PRESENT RESEARCH PROJECTS DURING FORUM

Radford University's tradition of exploration and discovery continued April 22-24 as the campus gathered for the 23rd annual Student Engagement Forum. Over the course of the three days, more than 130 students from the College of Science and Technology presented their original research and faculty/student collaborations to the Radford University community in a variety of symposia, presentations and forums. Students from the disciplines of Biology, Chemistry, Forensic Science, Geology, Geophysics, Geospatial Science and more were represented during the program.

Symposiums were devoted to arctic geophysics and innovations in forensic science. A large oral presentation session featured biology students highlighting their experiences both on campus and around the world. Poster sessions were devoted to chemistry, biology, geology and geospatial science.

At Wednesday's Innovations in Forensic Science Symposium, Sheryl Manning, a senior biology major from Fancy Gap, presented her two-year research project on DNA degradation as a means to determine Post Mortal Interval time.



Sheryl Manning

"The experience has been wonderful and I had a good opportunity to learn and do applied science," said Sheryl, who had to learn DNA extraction procedure and interpretation before embarking on a project that she thinks has "exciting potential and application in the real world."

Eminent Professor of Anthropology Donna Boyd and Bob Sheehy, Professor of Biology, were Sheryl's faculty mentors. Said Dr. Boyd: "When she proposed this project, Sheryl didn't have the classes yet. She knew blood and she knew lab work, but the way she taught herself to do this work makes me proud."

After a semester spent planning and developing a project called "Differential Identification of Blunt Force Trauma in Burned Human Remains," David Foley, a junior anthropological sciences major from Bassett, said, "It is a reassuring aspect of this university that I can work closely with someone as distinguished in her field as Dr. Boyd who pushed me and shared expertise and resources."



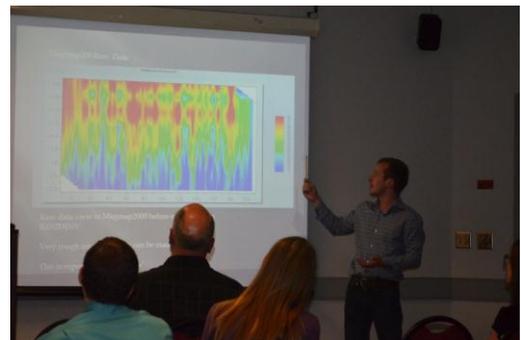
David Foley



Tanya Schulz and Emily Clark during their biology presentation

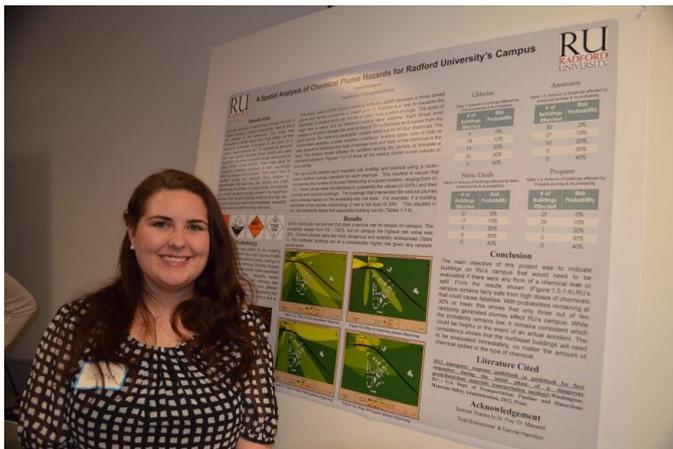
Throughout the forum it was obvious that students in the College of Science and Technology embrace the opportunity to learn outside the classroom. Even spring break provided opportunities to enhance their Radford experience to students who explored areas as diverse as the Virgin Islands and the Arctic Circle. Tanya Schulz and Emily Clark shared their research into the “Intraspecific behavior in the pearly-eyed thrasher, *Margarops fuscatus*” which took place on the island of St. John in March.

Half a planet away during the same week, students were researching correlations between ice thickness and temperature in Barrow, Alaska. Melissa Brett and Nicholas Aitcheson shared their experience and challenges of using an Ohm Mapper resistivity array to model the ice thickness during the Arctic Geophysics Oral Presentation session.



Nicholas Aitcheson showing the data received from the Ohm mapper in Barrow, Alaska

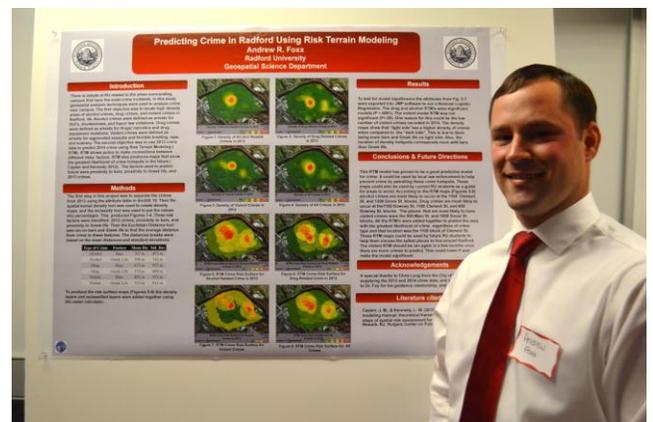
Poster sessions provided an opportunity for individual and research teams to present their work in a one on one fashion with students, faculty and staff. For some, it was their first opportunity to share the story of their work with an academic or professional focus.



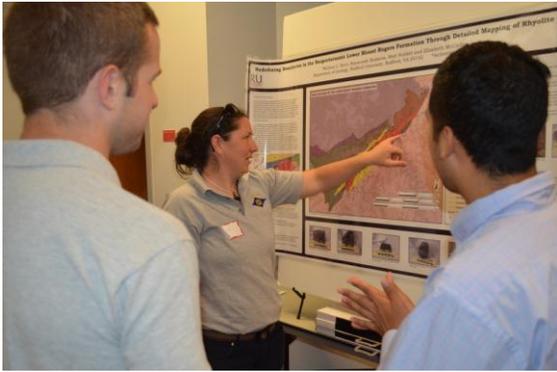
Victoria Kirkpatrick with her poster illustrating the spatial analysis chemical plume hazards for the RU campus

Victoria Kirkpatrick spent time during this academic year studying the potential risk to the Radford University campus from a chemical or toxic material spill along the railroad tracks near campus. Her work was not simply a scholarly exercise, but also valuable data that could be utilized in emergency preparedness exercises on campus and in the community. Her work was on display during the Geospatial Science poster session which also featured several of her classmates’ research in other

area projects such as rainwater run-off management and predicting crime in the city of Radford utilizing risk terrain modeling.



Andrew Foxx presenting his work utilizing risk terrain modeling



Melissa Brett showcasing her work at Mount Rogers

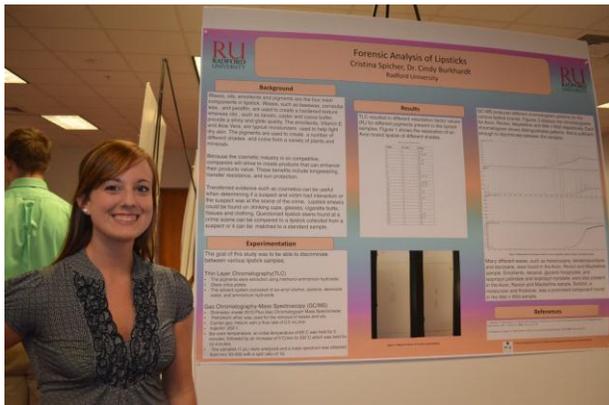
During the Geology session, Melissa Brett, Raymundo Balderas and Matt Sublett shared work that was conducted at Mount Rogers under the guidance of Dr. Elizabeth McClellan. Other students shared work related to rock slope stability and the use of LiDAR compared to traditional methods of data collection. Students also explored some of the issues of hydraulic fracturing, known as “fracking” in the oil and gas industry, on surrounding waterways and river basins.



George Ritter, Kelsey McGee and Emily Luketic with their poster during the Geology session.



William Wilson explaining his research with LiDAR

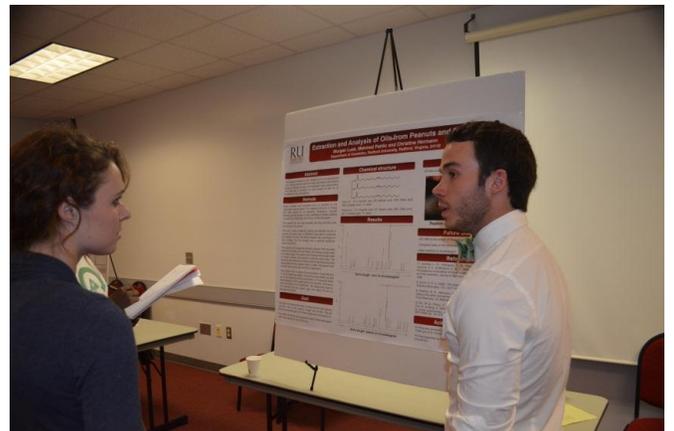


Christina Spicher with her poster presentation during the "Advances in Chemistry" session

Chemistry students shared their work ranging from a forensic analysis of the materials used in lipsticks and how they might be used to identify individuals involved in crimes to the extraction and analysis of oils from peanuts and corn.

In total, the forum provided hundreds of students, faculty, staff and the local community with an opportunity to come together for enlightenment and to share in discussion about new knowledge that students were developing.

- Don Bowman contributed to this story.



Morgan Lusk presenting his research

RU CSAT STEM CLUB MEMBERS ATTEND USA SCIENCE AND ENGINEERING FESTIVAL



CSAT STEM club members Abigail Ballowe, Joshua Williams, Hollyn Lofton, Ryan Skipper, Phil Valoyi, Kirsten Basham and James Stratton at the 2014 USA Science and Engineering Festival

On April 26 and 27, seven members of the Radford University CSAT STEM club traveled to Washington D.C. to participate in the USA Science and Engineering Festival, the national celebration of innovation and investigation in STEM fields. The event featured thousands of exhibits ranging from 3d scanning and printing to space exploration.

“The trip as a whole was very inspiring in that it gave all of us the chance to experience something new while being relevant to new concepts/techniques that are conceptually interesting” said club member Kirsten

Basham. “I’m sure many of us also learned a great deal about different scientific theories or technological advances and in stride will help us improve our horizons

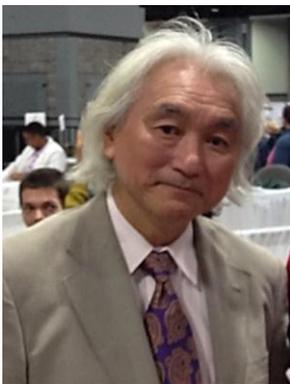
in CSTAT/STEM club.”

Special presentations were made by superstars of the science world such as television host Bill Nye “the Science Guy” and Dr. Michio Kaku, renowned physicist, futurist, professor and author.

During a lecture and science demonstration, participants were challenged by Bill Nye to think differently, figure out problems like energy generation and efficiency and “to change the world.” Mr. Nye was joined on stage by actress Danica McKellar who, in addition to her roles on television and film, has become a noted author in the mathematics world and an advocate for women in the sciences. Ms. McKellar participated in some of Mr. Nye’s experiments including the manipulation of air with a vortex cannon and the crushing of a steel drum with changing air pressure.



Bill Nye was joined on stage by actress and mathematics advocate, Danica McKellar to demonstrate how vortex cannons manipulate air



Dr. Michio Kaku

Dr. Michio Kaku shared his thoughts about the state of the brain. “Dr. Kaku's speech was both interesting and funny” said James Stratton, STEM club secretary. “It had a lot of the familiar concepts of the brain such as right-brain vs. left-brain, but It also contained many of his interesting theories from his book ‘The Future of the Mind.’” James added “Dr. Kaku believes that eventually people will be able to use technology to make motion pictures of people's thoughts and people's dreams. The funniest part of that presentation was that after explaining the ability of technology to tap into the human mind, Kaku made a nice joke about not having to probe his students' brains to

figure out who would pass or fail his classes.” STEM club Vice-President Ryan Skipper added “I found Dr. Kaku's presentation to be very informative and enlightening about how much we as a species can accomplish both technologically and mentally.”

Mike Rowe, host of the television show “Dirty Jobs” presented his concept of “STEMS” where the second S stands for skilled work. His message was a little less conventional than those of the scientists in attendance, but it was very well received.

“My favorite presentation was work hard and smart by Mike Rowe” said STEM club treasurer Abigail Ballowe. “I think that people need to find a job or a skill that is necessary to improve society and that they enjoy doing.



Mike Rowe

She added “Most times a person does not have to go to college to learn that particular skill. However I think that college also teaches you important lessons of how to be sufficient at your job. I am learning how to time manage and to learn so that I can apply the material to different situations. I have learned in physics that there are usually multiple paths to the same answer. It doesn't matter how you get there, as long as you have learned all the skills then you will prosper.”

Club president Hollyn Lofton added “Mike Rowe from Dirty Jobs was also a fantastic speaker. I did not know what to expect from him but he delivered a message about the importance of jobs like plumbing, electrical, carpentry, and other jobs that many take for granted or do not think about. “



Participants were almost overwhelmed with the variety of exhibits. “My interest was primarily in 3D printing of which there were many companies showcasing many different sizes and types of printers” said club member Joshua Williams. “The largest printer shown was Lockheed Martin and was printing a model of the Orion capsule the size of a kitchen table. They also showcased printers from many different manufacturers as well as the open source community. There was also a mobile maker lab that has laser cutters, CNC routers and other tools that can be run by middle school students.”

Joshua added “The highlight of the trip for me was catching a racket ball frozen by liquid nitrogen that bounced off stage when Bill Nye tried to break it against the ground.”

Participants also had the opportunity to talk with potential employers at individual booths and during the career fair sponsored by the festival. There were also a number of continuing education programs on display.

Ms. Lofton reflected on the experience by stating “What I enjoyed most of all was the fact that everyone there was more than willing to explain their booth or what they were presenting. I loved seeing that eagerness in them to share their ideas and thoughts in the science community. That kind of energy is what is needed to make more and more discoveries.”

CSAT STUDENTS PRESENT AWARD-WINNING RESEARCH DURING NATIONAL FESTIVAL



2014 RU P3 team members at their display booth in Washington D.C.

During the USA Science and Engineering Festival, the RU team of students who received an EPA award in 2013, presented their continued work in water purification as a part of the U.S.

Environmental Protection Agency's People, Prosperity and Planet (P3) Student Design Competition. While not in competition this year, the Radford University team was a featured organization.

Led by chemistry Professors Cindy Burkhardt and Francis Webster, the RU team includes geology, biology and chemistry students. They received the EPA grant to further develop their research during

the program's second phase, which culminated in their Sustainable Design Expo presentation

during the USA Science and Engineering Festival on April 26 and 27, 2014.

The interdisciplinary RU team—Cameron Baumgardner, Angela Gerard, Dennis Godward, Spencer Hayes, Anthony Rhea, Gavin Smith, Matt Sublett and Bekah Webster— consists of team members who received the EPA award in 2013 and new members helping to further the research.

The objective was to design and develop sustainable technologies that protect people's health and the environment while promoting economic development. "We looked at ways to pull materials out of the water and we turned to one of the most natural filter that is used in the world, sand" said Dennis Godward, a senior chemistry. "Using sand and combining it with carbon, we were able to remove most of the metals that we were looking at: cadmium, copper, and lead at levels nearing 100%."

Another senior chemistry major, Bekah Webster, spent much of her time on the team this year helping develop the process that was on display. "My main role has been working with our nano carbon material to combine with the sand to help remove unwanted elements including the heavy metals, organic dyes such as methylene blue and arsenic."

In addition to some of the methods developed in 2013, the team added several new members who approached the research from a slightly different direction. Gavin Smith, a senior chemistry and biology double major, joined the team in the fall and said "I was honored to join the team and continue into the second phase of the research project not only to help advance my academic career but to also have a better



understanding of research and development as an industry. His work focused on microbial reduction and disruption to help provide safer drinking water.

The team was visited by hundreds of festival attendees over the two days and shared their work along with the message that undergraduate students have the opportunity to participate in this level of research at Radford University in the College of Science and Technology.

Radford University to host Camp Invention June 23-27

Photo by Lora Gordon



For five years, Radford University's College of Science and Technology has offered the nationally-acclaimed Camp Invention program to children entering grades one through six in Reed and Curie Halls each June. The 2014 edition of the program is scheduled for June 23-27.

For more information, please visit:

<http://inventnow-web.ungerboeck.com/programsearch/moreinfo.aspx?event=9762>

BIOLOGY ALUMNI COMPLETING GRADUATE WORK

Four alumni of RU-Biology continue to advance in their careers. These students who conducted undergraduate research at RU are now wrapping up master's degrees in field biology-related topics. We couldn't be prouder!



Kiersten Newtoff (left) successfully defended her thesis, "Spatial variability in mercury exposure and diet in brown pelicans (*Pelecanus occidentalis*) in North Carolina." She will be graduating from the University of North Carolina-Wilmington. She has secured an internship with NASA, using GIS techniques to study the effects of forest changes in New England to long-term bird survey data. As an undergraduate of RU, Kiersten was very active in the Honors Academy, and worked in the labs of Drs. Small and Powers.

Clayton Faidley (right) will be defending his thesis later this year at the University of Louisiana at Monroe. His thesis is entitled, "Aquatic herpetofauna of a bottomland hardwood forest on Boeuf Wildlife Management Area in northeastern Louisiana." He'll spend this summer chasing bats in Wyoming as he writes his thesis. During his undergraduate years, Clayton gained research experience with Dr. Powers. He is a co-author (with Powers) on a published manuscript on the salamanders of RU's Selu Conservancy.



Justin Bower (left) successfully defended his Master's thesis at Frostburg State in Maryland. His thesis is entitled, "Health status of butternut (*Juglans cinerea*) in Maryland." This summer, he will be studying the effects of forest fragmentation on bird communities. As an undergraduate, he assisted with research in the labs of Drs. Guinan, Davis, Small, and Powers.

Craig Bland (right) is wrapping up his Master's degree at the University of Georgia. He is researching the rare northern yellow bat (*Lasiurus intermedius*) on the coastal islands of Georgia. He will be defending his thesis this summer or early fall, and will begin working as a full-time biologist for EcoTech, an environmental consulting firm in Atlanta. During his undergraduate years at RU, Craig worked on several projects in the lab of Dr. Powers, and was a co-author with Powers on a published bat manuscript.



- Story by Karen Powers

GROUNDBREAKING BRINGS RU COMMUNITY TOGETHER FOR GARDENING PROJECT AT SELU



With the arrival of spring, Radford University students gathered at Selu Conservancy Saturday, April 26, for a groundbreaking in preparation for its first crop.

Almost 30 RU students and faculty spent the day laying out beds, amending soil, mulching pathways and building fences for a 100-foot by 60-foot garden that will include 10 beds to generate produce for area fresh food pantries and club members, said Will Dowd, president of the Selu Garden and Service Club.

"It was a great chance to get outside on a beautiful day and work with some great students who really want to do something and make a difference," said Will, a senior geospatial sciences major from Smithfield. He expressed his thanks to the Scholar-Citizen Initiative and RU Sustainability for donation of material needed to get the garden project up and running.

The first planting will take place soon, said Will, and the effort will culminate at a harvest festival in the fall as part of the celebration of the 25th anniversary of the Selu Conservancy. The garden will feature corn, tomatoes, squash, zucchini, cucumber, green beans, eggplant, watermelon, cantaloupe, rosemary, thyme, sage and lavender from seeds donated by the Virginia Master Gardeners.

The Selu Conservancy is a 380-acre retreat/meeting center and classroom facility, located seven miles from campus. The Conservancy includes a 4,000 square-foot "Barn" equipped with meeting rooms, an observatory and the Selu Retreat Center.

"I was impressed by the work ethic and the number of volunteers who worked hard all day," said Jeff Armistead, director of Selu. "They put in a lot of effort to build the soil up to make it a good producer and source of all-round sharing."

The Garden Club will meet weekly during the summer to tend the plot and complete a variety of other projects at Selu, including the conversion of a dozen cement trash cans into raised beds and handicap-accessible planters.



Volunteers helping to create the organic garden at Selu

Student and faculty volunteers amend the soil and prepare the beds for a new garden at Selu Conservancy

- Story by Don Bowman

RADFORD UNIVERSITY TO HOST SUMMER BRIDGE PROGRAM JULY 13-18

The Radford University College of Science and Technology Summer Bridge program is a week-long residential experience for rising sophomore, junior, and senior high school girls interested in science, technology, and mathematics. The 2014 edition of the program will take place from Sunday, July 13 – Friday, July 18, 2014.

Thanks to many generous donors and sponsors of the program, full scholarships will be awarded competitively to participants. The scholarships cover all costs of the program.



Through classroom lessons, laboratory experiments, and field experiences, Radford University professors will draw students in to the wonders of:

Space Exploration—create a Martian rover

Geology—study the making of mountains

Forensic Science— combat “hackers” and analyze “crime scenes”

Genes, Molecules and Medicine - learn about the biology and chemistry applications in medicine

Environmental Science - studying habitats through examination of the environment

Participants in the program have stated that the interaction with Radford University faculty and staff has been an exceptional experience as has the residential programming. For many, it will be their introduction to a college atmosphere and campus living environment. An experienced staff of Radford University students will join the faculty and professional staff to provide a world-class program for those who attend.

Please help us connect young women interested in the sciences with this outstanding opportunity and pass this message along to those who might be interested. Thanks to support from our sponsors, we will be able to offer the program to even more budding scientists moving from 73 participants to 96.

Applications are now being accepted. To learn more, please visit:
<http://www.radford.edu/content/csat/home/summer-bridge.html>