

BY LAURA CONNELLY '09

ENVIRONMENTAL RICHES

A GROUP OF ROANOKE COLLEGE FACULTY AND STUDENTS HAVE EMBARKED ON A PROJECT TO CONVERT AN UNDERUSED SECTION OF THE COLLEGE'S ELIZABETH CAMPUS INTO AN ENVIRONMENTAL PRESERVE AND OUTDOOR LABORATORY.

For **Brittany Belcher '22**, summer included facing her fear of ticks while trudging through six-foot-tall grass to better understand stormwater management. For **Bryce Blake '22**, summer days involved assessing and tagging native species of trees to develop a cultivation plan. For **Da'Vaun Lee '22**, summer meant collecting and studying earthworms to learn more about soil health. The summer experience for **Kristen Privette '22** included field exploration to learn about the lively insect population scurrying below her feet.

While many students opt for relaxing summer days spent at the beach, this group of students embarked on the beginnings of establishing Roanoke College's first large-scale environmental studies endeavor: an Environment Center at the College's Elizabeth Campus.



Elizabeth Campus, located less than a mile from Roanoke's main campus, provides ancillary support to the College, accommodating residential facilities, athletic fields, tennis courts and one classroom space. Construction debris from the Bowman Hall demolition in 2014 also occupies an area of the grounds.

The campus, which will remain active throughout the duration of the project, is also home to what Dr. Laura Hartman, associate professor of environmental studies, calls an "underutilized goldmine."

"Elizabeth Campus is rich with animal and plant life," Dr. Hartman said. "It is my hope that through this work, we can restore and preserve the land for many years to come."

The initial conception of the project was developed by Hartman's Fall 2020 semester ENST 430 Environmental Practicum course. The class, consisting of 17 students majoring in environmental studies, determined that while Elizabeth Campus was functioning well for student life, there was an opportunity to rehabilitate functionality for the plants and animals that also call Elizabeth Campus home.

Kristen Privette '22, planting native plant species at the Environment Center site. She says the hands-on work she has done has positively shaped her undergraduate experience.

Dr. Chelsea Peters, assistant professor of environmental studies, during a field study with Environmental Practicum students in November 2021.



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DR. LAURA HARTMAN,
ASSOCIATE PROFESSOR OF ENVIRONMENTAL STUDIES

The class, under Hartman's guidance, conducted baseline research throughout the fall 2020 semester on plant, animal and insect species living on 10 underutilized acres at Elizabeth Campus. They determined that the area was suitable for restoration, and continued research in community ecology, restoration ecology, urban ecology, hydrology, soil science and environmental monitoring.

Hartman credits her students with the project's initial vision and passion, but she recognized that there was benefit to a broader, interdisciplinary approach. Because COVID-19 health guidance limited the typical social interaction needed for research and outreach, Hartman was restricted in utilizing community partners, the approach she typically takes with larger research projects.

So, she called upon her Roanoke College colleagues, specifically Dr. Katherine O'Neill, associate professor of environmental studies; Dr. Chelsea Peters, assistant professor of environmental studies; and Dr. Rachel Collins, associate professor of biology, to help propel the concept into a full-scale endeavor.

Dr. Collins, though, needed a bit of convincing.

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DR. RACHEL COLLINS,
ASSOCIATE PROFESSOR OF BIOLOGY

Associate Professor of Biology Rachel Collins (in baseball cap), with environmental studies students at the Environment Center site in April 2021. The group was planting native plants that Max Klaverkamp '21 (in striped shirt) grew in the Roanoke College greenhouse as part of an independent research project.



“Initially, in August [2020], when I went to Elizabeth Campus and saw the land the students wanted to restore, I saw this wasteland of invasive species,” said Collins, whose specialty is in forest ecology. “However, in November [2020], I went to the presentation that the [Environmental Practicum] students gave on their vision of the environment center, and they made me see their vision. I was all in, and I immediately thought, ‘We can do this!’”

With Hartman’s expertise in environmental humanities, Collins’s understanding of terrestrial ecology, O’Neill’s proficiency in soil ecology, and Peters’ mastery in hydrology, the group banded together to present a proposal to the Buildings and Grounds Committee of the Roanoke College Board of Trustees in December 2020. It was because of the faculty members’ shared vision, clear messaging, and the Environmental Practicum students’ initial research that the proposal received the committee’s support.

“Not only do we work well together, but our research areas are super complimentary,” said Collins. “I see so much synergy from how the four of us are interacting that our students feed off it and are able to learn not just about their area of interest but also other disciplines.”

Hartman echoed Collins’s support of an interdisciplinary approach since “environmental issues are complex.”

“My colleagues are powerhouses,” said Hartman. “I knew we needed their perspective to show students that they need to think in different ways. It is really important for students to be able to integrate different ways of thinking from different disciplines to solve these complex environmental problems.”

THE WORK

The group will be conducting research on environmental restoration at the site over the long term. Work will be composed of a number of different projects.

The group determined this summer that Elizabeth Campus can support four areas of rehabilitation focus over the years to come: a meadow restoration, a forest restoration, a wetland restoration, and the establishment of an indoor and outdoor laboratory space.

The meadow restoration would include transforming the Bowman Hall construction debris and surrounding land into a functioning ecosystem. The summer research concluded that even amid concrete and building refuse, insects — specifically ants — were thriving and reproducing, a discovery Collins sees as promising to building an “ecosystem out of rubble.” The meadow restoration requires a multi-year growing and maintenance plan as it will take considerable time for the native plant communities to establish.

Adjacent to the meadow is a relatively new forest area, established just a few decades ago from what used to be a residential yard. As with any young forest fragment, the area is “highly degraded and is dominated by non-native species, yet it provides an important refuge for a variety of plants and animals as a source of food, nesting habitat and shelter,” according to the Environment Center proposal presented to the Board of Trustees. The plan includes determining how to effectively remove the non-native plant species while also balancing the needs of the native plant and animal species at the same time.

“One thing I am really interested in seeing, especially in the meadow restoration, is whether the animals we typically see in the area that are currently completely absent will be able to start to use this area as their home,” said Collins. “I’m very hopeful that species development will start to bloom when we do this restoration work, and students will see that firsthand.”

Between the meadow and forest area lies a swale, a shallow, trapezoidal drainage feature that conveys, treats and reduces stormwater runoff. This swale was originally designed to drain the athletic field. But over the summer, Dr. Peters and student Brittany Belcher found that further wetland restoration techniques are needed to ensure that stormwater is used as filtration by native plants and microorganisms, and absorbed into the land rather than simply pooling on the soil surface.

“I have found that the swale is currently in a poor ecological state and that improvements are needed to enhance its hydrological function,” Belcher said. “Nevertheless, the swale demonstrates much potential to be reconstructed into a wetland.”

Along with the three restoration areas, there also is a plan to establish an outdoor laboratory and indoor classroom space to support decades of independent research, learning opportunities and environmental monitoring. The group specifically plans to renovate and convert Hundley Hall — a small indoor classroom on Elizabeth Campus that currently is used for storage and smaller class gatherings — into an environment studio. A long-term addition to the classroom space would include a weather monitoring system, as environmental research and monitoring is “so dependent on weather conditions,” Collins said.

The studio, which offers panoramic views of Elizabeth Campus and the Roanoke Valley, could not only support continued environment studies learning but also provide a space

for interdisciplinary collaboration and community gathering, said Collins.

“I envision this being more than just a place to learn about environmental issues,” said Collins. “This can be a place for students across all disciplines. We have classes on nature writing, drawing and painting classes, environmental history and sociology courses, you name it. This will be a space for [everyone].”

The core-four group of faculty members also envision the Environment Center as a place for younger students and community organizations to conduct independent research and work with the College on long-term restoration goals.

“I envision this project reaching students who are not yet enrolled at Roanoke,” Dr. Hartman said. “How wonderful would it be for local high school students to work with us on environmental research, and because of that experience decide Roanoke is the place for them to continue those studies? This would provide those students years of concentrated



Guy Whittemore

Two members of the Roanoke College Board of Trustees — David L. Guy '75 and Helen Twohy Whittemore '80 — have supported the Environment Center with monetary contributions. “I am a business owner and believe that business and the environment can work together,” said Whittemore, vice president and financial officer of a Norfolk, Virginia-based concrete company. “Growing up in a ready-mixed concrete company, with regulations changing, I found that it is good to know and understand how you affect the environment and how you can be a good steward to it and still produce. Businesses need more education and innovation to help protect the environment.”

Sofia Falkengren '22 prepares soil for the planting of native plant species at the Environment Center site in April.



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BRYCE BLAKE '22

Da'Vaun Lee '22, at the Environment Center site, hopes to take what he has learned and apply it to his future graduate work in zoology and wildlife biology.



research and a chance to possibly be published. There is no competing with that.”

“I can't wait to bring in community stakeholders,” said Peters. “This center will be an educational and community asset that draws partners and prospective students to our campus. I look forward to seeing high schoolers learning ‘how to do science like scientists,’ the Roanoke Valley Master Naturalists hosting trainings in the meadow, and environmental educators using the Environmental Studio for meetings.”

THE PURPOSE

For current Roanoke College environmental studies students who are working on the Center, publication opportunities are within reach. A program called the “Environment Center Scholars Program” was piloted this summer for students wanting to pioneer the work at the Environment Center.

Collins said that she anticipates Roanoke College students having the opportunity to apply to become an Environment Center Scholar each summer, particularly because the project will require years of concentrated planning, restoration and research. The Scholar students this summer included Belcher, Bryce Blake, Da'Vaun Lee, and Kristen Privette.

“It is our hope that the Scholars program is

a staple of the environmental studies major,” said Dr. Collins. “Wouldn't it be great if all environmental studies majors had the opportunity to spend one summer engaged in the Environment Center and how that would help them in what they pursued next? We would love to see that happen.”

Moreover, what Collins and Dr. Hartman find most promising is the opportunity for students to work with peers outside their area of interest and learn from one another, especially in such a personalized, interactive way.

“This is a prime example of the Roanoke Difference,” said Hartman. “My goal is to train every student in multiple ways of thinking and approaches because it takes people from all backgrounds to resolve such complex and interwoven environmental issues we see today. We do rely on science to guide the learning, but it really takes people with varying backgrounds to make real change.”

Blake, a transfer and commuter student, has appreciated this way of learning and values the camaraderie formed throughout this experience.

“Hands-on experiences such as this have helped me apply what I might have learned from class and have allowed me to see it in person as opposed to a textbook or presentation,” he said. “This internship has allowed me to connect with other students beyond what

a class might be able to do. Working as a team to get gear back to a van in the rain is more relationship-building than something such as studying with others for a test.”

Lee, although he is majoring in biology rather than environmental studies like his counterparts, said he hopes to take what he has learned and apply it to his future graduate work in zoology and wildlife biology.

“This hands-on work is beneficial for me because I'm learning from personal experience and getting a better view of a working environment.”

For Privette, her hands-on work this summer has positively shaped her undergraduate experience.

“The Environment Center is really exciting not just because environmental action is being taken by our school, but specifically because of the depth of student involvement occurring,” said Privette. “The other students I've worked with this summer and I all feel very excited about the opportunity to be so deeply involved in something as large and complex as a restoration project in an undergraduate experience.”

THE OPPORTUNITY

The work on Elizabeth Campus will have impacts beyond student learning and

research. It is a chance for the College to create long-lasting sustainability measures to ensure that native animal and plant habitats re-establish and eventually flourish, Dr. Hartman said.

“It's haunting that habitats are shrinking,” she said. “The way that our land development has caused these species to diminish in numbers is morally troubling. I feel like this is our way of acting on that responsibility and to see if we can advocate for greater biodiversity and preservation.”

“This has the opportunity to be transformative,” said Dr. Collins. “This is going to be a place for long-term research, but it will also be a place where we can foster environmental responsibility and sustainability that will have ripple effects for decades to come.”

The Environment Center has the opportunity to not only change the physical landscape of Elizabeth Campus, transforming the overgrown into a thing of beauty, but it also has the opportunity to provide faculty and students an avenue to transform themselves into environmental stewards, one effort at a time.

For Brittany Belcher, there was just one goal she didn't check off her summer to-do list.

“I had to face my fear of ticks every time I entered the grass and, despite having to pull a few [of them] off me, I can say that I still have a fear of ticks,” she said. **RC**

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KRISTEN PRIVETTE '22

Left to right, Dr. Chelsea Peters, assistant professor of environmental studies; Dr. Laura Hartman, associate professor of environmental studies; and Dr. Rachel Collins, associate professor of biology, at the Environment Center site in November.

