Re-creating a tornado in 3-D provides a more effective way to study storms

When meteorologist Jim Cantore from The Weather Channel stepped into the middle of an EF5 tornado re-created in 3-D in a four-story immersive installation at Virginia Tech, his perspective was that of someone 7,000 feet tall. Beneath him was the landscape of Moore, Oklahoma. Around him was the storm that killed 24 people in May 2013.

With support from Virginia Tech’s Institute for Creativity, Arts, and Technology, a student and faculty team from the Department of Geography and the Center for Geospatial Information Technology (CGIT) created the storm in the Moss Arts Center facility known as the Cube — a highly adaptable space for research and experimentation in immersive environments (see accompanying article on page 2).

Cantore was tipped off by alum Kathryn Prociv (‘11 B.A., ‘12 M.S. geography), who is now a producer for The Weather Channel. She had been a storm chaser with the Virginia Tech storm chase team for three years and completed her master’s degree research on the effects of changes in land surfaces on rotating storm intensity in the Appalachian Mountain region.

When Prociv asked her former instructor Dave Carroll what was happening at her alma mater, he told her about the tornado re-creation in the Cube. She shared the news with Cantore, who promptly made arrangements to visit, accompanied by Dr. Greg Forbes, The Weather Channel’s severe weather expert. Winter storms delayed the visit a few months, but on Feb. 6 Cantore and Forbes were immersed in the re-created storm and broadcasting live.

The project was born when Bill Carstensen, head of the geography department, told Benjamin Knapp, director of the Institute for Creativity, Arts, and Technology, about Carroll’s 3-D images of storms.

“We could build a tornado in the Cube,” Carstensen told Knapp during intermission at an event at the Moss Arts Center. Knapp urged him to write a proposal. Subsequently, a $25,000 Science, Engineering, Art, and Design grant from the institute made it possible to hire Matt Vaughan, a researcher from CGIT, Kenyon Gladu, a junior majoring in meteorology; and Trevor White, a master’s student in geography. Vaughan developed GIS map layers. Gladu worked with radar data, and White did the programming to retrieve the needed NEXRAD (Next-Generation Radar) data and render it appropriately. Institute staffer Run Yu, a computer science doctoral student, placed the storm in the Cube.

“We decided to produce that tornadic supercell because it was a catastrophic event,” said Carroll, who was south of Moore with the Virginia Tech storm chase team at the time the tornado occurred. The team members can often safely position themselves within a mile of a storm, but not in that instance. “It's like a video game environment in which you are embedded in the computer,” explained Carroll. “You can then study storms from different perspectives than in the field. You can peel away the outer layers of rain so you can see the business end of the storm. It is a more effective way of looking at storm structure.”

People on the ground could not observe that storm from all angles and directions,” said Carstensen. “But NEXRAD radar captured data throughout the storm. It provided hundreds of thousands of data points in 3-D with several attributes at each data point, including the intensity of precipitation and the direction and speed of floating particulates.

The tornado was re-created using hundreds of thousands of data points collected by NEXRAD (Next-Generation Radar) during the Moore, Oklahoma, storm in May 2013.

The weather-related data was overlaid on a GIS model of Moore, including road networks, landmarks, and the landscape of Moore, Oklahoma, beneath the tornado. The team created the landscape of Moore and the storm above in perfect position.

“People can zoom in, to control the scale of what you see,” said Carstensen. “It will be a valuable tool for researchers, forecasters, and students,” added Carstensen.

The ultimate goal is to bring real-time radar into the Cube — “real time” in this case being only a four- or five-minute delay. Carstensen and Carroll are working with Mike Kleist, a Virginia Tech mathematics graduate who is now vice president of engineering at Weather Services International (WSI), a weather graphics software company. "Mike said real time was absolutely doable," said Carstensen. "We could visualize the whole East Coast, or any place that has been mapped, overlay by a snow storm or a storm surge model."

“Combined with GIS information,” said Carroll, “this immersive technology could be extremely valuable for forecasters when alerting the public and for emergency managers when directing resources during life-threatening weather situations.”

Watch The Weather Channel’s coverage at www.youtube.com/watch?v=ne_q5ieSw5I.
We are studying the toxicity of the environment and its resulting impacts on aquatic and terrestrial animals. We are studying humans, organizational effectiveness, and leadership as well as our impacts on the environment. We are using remote sensing and satellite imagery to see our landscape in new ways. We are helping to conserve big game species around the world. The recently announced Sustainability Initiative (cnre.vt.edu/SI) is setting the stage for students to develop a lens for decision making in the sustainability arena and will become another signature program in the college. We are literally working on the ground, in the water, and in the air across all platforms of the college.

In this issue we feature the visionary work of our geography faculty, students, and campus colleagues to visualize an EF5 tornado — something no one has done before — so we can help save lives. We introduce the new campus-wide Global Change Center, which brings together faculty and students from across campus to think big about looming global challenges.

The forefront is an exciting place to be. It challenges us, stimulates us, motivates us, and helps us become better in all things we do. And yet our biggest responsibility — and our greatest success and impact — is working with our students to help prepare them for the challenges ahead.

We reflect on the life and contributions of Professor Otis Hall, who passed away in January. Otis was a dedicated professional who made a real difference to many students and the forestry profession.

Spring commencement in the Moss Arts Center was our largest ever, with 180 students completing degree requirements. Congratulations to all of our graduates and their families! We are thankful that you chose the college as the place to set you on your professional journey.

Consider establishing a named scholarship

It’s more affordable than you might think!

Imagine the honor and satisfaction of helping deserving students reach their educational goals. You can do so by establishing a College of Natural Resources scholarship. Scholarship in your name can honor a family member or an organization that you represent. Named scholarships can help the college attract and retain quality students, some of whom might not be able to attend college otherwise.

“The there is no limit to what the college can accomplish when there is a strong culture of giving in place,” said Dean Paul Winistorfer. “Some donors may originally object to putting their name on a scholarship, but it is important for us to recognize that someone is contributing to their success. In turn, we hope our students will ‘pay it forward’ when they have a chance to do so.”

For more information or to make a donation, please contact Emily Hutchins at shutchins@vt.edu or 540-231-8893.

FROM THE DEAN’S PERSPECTIVE

At the Forefront

Our faculty and students continue to work at the forefront of our disciplines and at the intersection of our disciplines with the sciences, engineering, the humanities, the built environment, and our natural environment. Our learning, discovery, and engagement efforts are pushing the status quo in nearly all areas. Examples of our position at the forefront abound. Our water and bridge platform and faculty are a world-leading example of stretching the educational model across colleges, departments, and disciplines. Our work in cellulose nanomaterials is at the cutting edge of science and materials development. We are restoring endangered muskegs to our rivers and streams. Our efforts to model the state’s natural resources and make predictions on their future sustainability stand at the frontier of natural resources stewardship and big data.

At the forefront, we are a National Science Foundation initiative, reflecting businesses’ expressed need for students who have skills in data science, computer science, and visualization. The Immersive Cube is exciting not only because of the drama and potential knowledge about such cataclysmic events, but also because the Institute of Creativity, Arts, and Technology, which he directs, has made it possible for faculty and students from such diverse disciplines as meteorology and computer science to work together.

“It is our mission to bring together faculty and students from the arts, design, science, and engineering,” he said. “It is also a National Science Foundation initiative, reflecting businesses’ expressed need for students who have worked with students from different disciplines.”

The 50 projects supported by the institute vary, from molding crowd movement in Lane Stadium by students and faculty from computer science and the School of Visual Arts, to the house of the future, which was created by an architecture and computer science research team. “We are bringing together faculty and students who wouldn’t have an opportunity to work together to do cutting-edge work. Students are seeing students from other disciplines that they might otherwise never see,” Knapp explained.

A faculty member in the computer science department, Knapp’s background is in human-computer interaction — specifically, human’s emotional response to computing.

The Cube’s four-story immersive environment has both artistic and scientific applications.

MARK McNAMARA, university provost, was our keynote speaker at commencement. He will be retiring in the coming months, and all of us in the college thank him for his steadfast support over these past 14 years. I have personally enjoyed working closely with Dr. McNamara and have considered him my mentor these past five years. Thank you Mark and best wishes to you and Carole for the years ahead.

Finally, as we each strive for excellence in our own lives and in our professional endeavors, I am very happy for Dr. Janaki Alavalapati, who has accepted the position of dean of the School of Forestry and Wildlife Sciences at Auburn University. Janaki has led the Department of Forest Resources and Environmental Conservation for the past eight years, and has been an exceptional colleague, professional, and friend. We have been very fortunate to have him serve with us. We wish Janaki and his wife, Renuka, the very best as they transition to Auburn this summer. You can send Janaki a note of congratulations at jrafd@vt.edu; I know he would enjoy hearing from you. We are proud to have a great colleague and an effective leader at a sister institution. The natural resources profession needs good leaders!

Best wishes for the summer ahead. We will be working on a realignment of our academic programs over the summer so we can be more effective in our recruiting, advising, and career development efforts. Please stop by campus and the college if you are near.

Warm regards from our faculty, staff, and students,

Paul M. Winistorfer
Dean
pstorfer@vt.edu

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Imagine the honor and satisfaction of helping deserving students reach their educational goals. You can do so by establishing a College of Natural Resources and Environment scholarship in your name or to honor a family member or an organization that you represent. Named scholarships can be initiated for as little as $1,200 and renewed on an annual basis or as your funding permits. Your tax-deductible donation can help the college attract and retain quality students, some of whom might not be able to attend college otherwise.

“There is no limit to what the college can accomplish when there is a strong culture of giving in place,” said Dean Paul Winistorfer. “Some donors may originally object to putting their name on a scholarship, but it is important for us to recognize that someone is contributing to their success. In turn, we hope our students will ‘pay it forward’ when they have a chance to do so.”

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MERGING ART AND SCIENCE

See accompanying article on page 1

The Cube opens doors for discovery

To Benjamin Knapp, a rendering of an EF5 tornado in 3-D and surround sound in the Moss Arts Center’s Immersive Cube is exciting not only because of the drama and potential knowledge about such cataclysmic storms, but also because the Institute of Creativity, Arts, and Technology, which he directs, has made it possible for faculty and students from such diverse disciplines as meteorology and computer science to work together.

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Global Change Center confronts environmental problems

The college is a vital partner in the university’s new Global Change Center, based in the Fralin Life Science Institute. Wildlife Professor Bill Hopkins directs the center, which aims to confront large-scale environmental problems such as habitat loss, invasive species, pollution, disease, and climate change with interdisciplinary, innovative team science, drawing on the diverse expertise of researchers across the university.

“We have incredible expertise at Virginia Tech on each of these problems, but this talent is scattered around campus in different colleges and departments,” said Hopkins. “The Global Change Center will foster interactions among experts in a diversity of fields so that we can approach global change problems with a more holistic, interdisciplinary perspective.”

In addition to establishing a core group of faculty researchers, the center is administering the Virginia Tech Graduate School’s Interfaces of Global Change Interdisciplinary Graduate Education Program, established in 2013, which already supports 15 doctoral fellows from multiple colleges who are committed to research at the science-policy interface.

Dean Paul Winistorfer sees value in the center’s potential to use research to confront major societal issues. “We have heard a lot about the changing climate over the past decade, and the reality is that the climate-induced changes taking place will impact all aspects of life on the planet,” he said. “The Global Change Center will be a convening space on campus that will bring disciplines and expertise together.”

Together, faculty and student researchers aim to make the best science available to policymakers at the state, federal, and international levels. A key objective is to form meaningful partnerships with external stakeholders, including federal agencies, nongovernmental organizations, and industry. The center will also offer novel research training opportunities for both undergraduate and graduate students.

Reynolds Homestead’s new greenhouse enhances research

With major research in the pipeline, the Forest Resources Research Center at Virginia Tech’s Reynolds Homestead in Covington, Virginia, has upgraded its research capabilities with a new 1,800-square-foot greenhouse with more precise climate control and enough space to handle small trees.

The greenhouse has already been used for rooting the first set of research plants. Associate Professor Amy Brunner and Assistant Professor Jason Holliday will begin a major study at the greenhouse looking at nutrient use and growth responses to daylight in black cottonwood. They will ultimately identify the gene regulatory networks that control these responses.

“The study would have been extremely difficult to execute in the original 42-year-old greenhouse,” Holliday said.

The new greenhouse is very well formulated and makes it less problematic to run the experiment with a minimum of environmental variation.”

Center Superintendent Kyle Peer, who oversees day-to-day operations, managed the greenhouse planning and construction. “The new greenhouse offers better climate control, more energy efficiency, and more options for growing plants up to 9 feet tall,” he said. “The new tables and concrete floor are easier to sterilize, decreasing the potential for parasites and disease.”

The structure was built with financial support from the college, the Nancy Susan Reynolds Endowment, Virginia Agricultural Experiment Station, Virginia Cooperative Extension, and Dow AgroSciences.

Panamanian course introduces students to global issues

Over winter break, Associate Professor John McGee led 13 students on a first-ever 12-day study abroad trip through Panama, where they learned about indigenous cultures, conservation issues, the impact of climate change, and more. “We traveled between the Atlantic and Pacific coasts, experiencing three distinct environments: Panama City’s modern urban environment at the Panama Canal zone, the Cocobolo Nature Reserve in the rainforest, and the autonomous region of the San Blas Islands, inhabited by the indigenous Kuna.” McGee said.

“The rainforest took the students out of their element,” he continued. “It wasn’t like anything they had ever experienced. Students learned about the interconnected nature of this tropical environment and the impact that local decisions can have globally. They saw monkeys, sloths, snakes, and exotic birds that looked as though they had escaped from Jurassic Park.”

The students developed a basic competency in wildlife camera systems, invertebrate identification, mist netting, and other field data collection techniques as they assisted scientists in the reserve, which is accessed only by a muddy, bridgeless trail. They also learned the ways tourism can impact the environment and indigenous culture, particularly on the San Blas Islands, where tourism infrastructure was undeveloped.

Associate Professor John McGee (standing, far left) and students with local farmers and Michael Roy (front row, fourth from right), director of CREA, which manages the Cocobolo Nature Reserve.

“Being able to experience these different cultures was incredible,” said Ali McClung, a wildlife conservation major. “Although we help native tribes economically when we visit, we can hurt their customs by trying to get them to conform to our ways. We should support them in keeping their culture and history alive.”

For geography major Davis Gilbert, the experience roused a dedication to conservation. “Every single person needs to become involved in the conservation of something,” he said. “Protecting the rainforest is incredibly important, but places all over the world need help. We are not necessarily saving the environment for the environment’s sake. We’re saving the Earth for ourselves, our children, and their children. We’re saving humanity.”

While at the nature reserve, the students helped a subsistence farmer build a sugar cane juice extractor, a process they began by falling and moving a tree.

All photos courtesy of CREA (Conservation Through Research, Education, and Action).

VIRGINIA TECH CNRE NEWS 3
This year, high school students at the Giles County Technology Center worked to create a house for Habitat for Humanity in their shop. Though they have a good grasp of traditional building methods, the students weren’t familiar with green building practices.

School officials and representatives from Habitat for Humanity approached Associate Professor Daniel Hindman for help.

Hindman volunteered to have students in his Green Building Systems course provide lessons on green building for the high school students. The concept so impressed Technology Center Principal Forest Fowler that he asked Hindman to present the idea to a group of technical educators and administrators from Floyd, Giles, Montgomery, and Pulaski county schools as well as New River Community College.

“This project is an example of the ongoing and increasing collaboration between the department and SVHEC,” Bush said. “It was a fun and educational opportunity to work together. We look forward to future collaborations.”

For the second consecutive year, the Southern Virginia Higher Education Center (SVHEC) was asked to manufacture the Pinnacle Award trophies for the American Society of Furniture Designers’ annual design competition. The wooden, custom-designed trophies were crafted by students in SVHEC’s advanced machining center.

Drawing on its longstanding relationship with the college’s Department of Sustainable Biomaterials, SVHEC asked Professor Robert Bush for help in developing custom packaging for the trophies. Bush advised two of his students — Stephanie Smith and Tyler Matusевич — as they designed and produced a packaging system attractive enough to serve as a presentation box but sturdy enough to withstand the hazards of shipping.

Smith and Matusевич’s design is not only functional but highlights and complements the trophy. Made of corrugated fiberboard, the box’s unbleached exterior surface pairs well with the wooden trophy, while its bright white interior reflects light onto the trophy. A cleverly designed insert holds the trophy in place. Rounding out the design are aspen wood shavings that serve as fill material and a closure of burlap ribbon, reflecting the natural products often used for furniture and the creative nature of furniture design.

“While interning at RockTenn in South Carolina last summer, senior forestry major Nick Lancaster had a chance meeting with Rick Counts, regional director of the Quality Deer Management Association (QDMA). With Counts’ encouragement, Lancaster took the initiative to establish a Virginia Tech branch of the QDMA, one of only a few collegiate branches within the 60,000-member national organization. Lancaster, who is also a founding member of the National Wild Turkey Federation’s on-campus chapter, now serves as president of the Virginia Tech branch of QDMA, which seeks to expand its current membership of about 12 students.

“Our main goals are to reach out to the local hunting community, hold food plot demonstration seminars, engage the community in ways to accurately age deer in the field, and encourage harvesting healthy deer populations,” said Lancaster. An additional goal is to encourage children to practice safe hunting through educational workshops and fun activities.

The Roanoke branch of QDMA is helping the Virginia Tech branch get up to speed by subsidizing several memberships. The two branches planned a joint fundraising banquet in May. “We will be partnering with them to help them grow and become successful,” said Albert Cigriger, president of the Roanoke branch.

The Virginia Tech students, all juniors and seniors, were tasked with creating models, posters, and interactive displays to demonstrate green building concepts. Working in teams of three or four, they addressed the topics of energy use, disaster protection, the definition of green building, material life-cycle planning, passive house concepts, and construction details of floors, roofs, and walls.

More than 30 high school students and teachers visited campus in November to see the student presentations and demonstrations of the models they created. “I realized this was a great project to get my students involved in,” Hindman said. “They demonstrated what they had learned over the course of the semester by creating teaching modules on aspects of green building to educate the high school students. They’re energized by this project because of its service learning component.”

Virginia Tech’s team paddled to first place in the Packaging Jamboree’s Corrugated Regatta. Thirteen packaging students traveled to the 30th annual Packaging Jamboree, held this year at Clemson University, where they attended networking events, presentations, and technical sessions with students from other universities as well as industry professionals.

Virginia Tech came away with first place in the Corrugated Regatta, in which student teams race unlimited quantities of corrugated board, one roll of duct tape, and an hour to construct a boat. The craft had to hold one passenger, who attempted to paddle 25 yards in an indoor swimming pool. Of the first three boats to race, only one successfully made it to the other side. When the Virginia Tech boat hit the water in the second heat, it was obvious they were paddling to first place. Congratulations!
Frimpong named Carnegie African Diaspora Fellow

Scott Klopfer, director of the Conservation Management Institute, has been elected to represent research faculty on the Virginia Tech Commission on Research, bringing the voice of this group of several hundred to university research governance for the first time.

“I am honored to be the research faculty representative to the commission and hope that through my involvement the concerns of research faculty across the campus can be heard and considered when making policy decisions,” Klopfer said. “The efforts of research faculty add to the university’s overall research portfolio, helping Virginia Tech meet its research goals.”

Klopfer, who joined the Conservation Management Institute in 1998 and was named director in 2009, will serve a three-year term on the commission. His research interests include habitat modeling, landscape ecology, decision support systems, and ecosystem services.

The Commission on Research is charged with studying, formulating, and recommending appropriate policies and procedures concerning research to the University Council. Areas of consideration include intellectual properties, research subjects, corporate liaisons, and other matters affecting research.

Fox appointed Garland Gray Professor

Professor Thomas R. Fox has been appointed the Honorable Garland Gray Professor of Forestry by the Virginia Tech Board of Visitors. This professorship was established in 1986 by the late state Senator Ernion Gray in memory of his father, who also served in the Senate of Virginia. Previous Garland Gray Professors include James Burger, Harry Haney, and Otis Hall.

A member of the Virginia Tech faculty since 2000, Fox has received international attention for his work in the sustainable management of forest plantations in North and South America. He is recognized as a global expert in plantation forest management and carries the distinction of Fellow in both the Society of American Foresters and the Soil Science Society of America.

“This is a tremendous honor for me personally, but it is really a recognition of the wonderful faculty, graduate students, and staff that I have had the privilege of working with while at Virginia Tech,” Fox said. “Without their support and that of my family, this would not have been possible.”

Klopf elected to Commission on Research

Daniel McLaughlin
Assistant Professor
Department of Forest Resources and Environmental Conservation

Morgan Varner
Assistant Professor
Department of Forest Resources and Environmental Conservation

Special Interests
Forest and wetland hydrology, biotic feedbacks to landform development, watershed and landscape hydrology, emerging environmental sensors, restoration and management of water resources

VIRGINIA TECH CNRE NEWS
When a bird flew into the window of Becky Schneider’s office at the Virginia Tech Corporate Research Center in September 2013, the avian ecologist rushed outside and found a stunned flycatcher that flew off shortly afterward. A few weeks later she heard a bird fly into her co-worker’s window; the scarlet tanager that hit the glass was not as lucky and died from the collision. “I looked at the windows and saw how reflective they are — more like mirrors than windows,” said Schneider, a project manager with the Conservation Management Institute.

With the permission of the corporate research center, Schneider and a troop of volunteers began surveying bird collisions with windows in the park that October and documented over 200 fatalities in a year’s time. Photos and a running tally of the birds found are posted on Schneider’s blog, “Hope is the Thing With Feathers.” The team has identified 50 species that have died from window collisions.

“People don’t realize the number of species that are being killed. They think it is just starlings and house sparrows,” said volunteer Kara Kosiarski (’13 B.S. wildlife science).

Kathryn Fabrycky Memorial Scholarship established

Walter Fabrycky, who remembers his late daughter Kathryn as an advocate for those she saw as less fortunate as well as a lover of nature, recently endowed a scholarship in the college in her memory. Kathryn Fabrycky worked as an administrative aide for the Department of Fish and Wildlife Conservation for 20 years before her death in 2004.

“The HokieBird hopes Becky Schneider (standing) and her fellow researchers will find an effective solution to the problem of bird-window collisions at the Virginia Tech Corporate Research Center. She and Chrissy Barton (’12 B.S. animal science) are the longest serving of the project’s 17 total volunteers. The study has identified the worst of the corporate center’s buildings and narrowed it to specific sides of those buildings to target for treatment. Window films are the best option and can last a few years, “but there is resistance because of the cost and the appearance,” said Schneider. Another method is to hang “curtains” of nylon cords spaced apart on the windows’ exterior.”

Coating the windows with UV paint is the least visible option, but the paint has to be reapplied every few months. However, “people might be more willing to use it if it works,” said Schneider. She has received permission to test its effectiveness on one of the privately owned buildings in the park.

It is estimated that close to 1 billion birds die each year in the United States due to collisions with glass. “It can be easy to ignore mortalities at a single site and to reason that the number of birds killed may not cause populations to decline,” said Associate Professor Karen Karpanty. “Window mortalities at the corporate research center add to window mortality events at other sites, leading to a cumulative negative impact on the population.”

“There are many threats to migratory birds,” Schneider added, “but this is one we can do something about.”
Alumni Profile

Aaron Parlier

Aaron Parlier (’12 B.S. natural resources conservation and recreation) grew up scrambling over the boulders of Southwest Virginia. While a paratrooper in the U.S. Army 82nd Airborne Division, he took up rock climbing with a passion in his spare time, even setting up a climbing wall at his base in Afghanistan. The concentration required while determining his next step or a fixed handhold focused his thoughts and occupied him between dangerous assignments. “I credit climbing as the singular activity that kept me sane in Afghanistan,” Parlier said.

When Parlier left the Army in 2008, he wanted to combine his strong interest in the outdoors and rock climbing and the environment into a career. He applied to the College of Natural Resources and Environment after earning an associate’s degree at Wytheville Community College. In Blacksburg, he introduced friends to bouldering, a form of rock climbing performed without ropes. He and his roommate outfitted their Foreedge apartment with hang boards for climbing, and he helped set up holds for a climbing gym that opened in Christiansburg.

In class, he listened intently when Adjunct Professor Jeff Marion described the negative environmental impact of informal trails made by bushwhacking hikers. Parlier decided that he would strive to keep rock climbing low impact and enlisted help from the climbing community for cleanup days and trail building projects.

“My education at Tech taught me so much about natural resources conservation and introduced me to the park system and environmental interpretation,” he said. “With this background, I began AmeriCorps service at Grayson Highlands State Park and worked as a park naturalist.”

Parlier received the Robert E. Wone National Service Award for his work at Grayson Highlands, where he used his bouldering expertise to recruit volunteers and construct a 1.3-mile trail to a boulder field to minimize user impact. He put in countless personal hours developing and mapping hundreds of climbing routes on the boulders. Parlier promoted the park through the rock climbing website mountainproject.com, his own website graysonhighlandsbouldering.com, and his book “Grayson Highlands Bouldering,” published in 2013. He recently developed a mobile bouldering guidebook app for the park, available at Rakkup.com.

“In my opinion, Grayson Highlands’ massive boulders with their endless views make the best bouldering experience in all of the Southeast United States, in the warmer months,” he said. “You can see wild ponies grazing in the natural balds. The park is my place of solace, a place that will always feel like home.”

Parlier used the education award he received for his AmeriCorps service toward graduate studies at Appalachian State University, earning a master’s in Appalachian studies with a concentration in sustainable development in December 2014. He’s now working to start a climbing gym in Boone, North Carolina.

College alumni share common bond at the U.S. Fish and Wildlife Service

Three of the U.S. Fish and Wildlife Service’s state field offices are now led by college alumni, who were recently promoted to field supervisor positions. They credit a Virginia Tech education and the strong connection between Hokies as a driving force in their success.

Eric Schradng (’91 M.S. wildlife management) heads up the New Jersey Field Office. “My education at Virginia Tech helped significantly with understanding wildlife ecology and management, and policy-level decision making,” he said. “Working on a research thesis helped build skills in field-level research and working with the public and stakeholders—a foundation I continue to rely on.”

In the West Virginia Field Office, John Schmidt (’79 B.S. fisheries management) and his staff work primarily on endangered species consultation and recovery actions. “My education in fisheries and wildlife biology and aquatic biology laid an excellent foundation for my current position,” he said. “My experience as a varsity swimmer at Virginia Tech also helped instill a strong work ethic and time management skills.”

Lora Zimmerman (’97 B.S. environmental science and ‘03 M.S. fisheries and wildlife sciences) of the Pennsylvania Field Office started her career with the U.S. Fish and Wildlife Service through the Pathways Program in the agency’s Abington, Virginia, office. “Hokie alumni are everywhere!” she said. “This connection creates a bond that often facilitates conversations and helps solve problems.”

“It is great to work with John and Lori on resource and administration issues that we share among our state responsibilities,” Schradng said. “It is extra nice to share that collaboration with fellow Hokies.”

Renneckar appointed Canada Research Chair

Scott Rennecker (’97 B.S. and ’04 Ph.D. wood science and forest products), associate professor in advanced renewable materials at the University of British Columbia, has been named a Canada Research Chair in Advanced Renewable Materials. Rennecker served in the college’s Department of Sustainable Biomaterials from 2005 to 2014 and retains an adjunct appointment there. His research program focuses on creating advanced materials through cutting-edge science that will catalyze a green economy. The prestigious Canada Research Chairs research professorship program invests approximately $265 million per year to attract and retain some of the world’s most accomplished and promising minds.

In her memoir “Altitude Adjustment: A Quest for Love, Home, and Meaning in the Tetons,” Mary Beth Baptiste (’77 M.S. wildlife science) recounts how she escaped her lackluster, suburban life in Massachusetts, dissolved her 15-year marriage, dusted off her wildlife degree, and fled to Wyoming to work at Grand Teton National Park. Unexpected lessons from nature and wildlife guide her journey as she pursues her dream of becoming a Rocky Mountain woodsman and creates a new life for herself.

Jeff Marion leads efforts to minimize visitor impacts on recreational areas

With “Leave No Trace” as his mantra, Jeff Marion is having a major influence on recreation areas and the management of natural resources for recreational use in a sustainable manner.

“America’s parks, forests, and wildlife refuges preserve some of the most spectacular scenery and pristine natural environments in the world, but recreational use by millions of people each year can have a negative impact,” said Marion, who has been conducting research on visitor impacts and developing science-based management strategies for more than 30 years.

Marion, a recreation ecologist with the U.S. Geological Survey and an adjunct professor in the college since 1989, was a founding member of the Leave No Trace Center for Outdoor Ethics board of directors and spent a decade as chair of its Educational Review Committee, helping to develop Leave No Trace principles, outdoor practices, courses, and educational materials.

He authored a comprehensive guide that is a resource for federal and state land management agencies, recreation and conservation organizations, communities, and the general public. “Leave No Trace in the Outdoors,” released in July 2014, details the core principles of Leave No Trace ethics and practices.

“The challenge is that different recreational activities — hiking, climbing, mountain biking, caving — have different practices. And different environmental settings — mountains, forests, deserts, wetlands — require different practices,” Marion explained.

The book not only deals with different uses and settings but takes backcountry ethics to the front country — day-use, close-to-home sites, “right down to walking the dog,” he said.

In 2013, one of China’s leading scientists on the management and preservation of forested landscapes, including forests, deserts, and wetlands, carried out a comprehensive study of the effects of recreational use on the environment. The study was conducted primarily in the central Utah’s canyon country. Marion takes the group, composed of high school students, on outings once a month and on a western trip each summer.

An avid outdoorsman, Marion has been hiking 100-mile sections of the Appalachian Trail most years for several decades and has completed all but 188 miles of the 2,180-mile trail.

Jeff Marion (left) leads a group of Venture Crew members on an outing in central Utah’s canyon country. Marion takes the group, composed of high school students, on outings once a month and on a western trip each summer.

With support from the U.S. Forest Service and U.S. Geological Survey, Marion conducted research in Minnesota’s Boundary Waters Canoe Area Wilderness last summer. He measured 100 of the area’s 2,200 campsites, examining soil and vegetation impacts and tree damage and regeneration, and assessing campsite sustainability. He had measured the same 100 campsites as part of his doctoral research at the University of Minnesota in 1982.

The research was presented at the National Wilderness Conference in October 2014, which marked the 50th anniversary of the Wilderness Act. Marion also presented two invited journal papers — published in a special wilderness issue of the Journal of Forestry — that review 50 years of recreation ecology research in wilderness and how it has been applied to mitigate visitor impacts.

In 2015, Marion begins a three-year study to characterize and help reduce the impact of the millions of hikers on the trail, campsites, and shelters of the 2,180-mile Appalachian Trail. With funding from the National Park Service, Marion will assess and evaluate the sustainability of trail alignments, campsite locations, and management practices. His goal is to write a book on the art and science of sustainable trail design and management.

“Park, forest, and refuge managers face new challenges from increasing visitation and as surrounding lands are further developed,” Marion concluded. “Scientific research can yield improved Best Management Practices to design and manage more sustainable outdoor facilities such as trails and campsites, and low-impact recreational practices for visitors that allow managers to avoid and minimize the negative impacts of visitation.”

Jeff Marion teaches visitors how to tread lightly in the wilderness, such as staying on existing trails. “Informal trail networks fragment wildlife habitats and hasten dispersal of non-native plants,” he said.

Jeff Marion (far right) will lead a team to create a comprehensive data set about trail and campsite conditions along the Appalachian Trail.

Jeff Marion has spent more than 30 years researching the impact of millions of visitors on America’s parks, forests, and wildlife refuges.

An avid outdoorsman, Jeff Marion has been hiking 100-mile sections of the Appalachian Trail most years for several decades and has completed all but 188 miles of the 2,180-mile trail.