



# CNRE NEWS

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## Wood Enterprise Institute Students Learn Entrepreneurship Firsthand

It's the day before graduation — exams are finished, and the semester is essentially over. But a group of students still labors away in the Wood Enterprise Institute (WEI) lab at the Brooks Forest Products Center. They're inlaying wood strips on tabletops, completing reports, and feeding instructions into a computerized milling machine.



*This year's coffee table proved to be a formidable challenge. Here, (L-R) Andrew Corbin, Eoghan O'Connor, Professor Earl Kline, and Jeremy Withers meticulously apply the sycamore inlay.*

"This may be the only class where students work more than required," said senior Jeremy Withers of Christiansburg, Va., president of the student-managed entrepreneurial venture. "I've averaged 8-10 extra hours a week here; most of us have."

Lured by the excitement of running their own business, using "cool" machines to create products, and being an integral part of a team, the students are putting theory into practice through experiential learning. And the experience isn't just about the process, it has tangible benefits as well — virtually all WEI alums have jobs waiting for them after graduation.

"I learned that communication is very important," said Andrew Corbin, a junior from Pennington, N.J. "You must make an effort to communicate with 17 other people to make them a team."

"These students have to get things done through people," said Professor Earl Kline, WEI's faculty advisor. "They have to motivate others, keep them accountable, help them do their jobs. These are things they say they learned when the course is over."

WEI is a concept-to-market venture run by the students as a two-semester course sequence. They design and develop prototypes of wood products, select one to produce, manufacture it in a sustainable manner, and sell it on the open market. Throughout the process, they learn to plan, delegate, and develop their leadership skills.

Past WEI teams have produced bookshelves, coasters, salt and pepper shakers, and decorative boxes. This year's product design — an elegant coffee table with curved legs and inlaid wood designs created from the Henderson Lawn sycamore — was the most difficult a team has attempted, requiring precision machining on

numerous parts. Modifications to improve product quality slowed production. The team produced fewer tables than planned, which significantly cut into the profit. "How the team responds to the challenges is where the true learning occurs," said Kline.

Most WEI students are wood science and forest products majors, but few come in with advanced manufacturing skills. Fortunately, the college's ongoing partnership with the Galway-Mayo Institute of Technology in Letterfrack, Ireland, one of Europe's leading furniture design programs, has brought students to Blacksburg to complete their program's on-the-job placement requirement. This past spring, Eoghan O'Connor was on hand to help the WEI team with the complexities of computer-aided manufacturing.



*Professor Earl Kline (L) and Josh Hertzler (2011-12 WEI) inspect part quality to ensure that work methods are set up correctly.*

Kline initiated the WEI six years ago after searching unsuccessfully for a company willing to support students eager to try out new product ideas. "Companies aren't set up to allow students to experiment, so Paul Winistorfer and I came up with the idea of allowing students to start their own business," Kline said. "The WEI is about higher order learning," Winistorfer added, "and encompasses critical thinking, problem solving, teamwork, and creativity as the basis for student learning."



*Professor Earl Kline, shown with some past Wood Enterprise Institute products, initiated the WEI in 2007.*



*In 2011-12, the WEI students produced a selection of university-themed coasters.*

Enrollment in the WEI had remained fairly steady at about nine students, but doubled in the 2012-13 academic year. "Coordinating the work effort of so many students into effective results was a challenge, but it ended up being a tremendous learning experience for both the students and instructors," Kline added. "We are now better prepared to handle increased enrollment in the future."

With financial assistance from donors, WEI has been able to buy materials and equipment, including software to run a CNC (computer numerical control) automated router that is the envy of most local woodworking companies. Donor Brooks Whitehurst, a 1951 Virginia Tech chemical engineering alumnus who holds 25 patents, attends the WEI presentations each year to give students critical feedback.

By the time the students deliver their final presentations, they have spent a collective hundreds of hours setting up their team structure, preparing a business plan, developing their product, writing computer code for the machinery, and creating marketing tools. This year they developed shop safety protocols that will be used by future WEI groups.

"The hands-on experience was by far the most exciting aspect," said Michael Bauman, a senior from Marion, Va. "I don't know of any other course in any major that allows students complete control of a business. Study of theory is necessary, but it doesn't truly capture the raw excitement of actually solving problems in real scenarios."

# Welcome to the College of Natural Resources and Environment

We are continuing to move the college forward. These past few years have brought a wave of change to the college as we deliberately position ourselves and our students for the future. We are proud and enthusiastic about what we have accomplished. On this page is a summary of our accomplishments as well as a glimpse of how we intend to continue our forward momentum.

We must not ignore the mounting global and local challenges that we face in managing and using our natural resources for a growing world population. The work we do is important. The students we train will have the future in their hands soon enough. The university will continue to evolve, and we must be relevant to the larger mission of Virginia Tech — the premier land-grant institution in the commonwealth.

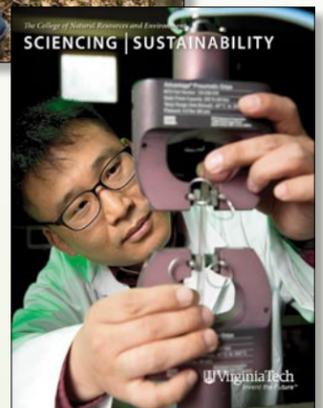
I would like to acknowledge the tremendous role President Charles Steger has had in shaping the future of Virginia Tech, and his steadfast support of all that we do in our college. He has announced his plans to retire soon, and a search for his replacement is ongoing. Thanks, Dr. Steger, for all you have done for our college!

Thanks to all of you for your continued support and belief in us and in the work that we do. The future is here and we are ready!

Warm regards,



**Paul M. Winistorfer**  
Dean  
pstorfer@vt.edu



## Four Years of Accomplishments

- Renamed the college as the College of Natural Resources and Environment
- Renamed the forestry department as the Department of Forest Resources and Environmental Conservation
- Renamed the fisheries and wildlife sciences department as the Department of Fish and Wildlife Conservation
- Renamed the wood science and forest products department as the Department of Sustainable Biomaterials
- Created 10 new tenure-track faculty positions
- Implemented a new degree in Meteorology — the very first in Virginia
- Approved a new degree in Sustainable Biomaterials\*
- Approved a new degree in Packaging Systems and Design\*
- Approved a new degree in Fish and Wildlife Conservation\*
- Approved a new major in Environmental Informatics — the big data, STEM-oriented, modeling and quantitative tools and techniques of studying the environment and our natural resources today
- Created a new major in Environmental Resources Management
- Created a new degree option in Marine Fisheries
- Approved a new minor in Sustainable Natural Resources and Environment
- Led a cluster hire of seven faculty whose disciplines pertain to water; the campus-wide initiative includes five colleges and 10 academic departments. A new B.S. degree titled Water: Resources, Policy, and Management, currently in governance, will be administered and reside in our college.
- Approved through governance more than 25 new or revised undergraduate courses
- Established the Center for Leadership in Global Sustainability in the National Capital Region
- Established the Executive Master of Natural Resources program in the National Capital Region
- Established a college-wide Leadership Institute — a two-semester course sequence for 12 select rising juniors and seniors
- Established the Center for Natural Resources Assessment and Decision Support to develop a landscape-scale assessment of Virginia's natural resources
- Developed several new programs associated with our Extension efforts, such as Real Forestry for Real Estate Professionals, and Focusing on Land Transfer to Generation Next
- With donor support, created a dozen new named annual scholarships to recruit and retain the best students
- Initiated and completed a branding/perception study to rebrand the college and developed new language around the theme "Advancing the Science of Sustainability"
- Developed a new strategic plan for the college titled "The Position of Greatest Potential" that dovetails with the new university strategic plan titled "A Plan for a New Horizon"

\*Pending State Council for Higher Education in Virginia approval

## College Profile

- More than 150 faculty and staff
- 710 undergraduate students
- 300 graduate students
- Four academic departments and 22 college and departmental research centers and cooperatives, including the federal- and state-funded Virginia Water Resources Research Center
- \$15 million in sponsored research per year
- Federal scientists from the U.S. Geological Survey, Forest Service, Fish and Wildlife Service, National Park Service, and CIA who serve adjunct roles
- More than 120,000 sq. ft. of infrastructure encompassing multiple locations on campus, at the Reynolds Homestead Forest Resources Research Center, and in the National Capital Region
- More than 2,000 acres of forestry field station land at Fishburn Forest and the Reynolds Homestead

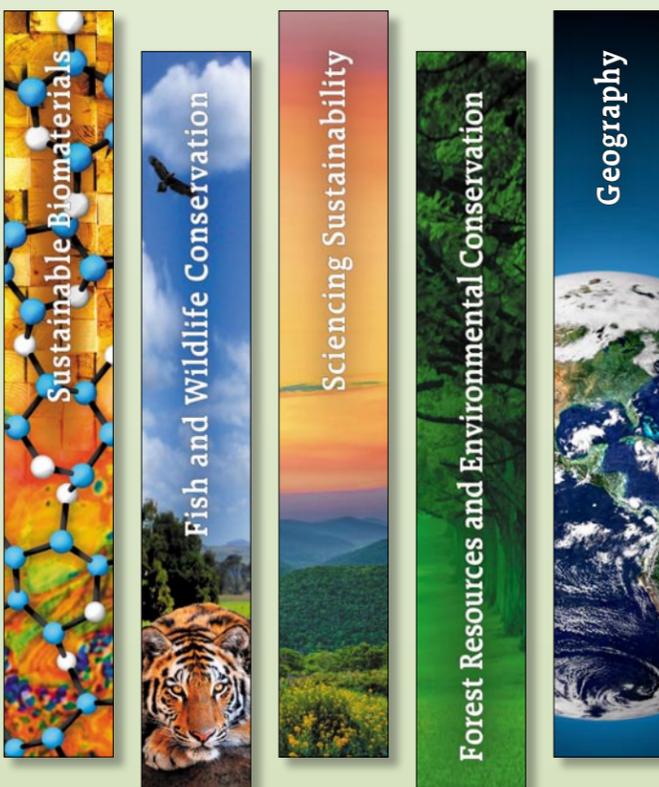
## 2012-18 Strategic Plan

- Grow the college to 1,000 undergraduate students and 300-500 graduate students
- Increase the size, quality, and diversity of the college faculty
- Support university strategic initiatives in climate, water, environment, materials, and STEM-oriented degree programs
- Address a strategy to elevate the college to global recognition as a world-class program
- Address the college's aging and at-capacity infrastructure

## In the Near Future

- Opening a new research aviary in our Center Woods Complex on the edge of campus (completion expected in late fall 2013)
- Developing a degree in Geospatial and Information Science
- Moving our Master of Natural Resources degree to a 100-percent online format
- Creating a professional doctorate degree in the National Capital Region
- Realistic assessment of aging infrastructure and constraints to physical growth
- Succession planning for our faculty in light of upcoming retirements (more than 25 college faculty members will be eligible to retire in the next 10 years)

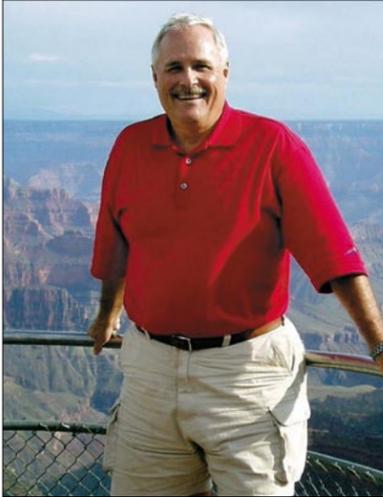
All photos on this page are among those that appear on posters and banners recently installed in the first floor of Cheatham Hall. This college "Hall of Fame" seeks to improve visitors' experience and promote the college's brand — Advancing the Science of Sustainability.



Awards and Honors

The college honored some of its most accomplished students, prominent alumni, respected faculty, and cherished friends at this year's Annual Awards Recognition Celebration. View the complete list of 2012-13 awards and recipients at [cnre.vt.edu/events/awards-recognition-celebration/2013-awards-recognition-celebration-program.pdf](http://cnre.vt.edu/events/awards-recognition-celebration/2013-awards-recognition-celebration-program.pdf). Among the many honors presented are those highlighted here.

Alumni Award of Achievement



Randy Bush

Two noteworthy supporters of the college, **Randy Bush** ('73 B.S. in forestry) and **John Carroll** ('77 B.S. in forestry) were each presented with an **Alumni Award of Achievement**. "Over the years the college has benefitted greatly from the assistance that Randy and John have provided from their respective posts," said Dean Paul Winistorfer, "so it was important for the college to honor these two exceptional professionals with the Alumni Award of Achievement."

Bush recently retired as the president and chief staff executive of the Virginia Forest Products Association, a nonprofit organization that represents companies involved in the forest products industry. Bush had served in this position since 1976 after working as the organization's field director for two years. In addition, he has served on both the advisory board for the college and the advisory committee for what is now the Department of Sustainable Biomaterials.

Carroll recently retired from the Virginia Department of Forestry after serving the agency for 35 years. He started his career as a field forester but soon transitioned to a management role with the agency, rising to deputy state forester in 2002. Carroll served on the advisory board for the college's Department of Forest Resources and Environmental Conservation from 2002 to 2010. He is the owner of Carroll Resource Management LLC, an organization that actively assists forest landowners.



John Carroll

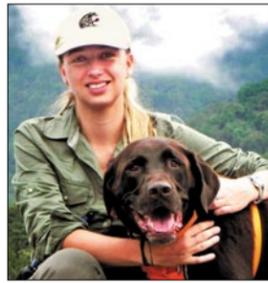
Outstanding Graduates



**Graduating Senior: Daniel Goff**  
**Hometown:** Christiansburg, Va.  
**Majors:** Geography and Meteorology  
**Main accomplishment:** "I am honored at being selected as the only undergraduate to present at the inaugural TEDxVirginiaTech event last year. My talk was about how people interact with meteorologists and how social media has changed those interactions. It's a topic I am very passionate about and I loved having the opportunity to present in a different and creative format."



**Master's Student: Shannon White**  
**Hometown:** Ashland, Va.  
**Major:** Fisheries Science  
**Research focus:** "Few people get the opportunity to study a creature that is completely new to science, that only a handful of biologists have ever touched. I was fortunate to have such an experience as I studied Clinch dace, a newly discovered, very rare species of minnow that is located in less than 10 streams in Southwest Virginia. My work focused on determining why Clinch dace are so rare and whether they should be federally protected. The results of my project will be used to start new conservation initiatives in an attempt to prevent Clinch dace from going extinct and to increase population sizes."



**Doctoral Student: Claudia Wultsch**  
**Hometown:** Klagenfurt, Austria  
**Major:** Wildlife Science  
**Research focus:** "My study combined innovative noninvasive research techniques such as scat detector dogs and molecular scatology to conduct the first genetic study on wild populations of jaguars, pumas, and ocelots coexisting across fragmented forest habitats in Belize. I assessed the genetic conservation status of all three target species across the country by examining levels of genetic diversity within five different sites, defining potential genetic clusters/populations, and estimating levels of gene flow and population structure on a countrywide scale."



Outstanding Recent Alumna

**Amanda Rosenberger** ('03 Ph.D. in fisheries science) received this year's **Outstanding Recent Alumna Award – Graduate Degree** in recognition of her early career accomplishments.

Since finishing her doctorate under the supervision of Professor Paul Angermeier, Rosenberger conducted post-doctoral work on the effects of wildfire on fish populations for the U.S. Forest Service's Rocky Mountain Research Station. She went on to a faculty position at the University of Alaska-Fairbanks and then became an assistant leader with the Missouri Cooperative Fish and Wildlife Research Unit at the University of Missouri in June 2012.

Rosenberger's research interests are in the ecology and conservation of freshwater species with an emphasis on the role

of ecological processes in shaping aquatic species' distributions, population characteristics, and community structure. She is particularly interested in the mechanistic relationships between aquatic organisms and their environment, and how human intervention, nonnative species, and climate change can alter those relationships.

Rosenberger has traveled the globe to study community structures in a variety of environments ranging from Virginia's rivers, desert systems in Australia, tropical wetlands in East Africa, the headwater streams of the Boise National Forest, and Alaska's complex freshwater systems.

"I am extremely honored and grateful to be chosen for this award," she said. "The beautiful photograph of the alumni hall hangs in my office in a place of honor next to my diploma from Virginia Tech and is a daily reminder of my time in Blacksburg."

IN MEMORIAM: Colleen Carlson

**Colleen Carlson**, a forestry research associate in the Department of Forest Resources and Environmental Conservation, passed away June 30 after she suffered a severe asthma attack and lapsed into a coma.

Carlson, who worked in the field of forestry and biometry for more than 22 years in the United States, New Zealand, and South Africa, was on the Forest Productivity Cooperative team led by Professor Tom Fox. She studied the manipulation of cuttings to improve their rooting and was an expert in the methodologies of trial-based research and data analysis.

"Colleen was a great scientist who was a pleasure to work with," Fox said. "She never turned down a request for help from anyone, especially the graduate students who went to her for help with statistics and data analysis. Even more important, she was a wonderful person and a true friend."

"Her laughter could always be heard before she entered the room," said her husband, Ross Allan. "She was generous with her time, knowledge, and especially her love." Carlson lived in Christiansburg with Ross and their son Daniel. Their roots are in South Africa, where her mother and sister live.



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## Conference Tackles the Challenge of Diversity in Natural Resources Careers

The college and sponsoring partners hosted a national conference in June to explore the future of diversity in natural resources disciplines and careers. "One of the critical issues we face," explained Dean Paul Winistorfer, "is the development of our future workforce and leaders with diverse backgrounds so they can prepare our diverse population to deal with pressing environmental problems that touch all of our lives."

"We brought in some top national leaders in their academic disciplines to engage us in conversation on this topic," he continued. "And while it may continue to be a struggle to attract more diverse people, a group of dedicated leaders in natural resources is committed to positive change."

Winistorfer emphasized that the world is indeed changing, and the general demographics of our nation are changing quickly. "If we as a nation do not pay attention to these changes, we will have even greater challenges in the future," he pointed out. "The conference was rich in content and breadth of coverage. We learned a lot about other university programs as well as what federal and state agencies are doing to encourage diversity."

Mamie Parker, recently retired assistant director of the U.S. Fish and Wildlife Service, shared her heartwarming story how she, the youngest of 11 children of a sharecropper in the Louisiana Delta, rose through the ranks in her career. "My mother taught me to fish, and



a white man mentored me when he saw my love and expertise with fish," she related.

James H. Johnson Jr., director of the Urban Investment Strategies Center at the University of North Carolina at Chapel Hill, explained the six disruptive demographic trends in the 2010 census and how they will change the landscape of diversity. Matt Thornhill, founder and president of The Boomer Project marketing firm in Richmond, Va., gave a lively multimedia presentation about what organizations need to do to get ready for the year 2020.

Conference organizers are developing a list of worthwhile ideas to pursue as feedback from the participants continues to come in. For a full list of speakers and partners, visit [www.cpe.vt.edu/ndc/](http://www.cpe.vt.edu/ndc/).

*Mamie Parker told conference attendees about her career struggles as she discussed the five shades of gray in the conservation community and how they are a game changer in the diversity arena.*

## Hindman Supports Campaign to Reduce Construction Falls

Falls in construction represent 14 percent of on-the-job fatalities and are estimated to cost construction firms approximately \$27,000 in direct costs per incident. Associate Professor Daniel Hindman of the Department Sustainable Biomaterials has spent the last eight years researching ways to help make the construction industry safer by reducing the number of worker falls.

For example, Hindman and Tonya Smith-Jackson, chair of the industrial and systems engineering department at North Carolina A&T State University, are using an \$825,464 research grant from the National Institute for Occupational Safety and Health (NIOSH) to develop and evaluate a new Fall Arrest System for residential housing construction.

NIOSH has partnered with several other safety centers in a two-year national campaign to help prevent falls

in construction. In support of this campaign, the spring 2013 issue of the journal *Wood Design Focus*, of which Hindman serves as editor, was entirely devoted to the topic.

"I wanted to encourage other construction industry groups to learn about safety and some of the current research on protecting workers," said Hindman, who co-directs Virginia Tech's Center for Innovation in Construction Safety and Health Research. "Engineers and architects have a special role to play in encouraging safety, and the purpose of this issue is to highlight that role."

The journal issue contains articles discussing fall protection methods, testing of guardrails to protect roof openings, testing of fall arrest anchors on trusses, and the need to observe lifting truss assemblies.



*Daniel Hindman (R) researches ways to reduce falls in construction.*

## Portable Biomass Power Plant Draws Visitors to Campus



*Henry Quesada-Pineda demonstrates the portable biomass power unit.*

Thirty visitors from as far away as New York and Guatemala journeyed to the Brooks Forest Products Center to see demonstrations of the Department of Sustainable Biomaterials' new portable biomass power plant.

About the size of a Mini Cooper turned upright, the biomass power system generates electricity by burning wood chips, corncobs, manure, and other agricultural wastes. In demonstrations, Assistant Professor Henry Quesada-Pineda powered shop tools with the unit. "There is increasing interest in the community and around the world, especially in off-grid situations, to learn more about how biomass energy production can be integrated into small-scale systems," he said.

The unit's generator is powered by a three-cylinder combustion engine using syngas — a combination of nitrogen, carbon monoxide, and hydrogen produced by biomass reacting with steam at temperatures over 750 C. The unit, which produces 1 kilowatt hour for every 1.2 kilograms of biomass, is capable of generating 10 kilowatts, enough to power 100 100-watt light bulbs.

With a price tag of \$18,000, the unit is not a cost-effective investment for most U.S. companies with access to electricity, Quesada-Pineda says, but his department's research will seek to determine the optimal use for this renewable energy source.

In addition to research, the biomass power unit will be used to support teaching efforts, giving students the opportunity to familiarize themselves with this emerging technology, and to power projects of the department's student-run Wood Enterprise Institute.

## World Regions Class Skypes With Prime Minister

Geography instructor John Boyer once again used a videotaped plea to convince an international figure to address his World Region's class. On April 11, former Australian Prime Minister Kevin Rudd — who returned to his post as prime minister on June 27 — spent over an hour with the class via Skype.

"It was a great opportunity to have our students interact with a world leader about issues that directly affect the United States," said Boyer. "That international perspective makes a much bigger impact and elicits a deeper understanding of our globalized world. Rudd is not only the leader of Australia, a vital U.S. economic and political ally, but he is also a scholar of China and the Pacific Rim region."

"Rudd's wealth of insight and experience about that part of the world, and the U.S.'s changing role in it, is exactly what I hoped was imparted to our students," Boyer continued, "so they are better prepared to navigate and interact in this 21st century in which an understanding of our connected world is increasingly a necessity for personal and professional success."

Watch the interview at [ustream.tv/channel/kevin-rudd-skype-with-vt](http://ustream.tv/channel/kevin-rudd-skype-with-vt).



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## Raya Receives Arab American Scholarship

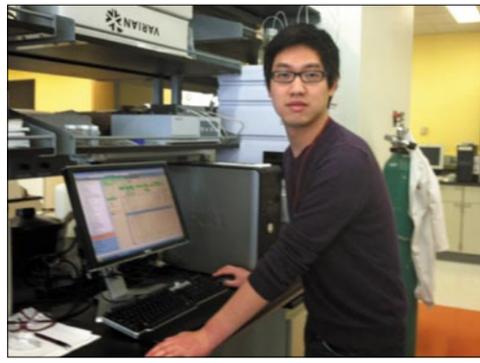


**Yasmina Raya of Fairfax, Va.**, a student in the Executive Master of Natural Resources program in the National Capital Region, received a scholarship from the Arab American Association of Engineers and Architects. The scholarship is presented to a student in the field of engineering, architecture, or information technology to promote these fields as worthy professions and to foster stronger ties between the association and the Arab American community.

After earning her bachelor's degree in architecture from the University of Minnesota, Raya worked for an environmental design firm. "An initial interest in sustainability issues just continued to grow," Raya explained. "I realized I wanted to devote my career to green initiatives."

In May, Raya completed the college's Executive Master of Natural Resources program, in which students meet one weekend a month at the Virginia Tech Research Center in Arlington and work off-campus the rest of the time, as well as complete a 10-day international residency. Raya has now focused her attention on energy efficient rebuilding programs and hopes to work in that particular field. "I am looking forward to applying what I've learned in the Virginia Tech program to future sustainability projects," she said.

## Liu Wins Chemical Society Award



**Haoyu Liu of Shanghai, China**, a doctoral student in the macromolecular science and engineering program under the supervision of Professor Kevin Edgar, received the American Chemical Society's Cellulose and Renewable Materials Division (CELL) Graduate Student Award. This prestigious international award, given to only one student each year, recognizes excellence in cellulose or renewable materials research. This is the second consecutive year that a student from Edgar's lab has won this prominent award.

Liu, already a co-inventor on a patent application, has authored seven published papers and presented papers at several international scientific meetings. His research, in collaboration with Professor Lynne Taylor's lab at Purdue University, has uncovered a superior family of cellulose polymers for enhancing the oral bioavailability of poorly soluble drugs, which can lead to lower doses, fewer patient side effects, and lower drug costs, and can help to rejuvenate new drug pipelines.

## Three Students Take Home Writing Prizes

Three students in the college took home prizes for their entries in the annual VOWA (Virginia Outdoor Writers Association)/Dominion Collegiate Undergraduate Writing Contest. Entries in the competition, which seeks to encourage youth and young adults to cultivate their creative talents, focused on this year's theme of a memorable outdoor experience or special interest.

**Zoe Carroll of Earlysville, Va.**, a junior majoring in wildlife science, took first place for her essay "Getting the Bird Flu," which recounts her volunteer intern experiences working with baby birds at the Blue Ridge Wildlife Center in Boyce, Va.

"I'm very excited that I've accomplished this," Carroll said. "I would love to be a part of wildlife research in the future and continue to write — not just because I love it, but because it would help others to appreciate wildlife."

**Leslie Beard of Laurel, Md.**, a junior majoring in natural resources conservation, earned second place for her entry "To Life, Outside." Her essay details her introduction to the outdoors during a trip to Lake Tahoe with her aunt, who fostered Beard's love of nature. She dedicated the piece to her aunt, who died from cancer in 2012.

"I enjoyed writing the piece," Beard remarked, "and I am glad that others will be able to read about the life-changing experience I had. I hope it will inspire others to spend more time in nature."

**Whitney Clark of Smithsburg, Md.**, a senior majoring in natural resources conservation, won the Cooperative Living Magazine Award for her entry "Knowing the Knob," which describes her adventure in the wind and rain to climb McAfee's Knob along the Appalachian Trail. Her essay will be published in Cooperative Living Magazine, a publication of the Virginia, Maryland, and Delaware Association of Electric Cooperatives.



(L-R) Whitney Clark, Leslie Beard, and Zoe Carroll.

Image courtesy of Robert Thomas Photography

"As someone who loves exploring nature, this contest gave me the chance to share my experiences with others," Clark said. "Hopefully it will inspire people to go and find adventures of their own."

All three essays are posted at [cnre.vt.edu/students/current/vowa-writing-contest/2012-2013/](http://cnre.vt.edu/students/current/vowa-writing-contest/2012-2013/).

## Graduate Student Team Prevails at GeoLeague Challenge

A team of seven geography and forestry graduate students took home Virginia Tech's second consecutive title in the American Society for Photogrammetry and Remote Sensing's national GeoLeague Challenge. The team, which calls itself the Trail Blazing Hokies, is composed of master's and doctoral students who are members of the society's Virginia Tech student chapter.

The goal of this year's challenge was to use geographic information system (GIS) analysis to develop a cost- and time-efficient method to design trails at the Philmont Scout Ranch in New Mexico.

The Virginia Tech team prevailed with their entry, A Least-Cost Algorithm Approach to Trail Design Using GIS. Associate Professor Stephen Prisley; alumna Baojuan Zheng, a member of last year's team; and Patricia



The 2013 GeoLeague Challenge Team. Front row (L-R): Laura Lorentz, Jayashree Surendrababu, and Beth Stein. Back row: Catherine Howey, Taylor Seigler, Ioannis Kokkinidis, Jim Campbell (faculty advisor), and Won Hoi Hwang.

Donovan, a GIS laboratory specialist in the College of Agriculture and Life Sciences, provided additional support for the interdisciplinary team.

"Trail making today is more of an art than a science," said Ioannis Kokkinidis, the team leader. "We have created a versatile and comprehensive tool that can be used wherever a trail needs to be plotted, not only by the Boy Scouts but also by users who lack trail-making experience."

Team members each received a one-year membership in the American Society for Photogrammetry and Remote Sensing. In addition, they earned \$300 for their student chapter and publication of their paper in Photogrammetric Engineering & Remote Sensing, the official journal for imaging and geospatial information science and technology.



## Battle Presents at ACC Meeting of the Minds

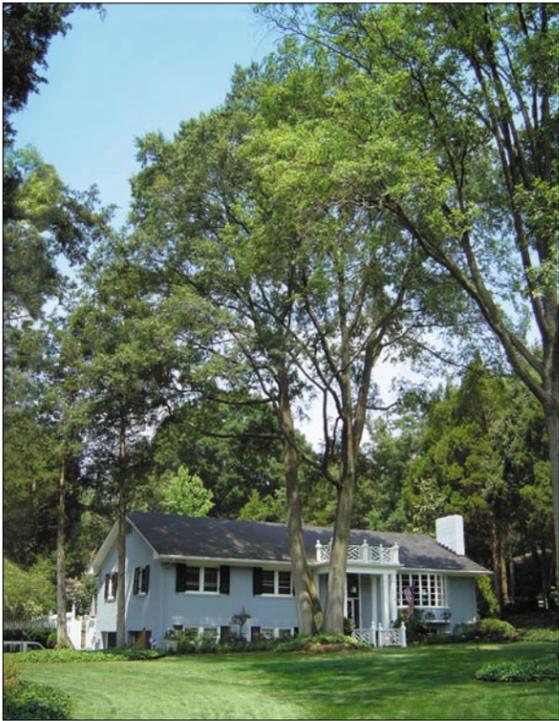
**Kathryn Battle of Richmond, Va.**, a junior majoring in wildlife sciences, presented her research at the eighth annual ACC Meeting of the Minds Conference at Wake Forest University in April. The conference is an opportunity to highlight the diversity of research work being completed by undergraduates and for students to share their work with peers.

"It was great to not only see the diversity of research presented at a professional conference, but it was also a wonderful opportunity for me to see how a variety of fields conduct research," said Battle. She presented her research on the effects of landscape characteristics on the activity of the little brown bat at Fort Pickett near Blackstone, Va.

Battle analyzed data collected by Michael St. Germain, senior project supervisor at the Conservation Management Institute.

"It was a great experience for me to learn how to communicate wildlife science to non-scientists," Battle said. "I was happy that at the end of my presentation I received a lot of good questions about the implications of this work, and I think I generated some interest in bats."

"No matter what I end up doing," she continued, "I hope to inspire other people to take interest in the natural world and foster a conservation mindset."



## New 'Trees for Energy Conservation' Online Resource

Eric Wiseman, associate professor of urban forestry and arboriculture, and Adam Downing, senior Extension agent, contributed to the development and content of a new online resource, **Trees for Energy Conservation**, to help consumers and professionals make decisions about selecting, planting, and maintaining trees to conserve energy. The interactive site includes guided lessons, opportunities to question experts, and links to articles on topics such as planting trees for noise reduction, the urban heat island phenomenon, and tips for renters.

According to the U.S. Department of Energy, carefully positioned trees can save up to 25 percent of a household's energy consumption for heating and cooling.

"The website provides answers for everyday questions that come from individuals, tree care professionals, business owners, community leaders, and others," Wiseman said. "Experts from across the country

*Properly planted trees can reduce heating and cooling costs by up to 25 percent.*

contribute to the site on topics running the gamut from tree selection and pruning to the role of trees in bioremediation and the difference between an arborist and a landscaper."

The website is hosted by eXtension, a national research and education based website supported by the Cooperative Extension System in partnership with 75 land-grant universities. Southern Regional Extension Forester Bill Hubbard initiated development of Extension's first urban forestry Community of Practice and the Trees for Conservation site in 2012, working with experts from all regions of the country under a grant from the U.S. Forest Service.

"Our goal is to be a useful and adaptable resource for everyone interested in how trees can help save energy," said Downing. "We know businesses, educators, homeowners, environmentalists, and others are interested in conserving energy in general. Trees are one of the most cost-effective tools in the box and simultaneously provide many other benefits."

## Kimball Maps Campus Fruit Trees

As part of a class project this spring, urban forestry graduate student Lele Kimball created a map of edible fruit and nut trees on the Virginia Tech campus and a website to showcase foods in the university's urban forest. "There is growing awareness in other areas of the U.S. of urban fruit as an important community resource," Kimball said, "and I wanted to share this awareness with the Blacksburg and Virginia Tech community."

The map indicates an abundance of fruit and nut trees, including cherries, crabapples, black walnuts, and less well-known fruit such as serviceberries, hawthorns, and Cornelian cherries. "Gathering urban fruit can be a fun outdoor activity that provides fresh, local, and nutritious food and also can save on the grocery bills," Kimball added. Visit [urbanforestry.frec.vt.edu/campusfruitmap/](http://urbanforestry.frec.vt.edu/campusfruitmap/).



## RESEARCH SPOTLIGHT

### Meaningful Interpretive Programs Impact Visitors

Live interpretive programs bring national park sites — from ancient ruins to cherished landscapes — alive for thousands of visitors. "At each of these locations, the park service wants to make the experience meaningful, giving the visitor something to think about, even change *how* he or she thinks or feels after leaving the park," said Marc Stern, associate professor of the human dimensions of natural resources.

Recognizing the importance of interpretive programs, the National Park Service Education Council sought to understand how such programs influence positive outcomes for visitors and how to improve them. At the education council's request, Stern and his colleague, Robert Powell of Clemson University, assembled a team that attended 376 live interpretive programs and collected surveys from audience members to solicit their satisfaction with the programs and their perceptions of the impacts they had on their knowledge, attitudes, behaviors, and overall park experience.

"When the interpreter's goal was to impart knowledge, visitors experienced less positive outcomes," said Stern. "But when an interpreter was going for an attitude — such as appreciation of the park or a desire to learn more — outcomes were more positive. The belief that, 'if I teach a visitor about a butterfly's life cycle, then they'll suddenly become environmentally conscious and recycle or buy a hybrid car' is certainly discredited by this study. Rather, content and delivery that encourage audiences to feel something and reflect on their own lives drive deeper changes in individuals."

Stern and Powell are currently working with the National Park Service to translate the research findings into training programs and system-wide monitoring protocols for interpretive programs. The study has implications for the broader field of interpretation research as well. "This is the first systematic, comparative study to isolate what leads to better outcomes for live interpretive programs," Stern said. The research will appear later this year in a special issue of the *Journal of Interpretation Research* devoted entirely to this study.



*Marc Stern (far left) leads a group of students during a field trip to Great Smoky Mountains National Park.*



## Nature Play Areas Could Be the Answer

Doctoral student and former park ranger Matthew H.E.M. Browning is investigating ways to let children better connect with nature in parks and reserves. He recognizes, though, that their "connections" may be formed in ways that could be detrimental to the environment. "As a park ranger, I couldn't simply ignore environmentally damaging play," he said. "When a child was ripping live branches off trees, for example, I knew I had to act. But in other situations, what should I do: preserve the environment or encourage children's connection with nature?"

His answer is to develop "nature play areas" — designated areas within environmentally protected sites with more lenient rules for

*Matthew Browning has worked as a park ranger in state and national parks from North Carolina to Utah.*

recreation to allow children to have unstructured opportunities that are unavailable elsewhere, with the goal of increasing their appreciation of the outdoors. Browning has traveled to dozens of nature play areas across the United States and Scandinavia to learn what recreational impacts are caused by children's play and has talked with managers and scientists about how to sustainably manage protected natural areas used for recreation.

Having researched the negative impact of unstructured play on natural sites, Browning suggests that land managers should be aware of, but not deterred by, such impacts; the societal benefits of unstructured play in nature may outweigh the environmental costs. He recommends selecting impact-resistant sites, improving site resistance, constructing formal play structures, promoting low-impact practices, and other management strategies to sustainably connect children with nature.

## Alumni Profile

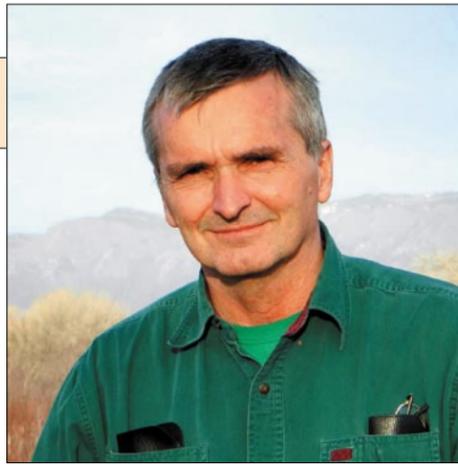
## Leon Kolankiewicz

For **Leon Kolankiewicz** ('77 B.S. in forestry and wildlife), it was both the university's historical academic excellence as well as the beauty of the surrounding southwest Appalachian landscape that drew him to Virginia Tech. "In particular, I took tremendous advantage of the proximity of the Jefferson National Forest, Appalachian Trail, New River, and rock climbing opportunities," he explained. "Indeed, I met my first-ever girlfriend on a work hike sponsored by the Virginia Tech Outing Club on the Appalachian Trail. How romantic is that?"

As an environmental planner and prolific writer, Kolankiewicz has a passion for the beauty and majesty of nature in his professional life as well. His résumé highlights time spent with organizations such as the U.S. Fish and Wildlife Service, National Marine Fisheries Service, Alaska Department of Environmental Conservation, and Alaska Department of Fish and Game.

Currently an environmental planner for the Mangi Environmental Group in McLean, Va., Kolankiewicz still finds time to promote environmental sustainability in print. He authored the books "Where the Salmon Come to Die: An Autumn on Alaska's Raincoat" and "Bright River, Dark Dreams: Tragedy on the Rio Plátano," and recently contributed a chapter to "Life on the Brink: Environmentalists Confront Overpopulation."

There wasn't a specific eureka moment that led Kolankiewicz to his career field. Instead, it was a culmination of many experiences beginning in his youth and spanning across the years, including playing in the woods surrounding his childhood home in western Pennsylvania, watching the Northern Lights, jogging along the shoreline on a Honduran beach, and seeing smoke



rise from a volcano in the Aleutian Islands. But for every amazing physical experience in nature, conservation literature, such as Rachel Carson's "The Edge of the Sea," compounded his passion.

"All of these moments filled me with awe and gratitude and gave me a sense of purpose to dedicate my personal and professional life to doing my small part on behalf of preserving life on Earth — human and non-human alike," he said.

Kolankiewicz continues to fuel his passion for writing. He blogs for the advocacy group Californians for Population Stabilization, exploring a wide variety of topics such as peak oil, coal mining, climate change, agriculture, wilderness, and the history of the environmental movement in America. At Mangi, he prepares environmental impact statements for the likes of NASA (post-space shuttle operations at the Kennedy Space Center), the U.S. Army Corps of Engineers (a proposed uranium mine in the Cibola National Forest of western New Mexico), and the North Texas Municipal Water District (a proposed water supply dam and reservoir).

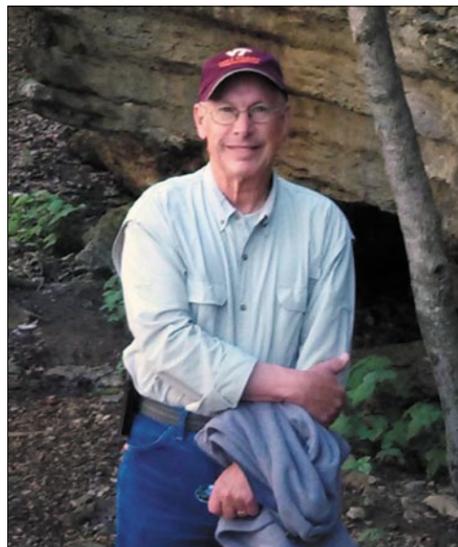
"Embrace lifelong learning; it doesn't stop with the receipt of your diploma," Kolankiewicz advises alumni and students alike. "To quote a dear old friend of mine, the late wildlife biologist Fran Uhler of the U.S. Fish and Wildlife Service, 'With a little curiosity there is never a dull moment.'"

## Hubert Receives Cross Alumni Leadership Award

**Wayne Hubert** ('79 Ph.D. in fisheries and wildlife sciences), professor emeritus and former leader of the Wyoming Cooperative Fish and Wildlife Research Unit at the University of Wyoming, received the Gerald E. Cross Alumni Leadership Award from the Department of Fish and Wildlife Conservation and the college's Leadership Institute.

Hubert's research focused heavily on the ecology and habitat needs of freshwater fishes but also included fish culture, aquatic macroinvertebrates, waterfowl, and riparian bird communities. A major component of all the courses Hubert taught, primarily graduate-level courses in fisheries management, was inclusion of the human dimension, an element not highly appreciated in many biologically oriented programs.

Hubert has been a leader in the American Fisheries Society for many years, serving as president of the society in 2010-11; as president of the Iowa chapter, the Colorado-Wyoming



chapter, and the Education Section; and in leadership roles with numerous committees and other units. He is included in the society's Fisheries Management Hall of Excellence.

"I am extremely honored to be recognized among a wide array of highly qualified Virginia Tech alumni for this award, particularly because Dr. Jerry Cross was one of my role models," said Hubert, who currently serves as president and CEO of Hubert Fisheries Consulting LLC.

Among his many accomplishments, Professor Emeritus Gerald E. Cross, who served as head of what was then the Department of Fisheries and Wildlife Sciences from 1976 to 1989, created a continuing education program focusing on leadership development for U.S. Forest Service wildlife and fisheries biologists and botanists. The leadership that Cross has demonstrated inspired the creation of his namesake award, whose recipients are recognized for their dedication and outstanding achievements in leading others.

## Kendall an Environmental Excellence Award Finalist



**Ron Kendall** ('80 Ph.D. in fisheries and wildlife sciences) was a finalist for the 2013 Texas Environmental Excellence Awards from the Texas Commission on Environmental Quality. The awards program honors individuals, organizations, and businesses that protect the state's human and natural resources while ensuring clean air, clean water, and the safe management of waste.

Kendall was presented with an individual award signed by Gov. Rick Perry to recognize his work as founding director of the Institute of Environmental and Human Health at Texas Tech University. The institute, ranked as one of the country's best environmental toxicology graduate programs, is a leader in the integration of environmental impact assessment of toxic chemicals with human health consequences.

"I'm thrilled with this recognition because it is considered the highest environmental award given in our state," said Kendall, director emeritus of the institute.

Under Kendall's direction, the institute received the Texas Environmental Excellence Education Award in 2009. Kendall, a past recipient of the college's Gerald E. Cross Alumni Leadership Award, currently serves on the faculty of both the institute and the Department of Environmental Toxicology at Texas Tech.

## Carrozzino-Lyon Selected for Leadership Institute



The Wildlife Society selected **Amy Carrozzino-Lyon** ('12 Ph.D. in fisheries and wildlife sciences) a research associate and instructor in the college's Department of Fish and Wildlife Conservation, to participate in its Leadership Institute, which prepares promising individuals for leadership and management positions in a wildlife career. The highly competitive program selects early-career wildlife professionals who demonstrate leadership

capability, academic excellence, and excellence in their current position to engage in intensive training activities and mentoring relationships.

"I am especially honored to be selected for The Wildlife Society's 2013 Leadership Institute because the society has played such an important role in my professional development," said Carrozzino-Lyon. "I am eager to learn more about leadership and my professional society, as well as interact with other early-career wildlife professionals before and during the annual conference in October."

In addition to teaching classes in the Department of Fish and Wildlife Conservation, Carrozzino-Lyon has developed a Virginia Cooperative Extension publication on enhancing wildlife habitat on reclaimed mine lands and participated with various outreach programs in New Jersey, Pennsylvania, and Southwest Virginia.

## Alumni Events Calendar

## SEPTEMBER 8-12, 2013

September 8-12, 2013  
American Fisheries Society 143rd Annual Meeting  
Little Rock, Ark.  
afs2013.com

## OCTOBER 5-10, 2013

The Wildlife Society 20th Annual Conference  
Milwaukee, Wis.  
www.wildlife.org

## OCTOBER 12, 2013

CNRE Homecoming and Tailgate  
Virginia Tech vs. Pittsburgh  
Cheatham Hall, Blacksburg, Va.  
www.alumni.vt.edu/reunion/cnre

## OCTOBER 8-12, 2013

North American Association for Environmental Education:  
10th Annual Research Symposium (Oct. 8-9)  
42nd Annual Conference (Oct. 9-12)  
Baltimore, Md.  
www.naaee.net/

## OCTOBER 13-16, 2013

Southeastern Association of Fish and Wildlife Agencies  
67th Annual Conference  
Oklahoma City, Okla.  
www.seafwa.org/

## OCTOBER 23-27, 2013

Society of American Foresters National Convention  
North Charleston, S.C.  
www.safnet.org/

## OCTOBER 27-31, 2013

National States Geographic Information Council  
Annual Conference  
Kansas City, Mo.  
www.nsgic.org/

# VIRGINIA TECH'S BELOVED SYCAMORE IS STILL STANDING BY WAY OF ITS CLONE, AND THE DNA IS IN IT

Downton Abbey is not the only icon still standing. Thanks to the efforts of two forestry professors, Virginia Tech's beloved sycamore tree will once again grace Henderson Lawn, this time by way of its progeny with the same DNA.

On April 22, Virginia Tech President Charles W. Steger presided over a town-gown tree planting celebration with Blacksburg Mayor Ron Rordam on Henderson Lawn near where the original sycamore once stood. The 10-foot tree planted was rooted from a cutting taken shortly before the decaying historic tree had to be cut down for safety reasons in the summer of 2010.



*John Seiler (L) and Eric Wiseman check the progress of one of the two surviving clones of the Henderson Lawn sycamore. This tree was planted outside Cheatham Hall in May 2011; the remaining clone was planted on Henderson Lawn on April 22, 2013.*

"The cloning and replanting of the sycamore is a historic milestone in so many ways," said Rordam. "The strong roots of this tree are a symbol for the strength and perseverance of our community and a true demonstration of how the town and the university can grow together. For years to come, our citizens will be able to create their own memories underneath this great connection to the past."

The stately old sycamore, which dated to around 1870, was a source of personal connection for many. It served as a site to meet, to sit and relax, and, on a number of occasions, even to propose marriage. Generations of alumni and residents have countless memories of the legacy tree that stood so prominently for well over a hundred years.

In a casual conversation with fellow members of the university's Arboretum Committee in 2010, Seiler lamented the fact that the historic sycamore had to be laid to rest. The idea occurred to them that perhaps they could try cloning the tree. And so they did.

Seiler grew the tree in a campus greenhouse, and then Associate Professor Eric Wiseman took over and planted it at the campus Urban Horticulture Center. "Over time this identical twin will look just like its mother tree, which succumbed to what became a poor growing environment, root damage from underground utility work in the 1980s, fungal disease, and old age," Wiseman explained.

"It isn't often as researchers at Virginia Tech that we get a chance to do something that will make such a profound impact on so many local citizens and our university community," Seiler added.

Because Earth Day, sustainability, and planting trees are inter-related, town-gown officials thought that planting the sycamore clone was an ideal way to recognize the 43rd anniversary of Earth Day on April 22. "Virginia Tech was awarded Tree Campus USA status by the National Arbor Day Foundation in 2008, the inaugural year of the program, and we have received annual re-certification ever since," said Denny Cochrane, Virginia Tech's sustainability program manager. "Tree planting directly supports the goals of our sustainability program, adds to the beautification of our campus landscape, and is a major component of our student-led Earth Week program each year."

"A world without trees would be a vastly different place," added Dean Paul Winistorfer. "Trees hold enormous emotional attachments for people of all ages. They are not just valued for their utility."

"Here in the Appalachian Mountains, we enjoy an incredible diversity of 850 species," Winistorfer continued, "so this event marks a significant occasion to perpetuate the memory of a tree that was very special to many people over the ages."

The sycamore clone is one of only two that miraculously survived from 300 small cuttings taken from the mother tree. "Unfortunately, we just were not very good at getting the cuttings to root," explained Professor John Seiler. "It was likely the wrong time of year, but we had to try since the tree's removal was imminent. The only other cutting that survived was planted outside Cheatham Hall in May 2011 in the tradition of planting a tree honoring each graduating class."



*Of the over 300 cuttings taken from the original tree, only two survived to a size large enough to be planted.*

*The original Henderson Lawn sycamore, shown in healthier days in this 2007 photo, had stood since before Virginia Tech was founded in 1872.*



*The sycamore clone was unveiled at a town-gown ceremony on April 22, 2013.*

## Hokie Nation Network

Sponsored by the Virginia Tech Alumni Association



Want to network with College of Natural Resources and Environment alumni, faculty, and staff without leaving your office?

The Virginia Tech Alumni Association has launched **Hokie Nation Network**, a social and professional networking site designed exclusively for Virginia Tech alumni, faculty, staff, and students.

Log on to [www.alumni.vt.edu/hnn](http://www.alumni.vt.edu/hnn) to join.

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