



CNRE NEWS

ADVANCING THE SCIENCE OF SUSTAINABILITY

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DESIGNING SUSTAINABLE PACKAGING SYSTEMS

New packaging degree will position graduates for high-demand careers

Students who enroll in the Department of Sustainable Biomaterials' newly approved packaging systems and design undergraduate degree won't spend four years just learning to think outside the box — they'll think about the box itself, as well as the entire packaging system. Upon graduation, these students will have opportunities in the diverse packaging industry, which by some measures is the third largest in the world.



Pallets are a critical component of packaging systems and design. Students Jason Hoepker (at back) and Zachary Shiner collect information on the moisture content of wooden pallets to assess the effectiveness of a new ventilated trailer design.

Since 2004, packaging science had been available as an option under the wood science and forest products major. Elevating the option to degree status, which will first be offered in fall 2014, gives added clout to a program that has a long history of collaboration and support from industry.

The program teaches students how to design and manufacture the most economically, structurally, aesthetically, environmentally, and technically sound packaging systems for the goods we use. Virginia Tech is the only institution in the state and one of just a handful in the country to prepare undergraduates with expertise in packaging science and technology.

"The degree in packaging systems and design is crucially important because the growth of major packaging companies across the country depends upon a continuous supply of highly trained young packaging professionals," said Assistant Professor of Practice Laszlo Horvath.

"The program is unduplicated in Virginia and the surrounding states," emphasized Professor Robert Bush.

"Students put what they learn into practice by using computer-aided design and manufacturing to develop and produce packaging systems to meet market and sustainability criteria."

The packaging industry needs graduates with expertise in packaging design, marketing, warehousing, distribution, and an understanding of issues involved in the recycling and re-use of packaging materials, all of which are addressed in the program.

"Our system-based study of packaging is unique among U.S. universities," explained Assistant Professor of Practice Young Kim. "We look at different sectors of the industry, production, and technology involved in packaging."

Packaging professionals are in such demand that 99 percent of students in the program have found a job within weeks of graduation, with salaries averaging from \$50,000 to \$60,000. Many students secure jobs well before receiving their diplomas.

Students take courses in computer-aided design, material properties, and packaging polymers and processing, among other offerings. The program has a strong focus on hands-on experience, with laboratory time incorporated into most courses. Collaborative team projects are a vital part of learning; small classes allow for extensive interaction among students and with faculty.



The packaging program's close ties with industry offer students many opportunities, such as field trips to industry partner firms.

The Center for Packaging and Unit Load Design, an industry outreach center, offers students unique learning and research opportunities. The center, located in the Brooks Forest Products Center adjacent to campus, researches the design and performance of packaging systems.



The college's Center for Packaging and Unit Load Design offers students unique learning and research opportunities. Here, Assistant Professor of Practice Laszlo Horvath (left), who directs the center, and students analyze the forces experienced by a unit load during vibration.

"Through the leadership of the faculty, our packaging program has grown substantially over the last few years," said Department Head Bob Smith. "Faculty have partnered with industry to develop a challenging curriculum that will prepare students to meet society's needs for sustainable packaging materials. Our goal is to produce the best students to meet the packaging industry's needs and reduce our use of natural resources through innovative new products and designs."

Students benefit from participation in the student chapters of the Institute of Packaging Professionals and TAPPI (Technical Association of the Pulp and Paper Industry), including package design competitions, attending trade shows, and networking with industry professionals. Virginia Tech students have won national awards in design competitions such as the 48-Hour Repack.

"Packaging has its roots in wood-based fiber materials, from pallets used to ship products to corrugated shipping containers and individual product packaging," noted Dean Paul Winistorfer. "However, we recognize the growing volume of nonrenewable materials and other resources such as water and energy used by the packaging industry. This degree program reflects a significant strategic action by the college to address such challenges facing the planet. Our program will help prepare students to address these issues and advance the science of sustainability, which is the mission of our college."

Learn more about Virginia Tech's packaging program:

Website: packaging.sbio.vt.edu

Facebook: [facebook.com/VT.Packaging.Science](https://www.facebook.com/VT.Packaging.Science)

YouTube: [youtube.com/user/VTPackaging](https://www.youtube.com/user/VTPackaging)



Students in the Principles of Packaging course proudly display their packaging designs.

We lost a driving force in North American wood science with the passing of Professor Emeritus Geza Ifju in May (see article on page 5). Geza, the founding department head of wood science and forest products, made a significant impact on the profession and on many individuals throughout his career. The department remains strong today due to the foundation laid over the many years of Geza's career. We will miss him, but the legacy of his efforts will be carried forward through the good work of our Department of Sustainable Biomaterials and our faculty and staff.

Our cover story reflects the very positive momentum of our packaging program. Packaging materials touch every individual on the planet, and the bulk of these materials come from wood fiber. Our new packaging systems and design degree program offers students a career-ready path forward, with strong starting salaries and advancement opportunities. We appreciate your help in promoting this program to those you interact with.

Our enrollment continues to grow across all degree programs in the college. Our meteorology degree has quickly exceeded projections, with nearly 120 students enrolled. We anticipate the hiring of another meteorology faculty member in the coming year. We expect to enroll more than 800 undergraduate students midway through the fall semester on our way to a goal of 1,000. We have some absolutely outstanding students in our college and welcome your support with summer jobs, internships, and full-time employment. We are the pipeline to the future success of your organization! Mark your calendar for our college career fair to be held on Nov. 5 and watch our website for details.

Spring commencement in the new Moss Arts Center was a real treat this year. We planted a chinquapin oak (*Quercus muehlenbergii*) to commemorate the nearly 165 students of the class of 2014, in the 22nd year of the college. Our annual tree planting is a great tradition.



Faculty and students helped plant a chinquapin oak on the grounds of the Moss Arts Center following spring commencement.

I mentioned in the last issue our pressing problems with space — both quantity and quality. I misstated our presence in 10 different buildings on campus — we are actually in 15 different buildings, and some of our space is much worse than I realized. Our Center Woods

Complex, used by the Department of Fish and Wildlife Conservation, is in need of immediate attention and long-range strategic planning. And we've learned that our Department of Geography will be relocated from Major Williams Hall, where it has been housed for 26 years, to Wallace Hall, just across the street from Cheatham Hall. We are excited about bringing geography in closer proximity to the majority of our college faculty and look forward to the synergism and collaboration, as well as space utilization, that will surely follow. The move is planned for 2017, with ample time to plan.

I had a surprise visit from Herman (Bill) Gabriel ('56 B.S. forestry) in June. Bill and his brother were on a multi-week trek across the country. It is always fun and rewarding to visit with our alums and learn of their life's journeys. We are thankful for Bill's generous annual scholarship support for our forestry students.

We will be starting the fall semester just as you receive this issue of CNRE News. Wish us well as we continue to shape the next generation of natural resources professionals. We are excited and thankful for the opportunity!

Warm regards from the faculty, staff, and students,

Paul M. Winistorfer
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New water degree to address complex global challenges

Virginia Tech is taking an interdisciplinary approach to meet the complex challenges of managing water by proposing a new bachelor of science degree that draws upon the resources of five of its colleges. The Virginia Tech Board of Visitors approved the new degree at its June 1-2 meeting; the proposal is now under consideration by the State Council for Higher Education in Virginia.

The degree program — called Water: Resources, Policy, and Management — addresses expected job growth in positions requiring a comprehensive understanding of water issues. "In order to sustainably manage the resource, understanding the human side of water is as important as

understanding the science," said Professor Stephen Schoenholtz, who will coordinate the program with an advisory committee representing faculty from 10 departments.

The interdisciplinary degree program will have its academic home in the college's Department of Forest Resources and Environmental Conservation. The colleges of Agriculture and Life Sciences, Architecture and Urban Studies, Engineering, and Science are equal partners, bringing a unique aspect to the degree. The university expects to initiate the program in spring 2015 pending final approval.

Look for an in-depth article on the new degree program in a future issue of CNRE News.

University hosts national Packaging Jamboree

Virginia Tech hosted the 29th annual national Packaging Jamboree March 20-21 under the theme "Packaging a Global World." About 70 undergraduate students and 40 industry representatives attended, including three students from Turkey and one from South Africa.

Presentations and exhibitions focused on the global challenges and opportunities facing the packaging and distribution industries in the future. Discussions included distribution to new and expanding markets and how technology can manage increasing energy costs, limit environmental impacts, reduce product damage, and increase overall efficiency.

"This event was very successfully organized and driven by the packaging student group," said Assistant Professor of Practice Young Kim. "Students had an ideal chance to develop their own network with the industry and to learn about the impact of globalized packaging systems."

"My favorite part of the event was seeing how excited the industry representatives were to meet with the students," said Zack Shiner, the main student planner of the event. "Events like these really help to make communication more comfortable between packaging companies and students. Luckily the Department of Sustainable Biomaterials has a great group of dedicated professors and students who worked very hard to make this event a success."



Participants got a helping hand from the HokieBird during the Packaging Jamboree's egg drop competition.



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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 2013-14 awards and recipients at cnre.vt.edu/events/awards-recognition-celebration/2014-awards-recognition-celebration-program.pdf. Among the many honors presented are those highlighted here.

Alumni Award of Achievement



Carl E. Garrison III ('78 B.S. forestry) received the college's Alumni Award of Achievement. "Carl Garrison has distinguished himself for his character and contributions to forestry in the commonwealth over many years," said Dean Paul Winistorfer. "We are proud to call him an alumnus of this college, but more so proud for Carl himself by the example he has set within the forestry community."

Garrison joined the Virginia Department of Forestry in 1980 and spent a total of 25 years with the agency. He left in 1995 to

open and operate his own business, then returned in 2002 to the position of regional forester. Garrison was appointed Virginia's state forester in 2004 and retired earlier this year.

Garrison quickly became a national leader in the integration of forestry and technology. He and his team developed innovative enterprise software known as IFRIS (Integrated Forest Resource Information System), a program modified and used by the U.S. Forest Service and a number of states. IFRIS is still the standard by which other forestry management programs are judged.

Garrison shared his vision across the region, serving as chairman of the Southern Group of State Foresters and taking leadership roles with the National Association of State Foresters and the Society of American Foresters. He is both a registered forester and a certified forester, highly coveted certifications held by less than 10 percent of those in the profession.

"I'm honored to be recognized by the college that I regard so highly," Garrison said. "It's tremendous to be recognized by these friends and peers whose support has helped to make my state career as successful as it was. I'm very grateful."

Outstanding Graduates



Graduating senior: Adrienne Engel
Hometown: McLean, Virginia
Majors: Meteorology and geography
Main accomplishment: Studying abroad in Nepal was an eye-opening and rewarding experience. Not only did I learn about the culture, the topography, and the day-to-day challenges that Nepalis face, but realizing that developed countries should be taking lessons from the ways in which Nepal employs innovation to cater to its needs put the Nepali way of life in a whole new perspective. In another sense, I am also grateful for the fun I had in this magnificent place, which included getting chased by a rhino in a national park, searching open grasslands for a tiger, riding and feeding elephants, and trekking through a section of the tallest mountain range in the world.



Master's Student: Paul Miller
Hometown: Franklin, Tennessee
Major: Meteorology
Research focus: I was presented with the unique opportunity to analyze a relatively new data set of total lightning observations (intracloud and cloud-to-ground flashes). The purpose of my work is to identify potentially meaningful relationships between total lightning frequency in a thunderstorm and any subsequent severe weather at the Earth's surface. The results of my work could serve to increase severe weather warning accuracy and lead time in very challenging forecasting environments.



Doctoral Student: Zachary Farris
Hometown: Guy, Arkansas
Major: Fisheries and wildlife sciences
Research focus: I use noninvasive techniques, such as camera traps and line transects, to sample carnivores and lemurs in Madagascar's rainforests. I am investigating the impact of forest loss, fragmentation, and exotic species on Madagascar's native wildlife. I use models to provide population estimates and investigate interactions among species, particularly between exotic and native carnivores. I am working to provide the first long-term assessment of Madagascar's carnivore community and inform conservation and government agencies about the current status of these populations across rainforest habitat, as well as recommend targeted management actions to protect these threatened species.



Outstanding Recent Alumnus

Jeremy Stovall ('10 Ph.D. forestry) received this year's **Outstanding Recent Alumnus Award – Graduate Degree** in recognition of his early career accomplishments.

Stovall, assistant professor of silviculture at Stephen F. Austin State University in Texas, teaches dendrology, silviculture, field silviculture, intensive silviculture, and timber cruising; leads the Silviculture and Ecophysiology Lab; is actively involved in outreach programs targeting landowners and practicing foresters; and serves in a variety of leadership roles in the Society of American Foresters and the Texas Forestry Association. He advises the university's Sylvans Forestry Club and works toward developing resources for his undergraduate students such as an online textbook and interactive tree identification quizzes.

His research has been primarily focused on the ecophysiological and silvicultural aspects of restoring degraded and disturbed forested ecosystems. In an attempt to create applied solutions to forest management problems, his projects have ranged from creating basic silvicultural tools such as site index curves and volume tables for pine plantations growing on reclaimed strip mines to examining the ecological effects and efficacy of herbicides for controlling invasive species such as Chinese tallow in bottomland oak forests.

"I am honored to be selected for this award and thankful for having been nominated," said Stovall. "This is a true honor given the high quality of work the college's graduate alumni are currently doing throughout the country."



A WEI first!

The Wood Enterprise Institute (WEI) earned a record profit of \$3,700 for its 2014 product, a maple and cherry laser-engraved cutting board. All 100 boards were sold 30 days before the end of the ordering period. WEI team members utilized a variety of marketing techniques — including local outlets such as the Blacksburg Farmer's Market and the college awards banquet in addition to online orders — to sell their entire stock for the first time in the program's history.

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 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 our students 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 ehutch@vt.edu or 540-231-8859.





Garretson shines in 'Spring Awakening'

Alex Garretson of Rockville, Md., a senior double-majoring in wildlife science and theatre arts, starred in the School of Performing Arts' spring production of "Spring Awakening." The musical, based on the 1891 German play of the same name, explores controversial issues like sexuality, puberty, rape, suicide, and abortion. The story revolves around a group of German teenagers coming of age and exploring their sexuality in the late 19th century. In one of the play's four leading roles, Garretson played the introverted perfectionist Moritz Stiefel. Garretson's strong and engaging performance stuck with audience members long after the final bows were taken.

Alex Garreston (bottom right) performs in the role of Moritz Stiefel.

Grad student works to preserve endangered flying squirrels

Realizing that the tiny northern flying squirrel depends upon red spruce trees, scientists from government agencies and nonprofit organizations have been protecting and restoring landscapes that support the once-plentiful tree and releasing suppressed trees as well as planting seedlings in the central Appalachian Mountains.

One of the scientists is doctoral student **Corinne "Cordie" Diggins**, who is featured with others in the April 2014 issue of Nature Conservancy Magazine in an article about the ecological restoration of red spruce in West Virginia. Diggins studies two regional subspecies of northern flying squirrel — the Carolina northern flying squirrel, which is federally endangered, and the Virginia northern flying squirrel, which was removed from the endangered list in 2013.

She and her advisor, Associate Professor W. Mark Ford, leader of the U.S. Geological Survey's Virginia Cooperative Fish and Wildlife Research Unit, along with biologists from the North Carolina Wildlife Resources Commission and the U.S. Forest Service, have been tracking radio-collared northern flying squirrels in the central and southern Appalachian Mountains to determine home range and habitat preferences.



Corinne Diggins sets traps in a variety of spruce and hardwood locations to account for the northern flying squirrel's foraging and denning habits in the central Appalachians. © Patrick Cavan Brown for The Nature Conservancy

In other words, Diggins has been sitting in the dark, tracking signals from radio collars to see where the squirrels forage, and digging under trees to determine characteristics of the microenvironments there and what the squirrels eat.

"Research in the central and southern Appalachians has highlighted the connection between northern flying squirrels and high-elevation spruce forests," said Diggins. In one study, Diggins and Ford found that a small sample of Carolina northern flying squirrels preferred to forage and den in taller, mature trees over 65 feet high. "They favor a subterranean fungus that grows at the roots of red spruce and shares nutrients with that tree," said Diggins. Such findings enable the necessary forestry management decisions.

Diggins will continue to study microhabitats to determine characteristics important to flying squirrels. She is now conducting field surveys for the ultrasonic sounds emitted by the squirrels using acoustic detection technology. "The technology lets me detect them without having to capture them. We can even distinguish between the northern flying squirrel and the more common southern flying squirrel," she said.



Serving community and the arts

As a service-learning project, students in Professor Robert Bush's Senior Seminar in Forest Products Marketing and Management built an outdoor "theater" for the Blacksburg New School, a cooperative private school offering grades K through 8. The students used their design skills, knowledge of wood and wood construction, and project management expertise to plan and complete the structure, which was approved and inspected by the Town of Blacksburg during and after construction. In the structure's debut, the New School's middle school students performed "Julius Caesar" as part of their study of the works of Shakespeare.

Instrumental in the project was Jeremy Withers, now a sustainable biomaterials graduate student, who had attended the New School as a child and whose son will enter the school's kindergarten this fall. "The best part for me was enjoying the New School students' excitement and hearing how they planned to utilize the structure when it was completed," Withers said. "As a team, we provided an avenue for creativity, learning, and collaboration."

Students at the Blacksburg New School perform "Julius Caesar" in their new outdoor theater, designed and built by Virginia Tech students as a service-learning project.

STAFF MEMBER SPOTLIGHT

Cheatham Hall's favorite musician, **Kathie Hollandsworth**, support technician for the Department of Forest Resources and Environmental Conservation, and her band recently helped kick off the Crooked Road Festival celebrating mountain music in a sold-out performance at the Moss Arts Center's new 1,260-seat auditorium.

Hollandsworth, who sings and plays bass and hammered dulcimer with the band Mountain Fling, has been performing at festivals, conferences, and even cruises with her husband, John, for over 30 years. The couple also performs with Katie and the Bubbatones, an old-time dance band.

A college employee for the past three decades, Hollandsworth has performed old-time, Appalachian, and Celtic music at numerous college conferences and gatherings, including the annual spring graduate student picnic, with both Mountain Fling and Katie and the Bubbatones. Surprisingly, she didn't have mountain music in mind when she earned an undergraduate music degree and a master's in piano performance at Radford University in the 1970s.

Hollandsworth's lifetime of music

"I ended up teaching piano privately to as many as 30 students," she says. "I still direct the handbell and youth choirs at Christiansburg Presbyterian Church. I became interested in the hammered dulcimer in the mid-1970s. John and I began performing folk music together publicly when he was invited to play autoharp at the 1982 World's Fair in Knoxville."

Since then Kathie has won ribbons at the Galax Fiddlers Convention and been named "Best All-Around Old-Time Performer" at the Maury River Fiddler's Convention. She teaches hammered dulcimer workshops at regional festivals, while John, an acclaimed musician who both plays and builds autoharps, gives workshops on his instrument.

The two have performed before thousands at festivals across the country as well as for student groups and private parties for caravans of Hokie fans. On stage they've suffered bee stings, skunk stench, and an unwelcome appearance by a copperhead snake. They've played in England, California, and Oregon, and spend many weekends on the road, but their longest running gig is at Roanoke Mountain Campground, 20 miles from home.



Kathie and John Hollandsworth have been performing together for over 30 years.

"The college has been so flexible and understanding of my travel schedule," Kathie said. "I really lucked out when I got a job here." For performance schedules, photos, and CD ordering information, visit www.blueridgeautoharps.com/performers.html.

IN MEMORIAM: Geza Ifju



Professor Emeritus **Geza Ifju**, 83, passed away at his Blacksburg home on May 15 surrounded by his family. He is survived by his wife, Beth, their seven children, and nine grandchildren.

Ifju was the founding head of the Department of Wood Science and Forest Products

and continued to serve in that capacity for 22 years. "He helped develop the department as one of the top wood science programs in the world, serving as department head from 1979 to his retirement in 2001," said Bob Smith, current head of the department, now called sustainable biomaterials.

Ifju began his forestry education at the Forestry College in Sopron, Hungary, his home country. Despite being a top student, his father's criticism of the political system forced him to leave school in 1951. He then worked as a plumber at an oil field and spent two years in a forced labor camp.

Many students supported the 1956 Hungarian Revolution but were forced to flee the country to avoid punishment after the resistance movement failed. Ifju eventually made his way to Canada where the University of British Columbia had adopted 200 students and 14 faculty members from the Forestry College in Sopron.

He earned his bachelor of science in forestry with honors from the University of British Columbia in 1959, his master of science in wood technology from Yale University in 1960, his doctor of wood science from the University of British Columbia in 1963, and was a post-doctoral fellow at the University of California before joining the faculty at Virginia Tech in 1964.

"Geza was an esteemed colleague," said David Smith, professor emeritus of forestry and Ifju's colleague since they were young faculty members. "He was a no-nonsense person who was determined to have people do their best work and to have the best resources for his students, faculty, and staff."

"Geza was always willing to do any work necessary, work with anyone, and would listen, compromise, and move forward," Smith continued. "He pushed, but he also had a disarming sense of humor. At the end of the day he would never turn down an opportunity for some socializing."

Among his many accomplishments at Virginia Tech, Ifju chaired the planning committee and raised funds for what became the Thomas M. Brooks Forest Products Center, and then divided his time between the center and his department on campus. He also helped establish the

Commonwealth Center of Excellence in Wood Science and Technology at Virginia Tech.

Ifju exhibited Hokie Spirit in more than just his academic career. "He loved his Hokies," recalled his wife, Beth. Proudly wearing his Virginia Tech orange and maroon, he called out "Go Hokies!" to anyone he saw wearing theirs. "He scarcely missed a home game, coming home from an island vacation early for a cold, windy football game," she added.

During a celebration of Ifju's life held on campus in June, tales were told of his "personalized" rules for tennis, a game he loved to play with his colleagues.

He also lived the Virginia Tech motto *Ut Prosim* (That I May Serve), coaching sandlot soccer and Virginia Tech varsity volleyball, chairing the resettlement committee for a Vietnamese family, and remaining active on behalf of education programs in his church and community.

"We — the university and our students, past and future — were very blessed to have a man of Geza's vision and energy here for so many years," said Dean Paul Winistorfer. "Dr. Ifju was an accomplished, first-class professional as a teacher, researcher, and administrator, and a special person in the lives of many. We will miss him dearly, but he made his mark that will live on a long time. He made a difference."

To donate to the Geza Ifju Scholarship in Wood Science and Forest Products, contact Emily Hutchins at ehutch@vt.edu or 540-231-8859.

Jones receives Rachel Carson Award

Restoration biologist **Jess Jones** received the Rachel Carson Award for Scientific Excellence from the U.S. Fish and Wildlife Service. The award, named in honor of the renowned ecologist, recognizes exemplary scientific contributions to achieving extraordinary results in fish and wildlife resources.



Jones, who is employed by the U.S. Fish and Wildlife Service and stationed in the college's Department of Fish and Wildlife Conservation, co-directs Virginia Tech's Freshwater Mollusk Conservation Center.

He researches the restoration of endangered freshwater mussel populations, conservation management of rivers, and mussel propagation, population dynamics, and genetics.

Jones leads the freshwater mussel restoration work for two multi-million-dollar Natural Resource Damage Assessment and Restoration cases in the upper Tennessee River basin, where many rare mussel species live. He and his team have consistently demonstrated high recovery success in the field and laboratory. They developed the first laboratory protocols for the captive care of host fishes for the university's aquaculture facility.

"Rachel Carson was a visionary leader," Jones explained. "Not only did she see the ecological connections between pollution and ecological health, and that human health was tied to it, she also wrote about these connections with such clarity and passion that her work resonated with the nation, leading to research and the passage of environmental laws."

"I have always enjoyed what I do as a biologist," Jones continued. "Much of my success is a direct result of the hard work and dedication of the staff at the Freshwater Mollusk Conservation Center, the lab manager, the students, and the technicians who work there."

Linzey honored with Jefferson Medal

In a fitting tribute to a lifetime of dedication to the natural world, wildlife conservation instructor **Donald W. Linzey** has been awarded the Virginia Museum of Natural History's Thomas Jefferson Medal for Outstanding Contributions to Natural Science Education. The award is presented to a Virginia educator who has made significant contributions to natural history or natural science education at any academic level.



Linzey teaches in the college's Department of Fish and Wildlife Conservation as well as at Wytheville Community College, where he recently retired after serving as a professor of biology for 25 years. His original research is documented in 215 articles in refereed scientific journals and 10 books. His "Vertebrate Biology" textbook is recognized nationally as the most readable on the subject.

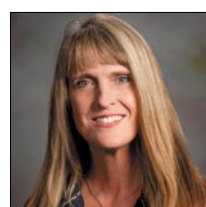
"Linzey's work exemplifies the best research, educational, and outreach practices, standing as a model worthy of emulation by others," said Professor Eric Hallerman, who nominated Linzey for the Jefferson Medal.

Linzey was an early advocate for endangered species, organizing the state's first symposium on endangered and threatened plants and animals in 1978 and editing the 665-page proceedings. The event served as a basis for continuing research and stimulated Linzey's long-term interest in the cougar. Although his research funding has focused on a variety of other projects — from toads to rodents — he has dedicated 40 years to verifying the status of the cougar in the southeastern mountains, particularly in the Smokies.

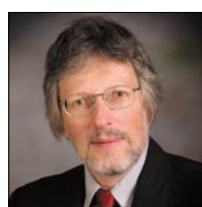
Almost 50 years after receiving his doctorate in biology from Cornell, Linzey has no desire for true retirement and is still teaching five classes at two colleges, remains involved in research, and has two new books percolating in his brain. "I want to do this as long as I'm able," he said. "I enjoy working with the students — it's energizing."

Promotions and Tenure

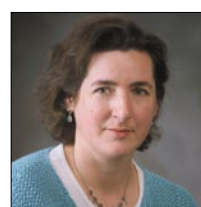
The Virginia Tech Board of Visitors has granted several college faculty promotions and approvals for tenure. Promotion to professor: **William Hopkins**, fish and wildlife conservation; **Stephen Prisley**, forest resources and environmental conservation. Promotion to associate professor with tenure: **Susan Day**, **Kevin McGuire**, and **Valerie Thomas**, forest resources and environmental conservation; **Emmanuel Frimpong**, fish and wildlife conservation; **Henry Quesada-Pineda**, sustainable biomaterials. Tenure at current rank of associate professor: **Kathleen Alexander**, fish and wildlife conservation. Promotion to advanced instructor: **David Carroll**, geography.



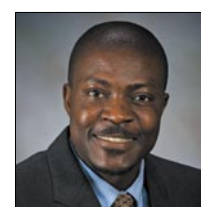
Kathleen Alexander



David Carroll



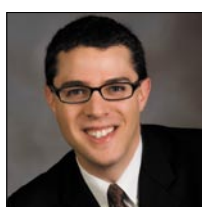
Susan Day



Emmanuel Frimpong



William Hopkins



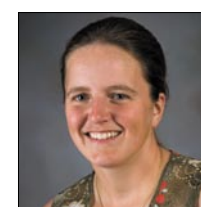
Kevin McGuire



Stephen Prisley



Henry Quesada-Pineda



Valerie Thomas

Research is a critical component of the college's mission of Advancing the Science of Sustainability. The short summaries below provide a glimpse into the wealth of research for environmental sustainability being conducted by our world-class faculty members. Visit vtnews.vt.edu/feeds/natural-resources.html to read the full stories behind these summaries as well as other press releases pertaining to the college.



Plastics to dust – in six months!

Professor Emeritus Wolfgang Glasser has joined cycleWood Solutions Inc. as its chief scientific officer. The company, whose mission is to produce sustainable alternatives to plastic products, pursued Glasser because of his extensive expertise in natural polymers. His work with various aspects of lignin chemistry, materials, and structure is an important aid in the creation of cycleWood Solutions' fully compostable household food and garbage bags. Some bags sizes are currently available for purchase; production and selection are expected to increase soon.

The bags are composed of all-natural components and disintegrate into particles less than 2 millimeters in size in 180 days, filling an important market as traditional plastic garbage bags become illegal in many places worldwide.

Lignin is a compound of plant cell walls discarded during the papermaking process. Besides being inexpensive and plentiful, it can replace petroleum to make "green" polymers since it comes from a renewable resource rather than a fossil fuel.

"In addition to viewing it from a resource viewpoint, I realized its environmental benefits," Glasser remarked of his work with lignin. "It could be compostable. Plastic bags and bottles needn't last forever."

This cycleWood grocery bag will decompose in 180 days when composted.

Recognizing the value of dead wood in Iranian forests

Research from old-growth forests in Iran point out the importance of dead wood, an often-overlooked forest feature. "Dead wood is great habitat for wildlife, provides a sheltered environment for young seedlings, holds soil and moisture on the site, and stores carbon," said Associate Professor Carolyn Copenheaver.

Copenheaver served on the graduate committee for Kiomars Sefidi, then a doctoral student at the University of Tehran, who conducted a study on dead wood at the university's Kheyroud Experimental Forest. Their research appears in *Natural Areas Journal*.

Their research objectives were to characterize the volume of coarse and fine woody debris present in old-growth beech forests in the Iranian forest, compare the number

and volume of different forms of coarse woody debris, and correlate the understory coarse woody debris volume to the overstory forest structure.

The researchers recorded diameter, height, and species of living trees; measured coarse woody debris, including snags, logs, and stumps; and noted degree of decay. Copenheaver reports that "almost 40 percent of the total volume of dead wood was fine woody debris — a class size that has received little attention" and is important to predicting fire behavior.

Snags are one form of dead wood researchers recorded. Iranian beech (shown here) is the same genus but a different species than American beech.

Image courtesy of Kiomars Sefidi



Counting African predators to help save them

Fish and wildlife conservation graduate student Lindsey Rich is working with the Botswana Predator Conservation Trust to determine the status of 13 different carnivores for her doctoral research. Her findings will help efforts to mitigate population declines and enact effective conservation measures in Africa.

"Having widespread data on carnivores will help the government and local communities make informed decisions regarding carnivore conservation and management," Rich explained.

Her research involves estimating the numbers of each species in areas with various degrees of human impact and determining which factors influence species distribution. Rich documented all of the native carnivores in her focus areas using both motion sensitive cameras and traditional track surveys.



Lions have disappeared from large portions of their historical range in Africa.

She is also developing environmental education programs targeting local children in Botswana to increase community awareness of sustainable use approaches for the future.

Ecology team improves understanding of stream chemistry



Kevin McGuire was a corresponding author on the study.

water quality," said Associate Professor Kevin J. McGuire, associate director of the Virginia Water Resources Research Center.

"Understanding the chemistry of these streams at a finer scale could help to identify factors impairing water quality and help us protect aquatic ecosystems," said co-researcher Gene E. Likens of the Cary Institute of Ecosystem Studies and the University of Connecticut.

Results of the study were published in the April 21, 2014, issue of the *Proceedings of the National Academies of Science*. The data used in the new analysis consist of 664 water samples collected every 300 feet throughout all 32 tributaries of the 14-square-mile Hubbard Brook Valley in New Hampshire. "The goal was to visualize patterns that no one has been able to quantify before now and describe how they vary within headwater stream networks," said McGuire.

American, Chinese scholars study wintering shorebirds in China

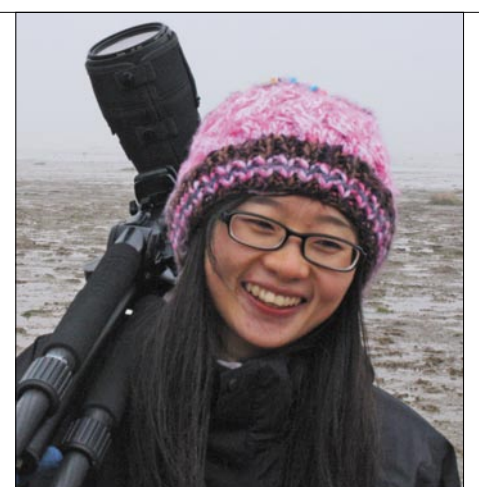
Professor Jim Fraser is collaborating with scientists from the Center for Watershed Ecology of the Life Science Institute at China's Nanchang University to establish the first-ever survey of migratory shorebirds that winter at Poyang Lake, the largest freshwater lake in China.

Chinese scholars were interested in Fraser's research on migrating birds and in 2012 invited him as a visiting scholar at Nanchang University and to give talks at Fudan University in Shanghai about his piping plover research. In 2013, a delegation of scientists from Nanchang and Fudan University, including the

director of the Center for Watershed Ecology, visited Fraser's research program at Virginia Tech.

Fraser and his team found good study sites during their first field expedition in January 2014. Since then, a Chinese colleague began sampling the habitats and is continuing to survey. With Fraser's support, she will write proposals for funding to supplement the nature reserve support.

Wenjuan Wang, leader of the shorebird research program for the Center for Watershed Ecology at China's Nanchang University, surveys the shores of Poyang Lake for shorebirds.



Alumni Profile

Linda Casey

Linda Casey ('74 B.S. forestry) knew building a career in her preferred field wouldn't be easy. "I was the only female forestry major in my class when I started," she said. "I didn't know of any women in the profession at the time."

However, she's refused to let anyone or anything hold her back. After telling friends she hoped to work in forestry after graduation, they balked. "They told me it was dominated by men and too tough for a woman," Casey explained. "I figured it had to be a pretty good career if you're told you can't do something."

Born and raised on a dairy farm in Southwest Virginia, Casey grew up understanding the value of hard work and grit as well as the rewards of meeting new challenges. Her upbringing gave her a love and appreciation of the land and the belief that we all share a responsibility to be good stewards of natural resources.

Casey's time at Virginia Tech instilled in her the practice of never accepting "no" as an answer. "Being associated with professors who expected nothing but excellence helped prepare me for the workplace," she said. "I worked full time for the first two years of school. My academic performance suffered to the point where I was advised to leave Tech, but professors encouraged me to stay and complete the program."

Many faculty members had a profound impact on Casey's life. "A few that really stood out were Richard Vasey, Henry Mosby, Harold Burkhart, Emmett Thompson, and Robert Parker," she explained. "These men were professionals, experts in their field, had a love for teaching, and cared about their students. They



were role models and mentors." Vasey, in particular, encouraged Casey to persevere through disappointing periods in her career search. "He told me, if you can get your foot in the door, you can go from there," Casey recalled. "All I needed was a chance."

Throughout her career, Casey has constantly broken barriers in a male-dominated industry. After college, she became International Paper's first female forester and spent 33 years with the company, moving from state to state and climbing the career ladder. Then she served as state forester in the Alabama Forestry Commission — the first woman to hold such a position in the Deep South. "I've always strived to do my best in whatever job I was assigned," Casey said. "My professors taught me that a person could accomplish more than they gave themselves credit for — all you had to do was try."

With each position, Casey looked forward to learning new things and being given more responsibility and accountability. "When I was with International Paper, I enjoyed working with suppliers, loggers, and wood procurement teams. After becoming state forester, I was honored to work with people responsible for providing a variety of services to forest landowners and others associated with Alabama's natural resources."

Casey loves spending time with John, her husband of 35 years, and their three children in addition to spoiling their three grandchildren.

Ring appointed Virginia State Forester



Bettina Ring ('86 B.S. forestry) was selected by Gov. Terry McAuliffe this spring as Virginia State Forester. Ring most recently served as senior vice president of family forests for the American Forest Foundation, overseeing the American Tree Farm System, the largest and oldest sustainable woodland program in America.

She heads the Virginia Department of Forestry, which protects 15.8 million acres of forest land from fire, insects, and disease, and manages 22 State Forests totaling almost 68,000 acres. The department has an operating budget of approximately \$25 million and employs 240 salaried staff.

Ring spent 14 years with the Virginia Department of Forestry, working her way up to deputy director before moving to the nonprofit sector. She served as executive director of both the Colorado Coalition of Land Trusts and the Bay Area Open Space

Council. Ring was a co-founder and faculty member of the Virginia Natural Resources Leadership Institute, a program that helps professionals develop leadership skills and solve environmental issues collaboratively. She earned her MBA from James Madison University in 2001.

"It's so great to be back 'home' at the Virginia Department of Forestry," said Ring. "The 14 years I worked at the department previously prepared me well for the many challenges and opportunities facing forestry and the natural resources arena. I'm very excited about helping lead the effort to enhance the department's programs and services during its second century, and I thank Gov. McAuliffe and Secretary Haymore for affording me the honor and privilege of serving as State Forester of Virginia."

IN MEMORIAM: John Wilburn

John D. Wilburn ('06 B.S. and '12 M.S. forestry) of Grants Pass, Oregon, died in a kayaking accident in California on March 9 at the age of 30.

A native of Winchester, Virginia, Wilburn was a natural resource conservation officer for the Oregon Department of Forestry. He had worked for the Virginia Department of Forestry before returning to complete his master's degree, focusing on habitat dynamics and nesting for eagles. He developed management plans for military lands, including the Indian Head Naval Support Facility in southern Maryland and Naval Support Facility Dahlgren in the Northern Neck of Virginia.

"John Wilburn was in a class all by himself," said Associate Professor John Munsell, Wilburn's advisor. "He was very independent and creative, and won many over with his humility and honesty. John had no problem taking an idea and making it a reality, which is what made him such a pleasure to work with. I am honored to have been his advisor."

"John was rarely idle, almost always fearless, and kind," said alumnus Matt Brinckman, a fellow forester and a close friend of Wilburn's. "I can honestly say that John was the finest and most true forester of our generation that I have ever met."

A longtime kayaker, traveler, mountain climber, and biker, Wilburn had a strong passion for the outdoors and was always looking for the next adventure.

Alumni Events Calendar

SEPTEMBER 13, 2014

CNRE Homecoming and Tailgate
Virginia Tech vs. East Carolina
Cheatham Hall, Blacksburg, Virginia
alumni.vt.edu/reunion/cnre

SEPTEMBER 14-18, 2014

National States Geographic Information Council
2014 Annual Conference
Charleston, South Carolina
nsgic.org

OCTOBER 8-11, 2014

North American Association for Environmental Education
43rd Annual Conference
Ottawa, Ontario, Canada
naaee.net

OCTOBER 15-17, 2014

Natural Areas 41st Annual Conference
Dayton, Ohio
naturalareas.org

OCTOBER 19-22, 2014

Southeastern Association of Fish and Wildlife Agencies
68th Annual Conference
Destin, Florida
seafwa.org

OCTOBER 25-30, 2014

The Wildlife Society 21st Annual Conference
Pittsburgh, Pennsylvania
wildlifesociety.org



Alumni discount for new program

The college's Center for Leadership in Global Sustainability offers an alumni discount for a new Professional Certificate in International Sustainability Consulting. Details at cligs.vt.edu/profcert-intlsust.

Join us!

College of Natural Resources and Environment Homecoming

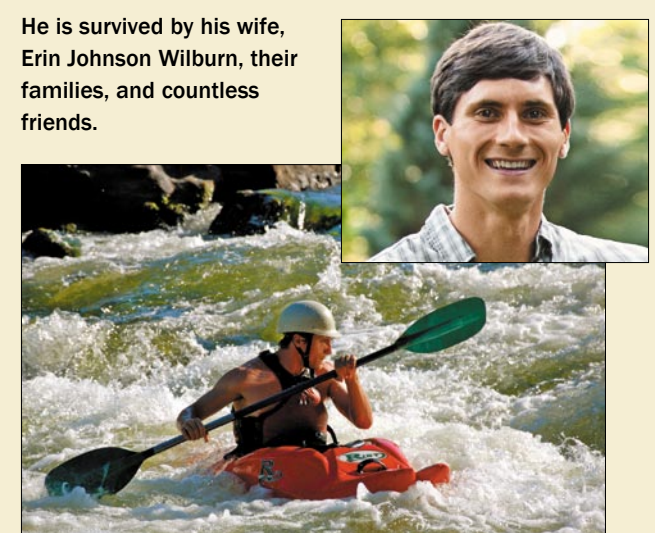
Join CNRE alumni, faculty, family, and friends at our pre-game homecoming tailgate. The festivities will take place outside Cheatham Hall starting 3 hours prior to kick-off when Virginia Tech takes on East Carolina.

Saturday, September 13, 2014

To register and for more information, visit alumni.vt.edu/reunion/cnre

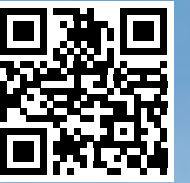
Tailgate buffet • College displays • Entertainment Games • CNRE Scholarship Fund Drawing and more!

Virginia Tech for life



He is survived by his wife, Erin Johnson Wilburn, their families, and countless friends.

ALL FOR THE BIRDS: Mitchell Byrd remains a friend of the college



At 86, alumnus **Mitchell Byrd** has lost neither his eagle-spotting ability nor his passion for birds. The aptly named Byrd still boards a private plane for annual eagle-sighting flights over the James and Rappahannock rivers, as he has for the past 38 years.

The plane cruises at an altitude of about 300 feet, sometimes slowing down to 80 mph for a better view. Byrd describes it as “living on the edge” and wonders how much longer he’ll be able to make the flights. The information he gathers is used to predict future eagle habitat and is shared with land planners in the hope that key roosting areas will be sheltered from development.



Mitchell Byrd (right) and Libby Mojica of the Center for Conservation Biology band a peregrine falcon chick for release in New River Gorge National Park in West Virginia in a program that reintroduced the species into the park.

Photo by Carla Schneider

In 1976, only 33 bald eagle nests remained in Virginia, none of them along the James. The federal government appointed Byrd to lead the Chesapeake Bay Bald Eagle Recovery Team, and soon the College of William and Mary professor was busily tracking eagles and speaking out to save their nesting areas. Byrd took influential people to see some of the wild areas eagles frequented — habitat now protected as the 4,200-acre James River National Wildlife Refuge.

These days, more than 600 eagle pairs tend nests in Virginia, and the James River supports the largest summer eagle population in the eastern United States. Byrd attributes the eagles’ comeback to a federal ban on the use of the pesticide DDT as well as Endangered Species Act protection, but others say Byrd’s surveys drew attention to previously unknown eagle habitat, which helped authorities protect nesting grounds.

“I don’t think the refuge would be there if not for Mitchell,” said Jim Fraser, Virginia Tech wildlife professor and recipient of the 2013 Mitchell A. Byrd Award from the Virginia Society of Ornithology, who was drawn into bald eagle research by Byrd in the 1990s.

After receiving his bachelor’s, master’s, and doctorate from Virginia Tech, Byrd joined the faculty of the College of William and Mary in 1956, eventually becoming chairman of the biology department, leading it to national recognition. He later founded the Center for Conservation Biology before retiring in 1994. Over the years, the chancellor professor emeritus and director emeritus, who remains active at the center, has worked with almost every species of bird found in the Chesapeake Bay watershed.

Leading the Eastern Peregrine Falcon Recovery Team, Byrd took up hammer and nails to help build towers to serve as nesting areas for some 240 peregrine falcon chicks being reintroduced to the Chesapeake coastal area. The birds had been almost completely exterminated in Virginia by pesticide poisoning — down to a single breeding pair in 1981 — but today the breeding population is close to 40.

Mitchell Byrd led the Eastern Peregrine Falcon Recovery Team, which helped the Chesapeake coastal area’s falcon population recover after being almost completely exterminated by pesticide poisoning. Photo by Linda Richardson



Lois and Mitchell Byrd have been longtime supporters of the college.



Byrd also built osprey nesting platforms, tagged at least 3,500 osprey, and worked to protect rare woodpeckers, but he will always be best known for his work with eagles. In 2007, he received the U.S. Fish and Wildlife Service Recovery Champions Award for his monitoring, research, and protection of the Chesapeake Bay bald eagle population.

Mitchell Byrd tagged at least 3,500 osprey and built many osprey nesting platforms over the course of his career. Photo courtesy of the Center for Conservation Biology

Surprisingly, much of Byrd’s early work at Virginia Tech was not on birds, but on muskrats. Byrd spent much of his time on Stroubles Creek below the Duck Pond, conducting thesis research on the muskrat population there. Occasionally, he trapped a few for dinner with his master’s advisor, a fan of fresh muskrat.

As longtime supporters of the college, Byrd and his wife, Lois, received the Friends of the College award in 2008. Their generosity includes three charitable gift annuities supporting the Department of Fish and Wildlife Conservation and gift plans to provide department faculty support in the area of conservation biology.

“I have always appreciated my education at Virginia Tech,” Byrd said. “Lois and I respect the value of a quality education. We are pleased to be able to give back to this outstanding college.”

Dean Paul Winistorfer acknowledges the Byrds’ support. “I am always so genuinely impressed when someone with such academic and career scientific success also gives back so generously,” he said. “Mitchell and Lois Byrd have been generous donors and actively involved with the college, and we deeply appreciate their kindness.”



2014 Commencement



This year’s college commencement ceremony was held for the first time in the performance hall at the new Moss Arts Center. The spectacular, state-of-the-art venue — a huge improvement over previous college commencement locations! — offers top-notch acoustics and comfortable seating. Photo courtesy of Grad Images

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