

FORESTRY

Fall 2014

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Forest Resources
& Environmental
Conservation

Department of Forest Resources and Environmental Conservation

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Welcome New Faculty

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Morgan Varner is a forest fire ecologist with research interests in plant flammability, post-fire tree mortality, the ecological consequences of fuels treatments, fire behavior, disease-insect-fire interactions, and impediments to prescribed fire. He serves as the Chair of the Coalition of Prescribed Fire Councils and on the editorial boards of the journals *Forest Science* and *Fire Ecology*. He was on the faculty at Mississippi State University and Humboldt State University before joining Virginia Tech in August. He received a Ph.D. in Ecology from the University of Florida, an M.S. in Forestry from Auburn University, and a B.S. in Forest Resources from the University of Idaho.

His work at Virginia Tech will be based in fire-prone woodlands and forests of the Appalachians, continued work in longleaf pine communities in the Coastal Plain and oak-conifer woodlands in California, and ongoing research in fuels treatments in the western US. Morgan's teaching responsibilities include an undergraduate course in Forest Ecology & Silvics, an undergraduate course in Fire Ecology & Management, and a graduate course in Fire Ecology.

Daniel McLaughlin is an ecohydrologist with research interests in forested watersheds, wetland and stream processes, emerging environmental sensors, watershed and landscape hydrology, and biogeomorphology. His research spans systems and scales to better understand abiotic and biotic drivers of ecosystem function, and is broadly focused on informing water resource management. Daniel's current teaching responsibilities include a graduate and undergraduate course in Wetland Hydrology and Biogeochemistry. He has a Ph.D. in Systems Ecology and Ecological Engineering from the University of Florida, an M.S. in Environmental Engineering from Clemson University, and a B.S. in Civil Engineering from Clemson University.



From the Department Head

Dear Alumni, Friends, and Supporters:

I am pleased to inform you that the Department of Forest Resources and Environmental Conservation had a successful fall 2014 semester! We have featured selected accomplishments of our students, staff, and faculty in this issue. Let me share a few highlights with you.

- **Morgan Varner** has joined us as an Assistant Professor of Applied Forest Ecology, and **Daniel McLaughlin** has joined us as an Assistant Professor of Ecohydrology Modeling and Informatics. We are quite excited with their joining us as our programs are expanding in those areas.
- The four-year degree in Water: Resource, Policy, and Management was approved by the State Council of Higher Education for Virginia on November 24, 2014. Working with various colleges across campus, we will initiate the program effective fall 2015. Our big thanks to our colleague and the Director of the Virginia Water Resources Research Center, **Stephen Schoenholtz**, for shepherding the approval process so effectively!
- **Harold Burkhart** received one of the 2014 Host Country Scientific Achievement Awards at the IUFRO World Congress. This award recognizes the outstanding achievements and distinguished careers of scientists from the host country. On September 15, 2014, the Board of Visitors approved **Tom Fox's** appointment to the Honorable Garland Gray Professorship. Congratulations, Harold and Tom!
- Thanks to the hard and excellent work of our faculty and staff, our graduate program is growing by leaps and bounds! Currently we have 84 graduate students, of which 34 are in the Ph.D. program. We expect that our graduate enrollment will grow to 90 in a year or two.



Dr. Janaki Alavalapati
Professor and Head
Forest Resources and
Environmental
Conservation

This is the busy time of the year to visit family, friends, and relatives! Best wishes for safe and happy travels! On behalf of FREC, I will take this opportunity to wish you and your families Happy Holidays and New Year!

John and Janet Doughty Endowed Scholarship

The department received a generous pledge payment in August from John and Janet Doughty supporting their scholarship benefiting students majoring in forestry within the department. Their support helps us greatly in providing quality education and creating the next generation of forestry professionals.

The scholarship named in honor of John and Janet Doughty awards an annual \$1,000 to undergraduate students majoring in forestry. John is a 1970 graduate of Virginia Tech, with a B.S. in Forestry and Wildlife from the College of Natural Resources and Environment. He has previously served his community by being the Assistant Vice President/General Manager of the Weyerhaeuser Real Estate Company in New Bern, North Carolina. Janet Doughty teaches high school students via classes at the local community college in New Bern.

Welcome New Faculty/Staff



Michelle Prysby

Michelle Prysby re-joined the department September 2014 as the Virginia Master Naturalist Special Projects Coordinator. She is working out of the program's Charlottesville office on projects to enhance the statewide volunteer program, such as developing training curriculum resources and creating new communication tools.

Michelle earned her M.S. in Ecology from the University of Minnesota in 2001, and her research and programming backgrounds include monarch butterfly ecology, citizen science, and volunteer management. Michelle enjoys running, hiking, and biking; just before returning to Virginia Tech, she cycled the 470-mile Blue Ridge Parkway.



Carol Franco

Carol Franco joined the department in August 2014 as a Senior Research Associate. She is involved in research and policy projects related to global climate change negotiations, REDD+ in Mexico, Peru, and Colombia, and impacts of climate change on human health in the Dominican Republic.

Carol received her B.S. in Biology from the Universidad Autónoma de Santo Domingo in the Dominican Republic, M.S. in Forest Resources Management from SUNY- College of Environmental Science and Forestry, and a Ph.D. in Ecological Economics and Environmental Policy from SUNY-College of Environmental Science and Forestry. She did her postdoctoral work at the University of Vermont.



Daniel McLaughlin

Please see the front page welcoming Morgan Varner and Daniel McLaughlin to the Department of Forest Resources and Environmental Conservation!



Morgan Varner

FREC Hosts Fulbright Scholar from India



Dr. Chandra B. "CB" Pandey was a visiting Fulbright Scholar in the Department of Forest Resources and Environmental Conservation from September through December 2014, with the support of the United States-India Educational Foundation (USIEF). CB is the Principal Scientist and Head of the Division of Natural Resources and Environment in the Central Arid Zone Research Institute in India. FREC professor Tom Fox and Postdoctoral Research Associate Kevan Minick, worked with Dr. Pandey on a study of dissimilatory nitrate reduction to ammonia in forest soils. This process can reduce denitrification and nitrate leaching losses in soils and thus help conserve N in forest ecosystems. Dr. Pandey plans to continue his study of this process at his lab in India.

Highlights: Teaching - Research - Extension

Forest Ecology and Silvics Class Partners with Virginia Natural Heritage Program



Carolyn Copenheaver's FOR 3314 Forest Ecology and Silvics class partnered with the Virginia Natural Heritage Program to write a conservation management plan for the newly purchased Clover Hollow Natural Area Preserve. Students met with Ryan Klopf (a regional steward with the Natural Heritage Program) to identify the landowner's objectives and property limitations. The students worked in groups to characterize the current vegetation and environmental conditions at the preserve. As a final project, students presented posters to the faculty at Virginia Tech and representatives from Natural Heritage.

Master Naturalist Program Receives Award and Support; Launches Newsletter

The Virginia Master Naturalist Program received a national award for "Outstanding Program Evaluation" from the Alliance of Natural Resource Outreach and Service Programs at its annual conference in September. ANROSP is the national umbrella organization for Master Naturalist programs (www.anrosp.org). The program also received \$5,000 from the Virginia Department of Forestry and \$20,000 from the Virginia Environmental Endowment to support development of basic training curriculum resources. A new statewide newsletter, the Pollinator has also been launched. The first issue was released in October. Anyone interested in receiving it can sign up on our home page at www.virginiamasternaturalist.org.

Research Uncovers Virtual Treasure Trove

Research at Virginia Tech led by **Phil Radtke**, Associate Professor of Forest Biometrics, has "rediscovered" a virtual treasure trove of standing and felled-tree measurements of volume, biomass, carbon contents and other wood properties, including component measurements ranging from wood and bark to branches and foliage, and even root dimensions, weights, and chemical contents. Records from over 140,000 trees have been recovered to date from files that had been largely forgotten on old computer tapes or paper files tucked away in storage facilities, research labs, libraries, offices, and field stations around the United States. Measurements recorded as long ago as 1898 have been located and preserved, with efforts underway to compile them into a nationally consistent database of volume, biomass, and carbon measurements for use in improving assessments of the nation's forest resources. A cadre of FREC students is working closely with **David Walker**, Research Associate, with financial support from the US Forest Service and forest industry to recover legacy data using document scanning, optical character recognition, and plain old-fashioned keyboard data entry to find and recover as many of these valuable records as is possible before they disappear altogether.



Highlights: Teaching - Research - Extension

Forest Modeling Research Cooperative Holds Annual Meeting

The 36th Annual Meeting of the Forest Modeling Research Cooperative (FMRC), hosted by Kingwood Forestry Services, was held in the Monticello, AR, area December 3-4. A one-day field trip took about 30 participants to see management activities in loblolly pine plantations in the southern Arkansas area. Stops on the field tour included research studies that focused on the effects of site preparation methods and the impacts on growth of mid-rotation fertilization, thinning, and their interaction. During the indoor session on the second day, held on the University of Arkansas-Monticello campus, Virginia Tech personnel **Harold Burkhart** and **Ralph Amateis** summarized collaborative efforts with other scientists and institutions and progress on growth and yield model and decision support software development and testing.



Former Virginia Tech graduate student **Nabin Gyawali** presented research results from his Ph.D. dissertation work that focused on modeling response to silvicultural treatments in loblolly pine plantations.

The mission of the FMRC is to develop tree growth and stand development models that advance the science of forest modeling and provide land managers with decision support capabilities needed to practice economically viable and environmentally sustainable forest management.

Brunner and Holliday Receive Grant

Amy Brunner and **Jason Holliday** have received a \$1.4 million grant from the U.S. Department of Agriculture National Institute of Food and Agriculture and the U.S. Department of Energy Office of Biological and Environmental Research. Their project is one of 10 grants awarded as part of the national strategy of sustainable biofuels production and will allow Brunner and Holliday to investigate the genetic regulatory networks that will allow an important bioenergy crop to be bred so it will grow in less than ideal soils and climate.

Brunner has 20 years' experience studying the regulation of *Populus* growth and development at the genetic level. She was a member of a team that received \$1.2 million in 2007 and \$1.5 million in 2011 from the U.S. Departments of Agriculture and Energy to identify genes and their regulatory networks specifically associated with wood formation. By 2011, that grant resulted in 400 such genes having been identified. Work to identify the interactions of their encoded proteins and functions is continuing.

Holliday has extensive experience with all aspects of next generation sequencing and is presently doing sequence capture research funded by the National Science Foundation, as well as other funded research.

Highlights: Teaching - Research - Extension

Virginia Tech Hosts Annual Meeting of Arborists and Urban Foresters

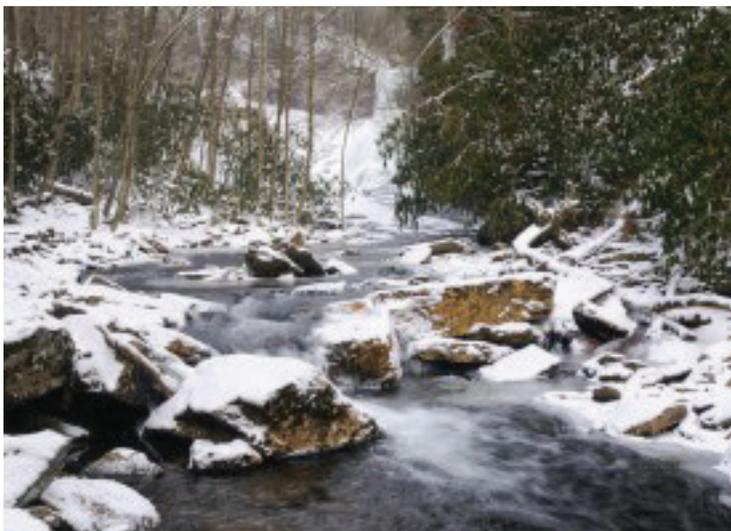


John Seiler discusses the history and ecology of Stadium Woods during the field day at the annual meeting of the Mid-Atlantic Chapter of International Society of Arboriculture.

In early October, Virginia Tech hosted the annual meeting of the Mid-Atlantic Chapter of the International Society of Arboriculture, bringing over 350 arborists, urban foresters, and tree enthusiasts to campus. Urban forestry faculty members **Eric Wiseman** and **Susan Day** coordinated the two-day meeting that included field tours, seminars, and panel discussions. Forest biology professor **John Seiler** led a tour of Stadium Woods, the campus old-growth forest, and research associate John Peterson helped the arborists brush up on their tree identification skills.

Several graduate students gave presentations on their urban forestry research projects. **Cene Ketcham** spoke about his investigation of community tree planting programs and **Jordan Endahl** presented the findings of his study of urban wood waste utilization in Virginia. Doctoral student **Keith O'Herrin** gave an overview of his research on the role of accreditation and certification in the urban forestry profession.

New Water B.S. Degree is now Approved



The State Council for Higher Education in Virginia (SHEV) approved a new undergraduate water resources degree at Virginia Tech that will begin in 2015.

The major, with involvement and course offerings from other colleges at Virginia Tech, will be the first of its kind available for undergraduates in the United States and will be highly interdisciplinary.

FREC will be the program's academic home and **Stephen Schoenholtz**, The Virginia Water Resources Research Center's director, will coordinate the new major, with assistance by an advisory committee comprising faculty from ten Virginia Tech Departments.

Highlights: Teaching - Research - Extension

2014 Forestry across the Bay Bus and Boat Tour



Group shot on the dock at Smith Island before returning to dry land.

The Virginia Forest Landowner Education Program and Virginia Cooperative Extension teamed up with the Virginia Department of Forestry, the Alliance for the Chesapeake Bay, and the Chesapeake Bay Foundation (CBF) to offer the first-ever Forestry across the Bay Bus and Boat Tour in September. This 2-day experience was part of the long-running Fall Forestry & Wildlife Field Tour Series.

The tour started on dry land in Northumberland County in Virginia's Northern Neck, with a stop on privately owned woodland where the participants learned about harvesting timber, best management practices, wildlife management, growing pines and hardwoods, and the impacts of these management practices on water quality.



Mucking around and learning about the importance of these grass islands to Bay health.

The 21-person group then took to the water by passenger ferry to Smith Island, just over the Virginia/Maryland state line. The knowledgeable and energetic CBF team talked about issues facing the Bay and its residents, including declines in commercial fisheries and a subsequent loss of watermen. Captain Wes, a local waterman, took the group out to set crab pots, which were collected on the second day, immediately steamed, and enjoyed by the group on the dock. He also did a seagrass scrape that pulled up all sorts of interesting Bay creatures for participants to identify. Then the group visited the Smith Island Crab Meat Co-op. There, a lifelong resident talked about how, when she was a

child, the island was a bustling community with very limited housing. As the crabs became scarcer, many people have given up the lifestyle and left the island.

The tour concluded in the Northern Neck with another stop on privately owned woodland and a visit to Wood Preservers Inc., a major supplier of treated wood products. Quotes from participants included "Great adventure – good memories" and "Fabulous tying together of forest[s] and effect[s] on other areas." Everyone became much more aware of how sound woodland management can help the Bay and its residents.

We are considering offering other immersion tours periodically, affording landowners the opportunity not only to expand their knowledge and understanding, but also grow their peer network.



Captain Wes teaching us how to steam fresh crabs, Smith Island style.



Spotlight: Faculty - Staff - Students

Aust, Barrett, and Bolding Win First Place Award in Technical Writing



Mike Aust, Scott Barrett, and Chad Bolding were honored in September by the Forest Resources Association's Appalachian Region with its First Place Technical Writing Award for 2014. This annual award recognizes the best serial publications from their quarterly magazine, the *Forest Operations Review*.

The Forest Resources Association Inc. is a nonprofit trade association concerned with the safe, efficient, and sustainable harvest of forest products and their transport from woods to mill. FRA represents wood consumers, independent logging contractors, and wood dealers, as well as businesses providing products and services to forest resource-based industries.

Chad Bolding (right, on behalf of the **Bolding-Barrett-Aust** co-author team) receives FRA's Appalachian Region 2014 First-place Technical Writing Award from FRA Appalachian Region Chairman Brian Gingerich (left).

Fox Appointed Garland Gray Professor of Forestry



Thomas Fox was appointed the Garland Gray Professor of Forestry in recognition of his contributions to the teaching, research and outreach missions of Virginia Tech. Tom works in forest soils and silviculture in natural and plantation forests in the US and Latin America. The goal of his program is to improve the productivity and sustainability of forest ecosystems.

The professorship was established in 1985 by the late state Senator Elmon Gray, who named it in memory of his father. Garland Gray also served in the Senate of Virginia.

Fox received his B.S. degree from the University of Maine, his M.S. degree from Virginia Tech, and his Ph.D. from the University of Florida.

Cristan Wins First Place



Richie Cristan presented his research at the Society of American Foresters National Convention in Salt Lake City, UT in October. His presentation was judged the first place winner in the Forest Science and Technology Board student presentation competition.

The Society of American Foresters (SAF) is the national scientific and educational organization representing the forestry profession in the United States. Founded in 1900 by Gifford Pinchot, it is the largest professional society for foresters in the world.

Spotlight: Faculty - Staff - Students

Burkhart Receives International Award



Harold Burkhart is the recipient of the 2014 World Congress Host Country Scientific Achievement Award from the International Union of Forest Research Organizations (IUFRO).

A member of IUFRO's executive board from 1996 to 2000, Burkhart has organized many scientific meetings for the organization, as well as served in several leadership positions with its divisions and research groups.

The forest biometrics scholar has been a prolific contributor to forest modeling science, with more than 250 research papers published in journals, research bulletins, book chapters, and proceedings papers.

IUFRO is a nonprofit international network of forest scientists that promotes global cooperation in forest-related research and enhances the understanding of the ecological, economic, and social aspects of forests and trees.

Burkhart, the Thomas M. Brooks Professor of Forestry, is one of 14 University Distinguished Professors at Virginia Tech, where only 1 percent of the faculty receive this honor based on national and international recognition. He has received many awards in science, forest biometrics, and statistical ecology over the years for his research that improved forestry practices, including being named Virginia's Outstanding Scientist of 2013

McElligott Wins Best Poster

Kristin McElligott, a Ph.D. graduate student working with **Brian Strahm** and **John Seiler**, won best poster presentation in the Forest, Range, and Wildland Soils section at the Soil Science Society of America International Annual Meeting, Long Beach, CA, November 2-5, 2014.

The mission of the Society is to enhance the sustainability of soils, the environment, and society by integrating diverse scientific disciplines and principles in soil science for the wise stewardship of soil and natural resources, and to advance the discovery, practice, and profession of soil science through excellence in the acquisition and application of knowledge to address challenges facing society, in the training and professional development of soil scientists, and in the education of, and communication to a diverse citizenry.



Kristin measuring soil CO₂ efflux in the Appomattox-Buckingham State Forest

Spotlight: Faculty - Staff - Students

Stern Presents at the World Parks Congress



Marc Stern went to the World Parks Congress in Sydney, Australia, from November 13-19. The World Parks Congress is convened approximately every ten years by the International Union for Conservation of Nature (IUCN), bringing together delegates from countries all over the world who work on protected areas. This decade's Congress brought together over 6,000 delegates from 170 countries. Marc gave five separate presentations there on building resilience governance arrangements from natural resource management in and around protected areas; on balancing adaptive management with accountability in evaluation systems; and on effective environmental education and communications.

Student Club Information

Forestry Graduate Student Association Recaps Semester



This fall the Forestry Graduate Student Association (FGSA) welcomed new members to the department and to the club. Some of their activities included going on hikes to Kelly's Knob and the Keffer Oak. There are plans for a winter hike once it gets colder. The club initiated its annual t-shirt design contest, and t-shirts will be on sale in the spring.

The FGSA is busy planning the spring 2015 symposium and are pleased to have their keynote speaker scheduled. The club members would like to thank **Cameron Houser** for hosting the annual Halloween bash and **Kristin McElligott** for pushing for more involvement in the Society of American Foresters. There will be a contingent of folks heading to the Appalachian SAF annual meeting in January. Thank you all for a good semester, see you in the spring!

Student and Alumni Corner

FREC Summer/Fall 2014 Graduates!

Ph.D. Graduates

- Kevan Minick
- Brian Morris
- Valquiria Quirino
- Bingxue Wang
- Ying Xu
- Marco Yanez

M.S. Graduates

- Bethany Avera
- Daniel DeBruler
- Clara DeYoung
- David Mitchell
- Yi-Jei Wu

Welcome New Graduate Students!

- Commender, Katie, M.S.
- Drum, Chelsea, Ph.D.
- Frensley, Troy, Ph.D.
- Gondran, Amy, M.S.
- Grieve, Alexander, M.S.
- Hemby, Tyler, M.S.
- Houser, Cameron, Ph.D. - IGEP
- Hurst, Kristin, Ph.D.
- Jensen, Carrie, Ph.D. - GEA
- Jersild, Annika, M.S.
- Ji, Xinde, Ph.D.
- Kaplan, Abdullah, M.S.
- Lee, Raymond, Ph.D.
- Luo, Yirou, Ph.D.
- Matiuk, Jonathan, M.F.
- Nolan, Lindsey, M.F.
- Reed, Warren, M.S.
- Russell, Edward, Ph.D.
- Sanwal, Trisha, M.S.
- Sarr, Mame, M.S.
- Siriwardena, Shyamani, Ph.D.
- Vinson, Joseph, M.S.
- Wade, Christopher, M.S.
- Walters, Rodney, M.F.
- Warrington, Brooke, M.F.
- Whitmore, Keridwen, M.S.
- Yang, Sheng-I, M.S.



Alumnus **Jacob "Jake" B. Huffman** passed away on June 5 in Gainesville, FL, at the age of 94. Born on a farm near Maggie, VA, Huffman attended schools in Roanoke before entering Virginia Tech, where he earned his B.S. in Conservation and Forestry in 1941, after which he spent five years in the US Army during WWII. In 1947 he received a Master's degree and in 1953 his doctorate from Duke University.

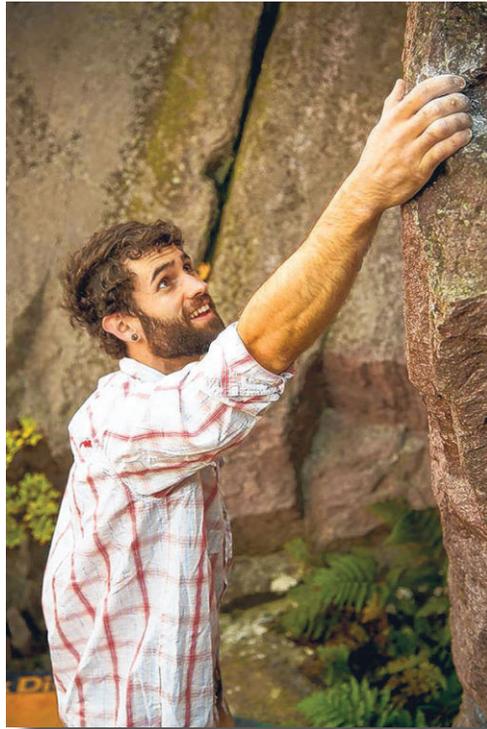
A scholarship was established by Dr. Huffman as an annual financial award given to a forestry major from Virginia. His career in forestry was dedicated to teaching and mentoring the next generation of leaders in forestry. His gift to establish the Jake Huffman Scholarship will continue his life's work.

Alumni Corner



For more information
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Alumnus Aaron Parlier ('12 B.S. Natural Resources Conservation and Recreation) Creates Mobile Guidebook



A mobile guidebook of Grayson Highlands State Park has been created by **Aaron Parlier**. The park is located in Virginia, near the border of North Carolina with over 4,000 acres.

The guidebook is available for download through iTunes and Google Play for Android smartphones. Rakkup, based in Seattle, is a mobile phone app that sells climbing guidebooks for various locations across the country.

As a student at Virginia Tech, Aaron realized there was limited information to be found about climbing and bouldering in southwest Virginia. The mobile guidebooks available on Rakkup are similar to physical guidebooks, but will include more features for users.

Aaron and the publisher/photographer for the print version of the guidebook hope to release a second edition once trails become more established in new climbing areas of the park. Both will be available in print and mobile versions.

Currently the guidebook can be bought on Rakkup at www.rakkup.com.

The Department of Forest Resources and Environmental Conservation is on social networks! Facebook (<https://www.facebook.com/vtfrec>) and Twitter (<https://twitter.com/VTFREC>). If you are a part of these social networks, look us up!

Gifts from our clients and friends have a direct impact on the quality of learning, discovery, and engagement programs that the Department of Forest Resources and Environmental Conservation offers. We invite you to become part of our team! To make a tax-deductible contribution, send your check, payable to the Virginia Tech Foundation, Inc., to: Department of Forest Resources and Environmental Conservation, 313 Cheatham Hall (0324), Virginia Tech, Blacksburg, VA 24061

For further information on memorial giving, endowed professorships, gifts of securities, planned or deferred giving opportunities or other contributions, please contact **Emily Hutchins**, Development Officer, at 540-231-8859 or send an e-mail to ehutch@vt.edu.