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COLLEGE OF NATURAL RESOURCES AND ENVIRONMENT

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POWELL RIVER PROJECT SYMPOSIUM

Graduate Students Contribute to Long-Running Efforts to Reclaim Surface-Mined Lands

The surface-mined landscapes of Southwestern Virginia continue to evolve. For more than 30 years, Virginia Tech has worked with the coal industry and natural resource partners in the Powell River Project to develop practical, cost-effective methods for restoring the environmental quality of lands and waters disturbed by surface coal mining.

Large quantities of soil and rock are removed to reach thin seams of coal. Scientists continue to research methods for restoring mined lands to their original condition.

"Successful reclamation is critical to re-establishing working landscapes to the southern Appalachian region," said Brian Strahm, assistant professor of forest soils and ecology in the college, which has had ongoing research projects related to forest, fish, and wildlife resources. College faculty and graduate students periodically present their latest findings to the coal industry, natural resource agencies, and the public at the Powell River Project Symposium.

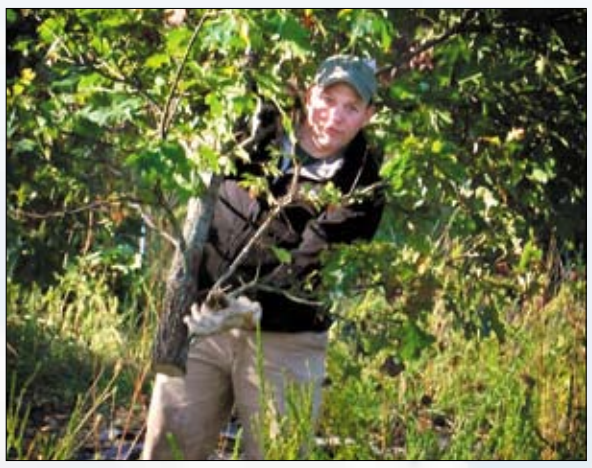
Biofuels, birds, reforestation, and water quality were among the hot topics at last fall's symposium, which also included researchers from the College of Agriculture and Life Sciences who work to improve reclamation practices. Scientists from both colleges conduct on-the-ground research at the 1,100-acre Powell River Project site in Wise, Va.

Professor Carl Zipper, who has directed the Powell River Project since 1997, examines the growth on a reclaimed mining area in the Powell River Project.

"We're all concerned with the environmental effects of coal mining, and better science can help miners and agencies protect the environment while also protecting the energy supply," said Carl Zipper, professor of crop and soil environmental sciences in the College of Agriculture and Life Sciences and director of the Powell River Project. "None of us have all the answers, but by working together, we can solve problems."

"The Powell River Project may be the longest running mined-land reclamation research project in the world," said Dean Paul Winistorfer, who serves as chair of the project's board of directors. "It is a testament to Carl Zipper's efforts and those of many scientists in both of our colleges. We have to realize that whatever we do to secure energy resources for the planet will have an environmental impact. Our role is to study these impacts and to work hard to mitigate their effects on the environment. We are very proud of all that has been accomplished."

Since the project was initiated in 1980, it has included research and education programs to enhance restoration of mined lands and to benefit Southwest Virginia's coalfield region. Research conducted by six graduate students from the college was featured among the nine presentations at the 2012 symposium.



Assistant Professor Brian Strahm helps harvest northern red oak for Nina Craig's research on how different overburden materials affect forest productivity.

Forestry master's student **Beth Boehme** investigated the seasonal dynamics of aquatic insect communities in mining-influenced streams of varying electrical conductivity with Professor Stephen Schoenholtz. Conductivity, a measure of water's ability to pass an electrical current, is affected by the presence of inorganic dissolved solids such as calcium, magnesium, and sulfate. After sampling the water quality and insect populations of mining-affected and control streams, she noted that aquatic insect populations varied seasonally and with increasing conductivity. This finding can be used to enhance the effectiveness of monitoring efforts in streams influenced by coal mining.

Undergraduate research assistants Zach Addington (kneeling) and Drew Carter help evaluate the effects of grasses on reforestation success. Graduate student Sean Allen found that reducing ground cover to 50 percent provides adequate cover while also allowing planted native hardwood seedlings to grow unimpeded by competition.

Maura Leveroos, a forestry master's student, discussed her work on the propagation of trees on mined lands for use as a biofuel. Working with Professor Jay Sullivan, Leveroos found that black locust achieved 10 times the volume of hybrid poplar and sycamore after four years, fertilization and lower density planting produce the greatest amount of biomass per tree, and higher density plantings increased overall biomass production.

Surface coal mining often affects headwater streams. Forestry doctoral student **Robert "Trip" Krenz** is examining how the ecosystems of reconstructed streams function over time. Knowing that streamside organic matter serves as an energy source and habitat component for stream biota, Krenz measured the amount of leaf litter and its breakdown as a way of assessing the condition of reconstructed streams. Comparing reconstructed streams with controls, he found that monthly leaf litter input in the control streams was higher and leaf breakdown occurred twice as fast. His work, in cooperation with Professor Stephen Schoenholtz,

Continued on page 2

The blue-winged warbler is one of seven species of concern that Chris Latimer and Amy Carrozzino found to prefer the early successional habitat on reclaimed mined lands.

FROM THE DEAN'S PERSPECTIVE

These four words — quality, relevance, heritage, position — belong together. Let me explain why.

When I think about the college today, the first word that comes to me is quality. The faculty and staff of this college are quality people who are committed and passionate about what we do and how we do it. This passion and commitment makes all the difference in how we approach our work. It is gratifying to come to campus each day knowing that our faculty and staff are at the top of their game. They are doing a tremendous job in the classrooms, labs, offices, and in the field. The quality of our people empowers us to do more, to take on more challenging research projects, to develop and teach new courses, to update our curriculum, and to reach out to new stakeholders with new programs in the state and beyond. We have quality students and quality alumni. The quality of our people is the difference we stand on in this college.

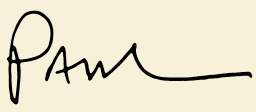
The second word that comes to my mind is relevance. I've been writing and speaking a lot about this lately, and the term has appeared in my perspective column many times. The College of Natural Resources and Environment is more relevant today than at any time in our history. Relevance is needed today to address the challenges we face globally in protecting, managing, and using our natural resources. Relevance is needed today to advance the science of sustainability — the new brand of the college. There is not a conversation today that we are not a part of. If you are not relevant today then you are irrelevant, and that is a slippery slope to stand on. We are relevant in everything we do.

The third word that comes to my mind is heritage. Now in our 21st year as a college at Virginia Tech, we stand on the vision, aspirations, hard work, and successes of those who have gone before us. Don't ever overlook the hard work and contributions of all those who have preceded you. They may have retired or moved on, but they were committed and passionate during their time with you. We have a great heritage in this college, and we share in the great heritage that is Virginia Tech. The quality, relevance, and heritage of the other colleges and programs at Virginia Tech help lift us up. We are better because we are Virginia Tech. Thank you to all who have helped create our great success and our heritage.

And the fourth word that comes to my mind is position. We have positioned the college to be relevant today and for the future. We have positioned the college for success. We have positioned the college so our students can be successful while they are with us and long after they leave us. We have positioned the college to make a difference in the world. Knowing that we can make a difference is perhaps the greatest reward.

What words come to mind when you think of the college? We are a quality learning, discovery, and engaged college with quality people. We are relevant to any conversation you wish to have. We have a strong heritage that all can take credit for. We are positioned to make a difference in this world. We are advancing the science of sustainability.

We are the College of Natural Resources and Environment and we are Virginia Tech.



Paul M. Winistorfer
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Dean Paul Winistorfer (C) joins Dean Emeritus Mike Kelly (L) and John Hosner, retired director of the School of Forestry and Wildlife, at the college's spring awards celebration in April.

POWELL RIVER PROJECT SYMPOSIUM

Continued from page 1

indicates that leaf litter breakdown, in conjunction with other variables, may be a useful measure of stream condition and re-establishing woody vegetation on the reconstructed banks may aid the streams' recovery.

Chris Latimer and **Amy Carrozzino**, both former fisheries and wildlife sciences master's students who worked with Professor Dean Stauffer, studied the reproductive success of birds on mined sites. Over a four-year period, they identified 96 bird species and observed population dynamics changing in tandem with vegetation growth on the reclaimed sites. At least seven species of special concern seemed to prefer the early successional habitat on reclaimed mine lands. Their results indicate a need to consider the landscape requirements of bird species when developing restoration guidelines for surface-mined land.

Successful reforestation of reclaimed surface mines requires balancing the need for erosion-controlling ground cover with the effect of herbaceous plants on tree seedling survival and growth. Former forestry master's student **Sean Allen's** research with Strahm examined the long-term effect of three levels of herbaceous ground cover control on the success of planted trees and native woody volunteers. Reducing ground cover to 50 percent provided adequate cover while also allowing planted native hardwood seedlings to grow unimpeded by competition. Allen reported that a ground-cover species mix for optimum tree propagation could mimic this reduced cover, and conventional ground cover mixes may be too aggressive for reforestation.

In summarizing the utility of the projects, Strahm noted that reclamation includes an emphasis on both ecosystem *goods*, such as traditional forest products or bioenergy production, and ecosystem *services*, such as clean water, wildlife habitat, and climate regulation. "Most of the post-mining regulatory environment focuses on recreating the previous structure of the ecosystems that were disturbed," he said, "including grading hill slopes to approximate the original contour and revegetation based on levels of ground cover."

Strahm stressed that the 30-some years of research in the Powell River Project has contributed greatly to reclamation goals. "In addition to replacing trees and streams, the work highlighted by last fall's symposium demonstrates a focus on restoring the functions of the disturbed ecosystems," he said. "This is the next step if we are indeed going to re-establish working landscapes to the southern Appalachian region."

Learn more about the Powell River Project at **www.prp.cses.vt.edu**.

CORRECTIONS TO WINTER ISSUE

Some of the information for **Yang Shao** in "New College Faculty" on page 5 in the winter 2013 issue of CNRE News was incorrect. Shao is an assistant professor of geography who earned his B.S. in 1997 from Nanjing University in China and his Ph.D. in 2007 from the University of North Carolina–Chapel Hill. His academic interests are remote sensing, GIS, land use and land cover change, and watershed assessment and modeling. We apologize for the error.

Also, the article "First in Firefighting: Virginia Tech Claims Four at Top of Wildland Firefighting Ranks" on page 8 failed to fully identify the origin of Virginia Tech's Wildland Fire Crew. Although Professor Dick Vasey served as the crew's first faculty advisor, the group was established by **Steve Pedigo** ('72 B.S. in forestry), who worked as a co-op student for the U.S. Forest Service in Blacksburg and was advised by Vasey. After Pedigo approached Vasey in 1971 with the initial idea, they worked out a proposal, and Vasey presented it to then-Director John Hosner. The rest is history!

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Guests at Satellite Launch

A group from the college traveled to Vandenberg Air Force Base in California to attend the February launch of Landsat 8, the latest in a series of U.S scientific satellites that have been imaging the Earth's surface for 40 years. Landsat 8 provides images at a scale at which human land management activities are evident, making it a valuable resource for researchers and land managers. As previously reported in CNRE News, Randolph Wynne was recently renamed to a five-year term on the national Landsat Science Team; Valerie Thomas and Christine Blinn are co-investigators on the research team.

(L-R): Robert Oliver, assistant professor of geography (holding his son, Ben); Valerie Thomas, assistant professor of forest remote sensing; James Campbell, professor of geography; Christine Blinn, research scientist; Randolph Wynne, professor of forest remote sensing; and Wynne's children, Jacob and Hannah Wynne.

Forensic Botany Used in Murder Investigation

Forensic botany and mysterious murder cases sound like a plot straight out of a television crime drama. However, this very real drama began in Kansas City, Kan., when Markus Lee was shot and killed in his yard. After exhaustive efforts, detectives were left with only one slim lead to go on — a rental car matching the description of a vehicle leaving the scene of the crime, which contained no other clues than a few elm and cottonwood leaves scattered on the floorboard and in the trunk. Since cottonwoods are rare in upland Kansas City but were present near the spot where Lee was murdered, detectives recognized that the leaves could possibly tie the rental car, and those associated with it, to the murder scene.

Seeking expert advice and assistance, the detectives called on Jason Holliday, assistant professor of forest genetics and biotechnology. Holliday willingly volunteered to determine if the cottonwood leaves from the rental car were from the same tree present at the crime scene, collaborating with Ruslan Biyashev, a research manager who works with Professor M.A. Saghai-Maroof of the Department of Crop and Soil Environmental Sciences, to do so. Although his results proved that the leaves were *not* a match, his efforts and cooperation with the detectives, who could then rule out the rental car's association with the crime, were very much appreciated.

In a letter to Dean Paul Winistorfer, FBI Special Agent M. Alexander Menzel Jr. recognized the case's two victories: (1) that two detectives, lacking traditional forms of evidence, turned to forensic botany in an attempt to solve a murder, and (2) that Holliday, contacted by detectives he didn't know from hundreds of miles away, agreed to volunteer his time and efforts on a mission all knew was a long shot.

Jason Holliday, shown tending to poplar seedlings, used forensic botany to assist in an FBI investigation.

Generational Changes to Impact Natural Resources Jobs

Steve McMullin, associate professor of fisheries and wildlife, predicts a "perfect storm" ahead for natural resource agencies, which will lose over 40 percent of their personnel in the next decade as baby boomers retire. The situation will be intensified by generational differences in the people eligible to fill those jobs.

Fewer students today are interested in jobs with state and federal natural resources agencies.

In general, those in the post-baby boomer generations tend to be less interested in agency jobs, less inclined to relocate for promotions, more likely to demand flexible work situations, and unrealistically confident of rapid job advancement. Extensive research suggests that, in addition to being very technologically literate, they are more committed to a work-life balance than previous generations and thus demand flexibility in the workplace.

"Today's students have grown up as the Animal Planet generation," McMullin said. "Fewer of them hunt or fish compared to previous generations. They want a Steven Irwin lifestyle working with exotic and endangered species. Unfortunately, there aren't many jobs in those fields and most are low paying."

"The good news is that jobs will be waiting," he continued, "but they may not be the ones students wanted going into natural resource programs. As part of their education, we need to increase students' awareness of where the real job opportunities are and show them just how cool jobs in federal and state agencies can be."

McMullin recalls working for the Montana Department of Fish, Wildlife and Parks early in his career — canoeing a remote river to do a census of red kokanee salmon, snorkeling among thousands of the red fish, and watching dozens of bald eagles circling overhead. "I often found myself saying, 'I can't believe I'm getting paid to do this,'" he said. "There are plenty of opportunities like this in the U.S."

Concern about filling baby boomer vacancies prompted the Coalition of Natural Resource Societies to host a national conference to determine what can be done to prepare the next generation of natural resource professionals.

McMullin, one of the 35 invited participants, says agencies may have to revise some of their rules, allow creative options such as flex time and virtual meetings, and implement active mentoring and leadership development programs geared to help younger generations earn their way into leadership positions. Jobs may be revamped to make use of the new employees' technical skills.

"We'll need to convince employers to support continuing education on the job," McMullin said. "Colleges and universities can't do it all."

Noted Speaker at Water Seminar

George M. Hornberger, Distinguished University Professor at Vanderbilt University, presented a seminar on campus titled "Challenges and Opportunities in Water Resources Research and Education." The seminar, part of the Institute for Critical Technology and Applied Science's New Horizons Seminar Series, was co-sponsored by the college and the Virginia Water Resources Research Center. Hornberger, the Craig E. Philip Professor of Engineering, is director of the Vanderbilt Institute for Energy and the Environment and chair of the Department of Civil and Environmental Engineering.

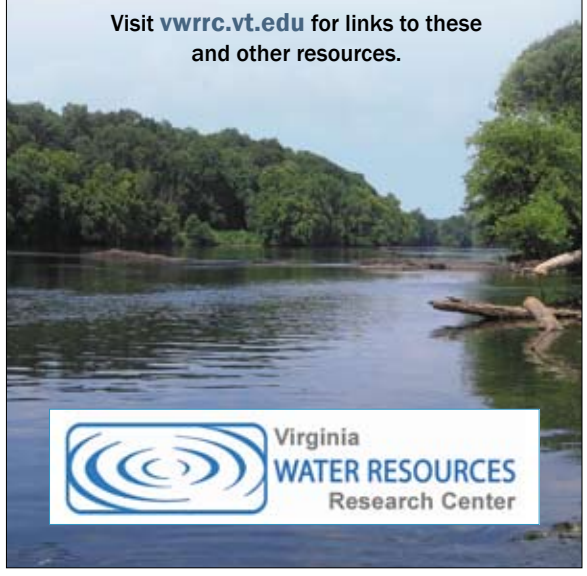
(L-R): Dean Paul Winistorfer; Stephen Schoenholtz, director of the Virginia Water Resources Research Center; George Hornberger; and Kevin McGuire, water center assistant director.

Water Center Reaches Out

One facet of the mission of the Virginia Water Resources Research Center, a federally funded center established in 1965 and housed in the college since 2005, is to share water-science information with citizens and policy makers across the commonwealth. It does so in a number of ways:

- The **Virginia Water Central** newsletter contains information on water news, policies, science, the status of water resources, and stewardship.
- The **Virginia Water Central News Grouper** provides annotated links to water news articles, events, and resources, grouped by topic.
- **Virginia Water Radio** broadcasts weekly segments highlighting music and sounds relating to Virginia's water resources.
- The **Quick Guide to Virginia Water-Related Events** includes information on conferences, workshops, stewardship events, government meetings, and other activities as well as links to lists provided by a number of other organizations.
- The **Virginia Water Monitoring Council** provides regular email announcements of meetings, reports, and other items related to water quality and water monitoring.

Visit **vwrrc.vt.edu** for links to these and other resources.



Riverkeeper Aids Students in Research

Doctoral students **Rebecca Kidd of Newport, Va.**, and **Matt Johnson of Colonial Heights, Va.**, conducted research on Virginia's Blackwater River last summer with Jeff Turner, the Riverkeeper for the Blackwater and Nottoway rivers. In his role as a volunteer for the Riverkeeper Program, Turner patrols both rivers and educates various groups and organizations about the watershed. "What pleases me the most is knowing there are young people out there like Matt and Rebecca who are interested in gaining knowledge that will aid in preserving that environment," said Turner. "I could not be any happier that those efforts were taking place right there in my rivers that I love so much. It just doesn't get any better than that."

"Jeff is very passionate about river conservation," Kidd observed. "As a result of his many years of experience, he was able to provide additional information regarding the history of the Blackwater River and how water quality has changed over time. It's always a great opportunity for scientists to interact with hardworking people in the field and to involve the community at which the research is aimed."

Johnson and Kidd were cruising the river to collect mussel specimens that could be used in their respective research projects. Johnson is studying the relationships between variation in stream flows in coastal plain streams and growth rates of freshwater mussels and trees in adjacent flood plains. Kidd's project focuses on the factors that influence freshwater mussel growth rates in the Nottoway and Blackwater rivers.

"Working with Jeff was great," said Johnson. "He seemed really interested in our research and asked a lot of questions along the way. We offered to compensate him for his time and gas used, but he refused. He said that someone taking interest in the rivers was payment enough for him."

Rebecca Kidd (foreground) and Riverkeeper Jeff Turner navigate the Blackwater River.

Wood Science Bowl Victory

A four-student team won the Wood Science Bowl at the Forest Products Society conference in Washington, D.C., last summer. **Shawn Crawford of Salem, Va.**, and **Qingqing Li of China**, both graduate research assistants in forest products; **Jeffrey Dolan of Salisbury, Md.**, a graduate research assistant in the macromolecular science and engineering program; and **Johanna Madrigal of Costa Rica**, a recent wood science and forest products graduate, made up "Team Quercus."

"Our team had a good combination of research specialties and nationalities," said Li. "We were both bold and prudent. The final match against Oregon State University was really tight. We won by a narrow margin, and the fact that we competed against such a strong team made it a very exciting game."

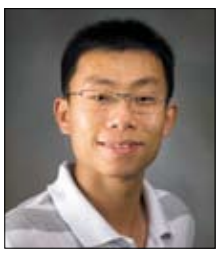
The competition was a Jeopardy-like game that tested the participants' knowledge of the wood and forest products field. Trivia questions were formulated by faculty members from participating schools.

"With skill, knowledge, and some luck, we were able to come away with a victory," explained Dolan. "We faced three teams in a bracket system to take the first-place prize, which was, in fact, a wooden bowl."

"It was a humbling experience because it showed me how vast and diverse the forest products industry is," Crawford added. "It was also very rewarding to put the knowledge we obtained from Virginia Tech to good use."

Shawn Crawford

Jeffrey Dolan



Qingqing Li

Johanna Madrigal

Graduate Students Receive Fisheries Awards

Brandon Peoples of Fort Smith, Ark., a doctoral student in fisheries and wildlife sciences, won the American Fisheries Society's 2012 student writing contest and received an honorable mention for the society's John E. Skinner Memorial Scholarship. Peoples' article, "Focus on the positive: how one little fish helps to sustain aquatic biodiversity," was published in the October 2012 issue of Fisheries, a monthly peer-reviewed journal for society members.

As summarized in the article, research conducted by Peoples and his colleagues showed positive interactions between two different types of minnows. In addition, Peoples introduced his ongoing large-scale experiment, which seeks to determine how habitat changes can affect interactions between species.

"My advisor, Emmanuel Frimpong, and I have been working on these ideas for some time now," Peoples said. "I'm enthused about presenting our research." Peoples hopes to continue conducting research and eventually teach at a university.

Master's student **Shannon White of Ashland, Va.**, received a John E. Skinner Memorial Scholarship from the American Fisheries Society. The scholarship includes a one-year society membership and covers expenses to attend next year's annual meeting. Selection is based on academic achievement, professional service, and reasons for attending the meeting.

"To be recognized as one of the top fisheries students in the country is truly humbling, and the award motivates me to continue striving for excellence in my own work," White said. "The end goal for me is to become a professor at a small college," she added.

Lohr Earns ACC Fellowship

Ashley Lohr of Purcellville, Va., a sophomore majoring in wildlife sciences, received a 2012-13 ACC Creativity and Innovation Fellowship. She was one of seven students chosen from 45 applicants for this scholarship program, which recognizes undergraduates pursuing an independent research project or creative work under faculty mentorship.

Lohr completed her research project, "Evaluating the maximum lethal temperature of the brown marmorated stink bug," under the guidance of Associate Professor Thomas Kuhar of the Department of Entomology. "Ashley has done a great job leading this research project," Kuhar said.

Ashley Lohr holds a Madagascar hissing cockroach in the entomology lab where she conducted her brown marmorated stink bug research.

"The brown marmorated stink bug is a major agricultural and household pest, and an invasive species," Lohr said. "I focused on nymphs, which means the insects were in the post-hatching stage. I placed them in an incubator at various temperature ranges to simulate the hottest part of the day in their natural environment. I am now incorporating adult bugs as well as egg masses into my research."

"Knowledge of the lethal temperatures of this invasive stink bug may help in predicting the geographic range of this pest as it spreads across North America," Kuhar added.

The fellowship included a $2,000 award, which Lohr will use to finance an independent study trip to Belize, where she will be volunteering with an ongoing jaguar study.

Moore Named Outstanding Young Scientist

Forestry master's student **Elizabeth Moore of Charlottesville, Va.**, spent last summer in the Adamaoua Province of Cameroon in Western Africa to complete field research and explore the potential for agroforestry opportunities in the area.

For three months, Moore interacted with local Cameroonians and refugees from the neighboring Central African Republic. Her focus was on improving food security and resource sustainability in the region by helping aid agencies such as the International Medical Corps to successfully integrate trees into gardening and farming systems in areas where refugee populations have increased dramatically.

Moore conducted interviews and focus groups with the Cameroonians and refugees to determine their agroforestry technique preferences and better understand the social arrangements of the villages. By recognizing the differences between the various cultures in the area, she was able to provide the villagers with agroforestry techniques catered to their needs.

As a result of Moore's hard work, she received the Outstanding Young Scientist Award at the 2012 International Union of Forestry Research Organizations' Small-Scale Forestry Working Group Conference in Amherst, Mass. The award is given to one conference attendee under the age of 35 who demonstrates exceptional promise as a scientist; competitors include academic faculty, research scientists, and other graduate students.

"Elizabeth's work in Cameroon is impressive not only for its nature, but also for its rigor," said Associate Professor John Munsell, Moore's advisor. "She worked very hard to organize and conduct a scientific program in a humanitarian setting. Her approach will benefit both people and science."

Elizabeth Moore (R) used illustrations and verbal explanations to enhance her interviews and focus groups with native Cameroonians and Central African Republic refugees.

Moore, whose focus is on human dimensions in natural resources, is particularly interested in collaboration between different groups of people and hopes to work in the field of community development and sustainable agriculture after completing her graduate studies.

Fox Named a Fellow — Twice!

Tom Fox, professor of forest soils and silviculture, was named a Fellow by two different national societies in 2012.

The Soil Science Society of America, a progressive scientific society dedicated to advancing the field of soil science, reserves the honor of Fellow for just 0.3 percent of its 6,000 members. The Society of American Foresters Fellow honor is given to those who have demonstrated excellence in volunteer involvement, consistent leadership, and advancement in forestry by education, public policy, research, or technology transfer.

"I am truly honored to become a Fellow in both the Soil Science Society of America and the Society of American Foresters," said Fox. "It is especially gratifying to have my contributions to forest soil science recognized in this manner by my professional colleagues in these two societies."

Fox's research focuses on silviculture, forest soils and fertilization, tree nutrition, and the environmental sustainability of intensive forest management. Much of his work concentrates on meeting the needs of the forest industry in the United States and Latin America.

Davis Selected Communicator of the Year

Communications Director **Lynn Davis**, the only person ever to serve the college in this role, was named the 2013 Communicator of the Year by Virginia Tech's Office of University of Relations. "Lynn does an excellent job of telling our story, which is so very important in this hyped up, sound bite world we live in," said Dean Paul Winistorfer, who nominated Davis. "Lynn takes what we do and turns it into such a compelling information piece that you simply have to read it. You can't put it down or click away from it."

Since 1992, Davis has worked tirelessly to promote the college and its programs through a comprehensive communications strategy, drawing on her years of experience and her countless contacts in natural resource agencies and organizations in Virginia and across the country. During the past year, she led a college-wide branding effort, incorporating input from all of the college's stakeholders to develop a brand portfolio identifying who and what the college is today. A new 32-page college prospectus showcases the college's brand promise: "Advancing the Science of Sustainability."

Davis' contributions go far beyond branding. She oversees production of this quarterly newsmagazine as well as stories for the Virginia Tech homepage, the Virginia Tech Research Magazine, and other outlets, and produces dozens of press releases each year. Key messages

are incorporated into all stories and media pitches, and the resulting media coverage has spread the college's name and work across the country and around the world.

"We've built an entire college communications plan around Lynn's expertise and that of her staff," Winistorfer added. "Putting together all the pieces of print, Web, and social media, as well as a strategy behind our brand and how we communicate it, is critically important for the college, our faculty, and students."

"Lynn is a consummate team player at the college and university level as well as with colleagues at local, state, and national levels," Winistorfer concluded.

Marion Helps Others Leave No Trace

Jeff Marion, adjunct professor of natural resources recreation, was recognized for his work with Leave No Trace, a national education program focused on low-impact outdoor practices and ethics. He received the Distinguished Service Medal from the Boy Scouts of America (BSA) for his dedication to advancing Leave No Trace education and training within the BSA.

Marion has worked with the Boy Scouts for the past 20 years to help them incorporate Leave No Trace practices into various courses and publications, including the Scout Handbook, Scout Fieldbook, and merit badge pamphlets. He was a founding member of the BSA Leave No Trace Task Force, a national group that guides educational efforts within the BSA. In addition, Marion received the Boy Scout's Hornaday Gold Medal and Gold Badge Conservation award.

Marion was also recognized in the Leave No Trace 2011 annual report: "A founding Leave No Trace board member and long-standing member of the Center's Educational Review Committee, Jeff's research and activism have helped propel Leave No Trace programming . . . . Jeff has given the Leave No Trace Center support and exposure that keeps reaching more people to make outdoor use as sustainable as possible."

Hammett Directs USAID Project to Improve Global Food Security

For millions of people around the world, getting enough calories to survive is a challenge, but helping them meet these daily needs solves only part of the problem. "Bread for now, hunger tomorrow," an old Spanish proverb says of short-term solutions.

Professor **A.L. "Tom" Hammett** of the Department of Sustainable Biomaterials directs a new multi-university USAID project to improve long-term food resources by strengthening the capacity of food-challenged nations to educate agricultural professionals.

USAID has awarded $6.2 million in core funding to Virginia Tech through the university's Office of International Research, Education, and Development to address knowledge gaps and modernize agricultural systems in developing countries. Up to $70 million in additional funds may be available through associated awards by USAID. Virginia Tech will lead the five-year project, partnering with the Pennsylvania State University, Tuskegee University, and the University of Florida.

The project, called InnovATE (Innovation in Agricultural Training and Education), is a component of the U.S. government's Feed the Future initiative. The four U.S. universities will work throughout the developing world to help agricultural training and educational institutions — from universities to primary schools — improve their curricula, strengthen administrative capacity, and build their infrastructure. University teams will address critical issues related to agricultural education in the

Tom Hammett (C) brings a wealth of experience working with partners worldwide to his new assignment.

21st century, including climate change, conservation, and carbon sequestration. The project will facilitate long-term collaboration between U.S. universities and these overseas institutions.

"We are committed to improving educational systems around the globe," Hammett said. "We are eager to build on our recent experiences assisting educational institutions in Liberia, Nepal, Senegal, and South Sudan."

He says the organization will take a holistic approach to improving the broad base of education as it relates to agriculture and food production. It will include such topics as gender equity because women are the major food producers and marketers in many regions.

Hammett, who has worked on efforts in Nepal since 1974, served for the past six years as director of the Memorial Center of Excellence at the country's Institute of Forestry, a USAID-funded project that honors 24 natural resource conservationists killed in a 2006 helicopter crash. Since the center's inception, he has traveled to Nepal to conduct workshops on resource planning, library building, proposal writing, administrative improvement, and establishing research collaborations, thereby facilitating numerous partnerships between U.S. faculty and their counterparts at the Nepalese institute. Virginia Tech's role in the project concluded in late 2012 as onsite administrators took over leadership of the institute.

Over the past 15 years, Hammett has been heavily involved in the university's study abroad efforts, introducing and facilitating new overseas courses in a number of locations, teaching courses in Cuba, Belize, and the Dominican Republic, and recruiting and mentoring other faculty to lead courses abroad. He has also hosted and organized training on campus for educators from Germany, Albania, Nepal, and India.

Colleagues praise Hammett's integrity, enthusiasm, and tireless personal commitment. They describe him as someone who can bridge the academic and real worlds, taking the notion of education well beyond traditional settings and students.

Digital Tool Gives Public Access to Urban Forest Canopy

Through a partnership with the Virginia Department of Forestry, faculty members in the college have developed the Urban Tree Canopy Mapper — a user-friendly, digital tool to view the tree canopy in 26 communities across the state. Both professionals and average citizens can use the free Web-based program to zoom in for close-up views of cities, towns, or neighborhoods and create custom maps of selected areas.

"It is imperative that we engage local community members and support their efforts to better understand the current extent of their urban forests," said Associate Professor and Geospatial Extension Specialist John McGee. "This information is an important first step to facilitate local and state efforts to manage and potentially grow urban forests, thereby increasing the benefits associated with urban trees."

McGee worked with fellow faculty members Eric Wiseman, Susan Day, and Randy Wynne, in partnership with the Conservation Management Institute, to develop the mapper. The 26 localities — from Arlington to Virginia Beach to Abingdon — are developing management plans to maintain or increase their urban tree canopy coverage, which could result in improvements in water quality, decreases in air pollution and in heating and cooling costs, and an increased quality of life for residents.

The Urban Tree Canopy Mapper enables users to view the tree canopy coverage in 26 communities across Virginia.

"The mapper empowers communities to advocate and plan for their urban forests with a sophisticated yet highly accessible Web tool," stated Wiseman. "It is a powerful tool for educating both citizens and policy makers about the benefits of urban tree canopy."

Users can toggle among different map options and view neighborhoods or examine a community as a whole. In addition, the mapper also provides analytical tools to help people better understand the canopy coverage. For instance, they can delineate an area, such as their neighborhood, and find out the percentage of tree canopy coverage.

"This project could not have been completed without the many partners who see the value of what we are working for," said Barbara White, urban forester for the Virginia Department of Forestry. "The Chesapeake Bay Program, U.S. Forest Service, National Oceanic and Atmospheric Administration, Virginia Department of Conservation and Recreation, and Virginia Coastal Zone Management Program all contributed project funding."

The Urban Tree Canopy Mapper can be accessed at www.utcmapper.frec.vt.edu.

Restoring Virginia's Quail Populations

In response to drastic declines in bobwhite quail populations, falling an estimated 4 percent a year in some parts of the state, Virginia has joined more than 20 states to sign on to the National Bobwhite Conservation Initiative, a large-scale effort to form federal, state, local, and nonprofit partnerships to increase quail habitat. Over the past three years, about 2,500 acres across the state — about 500 of them in the New River Valley — have begun to be managed for quail habitat.

At the frontlines of this effort are five private lands biologists working for the Conservation Management Institute (CMI) on a project sponsored by the Virginia Department of Game and Inland Fisheries and the USDA Natural Resources Conservation Service. David Bryan, Justin Folks, Robert Glennon, Andrew Rosenberger, and Blair Smyth are working together to provide information and support to landowners interested in managing for quail.

"Getting knowledgeable people on the ground working directly with landowners is the best way to achieve all of our habitat goals," said Scott Klopfer, director of CMI. "The private lands biologists work hard to ensure landowners have the information, resources, and support to make good decisions."

Artwork by Mike St. Germain

Rosenberger is helping develop conservation plans for landowners and farmers interested in the program. Since beginning his efforts, he has worked with more than 70 individuals across Southwest Virginia to restore quail and other native species to their land. He uses a variety of techniques to reach out to landowners, including workshops, field trips, and presentations to civic groups.

The main idea is to encourage communities to create "quail-habitat quilts" consisting of patches of appropriate habitat including warm-season grasses, brushy edges, and other early successional vegetation. Quail need these areas because they provide cover for nesting, raising young, and escaping predators. "For landowners interested in the project, there are conservation incentive programs available to help restore habitat in addition to free conservation planning," explained Rosenberger.

While restoring quail habitat in Virginia is positive in itself, the effort has broader benefits for other species. Grassland habitat is also good for songbirds such as grasshopper sparrows, meadowlarks, and yellow-breasted chats, and game species such as wild turkey and white-tailed deer. Managing for native grasslands can also help pollinator species such as butterflies, bumblebees, and honey bees, all of which are in decline worldwide. Native grasses such as big bluestem, Indian grass, and switchgrass provide drought-tolerant, perennial forage for livestock that doesn't require fertilizer, which improves water quality and reduces runoff when compared with row crops.

"There is a lot of work to be done before we can expect bobwhite quail to rebound in Virginia," said Klopfer. "But with interaction with interested landowners and continued support from the agencies involved, we can get there." For more information, visit bringbackbobwhites.org.

RESEARCH SPOTLIGHT

A Quest for Park Biodiversity Answers

Scientists around the world worked together in an essential biodiversity study to gauge the impact human activities have on the ability of natural systems and wildlife to survive. Their study, "Averting biodiversity collapse in tropical protected areas," published by the journal Nature, looked at more than 30 different categories of species within protected tropical areas across the Americas, Africa, and Asia.

Scientists, who found that many of the protected areas are struggling to sustain their biodiversity, estimated how species groups have changed in numbers over the past few decades while identifying environmental changes that might threaten the nature reserves, such as rapid deforestation in tropical nations. The team found many reserves acted like mirrors — partially reflecting the threats and changes in their surrounding landscapes.

Associate Professor Sarah Karpanty has studied wildlife in Madagascar since 1998.

Associate Professor Sarah Karpanty and her students have studied wildlife in and around Madagascar's Ranomafana National Park since 1998. She contributed a review of her research to the report, with particular attention to the state of the wildlife she studies, the threats to both the wildlife and the park, and how changes outside the park impact wildlife inside the park's boundaries.

"This is a uniquely comprehensive, up-to-date, and honest assessment about the role of protected areas in saving biodiversity in the tropics," Karpanty said. "The large project was a collaborative effort by scientists from around the world to contribute their data and insight to the question of whether nature and wildlife parks can save the world's biodiversity."

Scientists found that while most reserves were helping to protect their forests, about half of the reserves were struggling to sustain their original biodiversity, including old-growth trees, large predators, primates, stream-dwelling fish and amphibians, and other wildlife. The reserves suffering the most were those that were poorly protected and suffered encroachment from illegal colonists, hunters, and loggers.

"The take-home point," Karpanty emphasized, "should not be viewed in a negative light, in terms of thinking that hope is lost for biodiversity in the tropics. We need to be as aggressive in eliminating threats outside of park boundaries as we are in establishing new parks or maintaining existing ones. In many ways, the findings are common sense. However, sometimes 'we,' meaning society, need a wake-up call about the obvious."

ALUMNI CORNER

Alumni Profile

Dennis Treacy

Dennis Treacy ('78 B.S. in forestry and wildlife with a concentration in fisheries) knows the value of hard work and dedication. He is the executive vice president and chief sustainability officer at Smithfield Foods Inc., a global food company that is the world's largest pork producer and processor. Treacy paid his way through college working as a co-op student for what is now the Virginia Department of Environmental Quality and worked for the agency as a professional biologist for two years following graduation.

"I loved working there, but realized I really wanted to be a decision maker in natural resource policy," Treacy said, so he went on to earn an environmental law degree from the Northwestern School of Law of Lewis and Clark College in Portland, Ore., in 1983.

Before joining Smithfield in 2002, Treacy held various positions in both the private and public sectors. He was an environmental attorney for the West Virginia attorney general's office and a policy advisor for the West Virginia Department of Natural Resources. He later worked for the Virginia attorney general's office and served as director of the Virginia Department of Environmental Quality from 1998 to 2002. "To come full circle and become the head of the agency where I did my co-op was a wonderful experience," Treacy said.

In his current position at Smithfield, Treacy oversees many facets of the company. "I've been part of Smithfield for 11 years now. I focus on sustainability, which includes environmental management, how we treat the animals, and how the workforce is cared for," he explained. "I also dabble in government affairs and the legal department." In addition, Treacy serves as the executive director of the Smithfield-Luter Foundation, the philanthropic wing of Smithfield Foods that funds education and growth opportunities in communities across the country.

"One of my favorite parts of my position is the excitement that has been generated by the concept of sustainability within our company and other companies," Treacy continued. "I happen to be here at a time when the private sector is leading the charge, and Smithfield is being widely recognized as a leader in sustainability. It's exciting, and there seems to be no limit to what can be done, which makes it very interesting to come to work every day."

Treacy's time at Virginia Tech provided him with a strong foundation of knowledge and prepared him for real-world challenges. "My major was well suited for the workforce. We were taught biology with management superimposed on top of that, which was extremely useful because I was exposed to the concepts of managing natural resources."

Last summer, Gov. Bob McDonnell appointed Treacy to the Virginia Tech Board of Visitors, the university's governing authority. "It's an honor to go back to the school I love so much," Treacy said. "I'm very impressed with President Steger, the board members, administrators, students, and faculty. It's interesting to see how a large university works. Watching everyone rally around the university is great, because you really sense and feel the Hokie spirit. It's been a real eye-opener."

Alumni Events Calendar

MAY 17-19, 2013
Commencement Ceremonies:
Friday, May 17 – University Commencement
Saturday, May 18 – College of Natural Resources and Environment Graduation Exercises
Sunday, May 19 – National Capital Region Commencement

JUNE 4-7, 2013
National Conference of Private Forest Landowners
Coeur d'Alene, Idaho
forestlandowners.com

JUNE 9-11, 2013
Forest Products Society and the Society of Wood Science and Technology Joint International Convention
Austin, Texas
www.forestprod.org/ic

JUNE 19-21, 2013
The Future of Diversity in Our Disciplines and Careers: Natural Resources and the Environment
Blacksburg, Va.
cnre.vt.edu/events/conferences/diversity

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

OCTOBER 12, 2013
Homecoming and Tailgate
Virginia Tech vs. Pittsburgh
Cheatham Hall, Blacksburg, Va.
www.alumni.vt.edu/reunion/cnre

Holbrook Heads Georgia Wildlife Federation

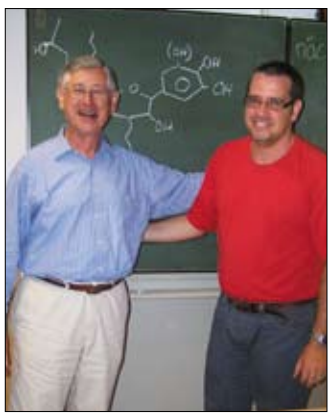
Todd Holbrook ('84 M.S. in wildlife science), former deputy commissioner of Georgia's Department of Natural Resources (DNR), has been named president and CEO of the Georgia Wildlife Federation. Holbrook, who has 27 years of experience with the Georgia DNR, including stints as assistant director of the Wildlife Resources Division and chief of Game Management, was responsible for several groundbreaking studies into the decline, recruitment, and retention of hunting and angling participation.

"I am proud to be joining a sportsmen's organization with three-quarters of a century of conservation history," Holbrook said. "The Georgia Wildlife Federation will continue to be active in the defense of the public's rights to enjoy the public's fish and wildlife and to maintain these resources in abundance."

Under Holbrook's leadership, the Georgia DNR enacted a scientifically driven, comprehensive statewide deer management plan to maintain the quality of both the state's world-class deer population and its hunting opportunities while keeping the deer population in balance with the habitat. Holbrook was also a leader in developing youth education programs that parallel the nationally recognized education programs of the Georgia Wildlife Federation.

"Todd Holbrook is going to do an absolutely great job as the Georgia Wildlife Federation's next CEO," said Board Chairman Matt Nichols. "His education, experience, and leadership ability alone qualify him for the position, but his great reputation, his passion for wildlife and habitat conservation, and his energy and enthusiasm are what carried the day for our board of directors."

Carrying on the Wood Science Legacy



Wolfgang Glasser (L) and his third-generation protégé, Danny Garcia-Marrero.

Doctoral program advisors are considered pseudo-parents (aka "doctor father" or "doctor mother") in some cultures, like the very traditional German academic system.

Wolfgang Glasser, professor emeritus of wood science and forest products, who currently holds a Mercator Guest Professorship at Germany's Albert Ludwig University Freiberg, is currently working with doctoral student Danny Garcia-Marrero on a tannin utilization project.

Garcia-Marrero is carrying out his dissertation at the university's Institute for Forest Utilization under the directorship of Professor **Marie-Pierre Laborie** ('02 Ph.D.). Laborie studied at Virginia Tech under the advisement of Professor **Chip Frazier** ('92 Ph.D.), who, in turn, was advised by Glasser, earning Glasser at least part of the great-grand (doctor) parenthood of Danny Garcia-Marrero — and making him feel really old!

Garcia-Marrero, who hails from Cuba, is also working on a project involving another alum, Professor **Milan Sernek** ('00 Ph.D.) of the University of Ljubljana in Slovenia, and Professor A. (Tony) Pizzi of the University of Nancy in France.

STAY IN TOUCH WITH VT NEWS

The **Virginia Tech News Daily Email** is your connection to Virginia Tech news and information. Delivered overnight, Monday through Friday, it includes the latest news, campus notices, and events, with extensive links for detailed coverage. To find more information about this service, see a sample email, or subscribe, visit **www.vtnews.vt.edu/email/sign-up.html.**

STUDENTS TRADE SPRING BREAK FOR SERVICE WORK, ADVOCACY, AND EDUCATION TO SAVE THE BAY

While most students envision Florida or the Caribbean as the ideal spring break locale, each spring a group of students instead heads north to the Chesapeake Bay to make a difference. Now in its fourth year, the Chesapeake Bay alternative spring break program continues to offer students unique opportunities to serve the environment.

Participants assist in restoration efforts and advocacy at different sites around the bay while learning from professionals from the Chesapeake Bay Foundation (CBF). The CBF exposes the student groups to a wide range of communities involved in enhancing bay quality; students learn not only from watershed scientists, but are immersed in the rich culture of Chesapeake Bay watermen as well. Through these interactions, the group gains a better understanding of the complex network that exists between human communities and the bay's resources.

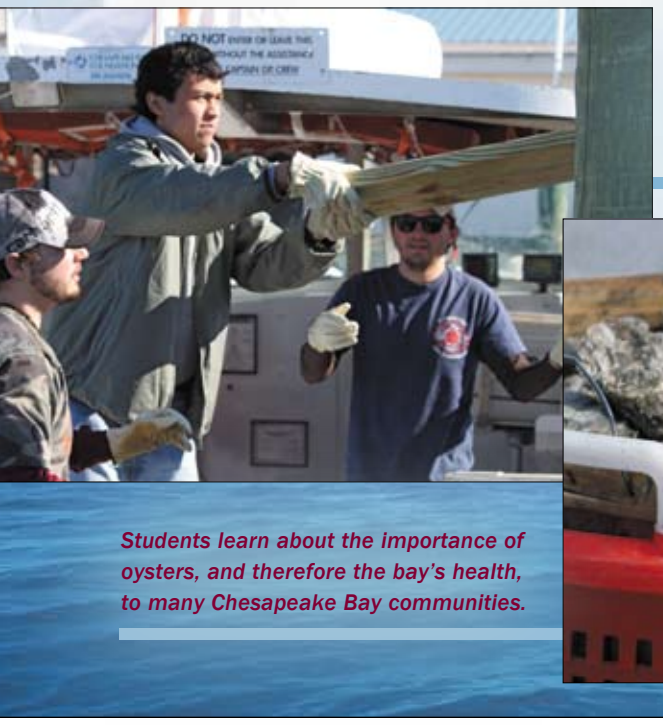
The program's origins stretch back to 2010 when fisheries science major Scott Riley organized a service trip with the CBF over spring break for himself and eight of his peers. The group travelled to Port Isobel Island for trail maintenance and explored cooperative agricultural extension, planting over 100 trees along a stream bank in Maryland.

Scott Riley (C) examines a blue crab, a valuable resource to the culture and economy of the Chesapeake Bay region.

In 2011, Lorelai Mackenzie, an environmental resource management major, took up the reins as senior coordinator and mentor for the trip, working to expand and develop the experience into an annual program. Fellow environmental resource management major John Haworth worked alongside her and took on the additional role of media coordinator. That year, students spent time at the CBF island education centers hearing from Tangier Island watermen and witnessed firsthand the dismal effects pollution has had on Tangier's crabs, oysters, and people. "It was an awesome trip, and it made me connect real-world experiences with textbook jargon from class," said Haworth.

In 2012, Anthony Brickey, an environmental resource management major, and Hope Wentzel, an animal and poultry sciences major, took over as program coordinators while Riley served as lead mentor for the trip. Participants traveled to sites around the Annapolis area and gained insight into oyster aquaculture at the CBF's Oyster Restoration Center.

"Sustainable practices within the Chesapeake Bay Foundation were stressed, which was a very important take-home message for those of us who hadn't been fully immersed in the field before," explained Brickey. "I hope to see the program continue on in the future as a student-led trip endorsed by the College of Natural Resources and Environment."



(L-R): Michael Salyer, Johnver Atienza, and Richard Mittler load lumber that will be used to reconstruct a canoe dock onto a CBF workboat.

Students learn about the importance of oysters, and therefore the bay's health, to many Chesapeake Bay communities.

Richard Mittler (L) and Michael Salyer remove old wood from a canoe dock to make room for renovation.

This year, Anna McAuley, a natural resources conservation and recreation major, and Tess Pangle, a wildlife science major, joined Brickey and Wentzel as part of the leadership team. Among other activities, the trip included a visit to the Arthur Sherwood Center, where students went out in canoes and CBF's one-of-a-kind research vessel to collect specimens and learn about water quality.

"I think the program will be strongest if it continues to be student organized," remarked Wentzel. "That responsibility helps people take ownership of their activities, community service, and educational goals and makes us better prepared to find jobs and make an impact in our chosen field."

The program is an ideal way for students to show potential employers their commitment and dedication to the field, and the networking that occurs during the program can lead to other opportunities. Riley earned an internship in oyster restoration with CBF in Gloucester, Va.; Mackenzie interned as an environmental educator with CBF at Port Isobel Island, Claggett Farm, and the Phillip Merrill Environmental Center; and Haworth served as a community building and digital media intern at the Phillip Merrill Environmental Center.

Each year has brought unique experiences and challenges for the student participants and leaders. The demand for this program, and other potential outreach programs, is apparent from the overwhelming number of applicants – representing widely varying majors – as well as those who sign up for the trip two or even three years in a row.

For more information, as well as photos and blogs about the Chesapeake Bay alternative spring break program, visit www.bayspringbreak.com.

Cody Schrader (L) and Dae Sung Lee help cut grid work to be shaped into oyster cages. Area residents can hang the cages off their docks to grow their own oysters in a process known as "oyster gardening."

Casey Jenkins (L) and Kelsey Schoenemann remove tree shelters — which help protect against insects, harsh winds, extreme temperatures, and damage from wildlife — from young trees. These trees are planted in a riparian buffer zone along a stream in an agricultural site to filter and uptake excess nitrogen and other nutrients.

All photos courtesy of John Haworth ('12 B.S. in fisheries science).

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