



CNR NEWS

A LITTLE BIT OF POLYSACCHARIDE HELPS THE MEDICINE GO DOWN

Picture a tree. Its thick, rough trunk extends upward, gradually tapering as it meets the sky. Powerful branches extend from its sides, covered in gently blowing leaves. The tree seems to blatantly ignore the most basic rule of life on earth – gravity. In large part, this phenomenon is due to polysaccharides, organic molecules that perform functions as diverse as building strong, flexible trees and delivering nutrients through the bodies of animals.

COLLEGE OF NATURAL RESOURCES
Virginia Polytechnic Institute and State University



Kevin Edgar examines the raw material for his work to improve drug delivery.

According to Kevin Edgar, a professor in the College of Natural Resources' Department of Wood Science and Forest Products, polysaccharides are also the magic ingredient to improving medicine. Currently, many medications have poor solubility and bioavailability, meaning that only a small portion of the drug reaches the bloodstream to combat illness. To compensate, patients must take higher doses to get enough of the drug into their bloodstream, leading to higher medical costs and increased risk of side effects from the off-target portion of the drug.



Nilanjana Kar, postdoctoral associate in wood science and forest products, carries out a reaction to prepare a novel polysaccharide derivative for drug delivery applications.

Edgar believes that polysaccharides can be used to solve many of these problems. Polysaccharides are naturally safe for use in medicines; Edgar's students modify them through selective photosynthesis to create safe derivatives with attributes that enable them to help to move the drug from the gastrointestinal tract into the bloodstream and to control release times. This opens the door to extended release medications that allow the patient to take a pill once a day, rather than once every few hours. The opportunity to create extended release medications is an important one, as Edgar firmly believes that convenience is a vital component of successful treatment.

Improved drug delivery has been Edgar's goal since before he joined the Virginia Tech faculty in 2007. While a Technology Fellow at Eastman Chemical Company, Edgar and his colleagues conducted research to improve the delivery of saquinavir, an HIV drug, and tamoxifen, an important therapeutic for the prevention of breast cancer. Their research resulted in drugs that can be more easily absorbed into patients' bloodstreams, increasing drug effectiveness.

In his quest to develop the most effective medications possible, Edgar crosses traditional boundaries, applying many different disciplines to his research. In the journal *Cellulose*, he wrote, "It is typical of modern scientific inquiry that it is at this multidisciplinary interface, at the intersection of organic chemistry, material science, polysaccharide chemistry, pharmacology, and pharmaceutical science, that rich opportunities for discovery exist."

Edgar enthusiastically pursues these opportunities through the long process of drug creation. Before he can use the polysaccharides, Edgar must first modify them by adding benign chemical groups in such a way as to enhance their solubility and ensure that they remain non-toxic. Next, he must determine the most suitable method to combine the polysaccharide with the drug, a process that can be as simple as mixing the ingredients together and pressing a pill, or as complicated as freeze-drying.

Edgar can further enhance the drug's solubility by incorporating the drug into a polysaccharide matrix, a process that requires testing many drug-polysaccharide matrices before finding the best combination. If laboratory tests indicate the system should be effective, it is then tested in complex living systems. If these tests are successful, the next step is approval from the Food and Drug Administration, a three-part process in which the drug is tested extensively for safety, efficacy, and uniform response in patients representing a wide spectrum of ages, races, and medical conditions.

Though Edgar spends much of his time dealing with the complicated chemical processes involved in creating new drugs, his ultimate goal is to help people. His progress toward this goal recently earned Edgar a place in the inaugural class of the American Chemical Society Fellows, an honor given to only 162 of its 154,000 members. "I hope my work will make drug taking more effective, safer, and more convenient for patients," Edgar says.



"I like to backpack, and it would be really great to have a once-a-day version of ibuprofen to treat those hiking aches and pains."



Carter Fox, a Ph.D. candidate in the Macromolecular Science and Engineering Program, prepares a sample of drug in polymer for x-ray analysis of crystallinity.

Edgar's "magic" ingredient to improve medicine is polysaccharides from such natural sources as trees, corn stalks, sugar cane, cotton, and seashells.



Greetings from all of us in the college. I can confirm to you after the first six months in my new role as dean, and what I'm sure you already know – it is the people in our college that make the difference; it is all about the *people*. Our faculty, staff, and students are the most collegial, positive, creative, and committed folks to work with. I genuinely tell you this is a wonderful group of people to work with in our university setting.

We have much to report as we move into this new decade. People and programs in the college continue to change and evolve. Three of our senior faculty will retire in June. Richard Oderwald, professor of forestry and associate dean of academic programs, will trade in his office for his various watercraft and fishing poles. Jeff Kirwan, professor of forestry, youth education Extension specialist, and author of the "big trees" book, will continue to spread the word about the importance of big trees. Larry Grossman, professor of geography, will trade his daily routine for some travel, but hopes to be involved in some as-needed teaching for us. You will have received this newsmagazine a few months prior to their departure; be sure to touch base with them and thank them for their influence on your life/career. It means a great deal to us as faculty to hear from former students – even, and maybe especially, if it has been decades! Each of these gentlemen has left his mark on our college and our students, and we are thankful and appreciative of their contributions.

We have added new faculty to the college – Jason Holliday and Brian Strahm have joined the Department of Forest Resources and Environmental Conservation (see article on page 5). Jason's position is a joint appointment with the Virginia Department of Forestry, and we are thankful for this creative partnership and working relationship with State Forester Carl Garrison and his agency. Brian, who works in the area of forest soils, replaces the legendary Jim Burger. Our future is very bright with the many new faculty we've brought to campus in the past few years.

Audrey Zink-Sharp has assumed the role of interim head of wood science and forest products. Audrey served as associate head of the program the past four years and is graciously serving the department while we resume a national search. Lon Weber has been named director of information technology, and Will Pfeil has joined this group to assume web responsibilities for the college. Watch for our new college website soon!

We have a number of new initiatives we are working on, including a college undergraduate student leadership institute, a new college-wide major titled Sustainable Natural Resources and Environments, an executive master of natural resources program to complement our current degree program in the National Capital Region, and renewed and stronger ties to our community college partners. We have begun the process to

change our college name to the College of Natural Resources and Environment to better reflect what we already do, but very importantly, to position ourselves, our programs, and our students for a bigger and more important role as leaders, problem solvers, and stewards of the earth's natural resources and environment.

We invite you to join us for our first "college showcase" on April 6, including a student awards reception, keynote speaker, college displays, and many opportunities for interaction with faculty and students. Look for information on our college website.

Finally, we are proud of and congratulate alumnus Doug Domenech ('79 B.S. in forestry and wildlife management), recently appointed as Secretary of Natural Resources for the Commonwealth in Governor McDonnell's administration.

I welcome your input and visits at any time. Let us hear from you! We appreciate your support of the College of Natural Resources. From all of us in the college...

Warm regards,



Paul M. Winistorfer
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COLLEGE OF NATURAL RESOURCES

www.cnr.vt.edu

Winter 2010 Quarterly Newsmagazine

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Printer **Progress Printing of Lynchburg, Va.**

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College Bids Farewell to Dean Mike Kelly

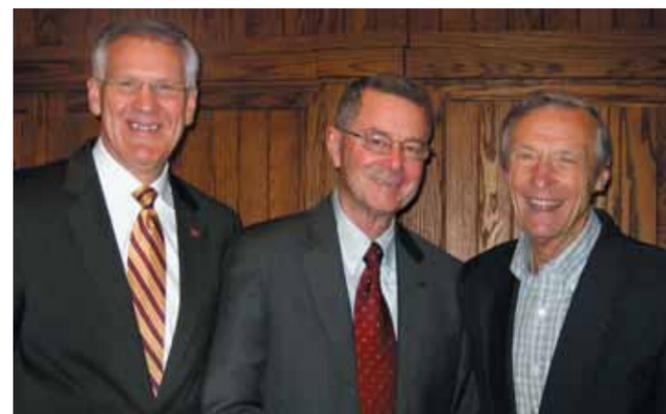
Faculty, staff, administrators, colleagues, and friends gathered at the German Club in November to bid a respectful farewell to retiring dean Mike Kelly and his wife, Candi. Guests shared memories and good wishes in honoring Kelly's five years of service as dean of the College of Natural Resources. The college presented Kelly with a large wood-framed mirror inlaid with leaves carved of wood from a variety of tree species. Many guests brought gifts as well: State Forester Carl Garrison presented Kelly with the Crown Award on behalf of the Virginia Department of Forestry; Carl Zipper of the Powell River project brought a caricature of Kelly flying in his plane over the Powell River, illustrated by local artist George Willis; and Peggy Quarterman, administrative staff assistant for the college, presented a handmade quilted bag to Candi Kelly.

Despite financial challenges during Kelly's tenure as dean, the college has seen the number of new students double, programs expanded to reflect Virginia Tech's strategic plan, and external research dollars increase by more than 60 percent. Among his many accomplishments, Kelly worked with colleagues to establish and strengthen relationships with universities around the world, including Chile and South Korea.

Kelly hosted the highly successful North American Forest Soils Conference on its 50th anniversary and was the lead dean and a strong supporter of Virginia Tech's hosting of the Society of Environmental Journalists Conference in Roanoke, the university's largest such undertaking. Upon stepping down as dean in August 2009, Kelly was asked by Provost Mark McNamee to lead the effort to conduct a selective mid-term review of the 2006-12 University Strategic Plan.

One lasting tribute to Kelly's compassion and dedication will endure long after his departure. It is the result of Kelly's efforts that the carved wooden Kopjafa memorial, a gift from West Virginia University and the University of West Hungary to honor those lost in the Virginia Tech tragedy on April 16, 2007, now stands in prominence outside Cheatham Hall.

When asked to reflect on his accomplishments as dean, Kelly was characteristically understated: "Mostly, I would like to be remembered as someone who tried to represent the college effectively, treated people equitably, and did his best to take something that was already good and tried to make it better. My goal when I came here was to leave things in better shape than when I arrived, and even with the budget cuts and other bumps in the road, I think the college has continued to progress. I credit this not to anything in particular that I have done, but more to the strength of our faculty and staff, as well as the fact that our ongoing reputation as a leader in the field has allowed us to attract bright and productive new faculty and staff to the college during a particularly critical time. I would be remiss in this if I did not also give credit to both the provost and president for their continued belief in the worth and potential of this college and the fact that they backed up their beliefs with support."



Mike Kelly (C) is joined by Dean Paul Winistorfer (L) and John Hosner, former director of the School of Forestry and Wildlife Resources, the forerunner of the College of Natural Resources.

See more photos of Dean Kelly's retirement celebration at <http://picasaweb.google.com/candikelly/MikeSRetirementReception111809?feat=email>.

In his retirement celebration remarks, Dean Kelly attributed his success to the support of his wife, Candi.

Generous Gift of Land Benefits Extension

A Woodbridge, Va., resident recently donated nearly 140 acres of forestland in Culpeper County, appraised at \$966,000, to the College of Natural Resources. Bill Ross, a retired geologist, had previously endowed an undergraduate scholarship in the college. Proceeds from the sale of the land he donated will be used for the college's Extension programs.

"Bill is a great friend of the college," said Dean Paul Winistorfer, "and this extraordinarily generous show of support will help us do even more to help citizens of the commonwealth through our Extension programs."

Ross is a University of Tennessee alumnus who developed a relationship with Virginia Tech through its programs that teach landowners how to manage forest property. He bought land in Culpeper County in 1981 for recreation. "I used to go down about every weekend until I just got old," Ross said. "I would hunt for deer and turkey."

Marshall Hahn's Gift to the College

Marshall Hahn, former Virginia Tech President and CEO of Georgia-Pacific, has generously donated a unique gift to the college. Hahn, an avid hunter who has traveled the world, presented the college with over 30 items from his vast taxidermy collection. "The expertly preserved animals, including North American species such as black and brown bear, cougar, elk, and turkey, now grace many of the offices and common areas in Cheatham Hall," said Eric Hallerman, department head of fisheries and wildlife sciences, who received the gift on behalf of the college. Each specimen comes with its own story, which Hahn will share on an upcoming visit to the college. Hahn also donated items from his African collection to the Virginia Museum of Natural History in Martinsville.



He also started going on the Extension-agent led tours – originated by Harry Haney, Garland Gray Emeritus Professor of Forestry, to show what timber harvesting, wildlife habitat enhancement, water quality conservation, and other forest management practices actually involve.

"It's one thing to show pictures and talk in a classroom, but with the tours we visit sites with landowners and they get to see things in practice," explained Adam Downing, an Extension agent for Virginia's northern district, which includes Culpeper County. Through tours, courses, and newsletters, his office helps educate thousands of people each year.

"I enjoyed taking the courses and going on the trips and so forth," Ross said of his involvement with Extension over the years. "So I thought it would be nice if I would support them." Through his generosity, Ross is helping ensure that others will continue to benefit from the college's outreach as he has.



Bill Ross donated land appraised at almost \$1 million to the college.

College Receives Engaged Department Award

The College of Natural Resources received one of the first Engaged Department Grant Awards from the Center for Student Engagement and Community Partnerships (CSECP). The award is made to the department or college whose proposal best represents a coherent and innovative plan for developing infrastructure and enacting curricular reform to institutionalize engagement across its unit. Engaged departments are those that demonstrate a collective commitment to teaching and discovery for the common good.

The College of Natural Resources received a \$5,000 grant award for its proposal, which focuses on achieving a 100 percent participation rate in engagement opportunities among its students and having 25 service-learning courses in place by 2012. The college already has an Engagement Committee in place, which includes one senior faculty member from each department, to develop a college-wide engagement plan. The group provided input on their respective departments and on how to increase engagement activities within their respective areas. The proposal team was led by Bob Smith, associate dean for engagement, and included Paul Winistorfer, Eric Hallerman, Janaki Alavalapati, Bill Carstensen, and Scott Klopfer.

Jim Dubinsky, director of CSECP, said, "We're very excited about the projects outlined in these proposals. Both teams' proposals offered specific strategies that would help students and faculty work with a variety of community organizations. In addition, the proposals demonstrated keen insight in the benefits of integrating this kind of engagement throughout the curriculum. . . . We believe this year's winners will be models for other departments and colleges."

Other elements of the college's proposal include collaborations with the Conservation Management Institute regarding the Catawba farm property, creating demonstration sites on campus for green construction, and incorporating service-learning into study abroad opportunities.

Bob Smith (R), associate dean for engagement, and Arlice Banks, administrative assistant for engagement, display the certificate received in honor of the Engaged Department Grant Award.



Virginia Space Grant Consortium Receives NSF Grant

The Virginia Space Grant Consortium has been awarded a \$894,228 grant by the National Science Foundation's Advanced Technological Education Program, which supports the development of technicians in emerging fields, for the Geospatial Technician Education through Virginia's Community Colleges (GTEVCC) project. The project will help build a partnership among Virginia's community colleges, business and industry, and higher education institutions.

Since career opportunities in geospatial technology (e.g., geographic information systems, global positioning systems, and remote sensing) are expanding, the project seeks to provide students with a relevant academic curriculum based on industry needs. Ultimately, students will be led to jobs, and employers will be able to draw from a larger pool of skilled geospatial technicians.

The project will establish academic pathways in geospatial technology at three colleges in the Virginia Community College System (VCCS) while consolidating the efforts in which the colleges are

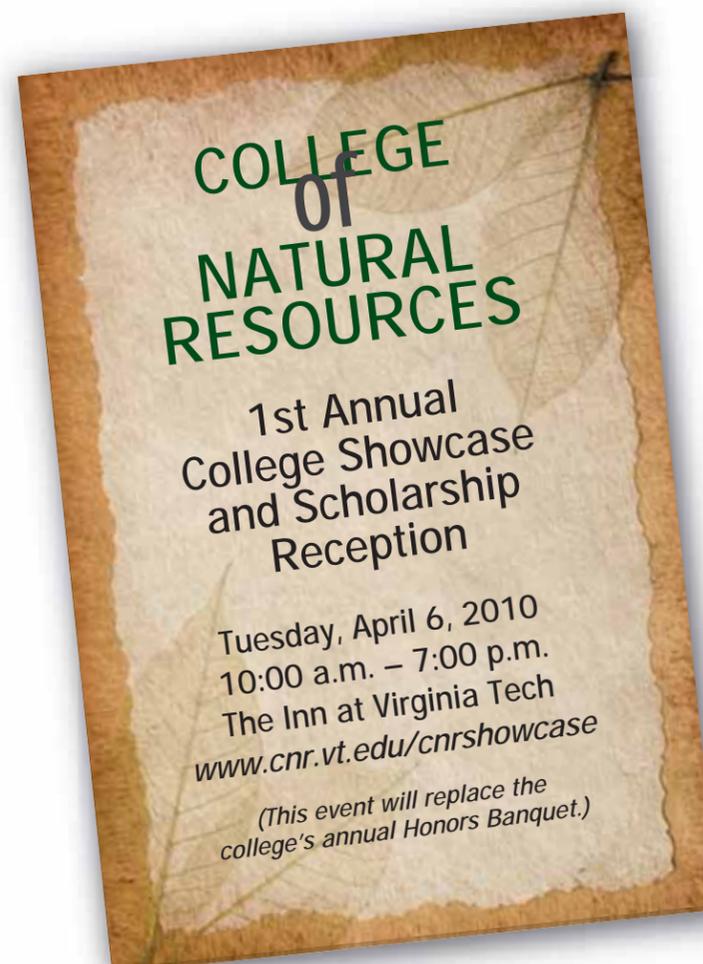


currently engaged. John McGee, the state's geospatial Extension specialist and assistant professor at the college, is head of the university's Virginia Geospatial Extension Program. McGee will partner with VCCS, John Tyler Community College, Tidewater Community College, Virginia Western Community College, and the Virginia Space Grant Consortium as the GTEVCC project team. During the summers of 2010 and 2011, he will coordinate an intensive geospatial institute to train community college faculty members at Virginia Tech.

"The institute will provide VCCS faculty with hands-on experiences, networking opportunities, and other resources that are designed to facilitate the integration and application of geospatial technology in the classroom," McGee said.

The project team will focus on developing educational resources such as academic pathway models, curriculum, professional development, and career awareness materials for students and faculty. "This effort will facilitate the continued development of quality and cutting-edge educational programs across the VCCS," commented McGee. The team will also create a geospatial technology web portal to "provide community college faculty across the state with instant access to geospatial educational resources," McGee explained.

John McGee (C), the state's geospatial Extension specialist, works together with Randolph Wynne (L), professor of forestry and remote sensing, and Jennifer McKee, geospatial project developer, on the GTEVCC project.



Hajnal Makes Big Splash With H2Ogies

Erika Hajnal, a sophomore wildlife sciences major, came to Virginia Tech from Budapest, Hungary, last January and has been breaking women's swimming records ever since. Excelling in the individual medley, butterfly, and distance freestyles, Hajnal has represented her native country in multiple international competitions, including the World Championships and European Championships, and has given the women H2Ogies a shot in the arm.



Erika Hajnal

Two semesters into her transition to a new school, new team, and new country, Hajnal already holds the records for Virginia Tech's 500-, 1,000-, and 1,650-yard free and 400-individual medley (IM), as well as the War Memorial Pool's 500- and 1,000-free and 400-IM. Hajnal was recently named ACC Women's Swimming and Diving Performer of the Week and Rookie of the Year. The first-ever Virginia Tech distance swimmer to earn All-American honors, she now has her sights set on breaking Virginia Tech's 200-free and 200-fly records and qualifying for the next Olympics.

Hajnal credits her coaches, Ned Skinner and Braden Holloway, for her award-winning swimming and describes the H2Ogies as a big family. "We train

three or four hours a day together, support each other, and trust each other," she explained. The strong bond she has with her coaches and teammates resonates in her swimming and is a large part of why her performance has improved since coming to Virginia Tech. "I am stronger, my turns are better, and my finish is my secret weapon, but this is all just a part of my growth," she added.

Despite the miles that separate her from her loved ones, Hajnal feels comfortable with her move to Blacksburg. "The most important thing is that mentally I'm absolutely fine here. I love swimming, I love working with this team and these coaches, and I think I made the best decision of my life by coming to Virginia Tech."

Graduate Students Host Symposium

Forest resources and environmental conservation graduate students presented a one-day symposium on the department's many specializations, ranging from locating reclaimed coal mines in Southwest Virginia using multi-temporal satellite images, to small-scale and amenity-focused forestry that fills a market niche. The event included oral presentations, a roundtable discussion, a panel discussion, a poster contest, and a keynote address by Al Sample, president of the Pinchot Institute for Conservation, who spoke about the role of forests in America's energy future.

"The idea for the symposium came from the graduate students," said assistant professor Valerie Thomas, who served as a key advisor in organizing

the event. "The faculty supported the initiative because they saw it as a great opportunity for the students to showcase their work to their peers, the department, and interested parties throughout the university."

Matthew Brinckman, Forestry Graduate Student Association (FGSA) president, was a driving force behind getting the symposium off the ground. "Members of the FGSA are always striving to interact not only socially but academically as well," Brinckman explained. "As president, I felt responsible to help facilitate an opportunity to share knowledge and awareness of each other's work, one of the cornerstones of academia."



The symposium featured keynote speaker Al Sample (L), president of the Pinchot Institute for Conservation, who was greeted by department head Janaki Alavalapati.

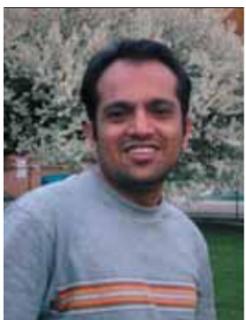
Sigma Xi Awards Graduate Students



Brian Gerber

The Virginia Tech chapter of Sigma Xi, a multidisciplinary research society, with support from the Virginia Tech Office of Research, presented awards to two students from the College of Natural Resources. Award recipients were selected on the basis of their academic history, research accomplishments, research proposal, and a letter of support from the student's research advisor. Sigma Xi and the Office of Research provide assistance for students to advance their research opportunities.

Fisheries and wildlife sciences student **Brian Gerber** received a Sigma Xi Graduate Award for Master's Degree Candidates. Gerber's research focuses on the development of programs for the conservation and management of resources in the rainforests of Madagascar and the protection of rainforest carnivores and their lemur prey. Gerber was also awarded the John Memorial M.S. Research Award by Sigma Xi. **Nabin Baral**, a forestry major, received a Sigma Xi Research Award for Ph.D. Degree Candidates. The focus of Baral's research is determining the institutional resilience of community-based conservation in the face of the Maoist insurgency in Nepal. Both students were also awarded a one-year membership in the society.



*Nabin Baral
(Photo by Ranju Baral)*

Northern Snakehead Website Launched

Fisheries and wildlife sciences graduate student **Nick Lapointe** launched a website about the northern snakehead, a non-native fish species living in the Potomac River and elsewhere in the region. The potentially troublesome species was introduced to North America from eastern Asia in the last decade.

The northern snakehead's broad habitat tolerances and its ability to breathe air result in large potential for population spread and possible adverse impacts. It is difficult to predict potential impacts, especially in the northern Virginia and Potomac River area, because many of the species located there are also non-native. Northern snakehead populations are currently found mainly in the lower Potomac River. If they spread over Great Falls to the upper Potomac, where there are fewer numbers of non-native species, the potential impacts could be significant and upset the ecological balance.

Although he is still completing his dissertation, Lapointe developed the website to make his research available to and easily understood by the public. "I feel that scientists should make their research accessible to the general public, and the pictures and videos tell a different story than just research articles," said Lapointe. He also wants the website to dispel misinformation about northern snakeheads, including myths that they walk on land and attack pets and humans. The site will be updated as the research is analyzed and completed.

Nick Lapointe holds a northern snakehead captured for his research.



Student Works to Reduce Waste on Campus



Tammy Parece, a graduate student in geography, is working to make the Virginia Tech campus more eco-friendly by creating strategies to conserve natural resources in 10 selected residence halls and 10 Greek houses in Oak Lane.

Parece compiled a list of strategies to help reduce the waste of natural resources while helping students develop eco-friendly habits, such as turning off lights, washing clothes in cold water, and immediately reporting any water leaks to maintenance. "Students are developing habits now that need to be unlearned. Our goal is to change the social norms of students not being environmentally conscious with everyday routines," Parece remarked.

Tammy Parece (R) and a facilities employee check a water meter in Ambler Johnston Hall.

Each month, students were given feedback on their results, which were determined by comparing usage data in their residence hall from previous semesters. Their results were also compared with the other participating halls. The study, which continued through the fall 2009 semester, will not only save resources, but will educate students who will carry those practices far beyond campus.

Virginia Tech still has some steps to take to become more environmentally friendly, but Sustainability Planning intern and Virginia Tech's GREEN Team coordinator Angie Desoto supports the study. "Virginia Tech is definitely not a green campus yet, but I think this study is helping to accomplish the first step of taking action, and that's educating students about sustainability," said Desoto.

FACULTY BRIEFS

Forest Resources Welcomes New Faculty



Brian Strahm is an assistant professor of forest soils and ecology; his research interests include forest soils, biogeochemistry, reclamation and reforestation, and the effects of land use and global change on soil carbon and nutrient cycling. "My research focuses on how forest ecosystems respond to external forces by better understanding the relationships between soil properties, processes, and function," he stressed. He is currently working to establish a research program that capitalizes on the strong tradition of forest soils research at Virginia Tech and is continuing to develop collaborations across the state, region, and country.

Strahm received his bachelor's in biology from the University of North Carolina at Chapel Hill and his doctorate in forest resources from the University of Washington, where he worked on long-term soil productivity research. His work experience includes postdoctoral research at Cornell University, where he investigated the influence of global change factors on soil carbon and nitrogen dynamics.



As an assistant professor of forest genetics and biotechnology, **Jason Holliday's** research interests focus on understanding the genetic basis for complex adaptive traits in widely distributed tree species, as well as molecular studies of abiotic stress and conservation genetics. His current projects include beginning a recently funded study aimed at enhancing wood properties for biofuels development, writing proposals for future projects, and preparing for field collections of local species such as red spruce, as well as developing a new genetics course to begin next year. "A better understanding of the molecular basis of adaptive traits in forest trees is the first step toward enhancing forest health in a changing climate and facilitates sustainable timber production through genome-enabled breeding," Holliday commented.

Holliday received his bachelor's in biology from the University of Victoria. Before obtaining his doctorate in forestry from the University of British Columbia, he was at Stanford University researching basic cell biology.



Dean Hosts Luncheon for Retired Faculty

Dean Paul Winistorfer hosted a luncheon with retired college faculty in December to update them and keep them engaged in college happenings. Pictured (L-R): Otis Hall, Bob McElwee, Bob Youngs, Gerry Cross, Bob Smith (associate dean of engagement), Fred Lamb, Marshall White, Will McElfresh, Bob Giles, John Hosner, David Smith, Roy Kirkpatrick, Joe Roggenbuck, and Paul Winistorfer (not pictured: Bob Mollenhauer, director of development). There are other retired faculty who live afar and were unable to attend.

Faculty Awards and Honors



Fisheries and wildlife sciences professor **Brian Murphy** received 2009's Scholarship of Teaching and Learning Award. The award, presented annually by Virginia Tech's Center for Excellence in Undergraduate Teaching, recognizes faculty members who have dedicated themselves to rigorous examination and investigation of higher education teaching and learning.

Murphy focuses his teaching on the development of students' writing and critical thinking skills by using case studies as his foremost instructional strategy. "Case-study learning is an effective way for students to learn to analyze critical issues and conflicts in the field," he emphasized. Murphy has authored case studies that are used worldwide by nearly 40 universities, created a graduate-level course at Virginia Tech that examines best practices for teaching in the natural resources sciences, and partnered with colleagues at Virginia Tech and South Dakota State to publish a critical text about case-study instruction.



Wood science and forest products professor **Audrey Zink-Sharp** has been elected a Fellow of the International Academy of Wood Science (IAWS), a non-profit assembly of scientist representing all facets of wood science. Election as an IAWS Fellow is regarded as a high honor in the wood science community, reflecting the entire membership's recognition of the contributions made in the field by the honoree. "I highly respect the International Academy of Wood Science and its members, and am very pleased to be elected Fellow by this organization of eminent scientists," said Zink-Sharp.

Zink-Sharp teaches undergraduate, graduate, and continuing education classes in wood anatomy, wood properties, and wood processing, and serves as director of the Sustainable Engineered Materials Institute at Virginia Tech. She has coordinated "Wood Magic at Virginia Tech," a natural resource education program that has reached over 10,000 children, teachers, guests, and volunteers, since its inception in 1998.



Joe Loferski (C) and Don Bender (L) accept the L.J. Markwardt Award from Thomas McCain, chair of the judging committee.

The Forest Products Society honored wood science and forest products professor **Joe Loferski** with the 2009 L.J. Markwardt Wood Engineering Award at its annual meeting in June. Loferski, along with his co-authors — Professor Emeritus Frank Woeste, and David Carradine and Donald Bender of Washington State University — received the award for the 2007 article "Development of design capacities for residential deck ledger connections," published in the *Forest Products Journal*. The

award recognizes the most outstanding research article in the field of wood as an engineering material published in the *Forest Products Journal* or *Wood and Fiber Science* over the past two years.

The article summarized two years of research, which sought to solve the problem of deck collapses and ultimately changed the building code for 2009. "The award was nice, but the main thing was that we changed the building code," said Loferski. "This research will save lives. We don't know how many, but it will."

Sforza Selected to Lead CGIT

Peter Sforza of the geography department has been selected as director of the Center for Information Technology (CGIT) at the Blacksburg campus. CGIT



Peter Sforza

was recently combined with Enterprise GIS to form Virginia Tech Geospatial Information Sciences, a division of Information Technology's Strategic Partnerships Initiatives, to create a restructured entity to advance geospatial science and research at

Virginia Tech through collaborations with faculty and administrators; research centers; local, state, and federal agencies; and external partners.

CGIT and Enterprise GIS are housed together in Torgensen Hall and function as a single unit. Sforza provides leadership for CGIT's research and sponsored projects, which focus on applied research in geographic information systems, global positioning systems, and computer-aided design. Enterprise GIS provides centralized storage and hosting of GIS data on a state-of-the-art server infrastructure. GIS applications development and GIS training will be provided as a collaborative effort of the merged entity.

"Peter Sforza's background and expertise are an invaluable asset to Virginia Tech; particularly as the university looks to advance geospatial technologies

as a strategic focus in research and academics. His leadership has already generated significant new funding and partnerships involving faculty from various areas of research specialty," said Brenda van Gelder, director of IT Strategic Partnership Initiatives.

Sforza brings a wealth of interdisciplinary experience in the geospatial research arena across multiple units at Virginia Tech, including the Center for Environmental Applications of Remote Sensing, the Department of Geography, and VirginiaView, a statewide remote sensing consortium. Sforza has also served as an Extension research associate in the Department of Plant Pathology, Physiology, and Weed Science, and as an Extension specialist and statewide coordinator for programs in integrated pest management related to plant pathology and weed science.

College Establishes Partnership with Costa Rica Tech

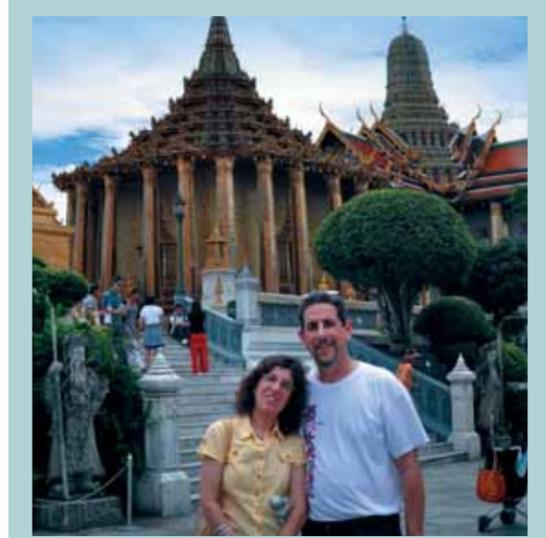
A delegation from the Costa Rica Institute of Technology visited Virginia Tech this past spring at the invitation of Henry Quesada, assistant professor in the wood science and forest products department and a former faculty member at Costa Rica Tech. "Costa Rica Tech is very interested in forming partnerships and collaboration in research, teaching, and extension activities with high ranked universities such as Virginia Tech," commented Quesada. The most essential of the many resolutions reached was the signing of a Memorandum of Understanding (MOU) between Costa Rica Tech and the College of Natural Resources, serving as the lead organization for Virginia Tech.

The first official activity of the MOU was an online course titled Business Process Management

for the Manufacturing Systems Program, which was delivered by Quesada in Spanish to 22 students at Costa Rica Tech's School of Industrial Production Engineering last summer. Additional courses were offered in the fall 2009 and spring 2010 semesters. Plans are underway for Costa Rica Tech faculty to bring their expertise and diversity into Virginia Tech's course offerings. "Through the support of new online information technologies, we can now cross real frontiers and travel around the world without having to physically go anywhere," cited Quesada.

Virginia Tech and Costa Rica Tech's partnership also sets the stage for parallel collaborations, including a study abroad trip for Virginia Tech undergraduate and graduate students to Costa Rica during the 2010 spring break. Quesada is also working face-to-face with faculty and students from Costa Rica Tech, including a student enrolling in his research program to earn a doctorate degree, and meeting with faculty to highlight the wood science and forest products program. Quesada says he anticipates the partnership with Costa Rica Tech to expand to other Virginia Tech colleges and departments that would like to increase their international collaboration.

Henry Quesada (R) welcomed the Costa Rica Tech delegation: (L-R) Giannina Ortiz, vice president of Academic Affairs; Dagoberto Arias, vice president of Research and Extension; and Marisela Bonilla, director of the Office for International Cooperation.



Fisheries and wildlife sciences department head Eric Hallerman traveled with his wife, Ester, to Thailand last summer, where he gave a presentation at the 19th International Symposium on Genetics in Aquaculture. Her Royal Highness Princess Dr. Chulabhorn Mahidol, who holds a Ph.D. in aquaculture genetics, opened the symposium, featuring 300 attendees from 42 countries. Supawadee Poompuang ('08 Ph.D. in fisheries and wildlife sciences) was a co-convenor of the symposium, and current doctoral student and Thai national Pawapol Kinghum presented a poster on disease resistance genes in common carp. Conference tours included tilapia and shrimp farms, a floating market, and the ruins of Ayuthaya, the historic capital of Thailand, which is now a UNESCO site.

Hammett Invited to Germany as a Scholar of Excellence

Tom Hammett, a professor in the Department of Wood Science and Forest Products, spent seven weeks in Göttingen, Germany, last spring where he was invited to serve as a Scholar of Excellence by the Sustainable Forest and Nature Management (SUFONAMA) Commission at the Georg-August University.

Hammett taught students from over 15 countries who were enrolled in the Erasmus Mundus Masters Course at the university's Centre for Tropical and Subtropical Agriculture and Forestry. The two-year internationally integrated course emphasizes the need to ensure the sustainability of natural resources and researches different methods of sustainable management. The SUFONAMA program, funded by the European Union, awarded Hammett the SUFONAMA Scholar Scholarship to support part of his stay.

During his time at the Georg-August University, Hammett taught a new course in scientific writing, and developed and led the pilot offering of the Global Seminar in Sustainability, which he described as "a case-study approach to learning." He also helped write proposals to fund collaborative international programs that will create a larger network of international students and scholars for Virginia Tech. "Our goal for the program was to set up joint summer programs and an exchange student program, and help graduate students with their research," commented Hammett. "Georg-August University graduated about 10 Nobel Peace Prize winners and now Virginia Tech students have the opportunity to study there."

Tom Hammett (C) stands with Ursel Kües (R), dean of forest sciences and forest ecology, and Christoph Kleinn, SUFONAMA project leader, at the Georg-August University in Germany.



EXTENSION AND OUTREACH

Emerald Ash Borer's Impact on Virginia's Street Trees

In response to the latest outbreak of emerald ash borer in Northern Virginia, urban forestry professor Eric Wiseman has been working with the Virginia Department of Forestry to help localities better understand the potential costs of losing their ash trees to this introduced pest. Wiseman and his collaborators are focusing on street trees, which, despite making up a small portion of the total urban forests, are the most visible and intensively managed public trees.

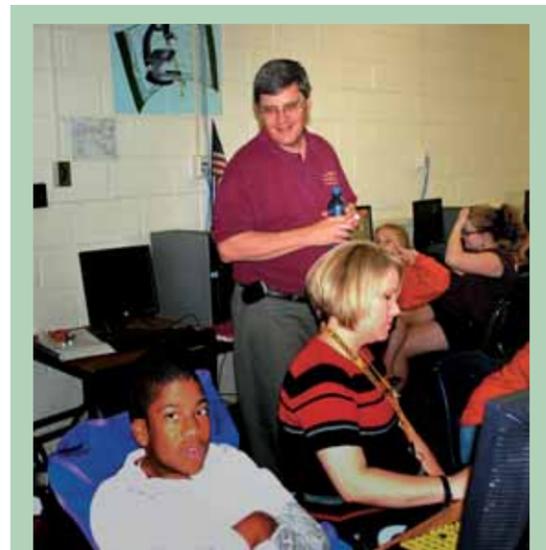
The emerald ash borer, which has killed over 40 million ash trees in the Midwest, was first discovered in 2002 in Michigan and has been discovered twice in Fairfax County, Va. The 2003 infestation there was eradicated, but a second infestation was found in 2008. Because there is limited information about the number of ash trees in Virginia's urban forests, the potential impact of the borer is unclear. Wiseman, who believes the pest will inevitably spread to other

localities, is working to compile existing inventories for urban street trees and supplement those with new inventories. So far, he has conducted new inventories in Roanoke, Fredericksburg, and Winchester.

Once the information is collected, Wiseman will use urban forestry modeling software developed by the U.S. Forest Service to calculate the abundance of native ash trees in each locality's street tree population. Each locality can then estimate the monetary value of their ecosystem services, such as reduced stormwater runoff and carbon sequestration, to justify expenditures for replacing trees potentially killed by the pest. Wiseman and his research team are also estimating the cost to remove and replant ash trees to help localities better plan for the impending epidemic.

"The potential rate of spread is not very well-known. The biggest means of spread for the pests are the transportation of ash firewood and untreated wood products. We have little insight into how quickly it spreads. It only takes one instance to introduce the pest to one locality," said Wiseman.

The emerald ash borer, an exotic beetle, has killed millions of ash trees in the Midwestern States since 2002. (Photo by David Cappaert, Michigan State University, www.bugwood.org)



During a visit with 7th graders at West Virginia's Peterstown Middle School, fisheries professor Donald Orth, a.k.a. "Dr. Fish," discussed the impacts that mussels and other life forms found in nearby Rich Creek would have if they ultimately ended up in the Mississippi River. He also explained the importance of technology for his research, and the need for middle and high school students to master technological requirements that will help them in college and the job market.

Graham Joins CNR Alumni Board

The CNR Alumni Board welcomes **Doug Graham** as its newest member. A Maryland native, Graham received both his B.S. in wildlife management ('94) and his DVM ('98) from Virginia Tech. He has been back to the college to speak to the Wildlife Society and previously advised CNR students interested in veterinary medicine. After spending 10 years in Maryland working primarily in companion animal private practice, Graham has returned to Virginia Tech where he holds a position in the dean's office at the vet college. "I am pleased to welcome Doug to the board and look forward to having his expertise as a part of this wonderful and dedicated group," remarked Lane Guilliams, the college's director of alumni relations.



Graham is a founding member and past president of the Virginia-Maryland Veterinary Alumni Society and previously served on the Virginia Tech Alumni Association Board of Directors representing CNR and the vet college from 2002 to 2008. He is currently a Christiansburg-Blacksburg Rotary Club member and an avid Hokie sports fan. Graham lives in Blacksburg with his wife, Holly, and two daughters, Alexa and Emily.

Alumni Events Calendar

MARCH/APRIL 2010

American Fisheries Society Student Chapter
27th Annual Mudbass Tournament
Duck Pond; Time and Date TBD
Blacksburg, Va.

MARCH 7-10, 2010

National States Geographic Information Council
2010 Midyear Conference
Loews Annapolis Hotel, Annapolis, Md.
www.nsgic.org/events/2010_midyear.cfm

MARCH 22-27, 2010

Wildlife Management Institute
75th North American Wildlife and Natural Resources Conference
Hilton Milwaukee City Center, Milwaukee, Wis.
www.wildlifemanagementinstitute.org/index.php?option=com_content&view=article&id=348&Itemid=61

APRIL 14-18, 2010

American Association of Geographers Conference
2010 AAG Annual Meeting
Marriott Wardman Park Hotel and Omni Shoreham Hotel,
Washington, D.C.
www.aag.org/annualmeetings/2010/index.htm

FRIDAY, MAY 14, 2010

Graduation Exercises and Graduate Student Graduation
Details TBA;
Blacksburg, Va.

SATURDAY, MAY 15, 2010

College of Natural Resources Graduation Exercises
Details TBA;
Blacksburg, Va.



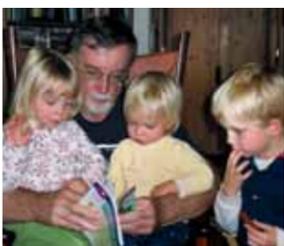
Major Jason Yeatts, son of alumni Doug ('75 B.S. in forestry) and Karen ('74 B.S. in biology) Yeatts of Soddy Daisy, Tenn., was aboard the B-1 bomber that flew over Lane Stadium during the Marshall game on Sept. 12. Major Yeatts, a weapons system officer stationed at Dyess Air Force Base in Abilene, Texas, volunteered to serve on the four-person crew and was tasked with planning the mission. Not only are both of his parents alumni, but Major Yeatts had strongly considered attending Virginia Tech, opting instead to go to the Air Force Academy, from which he graduated in 1997. (Photo by Woody Veasey)

Alumni Update



Tiffany Beachy ('03 B.S. in wildlife science) traveled to the Andes Mountains in Venezuela after finishing her master's degree program at the University of Tennessee last spring to research the nesting habits of cerulean warblers. The trip enabled her to

observe the songbirds in their native wintering location, enhancing her research on their reproduction. In particular, Beachy and her colleagues studied migrant physiology and foraging ecology, and assessed cerulean survival rates. "One of the coolest and most rewarding aspects of the work was getting to know the farmers whose land we worked on and seeing their interest in conserving these 'pajaritos,'" explained Beachy, who monitored bird behaviors in Missouri with the Institute for Bird Populations this past summer.



Andrew Carey ('70 B.S. in forestry and wildlife, '74 M.S. in wildlife management) authored *Aiming for Healthy Forests: Active, Intentional Management for Multiple Values*. This

U.S. Forest Service general technical report focuses on the conflicts around forest management and endangered species, and issues of general sustainability of forest-based communities. Carey spent most of his career as a research biologist at the Forest Service's Pacific Northwest Research Station, where he conducted research in a variety of ecosystems and most recently served as leader of the Ecological Foundations of Biodiversity Team. He also held an emeritus scientist position with the Pacific Northwest Research Station and an affiliate professor of forest ecosystem management appointment with the University of Washington. Carey retired a few years ago and now has a part-time consulting business.



John Gavitt ('71 B.S. in forestry and wildlife, '73 M.S. in wildlife management) served as a special agent with the U.S. Fish and Wildlife Service's Law Enforcement Division until 2000. He also served as the Enforcement Officer for

the secretariat of the Convention on International Trade in Endangered Species (CITES) from 1990 to 1995, living in Switzerland and traveling the world on CITES matters. After retiring, he joined WildAid, a non-governmental organization that addresses conservation issues in developing countries, and taught anti-poaching and wildlife investigation techniques in Asia, the Western Pacific, and South America. In 2006 Gavitt opened North River Retreat, a small guiding business in Hampshire County, W. Va., where he offers hunting, fishing, sporting clays, and outdoor skill courses. He and his wife Arlene currently reside in Winchester, Va.



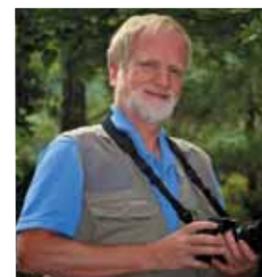
Leon Kolankiewicz ('77 B.S. in forestry and wildlife) celebrated his 10th anniversary as an environmental planner with the Mangi Environmental Group in McLean, Va., where he has

prepared numerous environmental assessments for federal agencies and assisted the U.S. Fish and Wildlife Service with conservation planning on nearly 40 national wildlife refuges. Kolankiewicz has also worked with the Alaska Departments of Fish and Game and Environmental Conservation, National Marine Fisheries Service, and Orange County (California) Environmental Management Agency, and was a Peace Corps volunteer in Honduras. Kolankiewicz, who has authored two books — *Where Salmon Come to Die: An Autumn on Alaska's Raincoast* and *Bright River, Dark Dreams: Tragedy on the Río Plátano* — is active in scouting and soccer, and lives with his two sons in Reston, Va.



Brian Bredenkamp ('88 Ph.D. in forest biometrics), a ninth generation South African, spent most of his career in forestry research with the South African Forestry Research Institute (SAFRI). He spent his last few years at SAFRI as head of the Site and

Sylviculture Section at the Saasveld Forest Research Center. In 1992, SAFRI became Forestek and introduced a culture of time sheets and invoicing clients, so Bredenkamp jumped at the opportunity to take a position as senior lecturer in forest management in the Faculty of Forestry at Stellenbosch University. He soon became a full-time professor and was appointed to the Chair of Forest Management. Bredenkamp retired as Emeritus Professor in 2008, happy to "never grade papers or attend meetings of any description." His current passion is big trees; he serves on the selection panel for the National Champion Trees for South Africa. He resides with his family in Stellenbosch, South Africa.



Budd Titlow ('73 M.S. in wildlife ecology) has worked as a wetland scientist, wildlife biologist, and natural resource manager, but he most enjoys his freelance photography-writing career. He launched his own business, Naturegraphs:

Freelance Photography and Writing, over 30 years ago, and his photographs and writings have appeared in such publications as *BBC Wildlife Magazine*, *National Wildlife*, *Audubon*, *Outside Magazine*, *Time/Life Publications*, *Popular Photography*, and *Petersen's Photographic*. He has authored two books — *Seashells: Jewels from the Ocean* (2007) and *Rocky Mountain National Park: Beyond Trail Ridge* (1986) — and is the recipient of honors such as BBC International Wildlife Photographer of the Year from the British Museum of Natural History. Titlow shares his love of photography and nature by presenting seminars and workshops nationwide. He currently resides in Durham, N.C.



Dean Paul Winistorfer (C) thanks Ken Morgan of Morgan Lumber (L) and Harrell Turner of CHT Forestry for their sponsorship of the college's 2009 Homecoming, which was attended by over 100 alumni, friends, faculty, and staff. Other sponsors included SAIC and Terpence Construction.

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To China and Back: Neves Turns Trip into Opportunity for Understanding and Collaboration

A dynamic country of 1.3 billion people, China has seen many changes in the past few decades – its booming economy, rising business class, and status as a global commercial producer have thrust it to international prominence. As its economic importance has grown, China has sought to improve its reputation in the scientific community as well. In July 2009, the country received a golden opportunity to further this goal: Beijing's hosting of the Society for Conservation Biology's (SCB) annual meeting, marking the first time the event had been held in Asia.

Richard Neves, professor emeritus in the Department of Fisheries and Wildlife Sciences, was one of the many conservation professionals to attend the meeting. Neves, a freshwater mussel specialist, saw the meeting's location as an opportunity for American and Chinese scientists to learn from each other, and he planned his trip so that both sides could learn from the experience.

Neves and Hua Dan, lab manager of the Freshwater Mollusk Conservation Center and part-time Ph.D. student, arrived first in Beijing, where they attended the SCB meeting and gave a presentation about Virginia Tech's endangered mussel propagation program. Also in Beijing, they met with Liu Qing, vice president of the Chinese Academy of Fishery Sciences. Other stops included Ocean University's College of Aquaculture and Life Science in Shanghai and the Freshwater Fisheries Research Center in Wuxi.



A commercial fisherman displays a handful of freshwater Asian clams taken from Taihu Lake, near Wuxi.

While in Shanghai, Neves and Hua toured an experimental pearl farm, which clearly illustrated the differences between Chinese and American aquaculture. At the farm, freshwater mussels, yellow eels, and soft-shelled turtles are all grown together, a polycultural approach that allows more biomass to be produced from a given space, a strong contrast to the monocultural practices common in American aquaculture. Researchers feed the mussel meats to the turtles after pearl harvesting, which reduces waste and increases efficiency. This efficiency is very important in China, where space and food are precious commodities. "There's probably no better place to get aquaculture training than China," remarked Neves.



Vendors sell freshwater mollusks such as mussels and snails at sidewalk markets such as this one in Zhou Zhuang.



Neves examines the shells of mussels harvested from Ocean University's experimental pearl farm in Jinhua City.



Hua holds several juvenile mussels as she, Neves, and Jiale Li, dean of the College of Fisheries and Life Science at Ocean University, discuss mussel production for China's freshwater pearl industry.

Chinese science faces many challenges. Most notable to Neves are the country's severe water quality issues. China's water quality standards are more lax than those in the United States, and its population is much larger. In addition, China is home to only 50 native freshwater mussel species, compared with 300 species in the United States, so protecting those species that do exist is vital. Though Chinese scientists have done much research on mussel physiology and environmental aspects since the 1970s, Neves' work on the physiological parameters of mussel health could also prove extremely valuable in preventing damage to Chinese mussel populations. "I suspect that even though they have different species, the sensitivities are going to be very comparable," Neves observed.

Lack of English proficiency is a severe challenge to China's desire for international scientific recognition. Though younger generations are becoming increasingly proficient, working-age Chinese scientists generally are not able to read or write international journal articles, which are published in English. This limits them to reading and publishing in Chinese journals, effectively isolating their science from the rest of the world. "If they can't get a good background on what has been published and a good knowledge of what the science is today," explained Neves, "they're behind when they start."

Neves experienced the language barrier firsthand when he and Hua made separate presentations during their trip. He was uncertain about how much of his presentation, given in English, the audience understood, but when Hua presented in Chinese, interest was obvious. Her one-hour lecture was followed by an hour of questions.

Despite such challenges, Neves feels that the trip produced valuable outcomes. He and Hua made many personal connections and learned more about what Virginia Tech and the Chinese universities they visited can gain from further cooperation. In September, Xu Pao, director of the Freshwater Fisheries Research Center (FFRC), changed his planned itinerary to tour Virginia Tech's mussel propagation facility, bringing 10 colleagues with him. During this visit, Xu and Eric Hallerman, department head for fisheries and wildlife sciences, discussed creating an exchange program between the two organizations. Neves is excited to see the outcome of such a partnership. "We're very interested in getting some collaborative work going between Virginia Tech and the FFRC," he concluded.



Neves (back row, third from left) and Hua (back row, third from right) with government officials and employees of the Juangyuin Yantze River Juangxian Aquaculture Company (back row) and graduate students from Ocean University (front row).

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