



CNR NEWS

Susan Day Leads Efforts for Novel Stormwater Solutions

Urban site development often results in compacted soil, increased impervious surfaces, and decreased vegetative cover. These changes result in an increase in stormwater runoff, which degrades water quality and stream ecosystems. An interdisciplinary collaboration of researchers from Virginia Tech, Cornell University, and the University of California at Davis is working to protect water resources by integrating trees into urban stormwater management systems. Their innovative approach was featured in the November/December 2008 issue of the *Journal of Environmental Quality*.



Susan Day (R) and Julia Bartens, a Ph.D. candidate in the Department of Forestry, prepare a tree for use in the stormwater management system.

The group, led by Susan Day, assistant professor of urban forestry in the departments of forestry and horticulture, recently released the manual *Managing Stormwater for Urban Sustainability Using Trees and Structural Soils*, which outlines four years of research on a unique system that uses structural soils (engineered tree soils) to both detain stormwater and allow tree root growth in confined urban spaces. By utilizing tree root and canopy growth to manage stormwater, this new approach more closely resembles the natural water cycle than traditional stormwater management approaches.

Soil cannot serve its natural function of absorbing and filtering stormwater when it is paved over or made impervious through soil compaction. As water flows over land, it collects pollutants such as sediment, oil, and metals. If water is not absorbed by soil, the contaminated runoff eventually makes its way to water bodies that are used for drinking water and recreational activities.

Compacted soils also limit tree root health and growth, especially for sidewalk and parking lot tree plantings. This amplifies the problem because trees assist in stormwater management in many ways, such as intercepting precipitation (canopy), directing water to the ground (trunk), facilitating soil infiltration (roots), and increasing the uptake of stormwater (transpiration).

The group's novel stormwater management system directs water under pavement to a structural-soil reservoir, where it is held until it either infiltrates into the underlying soil or is taken up via tree transpiration. Structural soils are designed to support the weight of pavement and vehicles while allowing for adequate root growth, and to facilitate the infiltration, storage, and recharge of stormwater. These engineered soils can be used beneath either pervious surfaces (e.g., turf, permeable paving) or impervious surfaces (e.g., concrete, blacktop) to increase the available area for tree roots to grow and to act as a stormwater reservoir and recharge zone.

"The end result? Stormwater remains on site and trees have greater rooting volume, which means they can attain greater size and intercept more stormwater," explained Day. "This is the first system that I am aware of that directly integrates full-size trees into a stormwater management facility."

RELATED LINKS

Stormwater Management Website
<http://www.cnr.vt.edu/urbanforestry/stormwater/>

Urban trees enhance water infiltration
<http://www.sciencedaily.com/releases/2008/11/081119120153.htm>

Can urban tree roots improve infiltration through compacted subsoils for stormwater management?
<http://jeq.sci journals.org/cgi/content/abstract/37/6/2048>

Engineered soil greens up parking lot
http://actrees.org/site/stories/engineered_soil_greens_up_parking_lots.php

COLLEGE OF NATURAL RESOURCES
 Virginia Polytechnic Institute and State University



A roadway test section was installed on Mount Tabor Rd. to explore how the stormwater management system can be used on slopes.

One facet of the research included setting up demonstration sites to test the stormwater management system and evaluate its efficiency. The team set up sites at the three participating universities, including two in Blacksburg:

► **A mini-parking lot** was installed the spring of 2006 at Virginia Tech's Urban Horticulture Center. Tree roots are monitored using specially designed tubes that allow for direct observation of the roots via camera without disturbing the soil or trees. Water levels and drainage rates for the parking lot are monitored before, during, and after storm events.

► **A roadway test section** was installed on a private property on Mount Tabor Rd. during the spring of 2007. This site explores how the management system can be used on slopes by comparing runoff from the structural soil section and the paved section of the access road.

"Urban trees are a critically important provider of ecosystem services in our cities and towns. If we can keep exploring ways to unite plants and soils with the engineering of the built environment, we may be able to not only enjoy more urban green space, but also make more headway in our quest for improved air and water quality," Day concluded.



As stormwater flows over impervious surfaces, it collects sediment, oil, and metals, which are then dumped into water bodies that are used for drinking and recreational activities.



Specially designed tubes allow for direct observation of the tree roots at the mini-parking lot demonstration site. (L-R) Horticulture research technicians Mona Dollins and Donny Sowers, and Liz Crawley, an undergraduate research intern.



Horticulture research technician Mona Dollins (L) and Félix Rubén Arguedas, a visiting scholar from the University of Costa Rica, install temperature sensors at various depths within the reservoir beneath the mini-parking lot.



The red maples planted as small seedlings at the mini-parking lot demonstration site have tripled in height and now completely shade the lot.

"Where do we go from here?" is a question at the forefront of all our lives in these uncertain times. As we continue to languish in the worst economic downturn since the Great Depression, we are all concerned about the future. As a college, our goal has been and will continue to be to maintain our core functions in the best possible condition and at the same time take advantage of any circumstances that may provide us with an opportunity to improve our long-term viability and stability.

While the economic situation and related budget shortfalls at the state level have not brought good news to the university or the college, relatively speaking we are in a slightly better situation than some of our sister institutions across the country. Our budget situation is still in flux at the time I write this, but it is clear that we will have less funding available at the college level for this biennium – probably in excess of 10 percent less. This reduction in base funding is on top of a 5 percent reduction that occurred in the previous biennium. However, I know from conversations with many of our constituents, particularly those in the wood processing industry, that reductions at this level would be welcomed when compared with the even greater economic challenges that many business and agencies currently face.

So we are down, but not debilitated. We have had to make some hard decisions that required downsizing of some programs, largely by not filling some vacant positions, fund shifting, and belt tightening. We have made every effort to address these reductions in a strategic manner rather than imposing simple across-the-board reductions that ultimately lead to mediocrity or program decay.

On the more positive side of the ledger, new funding for our research efforts continues to be strong even in the face of this worldwide recession. Overhead returned to the college and the departments from research grants is an extremely important part of our overall funding portfolio as a college and will help to sustain us through this period. And as important as these funds are to our economic health, they are even more important to our various constituencies because they are the means through which we do the work that leads to the development of

new products, gains in production efficiency, and other activities that contribute to overall economic vitality. Research is the engine that drives our economy, and we want to play an ever-increasing role in contributing to the recovery and sustainability of our economy.

Dean Mike Kelly welcomes Karen DePauw, vice president and dean for graduate education, to a recent symposium organized by forestry graduate students.



Finally, I am pleased to report that the search for a new dean to lead the college is progressing satisfactorily. Despite the uncertainty created by current economic circumstances, we have a number of highly qualified applicants in the pool who can step in and continue the upward movement of the college. As I have said before, and it bears repeating here, we continue to be the best college of natural resources in the nation and we will be working diligently to protect that position into the future. Even in these tough economic times we have much to be thankful for and to look forward to.

J. M. Kelly



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SEJ Materials
Earn CASE Award

The last issue of the CNR newsmagazine highlighted the college's and university's involvement in hosting the 18th Annual Conference of the Society of Environmental Journalists (SEJ) at the Hotel Roanoke and Conference Center last October. This spring, the Council for Advancement and Support of Education (CASE) recognized the SEJ conference materials with an Award of Excellence at its District III Conference in Atlanta.

The award, which was for the category of Institutional Relations Projects, recognizes the SEJ conference materials for their "outstanding achievement in concept and execution of programs for institutional advancement." Larry Hincker, associate vice president for university relations at Virginia Tech, said that "hosting the SEJ Conference was not only an honor for Virginia Tech and the Commonwealth of Virginia, but also a significant opportunity to showcase the robust environmental research programs throughout the campus."

SEJ executive director Beth Parke noted that "By all accounts SEJ's 2008 Annual Conference, hosted by Virginia Tech, was one of our organization's most successful meetings ever. The educational impact of this conference is still being felt, through the strengthened environmental journalism of SEJ members. The program and supporting materials have provided our attendees, and others who accessed them online, with a great source of inspiration and story ideas."

SEJ's annual conference manager Jay Letto and director of programs Chris Rigel teamed up with Virginia Tech's designer Nathan Skreslet, editor Richard Lovegrove, and conference coordinator Lynn Davis of the College of Natural Resources to produce the award-winning materials.

Support the
Ward Burton Wildlife Foundation
and Its Partner, Virginia Tech



Virginia Tech alumni, students, friends, and NASCAR fans are encouraged to donate \$5 and receive a collectible 2009 NASCAR Day lapel pin. All proceeds will be split between Virginia Tech and the Ward Burton Wildlife Foundation (WBWF). The sixth-annual observance of NASCAR Day, an annual celebration of the NASCAR spirit, will be held on May 15, 2009.

The WBWF is a highly respected environmental organization founded by Ward Burton, a NASCAR driver with multiple career wins, including the prestigious title of 2002 Daytona 500 champion. Ward is a long-time supporter of Virginia Tech and the College of Natural Resource, and has partnered with Virginia Tech on numerous environmental projects. Ward's visit to the Virginia Tech campus immediately after the April 16th tragedy and the subsequent placement of the VT logo on the hood of his NASCAR race car demonstrate his continued dedication to Virginia Tech.

The WBWF has been recognized by national and state leaders for its conservation and education efforts – many of which are in partnership with Virginia Tech –

such as the Wounded Warrior program, youth environmental education, conservation easements, Roanoke River watershed protection program, Army Compatible Use Buffers, and endangered species program.

To order a lapel pin and support Virginia Tech and the Ward Burton Wildlife Foundation, visit: http://store.nascar.com/entry.point?entry=3445189&source=NASCARDay_VirginiaTech:NASCARDayColl:3_25_09



NASCAR driver Ward Burton visited campus during Wood Week in 2007.

College Establishes Joint Graduate Program with Appalachian School of Law

The college has created a joint graduate program with the Appalachian School of Law (ASL), an independent institution established in Grundy, Va., in 1994 to help foster economic growth in Southwest Virginia. ASL is expanding its emphasis on natural resources law, an area of longstanding importance to the region's economic development. "We are pleased to partner with the Appalachian School of Law to develop a much needed program that will benefit both our natural resources students and ASL students," said Dean Mike Kelly.

Stewart Harris, an associate professor of law who coordinates ASL's efforts with the joint graduate program, said, "We hope to develop a robust program over the next several years that will become a major part of our focus on natural resources law." He pointed out that natural resources law will be an area of enormous interest and opportunity over the next few decades, as the United States and the rest of the world grapple with pressing issues of economic growth and energy security within the context of climate change.

Studies in Natural Resources in addition to their law degree, and to earn an MNR degree as well. Virginia Tech students who are interested in environmental law and public policy will have the opportunity to expand their knowledge by enrolling in select ASL courses.

"There are a number of significant elements to this partnership," observed Robert Bush, associate dean for research and graduate studies in the college. "It will have a positive impact on rural Virginia, it links the Falls Church and the Grundy programs using new technology, and it incorporates our shared interest in natural resources." He recently met with faculty and students at ASL to talk about the new program.

Southwest Virginia faces many challenging issues because its abundant natural resources sometimes conflict with management goals, from forestry and water policies to coal and energy needs. "There are few lawyers out there who know how to deal with the issues we face today," Harris commented, "so we hope this new program will help to fill that gap."



Robert Bush (L) and Stewart Harris discuss the new joint graduate program with ASL faculty and students.

The joint graduate certificate program kicked off this semester. Michael Mortimer, director of the college's Master of Natural Resources (MNR) Program in the National Capital Region, and recently retired director David Trauger will teach the first Virginia Tech classes offered to ASL students. In addition to online distance learning classes, students are also able to take video broadcast classes onsite at Grundy, Blacksburg, Richmond, or Falls Church.

The program will enable law students who want to incorporate natural resources law, policy, and science into their legal studies to earn a Certificate of Graduate

Workshop Explores Rainwater Harvesting

Bob Slusser, a National Capital Region Natural Resources program staff member and watershed field coordinator with the Virginia Department of Conservation and Recreation, conducted an informative workshop on rainwater harvesting at Virginia Tech's Falls Church, Va. campus.

Sixty-two participants from local jurisdictions, state agencies, and private companies in Northern Virginia attended to learn about this emerging technology from subject matter experts. The workshop covered various topics related to rainwater harvesting techniques and technology, as well as information on the progress of current and future research being conducted at Virginia Tech that shows promise in saving money and energy throughout the commonwealth.

In welcoming the group, Michael Mortimer, director of graduate programs for the college in the National Capital Region, emphasized opportunities for collabo-

ration between the Natural Resources program and municipalities, state agencies, and private consultants in Northern Virginia interested in rainwater harvesting and other new conservation initiatives.

David Bulova, a member of the Virginia House of Delegates, spoke about the hurdles of getting widespread rainwater harvesting legislation implemented, and Jack Frye, director of Soil and Water Conservation with the Virginia Department of Conservation and Recreation, examined the relationship between rainwater harvesting and stormwater management.

Ph.D. candidate Adrienne LaBranche gave an in-depth presentation on the components that make up a rainwater harvesting system. LaBranche, a sales and support specialist for Rainwater Management Solutions in Salem, Va., is a member of the interdisciplinary Environmental Design & Planning Program and co-author of the *Virginia*

Rainwater Harvesting Manual. Tamim Younos, associate director of the Virginia Water Resources Research Center, offered a long-term view of the economic and energy benefits of harvesting rainwater.

A common theme throughout the workshop was recognizing the need to bring together multidisciplinary practices in order to design new rainwater harvesting systems and see them through to the local watershed level.

Virginia Rep. David Bulova (C) joined Bob Slusser (L) and Michael Mortimer of the National Capital Region Natural Resources program at the rainwater harvesting workshop.



STUDENT NOTES

Robert Leaf Receives Fisheries Graduate Scholarship



Robert Leaf

Robert Leaf, a doctoral candidate in the Department of Fisheries and Wildlife Sciences, was awarded the 2009 Robert D. Ross scholarship for graduate students by the Virginia Chapter of the American Fisheries Society.

Leaf's work with the American Fisheries Society (AFS) gave him experience and leadership abilities that contributed to his earning the scholarship. Leaf also mentored three high-school students and two undergraduate students for the AFS. He has worked to bring more speakers and professionals to the university, is involved in many of the chapter's outreach and education opportunities, and has been

very active in a Virginia Tech undergraduate mentoring program that promotes interest in fishes and fisheries management.

Leaf's dissertation, which explores the evolutionary effects of fishing, focuses on how commercial fishing changes fish populations. "You remove a portion of a group of fishes, and the fishes evolve in a way. I'm not saying new species occur, but there is still change," explained Leaf. Once he completes his Ph.D., Leaf hopes to work in academia or at the federal level to help conserve and manage fisheries. "My main focus and interest is in the conservation and management of fisheries," said Leaf.

Students Assist with National Day of Service Tree Planting in D.C.

A group of students from the university, along with forestry professor and Extension leader Jeff Kirwan, traveled to Washington, D.C., to show hundreds of school kids how to plant trees at Anacostia Park in honor of the Presidential Inauguration and the Martin Luther King Jr. National Day of Service.

Sara Murrill, a forestry grad student ('08 B.S. in natural resources conservation), assisted with the planting preparation along with numerous other students, including Patrick Walsh, Jeff Curtis, and Julia Baugh of Virginia Tech's Natural Resources Recreation Society. Julia's father, Don Baugh, who is vice president of education for the Chesapeake Bay Foundation, was one of the coordinators of the entire event.

"Planting a grove in Obama's honor was a historical memory for us," Murrill noted. "It was neat to be a part of his inaugural activities, to visit all the environmental education exhibits set up for the kids, and to see some of the House of Representatives involved in the Anacostia improvement program."



Forestry professor Jeff Kirwan (R) shows volunteers Julia Baugh and Ted Martello how to plant acorns that were collected from Sallie's Crying Tree in Marion, Va., by Mayor David Helms. The tree had been nominated for inclusion in Kirwan's book, *Remarkable Trees of Virginia*, by African American historian Evelyn Lawrence, who gave her blessing to plant the acorns at the Inaugural Grove.

New Faces



Kevin McGuire has joined the Virginia Water Resources Research Center and Department of Forestry as a research assistant professor. In conjunction with the Virginia Department of Forestry, McGuire researches water quality and quantity issues in forest management and forested environments. McGuire will also train graduate students, guest lecture, and offer graduate seminar instruction.

One of the benefits of McGuire's new position is the opportunity to interface with a state agency and colleagues across the university. "Since arriving on campus, I've had many discussions with colleagues about potential projects," he noted.

McGuire previously worked at Plymouth State University as an assistant professor of hydrology and as the research hydrologist for the Hubbard Brook Experimental Forest, a unit of the U.S. Forest Service's Northern Research Station. He received his Ph.D. in forest engineering with a focus in forest hydrology from Oregon State University, his M.S. in forest resources from Penn State University, and his B.S. in environmental science from Susquehanna University.



Bob Mollenhauer's priority as the College of Natural Resources' new director of development is raising support to meet the college's share of Virginia Tech's fundraising campaign. He was drawn to the position by the college's high reputation. "I have a great deal of respect for Virginia Tech and its College of Natural Resources, which is internationally recognized," he affirmed.

Mollenhauer will be cultivating personal relationships with alumni, friends and long-time supporters of the college, and potential donors. His respect for his colleagues makes the job particularly satisfying. "The faculty members are just as friendly as they are distinguished," he observed.

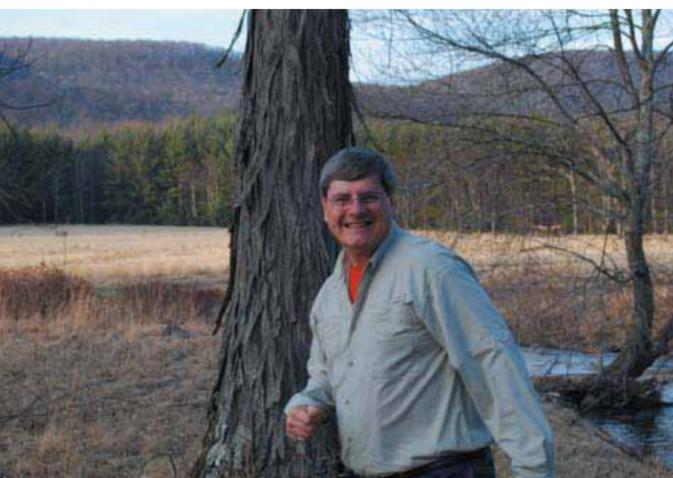
Previously, Mollenhauer worked as vice president for resource development at Roanoke College. He has experience working in various development positions at several different universities, in addition to his time as a professional baseball player for the Oakland Athletics organization. Mollenhauer received his master of education in counseling psychology from Boston University.



Lane Guilliams ('95 in forestry) recently returned to her alma mater to serve as director of alumni relations for the college. "It's rewarding to walk the same halls I walked as a student, but this time as a member of the staff," noted Guilliams.

Guilliams serves as a liaison with the Virginia Tech Alumni Association to plan and run events and special programs. Her aim is to make sure alumni feel they are a part of the university and the college. Along with the college's Alumni Board of Directors, Guilliams coordinates alumni events, such as the CNR Homecoming, that motivate alumni of the college to remain involved.

Guilliams, who earned a master of arts from the University of Oklahoma, has held previous positions with the Virginia Department of Conservation and Recreation, Roanoke's Center in the Square, and Hollins University. She has also served on the College of Natural Resources' Advisory Board.



Donald Orth Photo by Valerie Ferguson Turner

Orth "Makes a Difference"

Donald Orth, fisheries and wildlife sciences professor, has received one of three Making a Difference Awards from the Instream Flow Council. The award recognizes persistent activities to inform and educate the public about the importance of instream flow – the water flow in a stream and an indicator of the stream's ecological health – and its benefits to society. This is the first year the council presented awards and opened its annual meeting to the public.

"A lot of what I've been able to do was directly related to teaching," Orth said. "Even though the award recognized a lot of my work on external publications, teaching students and professionals at workshops and conferences has been a major way to get the information out."

Orth's former students serve important roles in instream flow management in over 10 percent of the council's member agencies. Orth is recognized as one of the first to write independent review evaluations on instream flow methods. He has also written many articles and books about instream flow science and served on the editorial board of *Rivers* and two of the American Fisheries Society's journals.

The Instream Flow Council, established in 1998, is comprised of fish and wildlife management agencies in the United States and Canada whose goal is to inform the public on instream flow issues, implement effective instream flow protection and restoration programs, and share information among the instream flow community.

Three Professors Honored As Emeritus

James Burger, Richard Neves, and David Trauger were each conferred the title "professor emeritus" by the Virginia Tech Board of Visitors this past fall. The title of emeritus may be conferred on retired professors and exceptional staff members who have given exemplary service to the university and who are specially recommended to the board of visitors by President Charles Steger.



James Burger, the Garland Gray Professor of Forestry, has been a member of the Virginia Tech community for 30 years. He has contributed significantly to the knowledge of forest soil productivity and restoration ecology, publishing numerous research papers, reviews, and book chapters on those subjects. He also contributed to the outreach and engagement mission of the university by publishing many Virginia Cooperative Extension articles, resulting in new guidelines and regulations in several Appalachian states that greatly improved the restoration of drastically disturbed forest land.

Burger has been active in the Soil Science Society of America, where he was elected fellow, and in the Society of Mining and Reclamation, where he served as president and was awarded the William T. Plass Award for career-long contributions to reclaiming science.



Richard Neves, professor of fisheries and wildlife sciences, is an internationally recognized expert on freshwater mussels. His three decades of research integrated knowledge from the fields of malacology, freshwater ecology, phycology, physiology, fisheries science, and aquaculture to achieve noteworthy contributions to our understanding of freshwater mussel biology. He has written more than 100 peer-reviewed scientific journal articles, as well as a number of book chapters and keynote addresses, and co-edited a book.

Neves has served on the editorial boards of the American Malacological Society, American Fisheries Society, and Society for Conservation Biology; was president of the Virginia Natural History Society and the Freshwater Mussel Conservation Society; and was a trustee of the Virginia Museum of Natural History. He has also been recognized with several awards, including the U.S. Fish and Wildlife Service's Research Director's Conservation Award and a Director's Commendation. In 2001, The Nature Conservancy named him as one of the top 10 conservationists in America.



David Trauger, former director of the National Capital Region's Natural Resources Program, has played a key role in recruiting faculty members and enrolling new students for the program at the Falls Church, Va., campus. Trauger also served as interim associate dean of the Graduate School for the National Capital Region from 2007 to 2008, and provided 13 years of dedicated service to the College of Natural Resources as a member of its advisory board. He developed and taught courses in conservation ecology, sustainability science, global issues in natural resources, modern wildlife management, land use planning, and ecosystem management. His research

focused on wildlife management through studies of waterfowl and of the balance between economic growth and biodiversity conservation.

Prior to his arrival at Virginia Tech, Trauger spent 32 years working in natural resource agencies of the Department of the Interior, including an appointment as chief of the Division of Wildlife Research for the U.S. Fish and Wildlife Service in Washington, D.C.

RESEARCH SPOTLIGHT



Native brook trout are one of the three southern Appalachian trout species threatened by rising temperatures. Photo courtesy of U.S. Forest Service, Center for Aquatic Technology Transfer

The southern Appalachian Mountains have always been known for the abundance of wildlife hidden throughout their range, but research by Patricia Flebbe, assistant professor in the Department of Fisheries and Wildlife Sciences, shows that the region may be losing a significant amount of trout habitat in the future. In a report with Laura Roghair, research associate at the Conservation Management Institute, and Jennifer Bruggink, formerly of the U.S. Forest Service, Flebbe created a projection about future habitat for trout in the southern Appalachians. The report set out to create a model for the minimum elevation at which trout could live in the southern Appalachian region, predict what a rise in temperature may do to trout habitat, and compare the current fragmentation of trout populations with the possible fragmentations resulting from an increase in temperature.

Flebbe looked at the three types of trout present – native brook trout, rainbow trout, and brown trout – in the selected research area in Georgia, South Carolina, North Carolina, Virginia, and Tennessee. “The trout here are at the southern-most extent in eastern North America,” said Flebbe, “but they can live in the southern Appalachians because of cooler temperatures at higher elevations at this latitude.” But owing to global warming, the fish may soon have nowhere suitable left to go.

“The major outcome is that trout habitat would decline dramatically, even with a moderate increase in temperature,” said Flebbe. “More importantly, the habitat would become much more fragmented than it is now.” This fragmentation would lead to a decrease in opportunities for the recolonization of the fish, which makes them more susceptible to extirpation. Additionally, the increase in temperature could alter

Rising Temperatures Create Problems for Local Trout

the spawning cycle of brook trout and rainbow trout, and limit food availability during specific times of the year. These problems only escalate the limitations on habitat, which is already threatened by increasing land development.

When applying projections from two separate global circulation models to their model, Flebbe found that either 53 or 97 percent of trout habitat would be lost by the year 2100. While the severity of problems faced by trout may only occur in the southern region of their habitat, there is much to be lost with the trout’s absence. With the extirpation of trout in the South comes the possible loss of the southern brook trout strain, which exists only in that area. Also, one of the area’s most popular attractions, trout fishing, would become a different experience, dependent on costly management. Finally, the loss of these wild fish would signal a loss in the quality of natural environments in the southern Appalachians.

INTERNATIONAL CROSSINGS

Burkhart Addresses IUFRO Conference in Korea

University Distinguished Professor Harold Burkhart was one of four keynote speakers at the International Union of Forest Research Organization (IUFRO) conference, hosted last fall by Kangwon National University in the Republic of Korea.

Drawing from his decades of research at the college, Burkhart gave the international audience a broad understanding of modeling forest growth and yield. He used an example of different methods from successful research done on pine plantations in the Southeastern United States. “Though the results are from a specific pine region,” Burkhart remarked, “they can be applied to wherever intensive management is practiced.”

Burkhart hopes that the conference’s international attendees can take the college’s ideas, concepts, and results, and apply them to their own country’s situation for advancing forest management and inventory,

thus contributing to improved forest productivity and environmental conservation.

Jungkee Choi, a former visiting professor in the college’s forestry department, and currently an associate professor in the forestry department at Kangwon National University, gave a presentation at the conference on the work he did at Virginia Tech this past summer. Burkhart also visited forests of Korean and white pine with Choi and some of his students to learn more about Korea’s management of pines and the local environmental situation. “It was very rewarding to get out in the field, see species grow, and meet the young students because they are our future leaders,” Burkhart noted.

Harold Burkhart (L) and Jungkee Choi at the IUFRO conference in Korea.



Geography Department Ventures Abroad



Stonehenge was one of many sites visited by the geography study abroad group, led by Jim Campbell and Larry Grossman.

Geography professors Jim Campbell and Larry Grossman led their department’s first overseas study abroad trip to Europe this past summer, taking a group to England for two weeks.

The 21 participants included Virginia Tech students as well as public school teachers in a continued partnership with the Virginia Geographic Alliance to enhance geographic education in the commonwealth. Through a year of detailed planning, including advance visits by both professors to arrange sites and speakers, Campbell and Grossman designed a trip that focused on how the English landscape is linked to patterns of food consumption, culture, and environment in both the historical and contemporary periods.

During the first week, spent in London, the Cotswolds, and West Country, the group traveled to the Tate Britain art gallery, the Muslim Council of Britain, a mosque, Borough Market, a traditional cheese-producing farm, picturesque villages, Kew Gardens, Royal Parks, pubs, and Stonehenge. These visits focused on understanding how landscapes reflect a wide range of issues – cultural traditions, immigration and urbanization, technological change, human-environment relations, class and inequality, industrialization and standardization, government regulations, colonialism, and globalization.

Grossman observed, “One of our goals was to enhance participants’ abilities to understand the significance of geography in such everyday experiences as eating fish and chips, visiting markets, or walking through public parks.”

For the second week, the group relocated to the Blencathra Field Studies Centre, a facility specifically designed to host visiting groups focused on environmental studies, in the Lake District in north-eastern England. There, the program, which was supported by faculty of the School of Geography, University of Nottingham, examined environmental change, environmental awareness of landscapes and climate, functions of landscape throughout history, and the impact of a long history of mining upon British landscapes. Sites visited included the Houseteads Roman Fort (an outpost on Hadrian’s Wall), the Force Crag Mine (administered by Britain’s National Trust), the Honsiter slate mine, Mayburgh Henge, King Arthur’s Roundtable, and Brougham Castle.

Campbell recalled, “Some of the trip’s most popular highlights were visiting the Roman ruins at Hadrian’s Wall and walking inside the mines.”

Creating Seamless Pathways for Learning



The Seamless Pathways initiative will incorporate programs at the elementary and secondary levels in order to prepare students for higher education opportunities in wood science and related fields.

The Department of Wood Science and Forest Products has initiated a partnership with K-12 schools to create seamless educational pathways in the areas of wood science, advanced wood manufacturing, and wood design.

"There has never been an initiative like this in the United States that focuses on wood and renewable materials utilization by starting with programs that address the human resource potential at all levels of our educational systems," said Paul Winistorfer, department head. "Essentially, we aspire to create the future wood products workforce at all levels – by creating educational pathways that start in the schools and lead to our program at Virginia Tech. We are on a path to create a globally recognized center of excellence in the entire state of Virginia." The Southern Virginia Higher Education Center in South Boston, Danville Community College, and Virginia Tech round out the partnering educational institutions, who have been working on the initiative for two years.

Central to the initiative was the establishment of the first two WoodLINKS USA sites in Virginia at South Boston and Danville. WoodLINKS is a grassroots industry-education partnership that brings innovative programming, curriculum guidelines, teacher in-service training, and significant in-kind industry support to official program sites. Begun in 2001, the program has grown to nearly 140 program sites in 25 states.

Winistorfer says he hopes the partnership can leverage its successes to create 10 to 15 additional sites in Virginia and then work closely with all sites in a statewide initiative that would include summer camps, annual competitions, teacher mentoring, and opportunities for collaboration along the educational pathway.

The partnership is hard at work on curriculum, facilities, equipment, faculty, student recruitment and awareness, and articulation among partnering institutions. "This is a long-term investment of human capital among partners. We believe we can impact the future of our state, our natural resources, the consumer marketplace, and, most importantly, our human resource through this initiative," stressed Winistorfer.

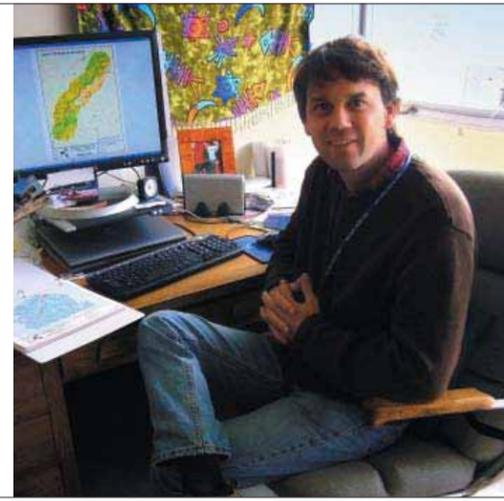
Rocky Knob Area Targeted for Sustainable Tourism Development

From Friday-night flat-footers to fiery autumn forests, Virginia's Floyd and Patrick counties are rich in both Appalachian culture and natural splendor. The Blue Ridge Parkway, a popular tourist route that meanders through the two counties in an area known as Rocky Knob, offers a valuable opportunity to the region's tourism industry. "The problem," said John McGee, assistant professor of forestry and geospatial Extension specialist, "is that many tourists passing through the Blue Ridge Parkway may not be aware of all of the local flavor in this region. They are not exploring areas off the parkway and, therefore, are not contributing to the local economy."

Teaming with Nancy McGehee, associate professor of hospitality and tourism management in the Pamplin College of Business, and a group from Clemson University, McGee is helping to plan a sustainable tourism destination centerpiece for the Rocky Knob area. The project, supported by Virginia Congressman Rick Boucher, began with an intensive GIS mapping phase. McGee and his team used this technology to identify potential "tourism destination sheds," using maps to display the demographics of

residents within bracketed driving distances of Rocky Knob. They also created a community inventory assessment, which plots the region's tourism assets in categories ranging from agrotourism to birding to local art. Currently, the Clemson group is superimposing the map layers on each other to determine potential tourism "hot spots" and the themes with which to market them.

After collecting the data, McGee held a community meeting in each county to gather local stakeholders' opinions on the project, as well as verification of the GIS data. "Without the buy-in of the local government, the local communities, and the local stakeholders," McGee acknowledged, "this project will never work." McGee gave the meeting attendees a general overview of the project, but did not tell them any specific plans, because, he explained, "(A) It is too early in the process, and (B) we don't want to bias the stakeholders. We really want *them* to champion this project." The main consensus, according to McGee, is that the stakeholders want a destination centerpiece that respects their community while recognizing the environmental and cultural assets associated with the Blue Ridge Parkway.



John McGee

Armed with input from the local community and an extensive database of area features, the project's contributors are working to reconcile the data into a plan that will satisfy the community and appeal to tourists. Nothing is decided yet, but the area's rich musical, recreational, environmental, agricultural, and historical resources may play a role in the outcome. "We know that this area doesn't want a Disneyworld, a Dollywood, a waterslide, or an IMAX theater," said McGee. "The Blue Ridge Parkway is something we hope to augment, not take away from."

Citizens Discuss Wood As a Renewable Energy Source

Wood could help solve the nation's energy woes. To look at some of the possibilities, the college, Virginia Cooperative Extension, and other key partners held two public meetings and a series of three agency in-service events across the state to gain input from community leaders, rural and urban planners, economic development officers, forestry industry professionals and consultants, logging and vegetation management contractors, developers and builders, forest landowners, and interested citizens. Over 120 people attended the public meetings held in Abingdon and Petersburg, and nearly 45 Virginia Department of Forestry personnel and Virginia Cooperative Extension agents attended the Abingdon, Farmville, and Madison in-service gatherings.

Both public meetings covered the operational and economic challenges and opportunities related to forest-based bioenergy in Virginia, however, each had a different focus. The first meeting focused on rural issues while the second had an urban/suburban agenda. The goal of the meetings was to understand how forest-based bioenergy markets may impact sustainable economic opportunities in Virginia. In-service sessions included presentations and discussions on the harvesting, utilization, and economics of woody biomass within sustainable wood-to-energy systems.

The results of both meetings were synthesized into a document that was provided to Steve Walz, director of the Virginia Department of Mines, Minerals, and Energy, and Gov. Tim Kaine's senior advisor for energy policy, to be shared with the governor. "The analysis and recommendations from the woody bioenergy symposia were very useful as we developed legislation and decided how to spend Recovery Act Funding

in Virginia. We are looking forward to continuing to work with Virginia Tech and other biomass researchers as we revise the Virginia Energy Plan in the coming year," observed Walz, who was a featured speaker at the public meeting in Petersburg.

Woody biomass, or the accumulation of woody material above and below ground, is the most important renewable energy source in the world. "Improving the utilization of woody biomass from both rural forests and urban landscapes is a promising arena in the pursuit of viable alternatives to fossil fuels," said John Munsell, assistant professor and forest management Extension specialist in Virginia Tech's forestry department. "By sustainably tapping into currently unused sources, such as wood waste left after harvesting operations, trees and branches removed in urban areas, and demolition debris from construction sites, we can expand the renewable energy supply in Virginia."



Students Host 2,000 4th Graders in Junior Hokie Showcase

Students in Rich Oderwald's Introduction to Natural Resources class got hands-on experience teaching others about natural resources during Junior Hokies Showcase, a weeklong event in October organized by 4-H Extension agents Michelle Adcock, Chris Lichty, and Charles Lytton, and Extension specialist Jeff Kirwan. Fourth-graders from Floyd, Giles, Montgomery, and Pulaski counties visited the Virginia Tech campus to learn about agriculture and natural resources. Oderwald's students led hikes to Stroubles Creek, the Duck Pond, and the Grove, where children learned about topics such as aquatic invertebrates, wildlife habitat, and biodiversity.

Maggie Peirce leads students in a tree identification exercise.

CNR Alumni Board Members Work Together to Engage Students and Alumni

The College of Natural Resources (CNR) Alumni Board, comprised of alumni, current and former faculty, staff, and students, is dedicated to serving the college and its alumni. The board works to promote the general welfare of the college, serves as the parent organization for all alumni groups within the college, and works closely with the dean in support of actions of the college. Members encourage cooperation, support, communication, and networking among the college's students, administrators, faculty, staff, and alumni.

The board has taken on many initiatives since its inception in 2000, such as launching the college mentor-mentee program in which sophomores are paired with alumni within their field of study. Students get an inside look into their area of career interest, build personal and professional contacts, and develop a supportive relationship with their mentor, who can provide advice and career networking opportunities.

"The CNR Mentoring Program is not only a great way for current students to generate knowledge on subjects and careers in natural resources, but it offers an opportunity for alumni who wish to stay connected to the college. Both the student and the mentor can benefit

greatly from the relationship," remarked Salli Dymond, CNR Alumni Board member and mentor program leader. Students can participate in the program until they graduate, but the relationships they build can last a lifetime. All CNR alumni are invited to serve as mentors and in doing so provide a great service to not only the students, but to the college as a whole.

Another recent initiative of the board is the Alumni Ambassador Program. By making a contribution of \$25 or more to the CNR Alumni Scholarship Fund, alumni receive a commemorative lapel pin that they may wear proudly as they share the great successes of our college, as well as printed information to use when talking with prospective students and others interested in learning more about the college. Contributions to the Alumni Ambassador Program are used to fund an annual student scholarship, which is awarded each spring to a CNR Student Ambassador and is a great way to honor and recognize the dedication and hard work of CNR students. In becoming an ambassador, alumni remain active in helping the college attract quality students and remain at the forefront of academic and research programs.



CNR Alumni Board member Harrell Turner (L) talks with Dean Mike Kelly and Ken Morgan, a member of the Department of Forestry Advisory Board, before the annual college awards banquet.

As a working group, the CNR Alumni Board is a great asset to the college and university. The efforts of the board members show their loyalty and service. Many thanks to the board, alumni, and supporters, both past and present!

To learn more about the board or its programs, contact Lane Guilliams, director of alumni relations, at 540/231-2512 or laneg@vt.edu.

Budischak Wins Best Student Paper Award

Sarah Budischak, 2007 M.S. in fisheries and wildlife sciences, won the 2008 Society of Environmental Toxicology and Chemistry's Best Student Paper Award.

This prestigious award is given annually by the society to one of its student members who was the lead author of a paper published in *Environmental Toxicology and Chemistry* that reported on non-postdoctoral research.

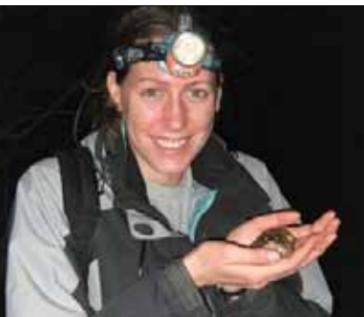
Sarah Budischak

Budischak's paper, entitled "Effects of malathion on embryonic development and latent susceptibility to trematode parasites in ranid tadpoles," provides an in-depth look into how disease and pollution interact and is considered to be a critical contribution to the study of conservation of amphibians. Those who reviewed the paper cited it as an innovative and excellent study that should have many applications for environmental quality assessments.

"Sarah's M.S. research here was so important and novel because it demonstrated how brief exposure to a common pesticide during early development can have

lasting effects later in life. She clearly showed that this brief disruptive event made amphibians more susceptible to parasite infection weeks later. Her findings force us to reconsider the subtle effects of pesticides on animal health," commented her advisor, associate professor William Hopkins.

Budischak is currently working towards her Ph.D. in the Ecology of Infectious Diseases Program at the University of Montana, where her research focuses on the ecology of bovine tuberculosis in African buffalo at Kruger National Park, South Africa's largest game reserve.



ALUMNI NEWS

George Grozdits, '67 M.S. in forestry and wildlife, and '71 Ph.D. in forestry, has been awarded an honorary doctorate by the University of Western Hungary. Grozdits has been associated with the university systems of Hungary for 54 years through forestry and wood engineering, and is known for his contributions in promoting environmental conservation in paper recycling. Currently an assistant professor of research at Louisiana Tech, Grozdits works in the Institute for Micromanufacturing where he researches "smart paper," which uses layer-by-layer molecular self-assembly to improve paper production and to lower mineral and chemical additives. He also participates in Louisiana Tech's Nano Pulp and Paper Initiative to help improve paper recycling and encourage better ways to provide greater energy savings and resource.

ALUMNI, SEND US YOUR NEWS

Please let us know what is happening in your life so we can include the news in our next college newsmagazine. Send your information to Helen Thompson at hthompson@vt.edu or 324 Cheatham Hall, Blacksburg VA 24061. We would love to hear from you. As a courtesy, please send address changes directly to Ruth Graves at ruthg@vt.edu. Thanks!

Steve Long, '78 B.S. in fisheries science, has been named the state environmental administrator for the Virginia Department of Transportation (VDOT). In his new position, Steve oversees all environmental programs within VDOT, which has the third largest state-maintained highway system in the country. His work involves managing statewide programs that obtain the numerous state and federal environmental clearances required to construct and maintain highways, and balance environmental issues with transportation needs. An employee of VDOT since 1979, Steve has worked in several environmental and engineering areas throughout the department in his 30-year career. He and his wife Laura live in Henrico County, where he is very active in outdoor activities such as downhill skiing, hunting, and fishing.

Upcoming Alumni and Friends Receptions and Special Events

AUG. 30–SEPT. 3, 2009

American Fisheries Society 139th Annual Meeting
Virginia Tech Alumni and Friends Reception; Details TBA
Renaissance Hotel and Nashville Convention Center
Nashville, Tenn.
www.fisheries.org/afs09

SEPTEMBER 2009

Wood Week 2009
Details TBA; Blacksburg, Va.
www.woodscience.vt.edu

SEPT. 21-23, 2009

Virginia GIS Conference
Details TBA; Richmond, Va.
www.viriniagis.org

SEPT. 30–OCT. 4, 2009

Society of American Foresters National Conference
Virginia Tech Alumni and Friends Reception
Thursday, Oct. 1, 2009, 7:00-9:00 p.m.
Disney World Coronado Springs Resort; Orlando, Fla.
www.safnet.org/natcon-09/events/alumni.cfm

SATURDAY, NOV. 21, 2009

Homecoming and Tailgate
Cheatham Hall, Blacksburg, Va.
Registration required. For more details and to request football tickets, visit www.alumni.vt.edu/reunion/cnr

Kayak Wedding

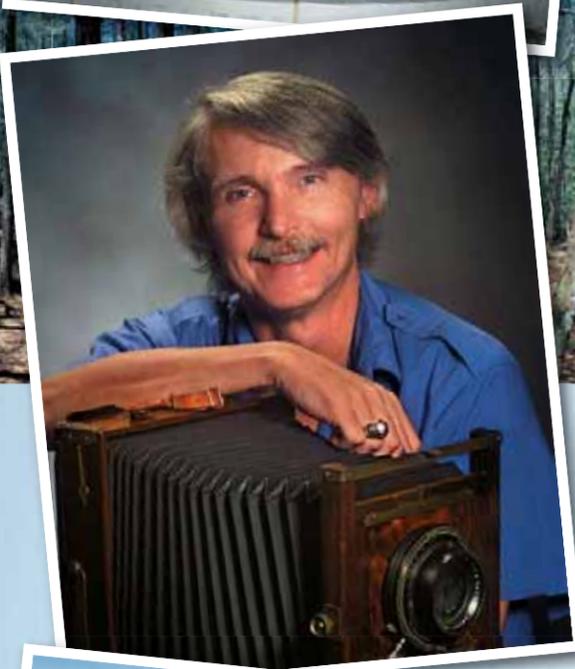
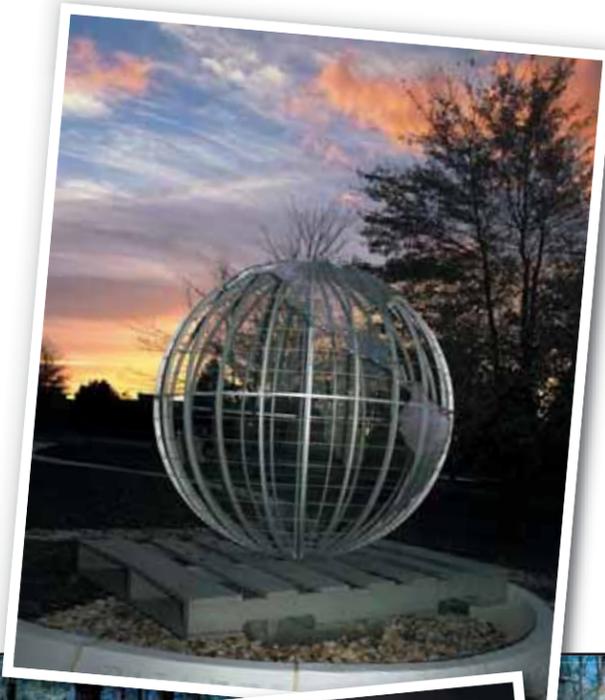
What better way to start off your wedding day than with a kayak excursion! Jennifer Philhower Gillen, '07 B.S. in wildlife science, did just that. She and guest Suzie Leslie, academic advisor for the college, ventured out for a morning paddle before Jennifer's wedding at Lake Hope State Park in Vinton County, Ohio, last September. Now a graduate student at Ohio State University, Jennifer recalls, "I will remember many special moments from that very special day, but kayaking with Suzie will remain a special memory always."



Suzie and Randy Leslie joined Jennifer Philhower Gillen for her big day.



Jennifer and Suzie paddled on Lake Hope the morning of Jennifer's wedding.



Tribute to College and University Photographer Rick Griffiths

Richard "Rick" Griffiths, '78 B.S. in forestry and wildlife, passed away on February 8, 2009, after a long battle with cancer. He was known for putting his talent in photography to use as a senior photographer in Virginia Tech's Visual and Broadcast Communication Department. Colleagues said, "Rick was such a nice guy and fun to be around. We loved his photography, and he will be missed by many."

Born on December 25, 1952, in Hornell, N.Y., the 56-year-old alumnus is survived by his wife, Barbara Griffiths, their two daughters, Krista and Kimberly, and his parents, Clara Beirwiler Griffiths and Wilton Griffiths. When Rick's brother John, '77 B.S. in forestry and wildlife, died some years ago of cancer, their parents donated John's exquisite bird collection to the college's fisheries and wildlife sciences department.

After receiving his bachelor's from the college, Rick worked with its Department of Forestry until he chose to follow his other passion – photography. Not wanting to leave Virginia Tech, he went to work as a university photographer and was often assigned to cover the College of Natural Resources. His photos have appeared in a number of issues of the CNR newsmagazine.

Rick's family has set up a scholarship in his name at Virginia Tech. Gifts to the Virginia Tech Foundation in memory of Richard Griffiths can be sent to University Development, 902 Prices Fork Road, Blacksburg, VA, 24061.

Friends remember Rick as "one of the most mellow, gentle persons." Displayed here are some of Rick's photographs, honoring the talented photographer, dedicated employee, and helpful colleague who always went the extra mile when needed.

