

# ENGAGEMENT matters

Virginia  
Cooperative  
Extension

A partnership of  
Virginia Tech and  
Virginia State University  
[ext.vt.edu](http://ext.vt.edu)



## A Few Words from Bob Smith

When the weather starts to turn cold, my memories turn to my Michigan roots and playing football, when everything seemed to “sting” a little more in the cold. This is the first time I remember having our fall colors framed by a snowy white background on campus. While raking leaves last weekend, I was reminded how important our natural resources are to us. The leaves we rake are put on our gardens, providing nutrition to the soil and food (and beauty) to us in the coming year. As I get older I am reminded how much effort it requires to take care of my yard. Then I think of the purpose of our college’s programs in teaching the next generation of students – taking care of “everyone’s” yard.

These are exciting times for our college and the university. Our undergraduate enrollment in the college has reached over 700 students for the first time in a number of years, we have new undergraduate programs in our departments, and every year there is a greater commitment by our students to serve our communities. Campus-wide, we have observed a new culture of service with incoming students. It is nice to think that we have moved from the “Me” generation to the “We” generation, where collaboration and service are looked upon as favorably as aptitude and strength. Can we envision a time when we could put 68,000 people in Lane Stadium to celebrate our service efforts?

In this issue you will be able to see the important engagement efforts of our students, staff, and faculty around the world. One of the growing programs in our college is agroforestry, led by John Munsell. His work has taken him from the New River Valley to Cameroon, partnering with local communities to protect and enhance farmland with proper natural resource management. Elizabeth Moore, a master’s student in forestry, spent the summer working with indigenous people in Cameroon and the Central African Republic on agroforestry issues. Alan Raflo at the Virginia Water Resources Research Center spreads the word about water science on Virginia Water Radio, heard on our local Virginia Tech and Emory/Henry campus stations. We had two interns at the Matthews State Forest again this past summer; they engaged with children and local citizens on forestry issues in southwestern Virginia. Our extension team spent a week with school teachers sharing the importance of natural resources and forestry to the Commonwealth. All of these efforts are geared toward our mission of *Partnering for Sustainable Solutions*.

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## ENGAGEMENT matters

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### Partnering for Sustainable Solutions

The College of Natural Resources and Environment's Engagement Program partners with landowners and communities to provide science-based solutions to natural resources and the environmental issues facing the world. Its goal is to improve the lives of the citizens of Virginia and beyond by providing information to make better decisions to sustainability manage and utilize natural resources.

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For the past five years, this newsletter has been led by Arlice Banks. Thanks to her efforts, it has won numerous awards and is one of the lead-



*Thank you, Arlice!*

ing campus newsletters on engagement. Putting together a newsletter that both interests and informs the reader is an enormous task, and I thank her for all her work. Arlice has taken on additional duties in the college, and we have passed this responsibility on. We will continue to share our engagement efforts with our community; please contact me at [rsmith4@vt.edu](mailto:rsmith4@vt.edu) or 540-231-7679 with any questions or suggestions.

## FEATURE

### Bringing Agroforestry Opportunities to Cameroon

Elizabeth Moore and John Munsell  
Department of Forest Resources and Environmental Conservation  
College of Natural Resources and Environment



*Cameroonian children show the tree illustrations they made during a lesson on agroforestry. Photo credit: Elizabeth Moore*

This summer, I worked in Cameroon for 3 months doing field research for my master's degree in human dimensions in the Department of Forest Resources and Environmental Conservation. In my research, I interviewed local Cameroonians and refugees from neighboring Central African Republic (CAR) in villages near the border of the two countries. In the past 10 years, about 100,000 Central African refugees have crossed the border into Cameroon to escape violence by bandits and rebel soldier groups. While the violence has subsided in the last few years, most of the CAR refugees will be staying in Cameroon, having become integrated into communities in the area.

Traditionally pastoralists, the Fulani people of the Central African Republic have little farm experience. Since new farmers may be more open to adopting new farming techniques, now is an excellent time to teach them agroforestry. In recent years, many more people have been added to these small villages, often straining the limited natural resources and land; agroforestry offers a way to increase production on smaller spaces through good land-use techniques.

While it is important for extension agents to understand agroforestry technique preferences of community members, it is equally important to understand social arrangements in villages if an organization is attempting to create community gardening or farming projects. Thus, we wanted our research to explore two things: the preferences for different agroforestry techniques and the social relations among refugees and Cameroonians, with the aim of providing information on the best arrangements for agroforestry projects in similar situations. During focus group meetings with male and female refugees and Cameroonians, eight agroforestry practices were described using visual illustrations and verbal explanations. These teaching sessions were enhanced

*Continued on page 3*

*Agroforestry, continued from page 2*

by conversations among participants, identifying areas where such agroforestry techniques are currently in use or areas where they could be particularly successful. Throughout the study, we discussed the needs of the village in relation to the agroforestry techniques.

In the individual interviews, each participant was asked to rank the illustrations of the eight agroforestry techniques according to their level of interest in each technique. We also conducted another activity using illustrations of people (refugees and Cameroonians, men and women), cows, and trees; participants arranged the illustrations on a board to demonstrate working in the fields in the “best social arrangement.” These results will be partnered with results from a survey looking at identity among individuals to create constructs for people more interested in mixed-group work and those more interested in working with members of their own group.

After the interviews, each participant received two trees to plant at their households. *Moringa oleifera* is a fast-growing tree with nutritious leaves used in sauces for meals. *Leucaena leucocephala* is a fast-growing, nitrogen-fixing tree, excellent for use in alley cropping and contour farming; *Leucaena* leaves are nutritious livestock forage.



*A refugee from Central African Republic studies illustrations of agroforestry techniques. Photo credit: Elizabeth Moore*

Through our research work, we found great potential for agroforestry projects in this area. The region is conducive to growing trees: it has a long rainy season and little pressure of overpopulation. However, there is little experience with any type of agroforestry. People are most familiar with and want to plant fruit trees (primarily mangos and avocados), but they do not have much experience with planting other trees for other purposes. The main constraints to farming in this area are soil erosion, livestock eating crops, and wind. Therefore, contour farming on slopes, using live fences to exclude livestock, and creating windbreaks would likely be the most beneficial agroforestry techniques. According to villagers, woodlots for fuel wood would be the least desirable technique, as fuel is plentiful near the villages. Many people are most interested in planting fruit and sauce leaf trees, as “answers to hunger are the first necessity.” This region would be a very fertile area for continued work in agroforestry extension.

Through this work, we partnered with two organizations in Cameroon: International Relief and Development, which is currently doing work in sensitizing on *Leucaena*; and International Medical Corps, which works with local communities and has developed a community gardening program with CAR refugees and Cameroonians. Trees for the Future, an international agroforestry organization based in the Washington, D.C. area, provided a grant for the tree-planting work.

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*Men from Garga Pella village receive trees from Moore (left) after participating in the study. Photo credit: Elizabeth Moore.*

## Trees to Products Program: Professional Development for Educators

Bill Worrell

Natural Resources Extension Agent  
Virginia Cooperative Extension

Twelve educators from across Virginia spent a week touring forests and manufacturing facilities as part of the 2012 Trees to Products program, hosted by the Southwest Virginia Chapter of the Society of American Foresters (SAF), July 16 – 19.

The program began with a tour of the Powell River Project Research and Education Center, where teachers had the opportunity to see the stages of forest succession on mined land reclamation projects. They learned about the Appalachian Regional Reforestation Initiative, which encourages planting high-value hardwood trees, increasing tree survival and growth rates, and expediting the establishment of forest habitat on previously mined land.

On the second day of the program, the teachers visited the Clinch District of Jefferson National Forest, where they toured forested stands to learn about forest ecology, silvicultural management practices, and wildlife ecology. While in the forest, the teachers participated in Project Learning Tree (PLT) activities and learned to use Biltmore sticks to measure tree diameter and height. Next, the teachers met with Mountain Forest Products, LLC, where they were able to see active timber-harvesting activities and discuss water quality and forest regeneration. The evening presentation from Virginia Department of Game and Inland Fisheries discussed how forest management activities affect wildlife species.

Day three began with a tour of Lonesome Pine Components, where teachers toured the state-of-the-art cabinet-manufacturing facility. Next, they toured Southern Forest Products in Appalachia, where they observed the primary manufacturing of hardwood logs into lumber and learned how to scale and grade logs. Next, the teachers traveled to Mullican Flooring's plant in Blackwood, Va., to see secondary manufacturing and value-added products.

The final day began with a tour of the hardwood sawmill of Virginia Forest Products LLC in Duffield, Va. The last stop was the fine paper manufacturing facility of Domtar in Kingsport, Tenn., where participants were introduced to the papermaking process and toured the sheeting facility.

When the program was over, the teachers went home with a tremendous amount of information, a load of souvenirs, the PLT Environmental Education Activity Guide, and a tree identification guide, provided by the Southwest Virginia Chapter and the participating forest products manufacturers.

The 2012 Trees to Products program was funded by the Virginia Forestry Educational Foundation, the Southwest Virginia SAF Chapter, and several forest product companies, which made financial contributions, provided meals and speakers, and offered the use of their facilities. Additional contributions were provided by the USDA Forest Service, the Virginia Department of Forestry, the Virginia Department of Game and Inland Fisheries, and Virginia Cooperative Extension. The 2013 Trees to Products program is scheduled for July 15 – 18, 2013. Contact Bill Worrell for registration information.

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*Craig Kaderavek with the Forestland Group instructs Trees to Products participants on how to measure trees using Biltmore sticks. Photo Credit: Bill Worrell*

## Virginia Water on the Air

Alan Raflo

Virginia Water Resources Research Center  
College of Natural Resources and Environment

Water is central to many big Virginia issues: energy production and impacts, climate change, residential growth and development, the Chesapeake Bay, resource-based tourism and recreation, and sustainable industries.

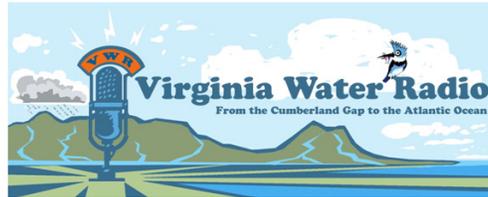
Virginia Water Radio aims to use the tried-and-true medium of radio, combined with modern online networking tools, to provide an engaging, weekly dose of information about water in Virginia. The show is produced by the Virginia Water Resources Research Center, which has provided objective, non-partisan information about water for Virginia citizens, policy-makers, and water-resources professionals since 1965.

Virginia Water Radio uses music with a Virginia water connection, or recordings of water-related sounds or events, as the basis for short discussions of topics related to the Commonwealth's water resources. Typically about two to three minutes long, the weekly episodes help listeners learn about specific bodies of water, aquatic organisms, water-based activities, water-management agencies, water-related history, and other connections between Virginians and water. Some of the episodes include:

- "Dock Safety" (Episode 131)
- "Turtles Don't Need No 401-K" (Episode 123)
- "Dragonflies" (Episode 119)
- "Jackson River Stream Rights Court Case" (Episode 76)
- "Wastewater Treatment Plants" (Episode 72)

As of September 2012, episodes have been broadcast on WUVT at Virginia Tech and WEHC-FM at Emory and Henry College in Emory, Va. The audio files—along with show notes and photographs—can be found at [www.virginiawaterradio.org](http://www.virginiawaterradio.org). Visitors to that site can sign up for a podcast download or RSS notification. The Water Center also posts notices of new episodes on Facebook, Twitter, and the Virginia Water Central News Grouper blog (<http://vawatercentralnewsgrouper.wordpress.com>).

The search for weekly sounds, music, topics, and



*Virginia Water Radio logo. Drawing by George Wills*

scripts has required collaboration with many partners. Several Virginia Tech student interns have contributed writing, editing, ideas, research into music, and recording of sounds. The Virginia Master Naturalist Program asked its members to help provide water-related

sounds from around the state. Assistance in providing sounds, voices, or music has been given by several organizations and state agencies, including the State Water Control Board, the Virginia Association of Soil and Water Conservation Districts, the Colonial Seaport Foundation, and the Virginia Foundation for the Humanities. Finally, some of the most interesting collaborations have involved working with musicians in Virginia and other states to find music with a connection to Virginia's water issues.

Virginia Water Radio's basic goal is to provide an accessible, accurate, and entertaining lesson about Virginia's water resources. Our ambition is much bigger, though: to develop and widely deliver a Virginia water "curriculum" that can help all of Virginia's citizens be more aware of, and make more informed decisions about, our common wealth of water.

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— Alan Raflo ([araflo@vt.edu](mailto:araflo@vt.edu)) is the host of Virginia Water Radio and a research associate in the Virginia Water Resources Research Center.



*Morning fog on the James River at Columbia (Cumberland-Fluvanna county border), used in the online show notes for "Fog," Episode 124. Photo Credit: Alan Raflo*

## Biomass Harvesting Workshops with Chipper and Grinder Demonstrations

Scott Barrett

Department of Forest Resources and Environmental Conservation  
College of Natural Resources and Environment



*Participants in workshops watched chipper and grinder demonstrations and learned about using biomass from harvesting activities for woody biomass fuel.*

*Photo Credit: Scott Barrett*

Within the next year, Virginia will see a rapid increase in the use of woody biomass for electricity. There are currently six renewable electricity facilities in Virginia that are either under construction or in the process of being converted to use woody biomass fuel to produce electricity. All of these new facilities plan to be operational before the end of 2013. Combined, these new facilities will have the capacity to produce over 300 megawatts of electricity, enough renewable energy to power over 75,000 homes. Total biomass use at these new facilities is estimated at over 3 million tons per year. Much of the new biomass consumption is expected to come from logging residues, such as limbs and tops that were previously left behind on harvest sites because there was no market for them. Utilizing logging residues for energy will require a change in harvesting operations: the addition of a chipper or grinder to process the material.

As construction progresses on these new renewable energy facilities, many Virginia logging businesses are evaluating whether they can adapt their operations to utilize logging residues for energy. The Virginia SHARP logger program ([www.SHARPllogger.vt.edu](http://www.SHARPllogger.vt.edu)) partnered with MWV ([www.meadwestvaco.com](http://www.meadwestvaco.com)) to offer two continuing education workshops on biomass harvesting, which included demonstrations of chippers and grinders from five different manufacturers. The first workshop

was held near Chatham, Va., on May 4, 2012, with 166 participants, and the second workshop was held near New Castle, Va., on May 12, 2012, with 115 participants. Both events were a great success. Many participants were interested in the opportunity to adapt their operations to harvest biomass for energy. Participants, sponsors, and equipment representatives indicated that the demonstrations were helpful to them, as this industry moves forward and prepares for the new demand for woody biomass fuel.

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— Scott Barrett ([sbarrett@vt.edu](mailto:sbarrett@vt.edu)) is a forestry Extension associate and the coordinator of the SHARP logger training program.



*Photo Credit: Scott Barrett*

## Notes from the Field: Interns at Matthews State Forest

Drew Cockram and Kyle Dingus  
 Department of Forest Resources and Environmental Conservation  
 College of Natural Resources and Environment

This past summer, we obtained forestry field experience as interns at the Matthews State Forest near Galax, Va. The Matthews State Forest is very unique; it is not only used for aesthetics and the production of timber, but its recreational trails and tours are also valuable public educational resources. Under the supervision of Zach Olinger (Virginia Department of Forestry), we participated in a wide variety of forest management activities, including timber inventorying, timber sale formation, stand improvement, invasive species control, environmental education, forest road maintenance, and best management practices.

One of our major focuses was on controlling invasive species in Matthews State Forest. Oriental bittersweet, tree-of-heaven, and autumn olive are three of the most prevalent invasive species there; these plants threaten forest biodiversity and disrupt ecological webs. Using backpack sprayers and mounted ATV sprayers, we learned how the chemicals used to control these invasive species worked and how they could be applied safely. We also monitored abundance of invasive plants, which allowed us to see the direct impacts of our chemical treatment.



*Spraying to control invasive plant species. Photo Credit: Kyle Dingus*

We were also involved in timber operations, inventorying trees to accurately estimate species composition and timber volume. We learned about tree value estimation, logistical planning for forest operations, and

predicting future stand species composition after harvest. Working with an experienced forester like Zach taught us to look at the forest differently.

One of our favorite experiences this summer was working in environmental education. Numerous children's groups visited the Matthews, and we walked them through the forest to teach them about the benefits of forests to society. On the Channels State Forest, we helped lead an interpretive hike and had an amazing day talking to visitors about trees, forest management, and forest ecology. A very interesting topic to educate people about was forest ecology and how it changes, particularly with respect to the American chestnut. Learning how such an economically and ecologically important species was wiped out of a landscape puts into perspective the importance of all species in a forest ecosystem.



*Leading an educational walk through a forest. Photo Credit: Kyle Dingus*

This internship allowed us to apply the concepts we had learned in the classroom and labs to real-world challenges in forestry, deepening our understanding and enjoyment of the field. We are very thankful to Zach Olinger for his mentorship and the Matthews Foundation for making this life-changing experience possible.

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**Eric Wiseman Receives Early-Career Scientist Award**



Eric Wiseman, an associate professor of urban forestry and arboriculture and an Extension specialist in the College of Natural Resources and Environment, is the recipient of the International Society of Arboriculture’s Early-Career Scientist Award. The award recognizes scientists in the field of urban forestry and arboriculture who demonstrate exceptional promise and high career potential for producing internationally recognized research.

*“Scientific accomplishments cannot happen unless someone values them.”*

“Dr. Wiseman has thoughtfully investigated such topics as the street tree population in his home state of Virginia to what kinds of courses colleges are teaching in arboriculture,” said Colin Bashford, president of the International Society of Arboriculture. “His thinking and questioning in his research is contributing to the growth and discovery of our field.”

“Scientific accomplishments cannot happen unless someone values them,” said Wiseman. “We scientists struggle with the relevancy of our work so we need a constituency like the International Society of Arboriculture, an advocate for science and research, to help us expand the ever-growing body of knowledge and technology around us.”

Wiseman, one of nine people selected for the society’s 2012 Awards of Distinction, accepted his award at the local chapter meeting in Cumberland, Md., on Oct. 2.