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School of Forestry & Wildlife Sciences

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Research & Discovery

Fighting Tick-Borne Illnesses in Alabama

SFWS Research to Study Prevalence of Tick-Borne Diseases in Alabama

As most people who spend time outdoors know, exposure to ticks is all too common in the South. What is less known by the medical community and the public is the degree of risk associated with these encounters.

Several tick-borne illnesses can be transmitted by ticks to humans and pets in the Southeast, including Rocky Mountain spotted fever, Lyme disease, ehrlichiosis, and others. Lyme disease is the most commonly reported vector-borne disease in the U.S. and is caused by bacteria carried and transmitted by black-legged ticks. Although Lyme disease is widely thought to be a problem of the Northeast, it has been established by experts in the fields of vector-borne disease ecology and epidemiology that the disease has also presented signs and symptoms in human patients in the South, consistent with Lyme disease recognized in the northeastern parts of the country. People and pets have been infected with Lyme and other tickborne illnesses in all U.S. states, including those in the Southeast, and every year tens



of thousands of new cases emerge across the nation. According to the Alabama Department of Public Health website, there have been 48 confirmed cases of Lyme disease in Alabama within the last 12 months.

Emily Merritt, recent graduate of the School of Forestry and Wildlife Sciences and research associate, grew up in New York, a tick-infested part of the country, and is well familiar with the realities of tick-borne illness. States Merritt, "When I moved to Alabama to pursue a master's degree at Auburn University, I realized there was a problem with ticks and tick-borne illnesses here, but no one really talked or knew about it." As she continued researching the topic, she found that doctors often misdiagnose and mistreat patients who have tick-borne illnesses, because the medical community and the general public are not aware of the scope of the issue in the state.

Recognizing a gap in research about the distribution of ticks and prevalence of tick-borne diseases in Alabama, Merritt approached Graeme Lockaby, associate dean of research of the School of Forestry and Wildlife Sciences, about the potential to undertake a study focused on the issue with the goal of identifying tick habitats and the degree in which ticks carry disease.

According to Lockaby, "While we in the SFWS are not trained medically, we are highly qualified to create precise descriptions of vegetation, stream, soil, and topographical habitats as well as to assess climate variation. With this expertise, we hope to clarify which habitats different species of ticks occupy



and what climatic conditions contribute to the distribution and prevalence of ticks and tick-borne diseases in Alabama. This information will then be used to develop a risk prediction tool that will help us better educate Alabama residents, medical professionals, state and federal agencies, and others on the areas of greatest risk and what they can do to avoid tick contact."

Realizing, by its nature, environmental health is complex, it was understood the project would require an interdisciplinary approach. With the addition of Rajesh Sawant and Sarah Zohdy of the SFWS, Derrick Mathias of Auburn's Department of Entomology and Plant Pathology, and Navideh Noori of the School of Ecology at UGA, the research team unites expertise in wildlife science (particularly host interactions), forest ecology, climate modeling, DNA analyses, remote sensing and spatial analyses,

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Contact Us

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A Message from the Dean

Dear Alumni, stakeholders, and friends:

Greetings from the School of Forestry and Wildlife Sciences! The school is known as the flagship program for forestry, wildlife, and natural resources in Alabama and is the backbone of its \$22 billion forest and wildlife industry; a significant component of Alabama's economic and employment fabric. With world-class faculty, state-of-the-art labs, field sites, and other infrastructure, combined with unwavering support from all of you, the school aspires to become the "go-to place" for forestry, wildlife, and natural resources in the southeastern U.S. and beyond.

The timing to move the school forward could not be better. Nationally and globally, there is growing support for a "working forests" approach to resource management. The reality of "use of wood is good" is on a robust rebound, and there is overwhelming scientific evidence that wood-based bioenergy systems have the potential to improve rural economies and the environment. With these and other trends in mind, we are confident of developing strategies that build on our strengths and enable us to forge new partnerships that align well with university priorities and our client needs to advance the school's programs.

As we move forward, we believe it is important to keep you informed about what is happening at the school and university. As you'll see in this newsletter, our alumni, students, and faculty are continuing to achieve great things in their respective fields.

We are pleased to present you with this first issue of the SFWS News. As always, we appreciate your comments and suggestions.

Best regards War Eagle!

- America

Dean Janaki R.R. Alavalapati, PhD

Research & Discovery

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and potentially in the future, sociology, to reach its primary goal of predicting risk.

Mathias, whose role will be to identify the ticks collected by morphology and screen them for pathogens using molecular methods, states of his involvement, "I became interested in working with this team because of their expertise in ecological modeling, forestry, and wildlife biology. Tick-borne pathogens are zoonotic, meaning that they cycle among wildlife, and therefore, humans are incidental or "dead end" hosts. Zoonoses are very complex systems, so it takes a team of people with a diverse set of skills to determine why we see the patterns of disease that we do."

Based on data from the Alabama Department of Public Health, we know clinical cases of tick-borne diseases in the state vary substantially between counties,

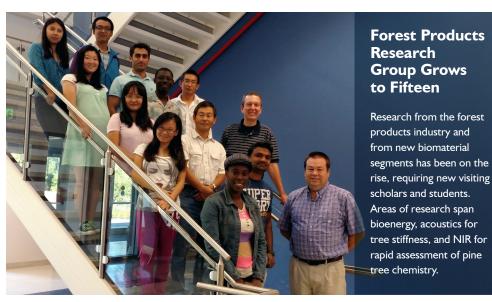


Research Associate and project lead, Emily Merritt, sets a carbon dioxide trap to catch ticks.

and the number of cases has gone up significantly over the last several years. Mathias further explains, "These data provide clues about areas in the state where ticks thrive, but what we don't understand are the factors responsible for variation in disease risk within these hot spots."

It is this variation that makes the team's expertise and research approach significant because of the strong correlation between risk and habitat features such as vegetation, topography, and variations in climate that strongly affect arthropods, a group that includes ticks, insects, and spiders. According to Lockaby, "Although this type of work is a new endeavor for the SFWS, it is highly appropriate, given the strong links between forest fragmentation and arthropod disease vectors."

Initial conversations with medical professionals and early research funding from the Alabama Department of Conservation and Natural Resources and the U.S. Forest Service suggests there is strong support for tick-borne disease research in the state. With additional funding, the team anticipates their research coverage will grow to encompass a larger geographic area to yield a wider range of applicability of the risk prediction tools and additional disease screening of tick samples. "Ultimately," states Merritt, "we hope these tools have the potential to enable people to avoid tick encounters and consequently reduce the incidence of tick-borne diseases in the Southeast."



<u>Top/First row:</u> Teng Xu (Daisy), visiting student; Xiping Zhao, visiting brofessor.

Second row: Yang Huang (Sunny), visiting student; Yusuf Celikbag, NSF IGERT PhD student.

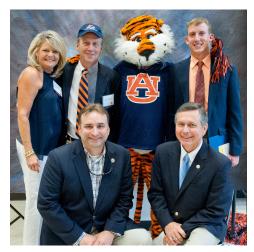
<u>Third row:</u> Lixia Hu (Lisa), visiting student; Charles Essien, PhD student; Shaolong Sun, visiting student.

Fourth row: Chengfeng Zhou (Jenifer), visiting scholar; Qingzheng Cheng (George), research associate; William Hand, chemical engineering NSF IGERT PhD student.

<u>Fifth row:</u> Gifty Acquah, NSF IGERT PhD student; MD Nuruddin, Adams Fellowship PhD student. <u>Bottom:</u> Brian Via, SFWS associate professor.

Not pictured: Kyle Malone, undergraduate; Cayde Thomas, undergraduate; Bin Hui, visiting student. Academics & Learning SFWS News | 3

SFWS Awards More Than One Quarter Million in Student Scholarships for 2015-16



The School of Forestry and Wildlife Sciences recently hosted its 2015 Student Scholarship & Fellowship Ceremony and Reception on Saturday, August 22. One hundred and seventy alumni, students, parents, faculty, and staff were in attendance for the annual ceremony. Heather Crozier, development director for the school, stated, "We are fortunate to have so many generous donors who are willing to support the educational pursuits of our students. Today we gratefully recognize the impact that legacy is having in our school and the lives of these young people."

For many donors, participating in the ceremony provided connection to the next generation of students and a platform to honor industry leaders. Chairman and President of the Alabama Conservation and Natural Resources Foundation, N. Gunter Guy, presented the inaugural

wildlife scholarship from the Dan Moultrie Fund for Excellence to Zachary Slay, a Natural Resources Management sophomore from Five Points, AL. Commissioner Guy stated about the fund, "I am very pleased that the foundation can join with Auburn University through this scholarship to recognize the conservation achievements of Dan Moultrie to the state of Alabama. This scholarship enables young people to pursue careers that will help to conserve, enhance and ensure the sustainable benefit of Alabama's rich natural resources."

Many of the scholarships were awarded for the first time this year, including the Weyerhaeuser Giving Fund/Jim Leist Memorial Endowed Scholarship, created in memory of longtime employee, Jim Leist, a 1982 graduate in forest engineering from Auburn University, and made possible by a bridge gift from Cherie Leist, Jim's widow. A registered forester in three states, Jim served as director for Southern Timberlands and was a member of many boards and associations.

The School of Forestry and Wildlife Sciences awarded more than 80 scholarships and fellowships to students pursuing degrees in forestry, wildlife sciences, and natural resources management for a total award of nearly \$270,000 for the 2015/16 academic year. States, Dr. Jodie Kenney, SFWS director of student services, "We truly have a wealth of opportunity available for our students who apply a focused effort toward their studies. This level of support proves that financial need doesn't have to be a barrier to success."



SFWS Considers Undergraduate Program in Geospatial and Informatics

Management of forests, wildlife, and natural resources have grown increasingly reliant on computer-based information science, which includes geographic information, remote sensing, statistical analysis, data base management, knowledge integration, and decision making. We believe that a program in geospatial and environmental informatics area will complement our existing programs and allow us to expand our undergraduate platform. Currently, such a program does not exist at Auburn University. A brainstorming among faculty in the school and conversations with selected faculty from other colleges suggest that there is strong interest and support for this degree. As we develop more details about this program, we will update you.

New Master's of Natural Resources Degree



Last spring, the Alabama Commission of Higher Education approved a master's of science in natural resources (MSNR). This new degree compliments the SFWS's

recent Natural Resources BS launched in 2014 and will provide students the opportunity to further develop their professional skills related to a wide array of natural resource fields that are anticipated to be in greater demand to meet the resource needs of our changing society.

Graduates will be prepared for such careers as water resource managers, conservation professionals, socioeconomic analysts, ecosystem scientists, and recreation and ecotourism managers. This multidisciplinary program is expected to attract students from many different backgrounds and underrepresented demographic groups, including women and minorities and is anticipated to increase the diversity of students the school represents.

Upcoming Events

Fall Commencement Saturday, December 12

SFWS Career Fair Wednesday, February 23, 2016 Details Coming Soon!



Smith Assists Japan with Wild Boar Issues

The United States is not alone in fighting its battle against wild pigs. Throughout many parts of Japan, wild boar populations have gone unchecked and have increased to the point where more and more negative interactions between wild boars and humans occur, especially in urban areas.

A species native to the region, Japanese wild boar are known to be just as voracious, destructive, and prolific as their non-native counterparts in the United States. SFWS Associate Professor and Extension Specialist Mark Smith spent three days touring the Kobe City in Hyogo Prefecture in Japan and meeting with local wildlife managers and city officials to look for ways to help them effectively manage their problems with wild boars within the city.

Smith noted, "It was a very unique experience learning about the challenges our counterparts in Japan face when managing wild pigs. We definitely have a greater amount of flexibility in the United States."

Along with wild boar experts from Italy, South Korea, and Japan, Smith toured many parts of Kobe learning about the issues associated with wild boars. Human feeding of wild boar has led the animals to habituate areas of the city that cause a variety of problems including vehicle collisions and wild boars falling into concrete water diversion canals.

The three-day visit concluded with each foreign expert giving a presentation to nearly 300 local city residents, managers, and administrators on how wild pigs are managed in their respective countries, followed by an open forum and panel discussion about their thoughts on Kobe City's current approach to managing wild boar problems.

SFWS Prepares the Next Generation of Water Scientists

The SFWS's Center for Environmental Studies at the Urban-Rural Interface (CESURI), along with the College of Agriculture and the Alabama Water Watch (AWW) recently engaged high school students across the state who are interested in careers in natural resources and the environment to participate in the first Auburn University Stream Team (AUST) program.

The program, funded by an Auburn University Competitive Outreach Scholarship Grant, gave student teams from six high schools the opportunity to learn about water quality issues and become trained to accurately monitor and collect stream data. They also improved their abilities to present their findings to their peers and the general public through oral and poster presentations.

Students were invited to attend a water symposium on campus and met with faculty



and other professionals working in waterrelated careers. During the symposium, the students learned about the challenges facing urban streams and were trained to monitor their own local stream using AWW test kits and protocols. Over the next six months, students visited their streams multiple times to monitor and collect data that could eventually be uploaded to the AWW database.

At the conclusion of the monitoring period, the winning team from the Dothan area was recognized for its monitoring and presentation efforts. At a town meeting, the students were presented with a \$500 scholarship, if they choose to attend Auburn University. According to lead project manager Chris Anderson, SFWS associate professor and assistant director of the CESURI, "One of the goals of this project was to expose aspiring high school students and their parents to water-related careers while experiencing life on the Auburn campus. We certainly hope some of these interested students eventually enroll in one of the SFWS programs."

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Endowed Professors Named

In September, SFWS Dean Janaki Alavalapati congratulated Lisa Samuelson, Hanqin Tian and Steve Ditchkoff on their reappointments to endowed professorships.

Established in 2007, the Dwain G. Luce Professor of Forestry, was created to support faculty who demonstrate high-quality instruction, research, and service. The appointed professor also serves to strengthen and enhance the program of Longleaf Restoration.

The Solon and Martha Dixon Endowed Professorship was established in 2009 by the Solon and Martha Dixon Foundation for the purpose of providing support for superior forestry faculty that have achieved the academic rank of full-time, tenured associate or full professor.

The Ireland Professorship recipient, established by a gift from William R. and Fay Ireland in 1995, must be a tenured faculty member in the Wildlife Science program at Auburn and have a distinguished record of teaching, research, and professional activities.

2015 recipients join other SFWS endowed professors: B. Graeme Lockaby, Clinton-McClure Professor; Ken McNabb, Mosley Environmental Professor; and Daowei Zhang, George W. Peake Professor.



SFWS Welcomes New & Returning Students at Fall Ice Breaker With the expansion of SFWS academic programs and recruitment efforts, undergraduate enrollment has increased by 18 percent. To help students acclimate to campus life, Student Services offers many activities, such as the annual Fall Ice Breaker held at the Mary Olive Thomas Demonstration Forest (pictured above), where Dean Janaki Alavalapati and associate deans of academic affairs and research, Drs. Scott Enebak and Graeme Lockaby, joined with other faculty and staff for a cookout to welcome new and returning students.



Lisa Samuelson has been reappointed for three years as the Dwain G. Luce Endowed Professor of Forestry. Samuelson is internationally recognized in the field of longleaf pine research and currently serves as director for the Center for Longleaf Pine Ecosystems at Auburn. In addition, she has published several dendrology textbooks that are being used in college courses throughout the country.



Hanqin Tian has been reappointed to the fiveyear position of Solon and Martha Dixon Endowed Professorship. Tian has a truly remarkable academic record with more than 180 highly cited publications, most of them in very prestigious journals including Science and Nature. He has won numerous awards for his academic achievements and has an outstanding record regarding his grantsmanship, collectively having received competitive grants totaling more than \$20 million in extramural funding.



Steve Ditchkoff has been reappointed for three years as Ireland Professor. Ditchkoff is known widely to be a successful researcher with a robust program that receives regional and national attention and growing visibility in the international community. He has made substantial contributions to the graduate and undergraduate teaching programs and has been instrumental in reshaping the undergraduate curriculum to advance the Wildlife Sciences program.



The Westervelt Company Hosts Alumni Luncheon to Introduce SFWS Dean Alavalapati The Westervelt Company recently hosted a luncheon to introduce SFWS Dean Janaki Alavalapati to its alumni executives and employees. Shown here next to Westervelt's first paper machine are: (L-R) Brian Via, SFWS faculty member; Westervelt's Vice President of Natural Resources Jim King; Dean Alavalapati; and Brandon Loomis, an Army veteran and recipient of the Vick Fellowship.

Armstrong Receives Governor's Award



Jim Armstrong, SFWS professor and extension wildlife specialist with the Alabama Cooperative Extension System, recently received the prestigious Conservation Communicator of the Year award at the 2015 Alabama Wildlife Federation Governor's Conservation Achievement Awards banquet held in August.

The Alabama Wildlife Federation, established by sportsmen in 1935, is the state's oldest and largest citizens' conservation organization. Awarded for more than 40 years, the Governor's Conservation Achievement Awards are one of the most respected conservation honors granted in the state which recognizes individuals and organizations promoting and exemplifying leadership of wildlife and natural resources conservation.

Armstrong was chosen as Conservation Communicator of the Year for his careerlong contributions to research and educational activities related to wildlife management. Of the award, Armstrong noted, "It was nice to receive the award and be recognized by others who are involved in managing our natural resources."

SFWS Launches *Because This is Auburn* Campaign

As part of *Because This is Aubum* — A Campaign for Auburn University, a historical \$1 billion fundraising effort launched in April 2015, the School of Forestry and Wildlife Sciences has set an unprecedented goal of raising \$19.8 million to benefit students, faculty, programs, and facilities.

With this support, the school will create 20 new scholarships to diversify student enrollment and four new additional faculty positions focused on outreach and extension, as well as a \$1.5 million endowment to support research. To achieve its goals to increase student enrollment, faculty enrichment, and program expansion, the school is seeking \$2.3 million in campaign support to renovate and upgrade existing facilities that enhance learning experiences for its students.

"Private support is essential to maintain the standard of excellence for which the School of Forestry and Wildlife Sciences is known. These gifts allow us to provide our students with a high-quality educational experience and to continue the growth and progress of our programs," said Campaign Committee Chair Marc Walley '85.

The school remains dedicated to its core of nurturing an era of sustainable forestry that will ensure future generations have abundant supplies of forest products, diverse wildlife populations, and clean air and water.

"The support we receive through *Because This is Auburn* demonstrates our alumni and friends' confidence in our school and enhances our ability to produce well-prepared professionals and science-based solutions to address the most critical issues facing forests, wildlife, and natural resources



management," said Dean Janaki Alavalapati.

True to the school's commitment,
Auburn's forestry program fuels one of
the state's largest industries by providing
graduates for the workforce, developing
solutions to industry challenges, and
providing a continuous flow of resources
and information for landowners, practicing
foresters, industry professionals, government
representatives, and the general public. In
addition, research in its wildlife sciences
program is significant to restoring and
properly managing a diverse array of wildlife
populations throughout the state and
educating hundreds of wildlife biologists.

"While the school joined in the launch of *Because This is Auburn* benefiting from the momentum of several transformational gifts from our alumni and friends, it is the unwavering support of our donors who give faithfully year after year that will carry us well beyond our campaign goal," said Heather Crozier, the school's development officer.

Individuals, companies, and foundations wishing to support the school may learn more about its campaign priorities, as well as give online, at because auburn edu/sfws, or by contacting its Development Office at 334-844-2791 or sfwsdevelopment@auburn.edu.

New Faculty & Staff

Please join us in welcoming new members of the SFWS faculty and staff:

Andrea Brothers, Executive Coordinator Will Gulsby, Assistant Professor of Wildlife Management & Ecology

Emily Merritt, Research Assistant II
Rajan Parajuli, Post-Doctoral Fellow
Sarah Peaden, Research Assistant I
Dalton Smith, Research Assistant I
Sarah Zohdy, Assistant Professor of
Disease Ecology

To learn more about our newest SFWS employees, please visit auburn.edu/sfws.

Woodlands and Wildlife Society New Members

The School of Forestry and Wildlife Science's Woodlands and Wildlife Society is the giving society offered to benefactors who give \$1,000 or more annually to the school (\$500 or more if a graduate of the last 15 years.)

The funds garnered through the Woodlands and Wildlife Society are invaluable in supporting faculty and student development, scholarships, and special programs such as the Solon Dixon Forestry Education Center, Kreher Preserve and Nature Center, and the Mary Olive Thomas Demonstration Forest.

New Members

Mr. and Mrs. Lewis G. Scharpf, Jr. Ziebach and Webb Timber, Inc. Mr. Andrew Boutwell '03 Mr. Kenneth G. Hood Mr. Chuck Thompson Mr. and Mrs. J. Rhea Silvernail Mr. and Mrs. Jason H. Berry Dr. Joe Exum, Jr. '85 Mr. Joseph Custer

Mr. Billy and Dr. Mary Ann Hooten Mr. Phearthur Moore '87 Mr. and Mrs. Tim Peters

Mr. William Terry '76

For a complete list of current members and to learn more, visit auburn.edu/sfws/alumni.

The Auburn Oaks Legacy

First initiated by a faculty member in the School of Forestry and Wildlife Sciences, the program that cultivates the acorns has naming opportunities available with the Auburn Oaks at Samford Park

Redevelopment of Samford Park began last fall as Auburn prepared for the dedication of the new Auburn Oaks during A-Day weekend and continued through the summer to ready the park for the next chapter in the Auburn Oaks story.

A new 14-foot-wide arching brick walkway now reaching from Toomer's Corner to Samford Hall marks the initial stage of Phase II of the Samford Park redevelopment project. As part of this effort, 21 descendants of the original Auburn Oaks will line the new walkway. Individuals, families, companies, and foundations can name one of these trees for themselves or someone of their choosing in recognition of a \$50,000 philanthropic gift to Auburn.

These gifts will go into an endowed fund for excellence benefitting the School of Forestry and Wildlife Sciences, which has

nurtured these Auburn Oaks descendants since collecting the acorns. Specifically, the fund for excellence will provide support for new scholarships; expand faculty members' instructional, research, and outreach efforts; and enhance the various programs that provide students with the knowledge and hands-on experience they need to be successful in their chosen careers.

Scott Enebak, a faculty member in the School of Forestry and Wildlife Sciences, initiated a program in 2001 to ensure the Auburn Oaks' legacy endures for generations to come. Under his leadership, Forestry Club and Wildlife Society members cultivated acorns from the original trees and sold more than 3,600 "Baby Auburn Oaks" to alumni and friends around the country. News in 2011 of the lethal poisoning of the original Auburn Oaks exhausted all but a

select supply of these trees, which had been reserved for the Samford Park project.

These Auburn Oaks at Samford Park, which now stand between 15 and 20 feet tall, will be planted in February 2016 and dedicated at a public ceremony scheduled later in the year. An engraved brass plaque placed near the base of each tree and commemorating the generosity behind each naming gift will bear the name or names of the donor's choosing.

Limited opportunities remain to be part of the Auburn Oaks legacy through a gift supporting students, faculty, and programs. For more information, please contact Heather Crozier at vannhea@auburn.edu or by phone at (334) 844-2791. You may also visit auburn.edu/samfordoaks for more details.





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Research & Discovery

Above: Left: Mo

Bioenergy Research at SFWS

While interest in bioenergy seems to be waning with lower fuel prices, the School of Forestry and Wildlife Sciences continues its bioenergy research. Led by SFWS Associate Professor Tom Gallagher, a recent study was established on eucalyptus plantations in Florida and cottonwood plantations in Arkansas and Mississippi. The project is being funded by a USDA grant and is operated in conjunction with a research project currently being completed with the University of Tennessee and North Carolina State, along with several industry collaborators.

The research objectives were to determine if the season of the year (winter versus summer) or the type of felling head (saw versus shearhead) affected the amount of coppice that returns after harvest. The SFWS graduate student involved with the project, Daniel P. L. de Souza, is from Venezuela and has been studying eucalyptus for some time.

Material was felled by a skid steer machine with a shear head attachment or sawn with a chainsaw. The operation was performed in the winter, followed by a summer cut on an adjacent site. Students then returned to the sites and evaluated the new sprouts six months after the harvest. While the shear versus saw had little variation, there was a significantly lower sprouting from the summer cut versus the winter, which could lead to operational challenges for management of these plantations. A continuation of the study will look at self-pruning of the coppice regeneration.

Above: Graduate student, Daniel P. L. de Souza, measures new sprouts six months after the harvest. Left: Material felled by a skid steer machine within the Florida eucalyptus plantation.