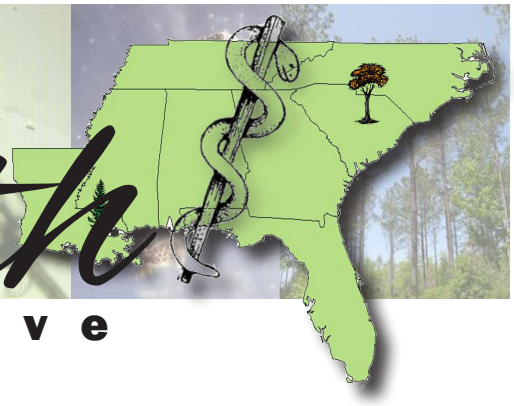
forest health
spring 2011
cooperative



Director's Report

The Advisory Meeting was held on November 17 and 18, 2010 and we had full participation by members. We hosted three visiting speakers: (1) Jason Hoeksema from University of Mississippi speaking about "Genetic variation in pines influencing ectomycorrhizal symbiosis: Potential implications for genotype selection in southern forestry," (2) Dr. Henry Brandhorst from Auburn University speaking about "UAV uses in forestry," and (3) Dr. Rob Gillette and Terrance Fischer speaking about "Forest Dogs and Pine Decline." Research presentations were made by students working on projects of interest to the membership. All presentations are on the Members Only section of the web site on the Meetings page. The work plan and budget were put on hold to be discussed at a Science Meeting planned for February 2011.

The Science Meeting was held February 1, 2011 and was attended by full and associate members. The Annual Report was dispersed at this meeting and can be found on the web site under Members Only. The meeting was very productive and the new Dean, Dr. Jim Shepard, was in attendance to answer members' questions. The work plan and budget were approved. There was a dues increase approved for Full Members of $500 per year and Associate Members of $250 per year beginning FY 2012. The sustaining membership will be addressed at the next Advisory Meeting.

Several research projects are in progress. The families for the Family Resistance Study have been planted and first round inoculations completed. The nutritional component of the screening is set up and underway. Families for screening in FY 2011 have been selected and sent to Gary Dasher at Rayonier. The second year data on the Thin-Harvest Beetle Population Study and the first year data for the Cogongrass/Pine Decline Study are being compiled. The Loblolly Distribution Study is being updated on a regular basis. The Forest Service has indicated that the treatments will be taking place this summer on the Biomass Project and post-harvest data will be able to be collected.

Membership.
Rebecca and I have been approaching several companies and consulting firms in the southern U.S. about joining the Forest Health Cooperative. We have shared our membership materials with them and answered a few questions concerning membership. The Forest Health Cooperative currently has 7 Full Members, 4 Associate Members and 7 Sustaining Members.

Advisory Meeting - FY 2012.
The Advisory meeting is scheduled for Tuesday and Wednesday, June 21 and 22, 2011 at the School of Forestry and Wildlife Sciences Building at Auburn University in Auburn Alabama. The Advisory meeting has been moved to earlier in the year to give members latitude for company budgeting. The Forest Health Cooperative staff is in the process of updating our accomplishments, the budget and next year's work plan. If you have any ideas or items that your organization would like addressed, please let me know. We will begin the meeting after lunch on Wednesday and adjourn around noon on Thursday. Please place those days on your calendar and more information will be available shortly.

Contact Meeting - FY 2011.
We are currently in talks with the Productivity Cooperative about having a joint Contact Meeting with them tentatively scheduled for June 6-9, 2011.

What's Inside?

Featured Disease

Pitch Canker caused by *Fusiform moniliforme* var. *subglutinans*

Pitch canker damages many pine species, including all commercially important species here in the south. In forest stands, only plantations of slash and occasionally loblolly, are seriously affected. While mortality can result, more commonly are losses due to growth suppression.

The fungus produces pinkish fruiting bodies (called sporodochia) on cankered shoots in the needle scars and on the outer surface of the bark. Microscopic features aid in identification.

Trees infected with this fungus exhibit shoot dieback of the current year's growth and abundant resin flow from the affected area. The wood beneath the cankers is resin-soaked and the main terminal and upper laterals are most often affected.

Fungus spores are airborne and spread in the summer during windy, wet periods. The spores infect wounds on the tree. The deodar weevil can also transmit the disease when it breeds in dying trees and feeds on the phloem of young branches. Spores are also abundant in the litter beneath diseased stands and fruiting bodies can persist for months on diseased shoots.

There is no specific control procedure for pitch canker. Forest practices which maintain stand vigor are recommended along with using genetically resistant trees.

Reference: USDA Forest Service. 1997. Insect and Diseases of Trees of the South.. Protection Rep. R8-PR 16. p. 82

New Additions

BRANDON WITHERS - LAB TECHNICIAN

My name is Brandon Withers. I attended Jacksonville High School in Jacksonville, AL, where I obtained an Advanced w/ Honors Diploma. I then went on to attend the University of Alabama at Birmingham, obtaining a Bachelor's Degree in Biology with a minor in Chemistry. I am now working in the Forest Health Dynamics Laboratory as an employee of Auburn University's College of Veterinary Medicine. I serve as a lab technician for the Timber Dog Project. As part of this project, dogs are being trained to detect the presence of disease causing fungi (i.e. *Leptographium*) in tree roots. My duties include the following: making training aids for use by the dog handlers in trials with the dogs, going out into the field to collect samples identified by the dogs, and processing those samples to determine the accuracy of the dogs. I look forward to working with the Coop members on this project.

DANIEL ANDERSON - FORESTRY TECHNICIAN

My name is Daniel Anderson and I was hired in January of this year as a Forestry Technician to work on the *Phytophthora ramorum* detection program and assist with new and ongoing Forest Health Cooperative research projects. I have a B.S. in Forestry, with a focus in resource management, and a M.S. in Forest Biology, both from Iowa State University in Ames, Iowa. Born and raised on a farm in northern Iowa I have worked and lived throughout the Midwest with forays into the mountainous regions of the East and the West. I have worked various forestry related positions including tree pruning and removal crewman, park management worker, utility forester, recreation technician, forestry technician, and research assistant. I am very excited to be a part of the Forest Health Cooperative's staff and to be helping with the Cooperative's various research projects. I am also looking forward to meeting and working with the Cooperative's members and contributors.

Nancy's Noxious Weeds

GOLDEN BAMBOO

by Nancy Loewenstein

Golden bamboo (*Phyllostachys aurea*), planted as an ornamental and historically for use as fishing poles, is a familiar sight spreading around old homesteads. Sometimes confused with native switchcanes (*Arundinaria* spp.), golden bamboo is one of over a 1000 species of large woody grasses generally referred to as bamboos. Golden bamboo can be quite invasive, but not all bamboos are weedy. Clump forming bamboos are unlikely to spread, while running bamboos have extensive and spreading rhizome systems. Running bamboos can become quite weedy if not carefully controlled.

A renewed interest in growing bamboo for biofuels, fiber and

Featured Insect

Deodar Weevil – *Pissodes nemorensis* Germar

Deodar weevil adults and larve can kill terminal and lateral branches, as well as girdle the stems of small trees. The weevil also vectors the pitch canker fungus, and its feeding wounds are infection courts for the pathogen. The weevil is found throughout the South and the Mid-Atlantic states. It attacks various southern pine species.

The adult weevil is rusty red to grayish brown, has a long snout, and is about ¼ inch long. The larvae are legless grubs with a reddish brown head.

During the fall, weevil larvae feed on the inner bark of leaders, lateral branches, and stems of small trees. Infestations usually remain unnoticed until the following January, when infested branches begin to turn brown. Small trees may be girdled and killed.

Adult weevils emerge during April and May and feed on the inner bark of nearby trees sometimes girdling stems and twigs before dispersing for the summer. Feeding activity increases just prior to and during the fall reproduction period. Females lay eggs in feeding punctures and the newly hatched larvae bore into the inner bark where they construct winding galleries which girdle the stem. Winter is spent as a larvae and pupation takes place in a chip cocoon during March and April. There is one generation per year.

Reference: USDA Forest Service. 1997. Insect and Diseases of Trees of the South.. Protection Rep. R8-PR 16. p. 49

Figure 1. An expanding stand of golden bamboo.

Figure 2. Little grows beneath bamboo.

wood products in the Southeast is on the rise. However, the potential invasiveness of bamboo is of some concern. Moso bamboo, a close relative of golden bamboo is the primary species currently under consideration for commercial use in the Southeast. The largest temperate bamboo, moso can reach heights of over 75 feet and over 5 inches in diameter. (Two scientific names - *Phyllostachys pubescens* and *Phyllostachys edulis* - are currently in use for moso bamboo.) Scientific data concerning the growth and behavior of moso bamboo when grown in the Southeast is unavailable, but the following provides a brief summary of basic bamboo biology.

Bamboo shoots emerge from a dense rhizome system which is generally located within the upper 12 inches of soil. The rhizomes can spread outward 20 to 30 feet before sprouting. Shoots elongate rapidly, giving the impression of rapid growth and high productivity. However, re-distribution of reserves from the rhizomes is the primary source of this rapid growth. Scurlock et al. (2000) and research from Japan (Isagi et al., 1997) suggest that overall productivity of bamboos is unlikely to be much greater than other C3 bioenergy crop species. Studies regarding moso bamboo productivity, carbon sequestration potential and economics of production in the Southeast have yet to be conducted.

Flowering and seed production by *Phyllostachys* spp. is infrequent, occurring on cycles of up to 60 or 70 years. Invasive spread of these bamboos by seed is therefore unlikely, but cannot be ruled out completely. Outward spread by rhizomes will occur unless edges of the grove are carefully and consistently maintained with frequent mowing, mechanical barriers and/or trenches. Abandoned moso bamboo plantations in Japan increased 50% in size over a 25 year period (Suzuki and Nakagoshi, 2008).

Once established, bamboo can be very difficult to control. Plants can be dug up, but any rhizomes remaining in the soil will re-

sprout. Frequent cutting of the entire grove can reduce underground reserves and eventually control a planting. Or, cut stems can be treated with systemic herbicides such as glyphosate or imazpyr, but multiple applications are usually required. Foliar sprays may suppress growth but are difficult to apply to mature stands and rarely result in complete control.

Dense shade and possible allelopathic affects allow little if anything to grow beneath bamboo. Young shoots of moso bamboo are edible, but use by native wildlife has not been documented. While native Arundinaria canebrakes provide unique wildlife habitat, extensive groves of non-native bamboos have not been reported to fulfill the same role.

References:
Isagi, Y., Kawahara, T. and Kamo, K. 1997. Net production and carbon cycling in a bamboo Phyllostachys pubescens stand. Plant Ecology 130: 41-52.

Miller, J.H., Manning, S.T and Enloe, S.F. 2010. A Management Guide for Invasive Plants in Southern Forests. GTR SRS-131. Asheville, NC: USDA FS, Southern Research Station. 120 p.

Scurlock, J.M.O., Dayton, D.C. and Hames, B. 2000. Bamboo: an overlooked biomass resource? Biomass and Energy 19:229-244.

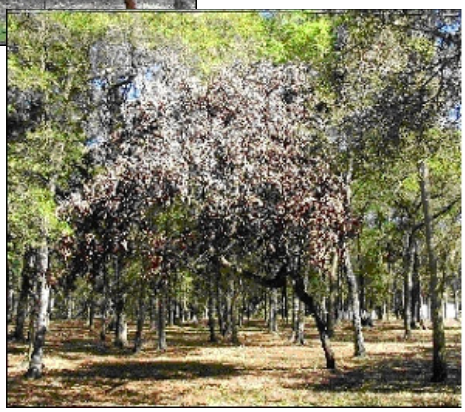
Suzuki, S. and Nakagoshi, N. 2008. Expansion of bamboo forests caused by reduced bamboo shoot harvest under different natural and artificial conditions. Ecol. Research 23: 641-647.

Thought You Might Be Interested To Know...

LAUREL WILT DISEASE
Dana McReynolds, Alabama Forestry Commission

The last breaking news sent to Alabama was about an insect-disease complex that is threatening Alabama's southern border. From survey traps and mere observation conducted in Jackson County, Mississippi, several symptomatic camphor (*Cinnamomum camphora*) and redbay (*Persea borbonia*) trees were found to be infected by laurel wilt disease. Also recently documented in Mississippi was the first symptomatic sassafras (*Sassafras albidum*) tree succumbing to this insect-disease complex. Two survey traps were placed just across the state line along County Road 28 in Mobile County, Alabama because of recent reports of seeing declining redbay trees in the state.

Another import from Asia, the redbay ambrosia beetle (*Xyleborus glabratus*) was first detected in a survey trap in Port Wentworth, Georgia in 2002. Since its initial introduction from infested solid wood packing materials, the redbay ambrosia beetle has spread to redbay trees in eastern Georgia and South Carolina. By 2005,



Left: Redbay with partially wilted crown.

Below: Same tree, eight months later.

Photos by A. Mayfield, Florida DACS Division of Forestry.

this insect-disease complex was discovered in Florida. Last year in July, 2009, declining redbay trees were documented in Jackson County, Mississippi due to this non-native, invasive pest. Trees of the laurel family (Lauraceae) are very susceptible to this insect-disease complex. Not just redbay, camphor, and sassafras trees are susceptible, but swampbay (*Persea palustris*), spicebush (*Lindera melissifolia*), pondspice (*Litsea aestivalis*), and avocado (*Persea americana*) can also become potential hosts.

Difficult to detect at first, infected trees will soon exemplify wilting leaves that appear red or purple in color. Part of the crown will show these symptoms, but eventually the entire crown will have wilted reddish foliage. This ambrosia beetle, unlike most, attacks healthy trees. The attack from the beetle does not necessary kill the tree; it is the associated fungus (*Raffaelea lauricola*) that causes the damage. The insect vectors the fungus, inoculates the gallery walls as it creates these tunnels in the sapwood. The fungus clogs the vascular system of the tree, preventing the flow of water. The fungus also causes brown to black streaks in the sapwood. In the final stages of decline, these ambrosia beetles will attack in large numbers, creating compacted sawdust that protrudes from the boring holes. Infested trees finally succumb to attack within 1 to 2 years.

Currently, the symptomatic redbay trees detected in Alabama were negative of laurel wilt disease. Close monitoring will continue to occur for early detection of this exotic disease since positive findings were reported near the state line.

References:
1. http://www.fs.fed.us/r8/foresthealth/laurelwilt/index.shtml
2. http://www.forestry.state.al.us/

THOUSAND CANKERS DISEASE
by Dana McReynolds, Alabama Forestry Commission

Photo by Jim LaBonte, Oregon Department of Agriculture.

An insect-disease complex that only occurs in the western states, the thousand cankers disease was documented in the southeast for the first time. In a residential area near Knoxville, Tennessee, five symptomatic eastern black walnut (*Juglans nigra*) trees were tested positive for the walnut twig beetle (*Pityophthorus juglandis*) and its associated fungus (*Geosmithia morbida*). Later in August, a second round of sampling was done at different sites near Knoxville for further confirmation of this pest. Based on the results, the thousand cankers disease has been in Tennessee, in more than one area, longer than previously suspected.

This insect-disease complex causes dieback and mortality of eastern black walnut trees. Generally, individual landowners may believe that their declining walnut trees are suffering from drought-related problems, since the early symptoms due resemble that of drought stress. Specific symptoms include: yellowing of foliage, cankers on branches, exit/entrance holes on branches, and eventually, the mortality of the tree. The first apparent symptoms are the yellowing of the foliage. Later, the foliage becomes brown and wilted.

The bark surface generally has no symptoms, but with close analysis, numerous entrance and exit holes are present on dying branches. The walnut twig beetle creates galleries in the phloem while vectoring the deadly fungus. The fungus causes cankers on infected branches, resulting in some cracking of the bark. Finally, dieback of the branch occurs from the attack. After initially noticing some or more of these symptoms, the walnut tree finally succumbs from the attack within 2 to 3 years.

No one is exactly sure how this pest spread from the western U.S. (Washington, Oregon, California, Idaho, Utah, Arizona, Colorado, and New Mexico) into Tennessee, by-passing all of the other states. Transportation of firewood is the main hypothesis of this pest introduction. Because the beetle is "classified" as native, quarantines are different to establish. The fungus, however, is relatively new, and perhaps classified as non-native. The Tennessee Department of Agriculture, however, plans to issue a quarantine in Knox County prohibiting the movement of firewood, black walnut nursery stock, and other materials that can spread the thousand cankers disease.

Photo by Kathy Keatley Garvey.

Above: Coalescing branch cankers produced by *Geosmithia*.

Right: Large trunk cankers of black walnut.

References:

1. http://www.volunteertv.com/news/headlines/99657644.html
2. http://news.tennesseeanytime.org/node/5684
3. http://na.fs.fed.us/pubs/palerts/cankers_disease/thousand_cankers_disease_low_res.pdf
4. http://www.knoxnews.com/news/2010/aug/08/thousand-canker-disease-hits-et/
5. http://www.wate.com/Global/story.asp?S=12957105
6. http://mghc.org/2010/08/08/thousand-cankers-disease-discovered-in-east-tennessee/
7. Forestry and Natural Resource Webinar Series on September 3, 2010

DISEASE CLINIC
by Lori Eckhardt

We have instituted some new procedures for the Disease Clinic. There is a new link on the webpage explaining sampling procedures and a form to send in with your samples. This will make the process and information received more uniform and easier for us to track, process and report. Daniel Anderson is the new contact person for diagnostics for the Cooperative. His contact information is at the beginning of this newsletter and on the website. Please feel free to contact him with any questions.

The Forest Health Cooperative Staff saw a variety of issues this past year in the laboratory. The most frequent repeat occurrence was blue-stain fungi and root-feeding insect damage in loblolly pine roots. If you have any questions about the identification and management of these issues, be sure to check the Forest Health Cooperative web page or just give us a call.

Here is a list of the problems we were involved in during 2010:

1. Pine decline – blue-stain fungi and *Hylastes* feeding in loblolly pine roots
2. Pine decline – blue-stain and *Hylastes* feeding in longleaf pine roots
3. Annosus Root Disease
4. Tip Moth
5. Pine Sawfly
6. Pine Shoot Borer
7. Seiridium Canker of Leyland Cypress
8. *Neoclytus scutellaris*
9. Slim flux
10. Hickory Borer
11. Horned Oak Gall
12. Diplodia on pine

SAMPLE COLLECTION AND SUBMISSION GUIDE
by Daniel Anderson

Samples are recorded and processed routinely by the date and time in which they are received. All samples will be initially processed within seven days of receipt with results available twenty-one days after processing. Some laboratory diagnostic techniques take longer than others, which may affect result punctuality.

Sample Collection
Tree disease diagnosis is largely dependent on the quality of the sample and on the relevant information provided by the submitter. Samples must be of sufficient quality and quantity to allow for proper laboratory testing and pertinent information, such as sample tree identification, is essential.

1. Collect samples before the application of pesticides in order to increase the probability of recovering the causal pathogens.
2. Samples should be collected from symptomatic trees showing tinning/transparent crowns, foliage discoloration, and/or excessive cone production.
3. Samples should not be collected from dead or severely declined trees; determining the causal agent from such trees is highly unlikely. Samples should not be collected from dead roots for the same reason.
4. Submit a generous amount of sample material to allow for all required laboratory processes: collect 12 to 18 inches of first order lateral roots that are ¾ to 4 inches in diameter.
5. Carefully excavate to avoid unnecessary damage to the sample.
6. Excess soil should be removed from root samples. Samples should retain just enough soil to maintain moisture levels.
7. Do not add water or pack a sample in water.
8. Wrap samples in a dry paper towel and seal in a zip-top bag. Place on ice if possible to keep cool in the field.
9. Keep samples refrigerated from collection to submission and do not expose them to high heat situations, such as baking in the sun or in the back of a vehicle.
10. Keep all samples in separate bags and label appropriately.
11. Complete a "Tree Disease Diagnostic Form" for each sample, available on the Forest Health Cooperative webpage (https://fp.auburn.edu/ForestHealthCooperative/default.htm).

Sample Submission
Samples may be mailed to the Forest Health Cooperative Diagnostic Laboratory or delivered in person to: Daniel Anderson at 3301 Forestry and Wildlife Sciences Bldg., Auburn, Alabama 36849-5418 (USPS) or 602 Duncan Drive, Auburn, AL 36849-5418 (UPS/FedEx or other package carrier).

1. All samples must be submitted with a completed "Tree Disease Diagnostic Form."
2. When submitting samples by mail, either mail them early in the week to avoid weekend layovers or use an overnight service. You may also deliver them in person.
3. Samples should be mailed in an appropriate sized box, with padding, or in a padded envelope.
4. If the sample is a suspected high-risk pathogen, contact Diagnostic Laboratory personnel for appropriate packaging and mailing instructions

***PHYTOPHTHORA RAMORUM* AND THE FOREST HEALTH COOPERATIVE - SUDDEN OAK DEATH (SOD) STATE LABORATORY**
by Daniel Anderson

Phytophthora ramorum is an oomycete plant pathogen, often referred to as a water mold, that causes Sudden Oak Death. The disease kills oaks and tanoak, expressed as a bleeding canker, and causes leaf blight and dieback on many other species of tree and woody plants. First reported in California in 1995, *Phytophthora ramorum* has devastated the coastal California black oak, tanoak, and coast live oak populations and has spread to fourteen coastal counties in California and one in Oregon. Through the selling and shipping of infected nursery stock from the West Coast, *Phytophthora ramorum* has been detected in nurseries throughout the Southeastern United States. Streams outside of nurseries in Alabama, Mississippi, Florida, Georgia, and North Carolina have tested positive for Phytophthora ramorum. Spread of the disease has been somewhat slowed through the use of quarantine actions and the eradication of infected nursery stock. However, the pathogen persists in infected nurseries and is leaving these nurseries in discharge water. As many of the Eastern United States woody plants can act as sources of inoculum, there is a plausible pathway for *Phytophthora ramorum* to enter the local ecosystems and remain a long-term threat.

Symptoms of infection by *Phytophthora ramorum* can look very similar to other Eastern United States diseases, such as Oak wilt, Oak decline, Red oak borer and other *Phytophthora* species. As such, laboratory testing is required to provide confirmation of the pathogen's identity. Through cooperation with the U.S. Forest Service, the Alabama Department of Agriculture and Industries, the

Alabama Forestry Commission, and the Mississippi Department of Agriculture and Commerce the Forest Health Cooperative has become the regional coordinator for *Phytophthora ramorum* detection in Alabama and Mississippi. Forest Health Cooperative technicians will be testing for *Phytophthora ramorum* in select locations throughout Alabama and Mississippi during the spring and fall. Streams will be baited with susceptible plant material and then collected after a predetermined exposure period. Exposed leaf material will then be used in the laboratory by culturing samples on a semi-selective media for *Phytophthora* spp. Pathogens will then be identified and the presence of *Phytophthora ramorum* confirmed or not.

The Forest Health Cooperative will be involved throughout the baiting and testing process in Alabama and Mississippi for a minimum of two years. However, with the potential damage that *Phytophthora ramorum* could cause to the local forest environments and the pathogen's resilience, the Forest Health Cooperative can expect to be involved with helping protect Southeastern forests from this pathogen for many years to come.

Project Updates

IMPACTS OF COGONGRASS (*IMPERATA CYLINDRICA* (L.) BEAUV) ON POPULATIONS OF ROOT-FEEDING BARK BEETLES ASSOCIATED WITH PINE DECLINE
by Ben Brunson

I would like to inform you of the current status of my project which deals with the impacts of cogongrass (*Imperata cylindrica* (L.) Beauv) on populations of root-feeding bark beetles associated with pine decline. We established twenty research plots near State Line, Mississippi in March of 2010. A panel and a pitfall trap were placed on each plot and are checked for insects every two weeks. Currently, we have made twenty-seven of the fifty-two bi-weekly insect collections, resin sampling has been completed and processed, first year root samples have been collected and processed, crown ratings have been completed, and soil samples have been collected for all twenty plots.

Future tasks to be completed at the field site includes the continuation of the bi-weekly insect collections, collection of year two root samples, collection of tree height, age, as well as, five and ten year growth data for each tree per plot. Processing of soil samples will be completed by early April, in which half of each sample will be checked for bulk density and moisture content while the other half will be sent off for nutrient analysis.

Preliminary data from the insect collections shows that four of the six species of root-feeding bark beetles had higher populations in cogongrass infested plots versus the non-cogongrass plots. Hylastes porculus, Hylastes salebrosus, Dendroctonus terebrans, and Hylobius pales had higher populations in plots containing heavy

Plot without cogongrass.

Plot with cogongrass.

cogongrass infestation versus the non-cogongrass plots. Average resin production was slightly higher in non-cogongrass plots. These two points may suggest that the pines located in areas heavily infested with cogongrass are stressed, leading to higher bark beetle infestations but, cogongrass plots showed a higher average dbh and crown rating criteria, as well as, zero percent mortality versus an average of approximately two percent mortality across non-cogongrass plots. This criterion suggests that trees on cogongrass plots are healthier than trees located on non-cogongrass plots.

BIOMASS REMOVAL AND FOREST HEALTH
by Jacob Thompson

Over a two year period (March 2008 to February 2010), bark and ambrosia beetles were captured in three different trap types (intercept panel, flight intercept and pitfall) at the Talladega National Forest in Chilton, Bill and Perry Counties in Alabama. Of 85,876 total insects captured, 23,030 were Hylastes salebrosus Eichoff, 21,283 were Gnathotrichus materiarius and 8,004 were Ips grandicollis. The high number of root dwelling insects captured emphasized their importance in the loblolly pine ecosystem. Several beetle species were more common at loblolly pine decline plots compared to plots that were not believed to be declining, including several ambrosia beetle species. Elevated presence of beetle species that feed on weakened trees indicated that loblolly pine decline may be affecting the study plots because trees in decline are less capable of resisting insect attacks. Previous thinning that occurred at 8 of the 24 study plots during the 1990s appeared to mitigate the increased insect numbers in declining plots. Loblolly pine decline may, therefore, be managed through thinning.

Intercept panel traps captured virtually all individuals of species associated with the mid-bole of trees and higher in addition to many insects of species associated with roots. Intercept panel traps appeared to capture many of the same beetle species that Lindgren funnel traps have played in other insect surveys. Flight intercept traps captured many of the same species as intercept panel traps but captured fewer individuals of all species.

Invasive non-native plants were detected at the plot in during 5 surveys conducted in 2008 and 2009, but the non-native plants

observed were generally common across the region. Most non-native plant observations occurred along roads but adjoining private property did not appear to facilitate invasion. Non-native plants were more common at plots that had had been thinned during the 1990s than at plots that had not been thinned since regeneration, affirming previously studies that found non-native plants respond to disturbance.

Biomass removal and conventional thinning are expected to occur at all the research plots currently in loblolly pine decline this summer. Conventional pretreatment thinning is expected to increase short-term bark and ambrosia beetle populations because of the release of attractant chemicals and increase of slash at the plots that would follow treatment. Insect population following biomass removal would not be expected to increase to the same extent as in conventionally thinned plots because of the removal of potential habitat and the subsequent release of remaining trees. Both treatments are expected to increase the presence of invasive plants because of the disturbances involved and the need to create man-made paths. Expected follow-up research will compare insect collections and non-native plant totals from before and after the treatments.

THIN-HARVEST *HYLASTES* POPULATION
by Yuan Zeng

Pre-treatment insect sampling has been collected since March 2009. Pre-treatment insect samplings at all five sites were completed. Insect collections at RAY and F&W sites (both pre- and post-) were completed. Pre-treatment root samplings were completed in March 2010. Post treatment root sampling at F&W and RAY sites have been completed. Stump Sampling at clear-cut plots except SS site was completed November 2010.

Root-feeding bark beetles are active throughout most of the year. The number of *H.salebrosus* captured was greater than the other *Hylastes* spp. Thinning did affect the population of three *Hylastes* spp. For example, populations of *H. salebrosus*, *H. porculus*, and *H. tenuis* significantly increased after thinning at the RAY site (p (H. salebrosus-thinning) <0.0001, p (H. porculus-thinning) <0.0001, and p (H. tenui-thinning) =0.0040; α=0.05) when compare to control treatment and clearcut treatment. Pre-treatment results for bluestain fungal isolation from root samples showed that *Leptographium procerum* is the dominant fungal species present. Different stages of root-feeding bark beetles and weevils were observed from stump samples collected from clearcut plots indicating that the beetles may use stump and root material as brood habitat. *Hylastes tenuis* and its galleries were observed commonly compared to other root-feeding bark beetles.

Call Us!

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Rebecca Booker Kidd	334.844.1583
Daniel Anderson	334.844.8037
Elizabeth Bowersock	334.844.1012
Ben Brunson	334.844.8116
Matt Meyerpeter	334.844.8116
Amritpal Singh	334.844.8116
Yuan Zeng	334.844.1538

Moving On...

Members & Associates, I would like to extend my thanks to each of you for supporting my employment as a Research Associate with Auburn University over the past 2 years. I have accepted a Graduate Research Fellowship to work on my PhD in Forestry beginning in August 2011 at Virginia Tech. My resignation with Auburn University and the Forest Health Cooperative (FHC) will be effective June 30, 2011. I am grateful for the experiences and the many memories I will carry forward. I have enjoyed working with you and wish nothing but the best for future FHC research. Sincerely, Rebecca Booker Kidd

Accolades

We would like to recognize Matt Meyerpeter (FHC MS Student) on being awarded the competitive York Scholarship from the Office of International Studies at Auburn University for his project titled "Comprehensive Analysis of the Pathogenicity of *Ophiostoma* sp. Nov. in Nicaragua." He will be traveling to Guatemala, Honduras and Nicaragua in June for sixteen days to collect *Dendroctonus approximatus*, gallery material and root tissue in conjunction with *Pinus oocarpa* decline. In addition, he will collect boles of symptomatic trees in Nicaragua to sample for plant pathogenic nematodes. Pitch canker samples also will be taken from *P. oocarpa* in Nicaragua. He will work at the Universidad Nacional Agraria (UNA) in Nicaragua to process all samples before returning home. This is a joint project between the Forest Health Dynamics Laboratory, Forest Health Protection, CAMCORE (North Carolina State University), UNA and FABI (Forestry and Agriculture Biotechnology Institute, University Pretoria, South Africa).