forest health
spring 2010
cooperative

Director's Report

The Advisory meeting was held on November 17 and 18, 2009 and we had full participation by members. We hosted three visiting speakers: (1) Mary Anne Sword Sayer from the US Forest Service speaking about "Pine Decline from a Physiological Perspective," (2) Stephen Enloe from Auburn University Department of Agronomy speaking about "Cogongrass Ecology and Control in the Southeast," and (3) Don Grosman from the Texas Forest Service speaking about "A History of Emamectin Bensoate Tree Injection Research and Status of TREE-age Registration." Research presentations were made by students working on projects of interest to the membership. All presentations are on the Members Only section of the webpage under Meetings. The work plan and the budget were approved.

All three research projects are in progress. The seed to produce the seedlings for the Family Resistance Study have been planted at the Glenville Nursery in Georgia. We would like to thank Kelly Dougherty at Rayonier who oversaw the hand-planting of this seed. The first year data has been completed on the Thin-Harvest Beetle Population Study and a first year Research Report will be out by the end of May. The Loblolly Distribution Study is being updated on a regular basis. We finally have access to the FIA Database and can begin data analysis.

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 8 Full Members, 3 Associate Members and 6 Sustaining Members.

Advisory Meeting

The Advisory meeting is scheduled for Wednesday and Thursday, November 17 and 18, 2010 at the School of Forestry and Wildlife Sciences Building at Auburn University in Auburn Alabama. The Forest Health Cooperative staff will begin 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. Mark those days on your calendar and look for more information to be available around August.

Other News

New Additions

Rebecca Booker -- Greetings! My name is Rebecca Booker. I have worked as a research associate for the Forest Health Cooperative at Auburn University since February 2009. My current role in the cooperative is to oversee field research through study establishment, sampling, and data collection. I serve as a liaison between foresters/landowners and graduate students regarding current management practices, forest health issues, and ongoing research projects. The majority of my time is spent in the field; however, I am also responsible for maintaining laboratory equipment, budgeting expenses, supervising undergraduate assistants, ensuring sample analysis, presenting research, and providing technical assistance to the graduate students in the Forest Health Dynamics Laboratory. I am a native of Reidsville, North Carolina and obtained a BS in Biology from Campbell University. Following graduation, I served as a Student Conservation Association intern working with the US Forest Service on a Pacific fisher and American marten project in the northern Sierra Nevada Mountains in California. I completed post-baccalaureate coursework in forestry and wildlife at North Carolina State University and in December 2008, I earned my MS in Forest Resources, Forest Science, at the University of Arkansas at Monticello. In Arkansas, I studied the

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What's Inside?

effects of prescribed fire on aspects of oak regeneration and the effects on overstory crown conditions in stands impacted by oak decline in the Ozark Mountains. I am an active member of SAF, a registered forester in the State of Arkansas, and an ESRI certified Spatial Analyst I. In my spare time I enjoy spending time with my fiancé John, participating in church activities, playing golf, running, hiking, skiing, watching college basketball, painting, and fishing. I would like to thank the cooperative for allowing me to fulfill this position. I look forward to working with you in the future.

Yuan Zeng – Hello! My name is Yuan Zeng. I was born in Luzhou, Sichuan Province, which is one of the largest forest resource provinces in China. Beautiful natural sceneries attract many tourists visiting my home town every year. However, a video showed by my middle school teacher which reflected the serious damage caused by fall webworm (*Hyphantria cunea*) on our forest resources in 1985 in China greatly touched me. The responsibility of human beings to protect the forest has kept encouraging me to develop myself in this direction, and was deepened in my specific research in forestry, time and time again. Four years' of undergraduate study in Beijing Forestry University enabled me to have an understanding of the forest system and help me recognize my research interest in forest health. So I wanted to continue my education, and now I am a master student in the School of Forestry and Wildlife Sciences at Auburn University to focus on field experiments, learn how to think more scientifically and develop study methods rather than just dreaming through classes. My project explores fluctuations in pathogen-vectoring beetle populations as a response to harvest and thinning disturbances and the interrelatedness of trends among beetle species. In my spare time, I like playing the violin, drawing pictures and hiking or doing exercises with my friends. Life is full of challenges when I try to fulfill my dream, but I will keep on studying and working hard to be a real forester in the future.

Disease Clinic

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 2009:

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

Nancy's Noxious Weeds

By Nancy Loewenstein

Featured Weed:
Oriental bittersweet (*Celastrus orbiculatus*)

Oriental bittersweet (*Celastrus orbiculatus*), sometimes referred to as the 'kudzu of the north', is working its way south. This invasive, rapidly growing vine occurs most commonly along forest edges, roadsides and in other disturbed areas, but it is shade tolerant and capable of growth in the forest under story. Young pine or hardwood stands are especially vulnerable to Oriental bittersweet infestations as the vines can readily overtop and girdle saplings.

A deciduous twining vine, Oriental bittersweet stems can reach 4 inches in diameter and 60 feet in length, growing in dense mats over the ground or climbing up into and over trees. The alternate, 2-4 inch leaves are a glossy dark green with crenate margins (small rounded teeth). Leaf shape can be variable, but leaves are generally oval with either a rounded or very long and tapering tip. Leaves turn bright yellow in the fall. The stems, dotted with corky light-colored lenticels, also have very distinctive buds that look like tiny shelves over each leaf scar. The small, inconspicuous flowers occur in clusters at the leaf axils. The small round fruits are initially green, turning yellow in the fall then splitting to reveal a bright red interior.

Fruit. (Courtesy of Leslie Mehrhoff, Univ. of Conn., photographer. www.invasive.org)

Although not common, a native species of bittersweet, American bittersweet (*Celastrus scandens*), also grows in the Southeast. It is similar to Oriental bittersweet, but generally

Featured Disease

Fusiform Rust caused by *Cronartium quercuum* f. sp. *fusiforme*

Fusiform rust infections that occur on the main stem within the first 5 years of a tree's life normally cause tree death. Infections that occur later in the life cycle of the tree weaken the stem, resulting in wind breakage at the canker of quality loss at rotation. Losses in individual nurseries can exceed 80 percent. Loblolly and slash pine are the most susceptible species and longleaf is fairly resistant, while shortleaf is highly resistant. The alternate host is Oak.

The fungus produces orange spores on the surface of fusiform-shaped pine galls in the spring. Orange spores are produced on the lower surface of the oak leaves and later hairlike structures are also produced on the leaf.

Spindle-shaped swellings or galls develop on the branches or main stem. Main stem infections on older trees are somewhat depressed on one side. Trees commonly break at the canker. In the spring, the galls turn orange. Infection on the oak host produces orange leaf spots and hairlike structures (telia), which can cause cupping and curling of the leaf.

Orange-yellow blisters form on the pine gall: the blisters produce aeciospores. In the late spring, uredia are formed on the underside of young oak leaves. During late spring or early summer, brown telia form on the oak leaves. Spores produced on the telia infect the pine.

The control strategies for fusiform rust are complex for forest stands and nurseries, please refer to the Integrated Pest Management Decision Key (IPM-DK) for more information.

Reference: USDA Forest Service. 1997. Insect and Diseases of Trees of the South.. Protection Rep. R8-PR 16. p. 78

Leaves

has larger leaves and the flowers and fruit only occur at the tips of vines, not all along the stem. Given that hybrids of the native and non-native species may occur and fruit is not always present, a taxonomist may need to be consulted for proper identification. Generally speaking though, if a large infestation is encountered, odds are it will be the non-native Oriental bittersweet.

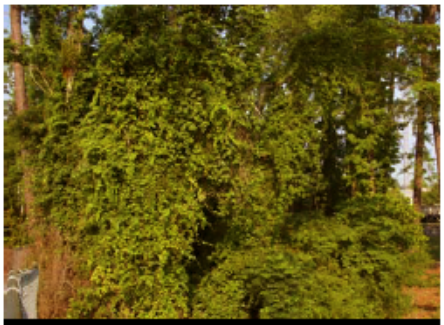
Oriental bittersweet, which spreads readily by seed and root suckers, can be difficult to control. Because stems and roots easily re-sprout, mechanical treatments such as cutting or pulling are effective only for small seedlings. Herbicides containing triclopyr or glyphosate will control Oriental bittersweet, but a minimum of two to three years of follow-up treatments are typically needed to eradicate an infestation. Before beginning any control efforts, verify that the species is the non-native Oriental bittersweet.

Oriental bittersweet growing with kudzu, showing relative size.

References:

Miller, J.H. 2003. Nonnative Invasive Plants of Southern Forests: A Field Guide for Identification and Control. Revised Gen. Tech. Report SRS-62. Asheville, NC: USDA Forest Service, Southern Research Station, 93 p.

Kaufman,S.R. and Kaufman, W. 2007. Invasive Plants: Guide to Identification and the Impacts and Control of Common North American Species. Stackpole Books, 458 p.



Infestation

Guest Article

Fusiform Rust on Longleaf Pine?

Tom Starkey

Yes, longleaf pine; that is not a editorial typo. Twice this past year, Scott Enebak and I have heard a presentation by Dr. Ed Barnard, Florida Division of Forestry discussing fusiform rust in longleaf pine. It is perhaps a good time to make everyone aware of a ***potential*** problem. Here is some of the information and pictures Ed shared.

If you look at literature on longleaf pine you will see phrases such as "high resistance," "seldom a problem," "natural resistance," "tolerant" in relation to fusiform rust. The reality is, longleaf pine is not immune to fusiform rust. In 1992 Walkinshaw and Barnett reported in Forest Farmer the results of a survey in which significant

rust infection in longleaf pine in MS, FL, GA, and LA were found. At one Florida site, stem galls were found on 67% of the longleaf. Infections up to 80% were recorded in longleaf in GA. Several seedlots in GA had more than 50% infection. Seedlings from LA and TX had infections ranging from 34 to 52%. In 2002 Barnard and Van Loan surveyed 78 longleaf plantations in north Florida and the panhandle. Ten of the plantations had 10 -30% stem galls. Three of the plantations had more than 30% stem galls.

How significant of a problem is fusiform rust in longleaf pine? We don't know as we have not heard from anyone within the Nursery Cooperative with this issue. Ed Barnard recently sent seed from 9 longleaf sources to the USFS Rust Testing Center in Asheville, NC for evaluation. Those of you who grow longleaf pine should examine seedlings from each of your longleaf seedlots to see if you have any unusual, questionable swelling at the root collar, similar to the seedlings in the picture. If you do find some, please let us know as we would like to keep track of fusiform rust on longleaf pine from areas outside of Florida.

This article originally published in the Fall 2009 Southern Forest Nursery Management Cooperative Newsletter.

Featured Insect

Black Turpentine Beetle
Dendroctonus terebrans (Olivier)

I have received many calls recently from homeowners and forest industries regarding bark beetles attacking pine. A closer look often reveals that the trees had been or were being attacked by the black turpentine beetle, *Dendroctonus terebrans*. This is possibly due to the trees being stressed by the previous years of drought.

The black turpentine beetle, a close relative of the southern pine beetle (*Dendroctonus frontalis*), is found from New Hampshire south to Florida and west to east Texas. Attacks have been observed on all species of pine native to the South. This beetle is most common in pine naval stores, pines stressed for lighterwood production, and damaged pines in urban areas.

The adult insect is dark brown to black in color and 3/8 inch in length. The posterior end is rounded. Full grown larvae are white with a reddish brown head and about 1/3 inch long. Pupae are about ¼ inch in length and yellowish white.

Black turpentine beetles attack fresh stumps and the lower trunk of living pines. Initial attacks are generally within 2 feet of the ground. Attacks are identified by white to reddish-brown pitch tubes about the size of a half dollar. The pitch tubes are located in bark crevices on the lower tree bole, usually below a height of 10 feet. Infested pines are often attacked by other bark beetles (i.e., southern pine beetle and *Ips* engraver beetles).

Adult beetles bore into the cambium and construct galleries which usually extend downward. Eggs are laid in clusters and hatch in 10 to 14 days. Larvae feed side by side, excavating a large continuous area. The life cycle takes from 2 ½ to 4 months, depending on the season. There are two to four generations per year.

Natural enemies and good tree vigor generally keep black turpentine beetle populations at low levels. Newly attacked trees can often be saved by spraying the base to the highest pitch tube on the trunk with an approved insecticide. Preventative sprays also are effective for high value trees. The following insecticide formulations are suggested to be used by licensed certified pesticide applicators to control black turpentine beetle: permethrin (Astro® and Dragnet® SFR) or bifenthrin (Onyx® and OnyxPro™). Thoroughly drench the lower 10 feet of the trunk and buttress roots with a forceful spray in mid-April. Reapply in the summer if adults are still present. The prompt removal of infested trees also helps to control outbreaks. Forest management practices which promote tree vigor and minimize root and trunk damage help prevent infestations.

Reference: USDA Forest Service. 1997. Insect and Diseases of Trees of the South. Protection Rep. R8-PR 16. p. 45