FOREST HEALTH PROGRAM

GEORGIA FORESTRY COMMISSION

Georgia's Forest Health Highlights 2011

Chip Bates, Forest Health Coordinator
Mark Raines, Mark McClure, Scott Griffin (Regional FH Specialists)

Forest Health Notes

Summary:

The Forest Health Management Group provides statewide leadership and guidance to consulting, industry, and GFC foresters and other natural resource managers on a wide range of forest health related issues. GFC foresters incorporated insect and/or disease advice on 316 management plans involving 66,790 acres for the year. Statewide, forest health training was provided to foresters, resource managers, loggers, public works departments (state and county), nurserymen, regulatory agencies, landowners and during field days on 95 occasions (3,741 attendees). These sessions involve most of the program areas listed in this report.

Special notes of interest:

- ***Rhizoctonia Seedling Blight***: Rhizoctonia Seedling Blight of longleaf pine was first observed in Georgia in 2010 causing blight or mortality in seedlings with symptoms appearing first in the grass stage. It was determined that prolific seeding of Partridge Pea created excessive shading conditions of the forest floor, restricted available sunlight and possibly created a microclimate conducive to the success of the unwanted fungus. This was thought to be isolated occurrences in Georgia but the Longleaf Alliance has found Rhizoctonia Seedling Blight across Georgia and Alabama.

  Once the problem was recognized as a regional issue, The Longleaf Alliance initiated a field study to recommend herbicide application rates to control Partridge Pea spread. These studies are in the final evaluation stages and the information is pending. The standard recommendation is to mow infested fields early in spring to restrict Partridge Pea growth and seeding, and repeating this treatment throughout the year appears to maintain adequate airflow across the stand. This treatment prevents the creation of elevated levels of moisture at the soil surface thus preventing the creation of an unwanted microclimate.

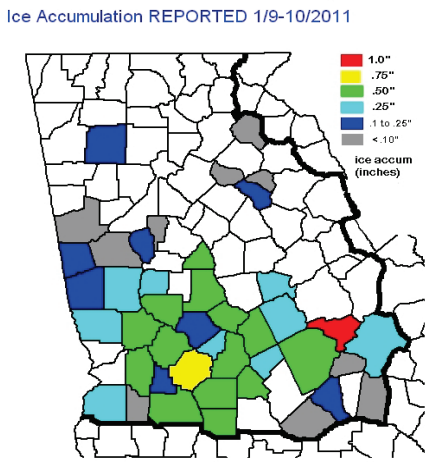
  To date *Rhizoctonia* has been confirmed in twelve counties with an estimated impact of approximately 250 acres across 1000 acres of young Longleaf pine stands.

  A forest health pest alert was issued for the occurrence of Rhizoctonia blight in longleaf pine. Postings can be found on the Georgia Forestry Commission's public web site: (***Rhizoctonia blight in longleaf pine***).

  http://www.gatrees.org/ForestManagement/documents/LongleafPineMortalityRhizoctoniablightAug2010.pdf

➢ ***Winter Weather Damage Report, January 2011:*** Winter weather damage to forests in Georgia is not a Forest Health Issue encountered on an annual basis, but this year we did. On January 9-11, 2011 ice, sleet, and snow covered Georgia from the North Georgia Mountains to the Lower Coastal Plains. Many areas of North Georgia received six inches or more of snow and ice or sleet blanketed areas well into South Georgia. In Statesboro, ice either encapsulated trees in a quarter inch blanket, or the weight snapped branches, broke out tops, or bent trees toward the ground under the weight.

The Georgia Forestry Commission's District Managers reported winter weather damage occurring in a small section of The Ogeechee and Oconee Districts in Central to East Georgia. It was estimated that Burke, Emanuel, Jefferson, Jenkins, Johnson, Screven, Washington, and northern Bulloch Counties had received significant impact from this winter weather.



One National Weather Service map indicated ice accumulation of .5 - .75 inch in west central Georgia for the counties of Bibb, Butts, Crawford, Crisp, Dooly, Houston, Laurens, Macon, Marion, Monroe, Peach, Pulaski, Schley, Sumter, Talbot, Taylor, Twiggs, and Upson Counties.

These two reports indicated a possibility that the central region of Georgia could experience widespread ice damage. A Forest Health Assessment Survey was conducted to determine the extent of damage.

Survey Results

This survey was conducted as a partnership between The Georgia Forestry Commission and The University of Georgia, Warnell School of Forestry and Natural Resources. Dr. David Dickens surveyed areas in Georgia and South Carolina while Mark Raines and Chip Bates surveyed Central Georgia. This survey is only the beginning; stands affected by winter weather damage will be at risk for the next twelve months. Stands with low to moderate levels of damage will need to be re-assessed monthly. Stressed trees are more susceptible to insect and disease damage, especially Southern Pine, Ips Engraver, and Black Turpentine Beetles, should weather conditions turn dry during this growing season.

The survey revealed no large scale areas of mortality or Winter Weather damage due to breakage or wind throw. In all cases there was damage from individual limbs breaking due to the additional weight of the ice, but there was no evidence of any merchantable stands that will need to be salvaged due to this event. It appeared that recently thinned stand (within two years of thinning) were more susceptible to tops breaking and individual trees bending due to the weight of the ice. Even in these cases the overall stand was not destroyed and only a few trees per acre were permanently damaged. Trees along the edge of stands, recently thinned stands, or trees along rights-of-ways appeared to be far more susceptible to leaning or breaking. These trees had no lateral support to help hold the tree upright.

Young pine plantations ranging from five to fifteen years old appeared to suffer the most damage from ice and bending. No stands were observed with damage to the extent of elimination, yet some trees in these stands will never straighten up. The majority of these stands will recover; the determining factor being the time that ice stayed on the trees, tree diameter, and height.

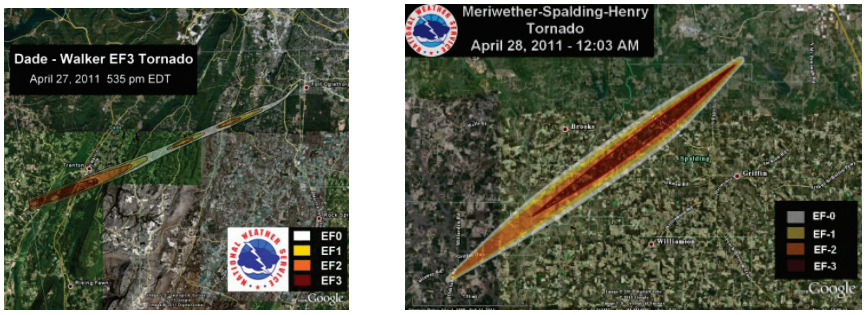
Young pine plantations (under the age of five) appeared to suffer little damage and should recover.

Little to no damage was observed in hardwood stands. Some minor limb damage due to ice weight was observed, but no large scale areas of damage were noted.

Overall winter weather damage was minimal across Georgia, but the hidden damage will only reveal itself over the next twelve months. Broken limbs, damaged tops, broken bark are all sites of potential entry for fungus, and bacterial infection. Southern bark beetle attacks are greatly increased with trees under stress. Any stand that has suffered damage should be evaluated monthly for Forest Health Issues.

- ***Tornado Damage Report, April 2011:***

April 2011, 15 tornadoes tracked across north and central Georgia. The Forest Health Staff assisted GFC foresters in conducting the initial timber damage assessment, using information attained from The National Weather Service, in Peachtree City. Maps were provided to field crews, by the GIS team, to inspect damage and begin the assessment process. Each landowner in the affected area was contacted and Management assistance was extended.



Tornado Tract samples for April 2011 Outbreak.

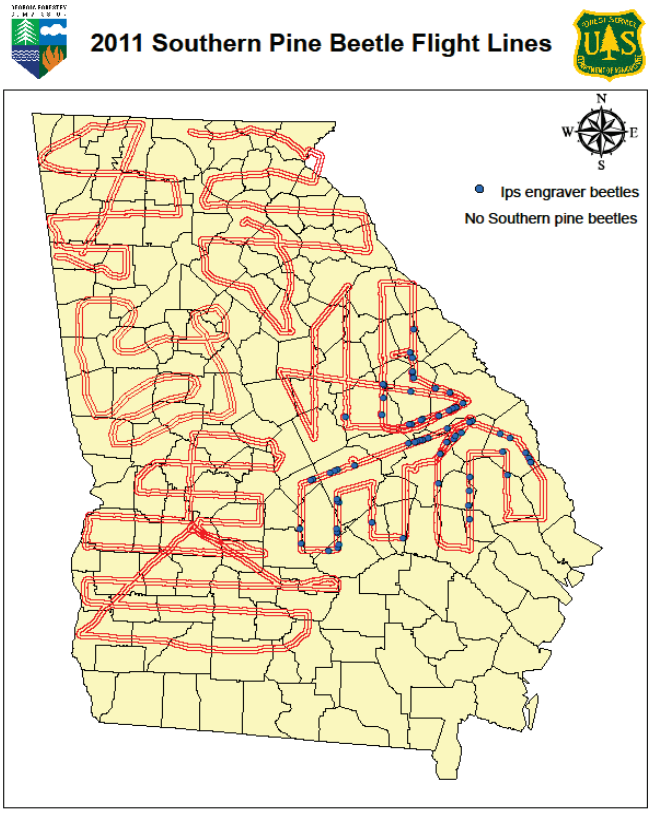
Damage was reported in **34** counties and **161,208 acres of forest land was destroyed**. This represents an estimated value of **$68,296,055.00** of timber destroyed.

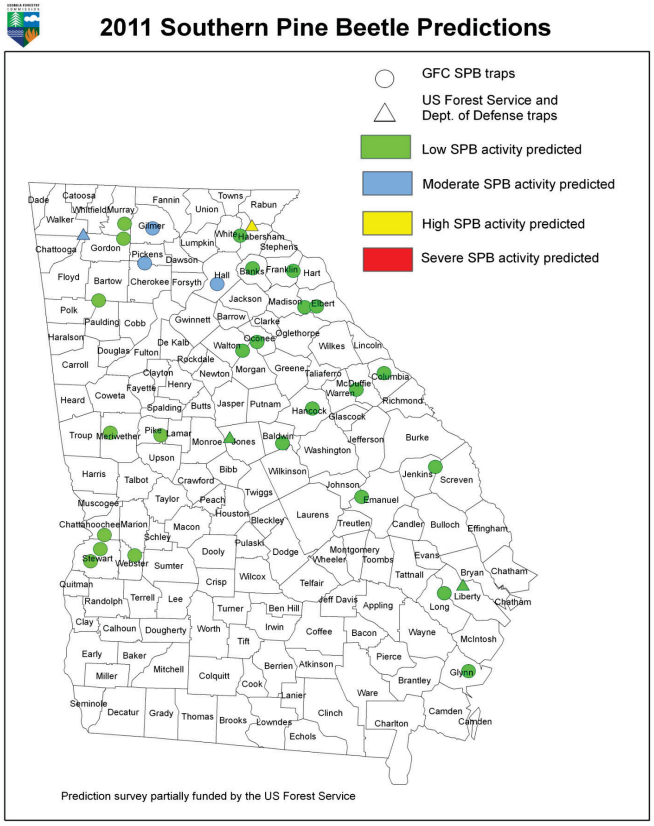
In an effort to assist landowners affected by the April tornadoes with reforestation efforts, the Georgia Forestry Commission submitted a request to the Farm Services Agency Emergency Forest Restoration Program for **$14,975,484**. The actual estimated restoration cost for tornado damage alone is nearly $85 million.

Thus far, GFC has been unable to locate a source of financial assistance available for landowners who lost timber to wildfires.

Pine Beetle Aerial Survey / Pheromone Trapping

In 2011, GFC Forest Health Specialists flew a 20% statewide survey to detect the presence of southern pine beetle (SPB) activity. Fortunately no southern pine beetles were detected on private, state, or federal lands. Significant ips beetle activity was detected with ground and aerial surveys for 2011. Ips beetles have caused many small spots from just a few trees up to a 0.5 acre in size scattered throughout the state. This is likely the result of continued drought, coupled with a record breaking hot and dry summer in 2011.





Georgia Forestry Commission foresters conducted the southern pine beetle prediction trapping program for 2011 with 30 traps being deployed in 28 counties. Most of the traps indicated low SPB populations/activity; but a few North Georgia traps showed moderate SPB populations/activity and one showed high SPB populations/activity. Based on the trapping data alone, GFC did not expect to see significant SPB activity in the state this year, and these predictions proved accurate with the low SPB numbers revealed during the aerial survey.

Predictions are posted on the Georgia Forestry Commission's public web site: at ***Southern Pine Bark Predictions 2011***

http://www.gatrees.org/ForestManagement/documents/2011SPBPredictions.pdf

Hemlock Woolly Adelgid

A survey for the hemlock woolly adelgid (HWA) was conducted for an eighth year. One temporary employee worked on this survey, concentrating on the western front of the spread and the isolated pocket of hemlocks in the Northwest corner of the state. HWA continues to spread at a rapid pace and there are many declining and dead trees. The counties with HWA include Rabun, Towns, Union, White, Habersham, Stephens, Lumpkin, Dawson, Fannin, Gilmer, Pickens and Murray.

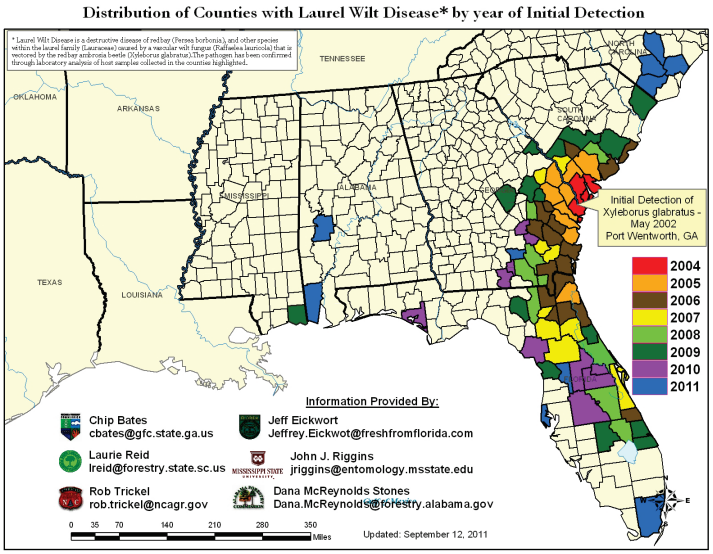
The GFC supported predator beetle rearing labs with foliage collection and beetle release locations. With the area of suitable foliage and release sites advancing rapidly west, coordination of these activities was critical. GFC was used to scout for suitable collection sites and loads of infested branches were delivered as needed from December through early June. GFC also served as a site locator for the release of predator beetles raised by the Georgia and Clemson University labs.

The GFC continued to work with the Georgia Department of Natural Resources (DNR) to help survey and protect hemlocks on state lands. GFC continued to serve in an advisory capacity. Much work was done on the Wildcat Tract of the Dawson Forest to develop a long range plan for the hemlocks on this property. A mix of chemical and biological control recommendations were offered. A partnership was developed with the Mountain Stewards, a non-profit group active in the area, and local volunteers to chemically treat thousands of trees according to the plan that was produced.

The GFC assisted numerous cities, communities, homeowner associations and individuals regarding HWA. Kioritz injectors are available at GFC offices in Habersham, Union, Lumpkin, Gilmer, Fannin, Murray, and Pickens Counties. One injector was also placed in Rabun County at the UGA Cooperative Extension Office. Most counties reported frequent use of the tool with some counties having a waiting list. At least 10 presentations were made to the public on HWA. GFC continued to work with UGA researchers and others to gather the most up to date information on HWA. GFC public website postings were added and updated in an effort to relay this information.
http://www.gatrees.org/ForestManagement/HemlockWoollyAdelgid.cfm

Laurel Wilt Disease

Laurel wilt disease (LWD), caused by the fungus *Raffaelea lauricola*, is a disease of plants in the Lauraceae family in the United States, vectored by an introduced Asian ambrosia beetle (Redbay Ambrosia Beetle), *Xyleborus glabratus*. This disease spread rapidly through the abundant redbay, and sassafras from the maritime and coastal plain forests of Georgia, north into South Carolina, south into Florida. The disease is now present in Mississippi in Jackson County, along the interstate 10 corridor and in the Pascagoula River drainage, killing most of the large redbay trees in its path. Dade County, Florida was added in 2011 and this poses a true threat to the avocado industry in South Florida. Alabama is the newest state to identify LWD; Mobile and Marengo Counties in Alabama were positively confirmed using both lab culture and DNA identification in July 2011.



Across Georgia approximately seven million acres of forests have been infested with this disease. Other plants in the laurel family known to be susceptible to varying degrees include: camphor tree (*Cinnamomum camphora*), avocado (*Persea americana*), pondspice (*Litsea aestivalis*), and pondberry (*Lindera melissifolia*).

LWD continues moving across Southeast Georgia. The active front and outlying disease centers in GA, at the end of September 2011, have progressed approximately one hundred miles inland from the original point of origin at Port Wentworth, Georgia in May of 2002. One new county (Atkinson) was confirmed as a new positive redbay infestation in 2011 and to date there are **30** counties confirmed with Laurel Wilt Disease.

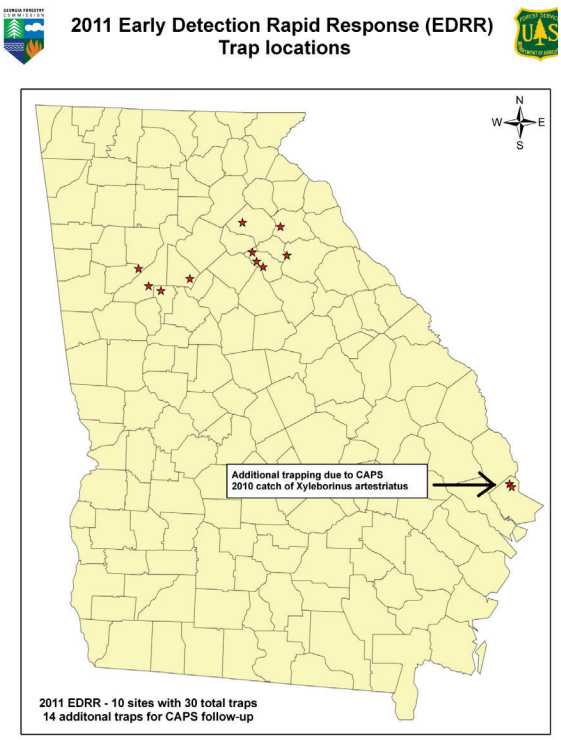
LWD continues to spread northward in Georgia and is moving from a traditional redbay range to areas dominated by sassafras. The new infestation in Marengo County, Alabama was in a sassafras stand with no redbay in the area, and new infestations in the northern regions of spread, in Georgia, are showing more occurrence in sassafras stands with little to no redbay.

In October 2009, field trials were conducted on Jekyll and St. Simons Islands, to test a new delivery method for application of Propiconazole to inhibit the spread of this pathogen in xylem tissue and prevent laurel wilt. A bark penetrating adjuvant was combined with Propiconazole and applied directly to the lower ten feet of redbay trees to find new delivery methods for application of Propiconazole. The purpose of the study was to determine if Propiconazole can be applied directly to the tree, absorbed through the bark, and provide protection from LWD for an extended period of time with an easier and cheaper method.

Preliminary finding showed many of the smaller trees that were healthy and free of symptoms during the initial treatment were still alive and showed no sign of decline in the fall 2010. The remaining sample trees were evaluated during 2011. The sampled areas showed signs of attack by Redbay Ambrosia Beetles and symptoms of Laurel Wilt Disease. It was concluded that the topical application method, with Propiconazole and a bark penetrate, could not provide adequate protection to prevent the spread of the fungus *Raffaelea lauricola.*

The Georgia Forestry Commission has and will maintain a working relationship with the USDA Forest Service, the University of Georgia, and our many other partners to document the spread, study the biology, and possibly find a cost-effective suppression method to this nonnative invasive insect. More info on LWD can be found at: http://www.gatrees.org/ForestManagement/LaurelWilt.cfm . This includes our comprehensive two-year report for our evaluation monitoring grant for our survey and field work.

Early Detection Rapid Response



The Georgia Forestry Commission hired one temporary employee to perform early detection insect trapping around facilities accepting international cargo with solid wood packing material (**SWPM**) from Southeast Asia.

Thirty (30) EDRR and CAPS traps were deployed at ten (10) locations in north Georgia and twelve (12) Early Detection delimiting traps were established around a warehouse complex in the Savannah Ports Area. Traps were inspected on a two week schedule for twelve weeks with trapping ending in July 2011. Specimens collected were cleaned, sorted, labeled and sent to Dr. Rick Hoebeke at Cornell University for identification. No exotic pests were collected from the traps in the North Georgia traps, but a new nonnative exotic ambrosia beetle species was captured in the Savannah traps.

In 2010, a new United States record for *Xyleborinus artestriatus* occurred when the insect was found in a trap placed in an area near a warehouse in Port Wentworth, Georgia. This insect was seen as a potential threat to native species in the region and a delimiting survey was initiated in June 2011. A series of twelve Lindgren funnel traps baited with ethanol or ethanol/alpha-pinene were established around the perimeter of the warehouse where the *Xyleborinus artestriatus* had been caught in CAPS program traps in 2010. Trap data was monitored and recorded from June – August of 2011, and a series of five inspections were completed. During the survey ten of the twelve traps recorded the capture of at least one *X. artestriatus* beetle and a total of forty eight new catches were made during the 2011 survey. (**Refer to Georgia Bark Beetle trapping for the newly detected *Xyleborinus artestriatus* in the Appendix**). Plans have been developed to expand the delimiting survey for 2012 to determine the extent of establishment.

In addition, eleven Sirex wood wasp traps and 20 emerald ash borer traps were placed in the Atlanta, Elberton and Savannah areas. These traps yielded no pests as well.

Sudden Oak Death Syndrome

The sudden oak death monitoring program continues and 10 sites were chosen in northeast Georgia to detect the presence of the pathogen (*Phytopthora ramorum)* blamed for west coast tree mortality. Stream baiting sites targeted watersheds near the positive nursery sites in the metro Atlanta area with the belief that many of these plants were sold and planted locally and could be causing further *P. ramorum* infections in the landscape undetected. None of these sites detected *P. ramorum.*

In addition, stream-baiting continued around a nursery that had positive plants and soil in 2008. Multiple positive stream baits were found at this location. A cooperative effort has been formed between Georgia Forestry Commission, U.S.D.A Forest Service, Georgia Department of Agriculture, Animal and Plant Health Inspection Service, and Clemson University to conduct a vegetation survey along the streams in this area. Stream baiting will continue at this site.

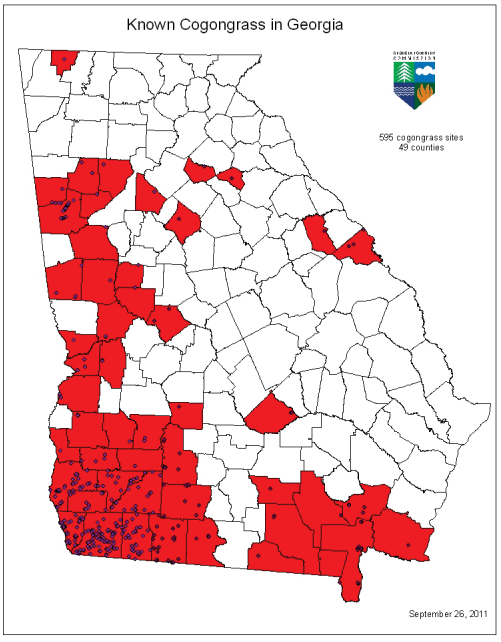
Invasive Weeds and Cogongrass
Cogongrass

Although many invasive plants cause problems within Georgia, most of our efforts have focused on Cogongrass and Chinese privet. Our "Cogongrass Task Force" continues its mission in Georgia to address the threat this plant has toward our environment. Training has been given to resource professionals throughout the state, and the educational campaign continues to help landowners identify the plant. Once landowners find suspect plants, they then notify the GFC to verify the identification, and if confirmed is treated by the GFC (at no charge to landowners). All known cogongrass infested sites are being treated by either the GFC, APHIS, or in a few cases the landowners.

The GFC spearheaded an effort to bring all concerned groups and agencies under this umbrella to detect cogongrass. A total of 23 state, federal and private partners signed an agreement to establish the entire state of Georgia as a Cooperative Weed Management Area for cogongrass in May 2008. These partners were contacted last winter (February) to remind them of the flowering and seeding period that makes it recognizable. Literature was mass printed and given to all partners who expressed interest. The combined effort of this group should have far reaching impacts to help educate the public about cogongrass as well as help locate all infested sites. All information regarding this non-native invasive weed has been assembled at this web site: http://www.cogongrass.org/

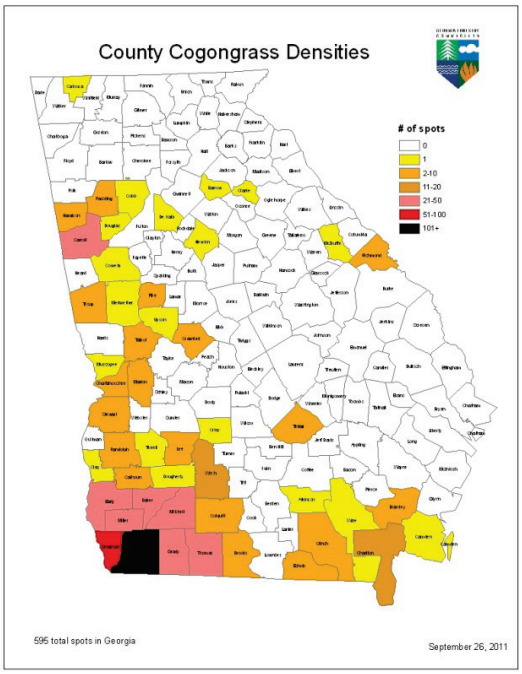
The education efforts of the Georgia Forestry Commission have paid dividends and initial cogongrass reports are being filed from private landowners, industry foresters, and some logging operations. Statewide, forest health training was provided to foresters, resource managers, loggers, public works departments (state and county), nurserymen, regulatory agencies, landowners and at field days on 95 occasions (3741 attendees). These sessions involved forest health key topics and cogongrass was included as a fundamental part of these training seminars.

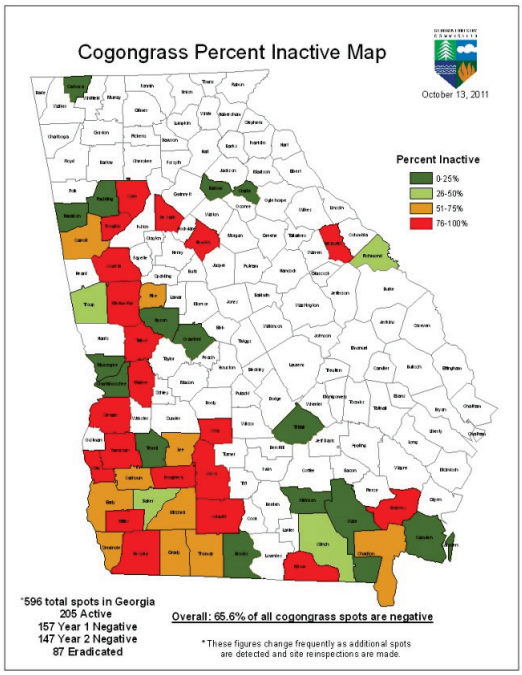
There have been 135 new cogongrass infestation sites reported and treated by the GFC during this fiscal year. The GFC continues to treat all new sites with herbicide, normally Imazapyr and Glyphosate, at no cost to landowners. This assistance is only possible through an ongoing grant provided by the USDA Forest Service. This non-native invasive weed has now been found in **49** Georgia Counties, involving **595** sites. In Georgia, **165.5 acres** of cogongrass have been treated with all known sites being sprayed at least once. Most of the infestations in Georgia are between **1/10 - 1/4** acre in size and are not visible from an aerial detection survey. Ground survey and field reconnaissance are the only reliable means of detection. During the post treatment inspection process, approximately **66%** of all known sites are being shown as negative for cogongrass. Three consecutive years of negative evaluation is required for a cogongrass site to be deemed as eradicated. There are 157 sites in Georgia that have shown one year of negative post inspection, 147 sites that have shown two years of negative post inspection and **87 sites** have been declared eradicated. Herbicide results have been positive with the majority of all sites now being controlled within two growing seasons based on the current herbicide mixture and rates. These mixes and rates are published in a paper produced by the Forest Health staff and John Taylor with The USDA Forest Service. These recommendations are posted on the Georgia Forestry Commission's public web site: ***Cogongrass Eradication Strategies***
http://www.gatrees.org/ForestManagement/documents/GFCCogongrassEradicationStrategiesrevMarch2010.pdf



In an effort to increase public awareness and education, Mark McClure, Forest Health Specialist, Southwest Georgia, developed an information newsletter that is published semi-annually on the GFC Homepage and is e-mailed to landowners and partners across the Southeast. This newsletter contains reminders for landowners to be vigilant for new infestations of cogongrass, gives pictures for identification purposes, and provides an update on the current status of cogongrass infestations in Georgia. This newsletter is published on the GFC Homepage at: ***Cogongrass in Georgia: Spring 2011 Update***
http://www.gatrees.org/ForestManagement/documents/CogongrassinGeorgiaSpring2011Update.pdf

Mark also produced a county density map to better depict local infestations and more accurately shows the spread of cogongrass in Georgia. This map is published on the GFC Homepage and can be found at:
County Density Map
http://www.gatrees.org/ForestManagement/documents/CogongrassCountyDensityMap-092611.pdf

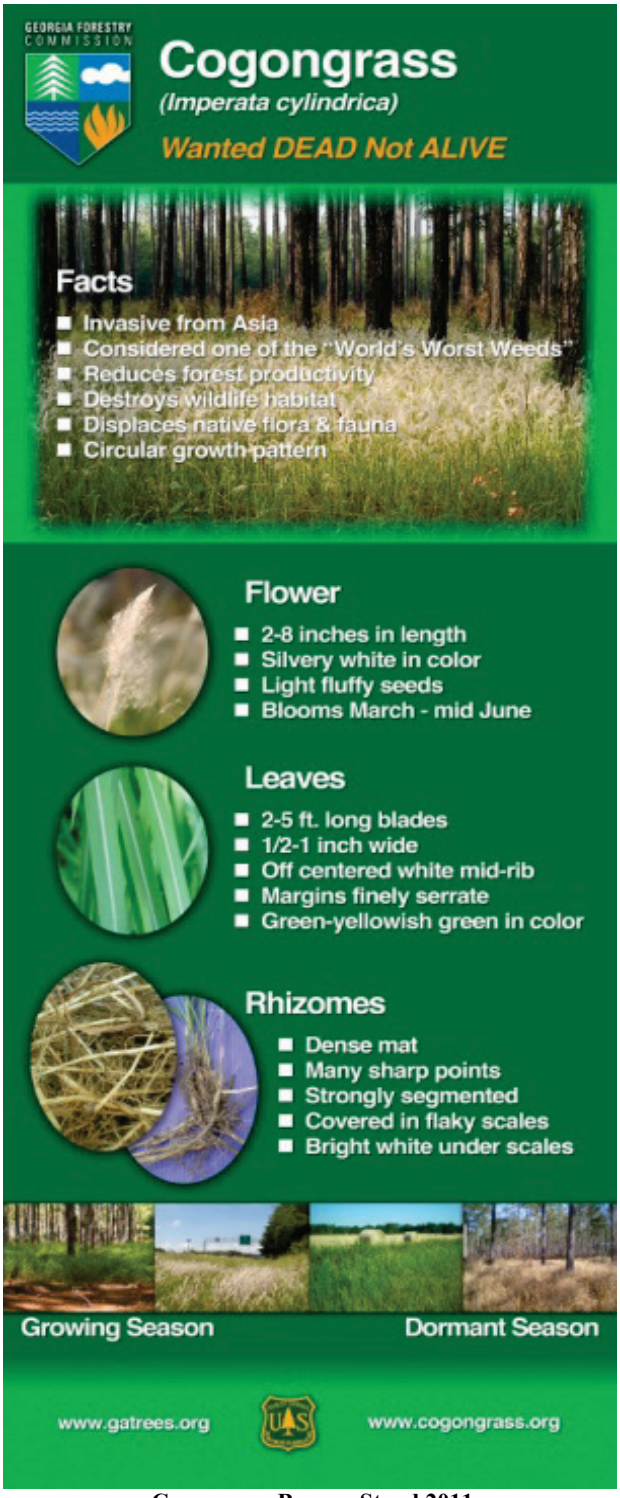




An additional map was created in 2011 to show the percentage of **inactive** cogongrass sites in each Georgia County.

http://www.gatrees.org/ForestManagement/documents/CogongrassPerCentInactiveMap-101311.pdf

The Forest Health Staff also produced a new cogongrass banner stand to be displayed at public events and workshops. In addition, a cogongrass poster was created to be displayed in state and federal government offices along with local stores in the community.



Cogongrass Banner Stand 2011

Cogongrass Poster 2011

Invasive Weeds

The use of the top twelve "Dirty Dozen List" has proven a valuable tool in the fight against invasive weeds in Georgia. This list removes emotion from the identification of an invasive weed and uses Forest Inventory and Analysis (FIA) data providing a defendable ranking of invasive plants. The Forest Health Management Staff has adopted a standard definition for the term "Invasive" and it is "Any plant or animal that has normally been introduced and aggressively competes with, and displace, local native communities; normally having no natural enemies to limit reproduction and spread."

Although many invasive plants cause problems within Georgia, most of our efforts have focused on cogongrass and we separate this Federal Noxious Weed out as our number one invasive weed challenge in Georgia. Across Georgia our efforts have focused on Chinese privet, Japanese climbing fern, Chinese tallowtree, Non-native olive, and Tree of heaven.

In the 2012 fiscal year, the GFC will incorporate an invasive species control cost share program to assist landowners in the control of these targeted species list above. We project that over one hundred (100) landowners will be funded and approximately 1750 acres will be treated.

Invasive Species Control and Education

Addressing invasive species occurrence and control is a growing issue; The Forest Health staff is partnering with The USDA Forest Service, The University of Georgia, National Wild Turkey Federation, and other state, local, and federal agencies to inform the public of the harm non-native invasive plants can cause in Georgia. Regional and local programs have been conducted during the past year and are being planned to bring relevant and current topics to the landowners of Georgia and our Federal and State partners.

Chinese privet

This is the most widespread and harmful non-native invasive plant to Georgia's forests (FIA data indicates 377,000+ forested acres in Georgia have privet). Under the ARRA Program in 2010 over 90% of the requests for assistance were for privet control, and only 1/3 of the request were filled. This nonnative invasive has grown from a nondescript wetland plant to the number one invasive plant in Georgia.

In order to better service the landowners in Georgia the GFC will offer a new cost share program to combat invasive species. This program will provide assist to landowners in the control of targeted species that have proven to aggressively compete with and displace native forest communities; our efforts will focus on Chinese privet, Japanese climbing fern, Chinese tallowtree, Non-native olive, and Tree of heaven. This new program should assist over one hundred (100) landowners across Georgia and will fund approximately 1750 acres to be treated for the control of non-native invasive plants with an emphasis on the control of the number one invasive plant in Georgia, Chinese privet.

Before Glyphosate Treatment - January 2010

After Glyphosate Treatment – January 2011

Trifoliate orange (*Poncirus trifoliate)*

On January 13, 2011 the Forest Health Staff began field trials to test application methods, and herbicide rates for control of Trifoliate orange (*Poncirus trifoliata)* in central Georgia. The goal is to determine optimal application timing and rates for best control using proven application techniques and commercially available herbicides.

Multiple plots were established using cut stump, basal stem, thin line, and foliar applications at varying rates of Triclopyr, Glyphosate, and Imazapyr to determine the most economical and practical application methods for control of this thorn infested invasive.

The initial evaluation was made in midsummer and the most promising techniques were made with low rates of Glyphosate in a foliar application. Additional field trials will be tested during the winter of 2011 and a final fact sheet and recommendations will be made in the summer of 2012.

Trifoliate orange (*Poncirus trifoliata)*

Trifoliate orange Thorns

Glyphosate Application On January 21, 2011

Initial Inspection of Trifoliate Field Trial in June 2011

Japanese climbing fern

Japanese climbing fern is a perennial climbing fern that can reach lengths of 90 ft. (30 m). Vines are thin, wiry, green to orange to black and usually die back in the winter. The fronds (leaves of a fern) are opposite, compound, usually triangular in shape, 3-6 in. (8-15 cm) long, 2-3 in. (5-8 cm) wide and finely dissected. Fertile fronds bear sporangia that produce tiny, wind-dispersed spores. Plants are also spread by rhizomes. Japanese climbing fern often invades disturbed areas such as roadsides and ditches, but can also invade natural areas. It generally is scattered throughout the landscape, but can form dense mats that smother understory vegetation, shrubs and trees. Japanese climbing fern is native to eastern Asia and was first introduced into the United States during the 1930s for ornamental purposes.

Five years ago Japanese climbing fern was unknown in Georgia. Once this plant was perceived as a potential threat to the health of Georgia's forests, a consolidated effort was made to include this new information as part of our landowner education programs. Increased awareness of this plant has lead to a dramatic increase in sightings and identification of this pest. To date Japanese climbing fern has been found as far north as Richmond County in Georgia and new locations are discovered weekly.

Field trials have shown good results in first year control using 5% Glyphosate and one and a half ounces (in one hundred gallons of solution) of Metsulfuron (Escort XP) sprayed the in late summer to early fall. First year evaluations showed approximately 95 % control and very little sprouting in the test area.

Chinese tallowtree

Chinese tallowtree is native to China and Japan and was introduced to The United States in the late 1700's. This non-native invasive can establish in full shade on a wide range of soil types in the coastal region and South Georgia. Chinese tallowtree is becoming a serious forest health problem in bottomlands, old fields, coastal mashes, disturbed and undisturbed sites, and in urban settings.

Each tree has the potential to produce thousands of seeds annually and it is common to find trees in excess of twelve to fourteen inches in diameter in well established areas. Seeds are dispersed primarily by birds; and flooding in riparian areas can disperse seeds for miles. These seeds mature in late summer to fall ready to germinate the following spring.

Historically, Chinese tallowtree has been controlled using labor intensive injection methods or basil stem application of herbicide. In the spring of 2010 a new chemical, "Clearcast", was presented by BASF as an aerial or ground herbicide for application directly over hardwoods with the claim that tallowtree and only tallowtree would be killed. In an effort to increase our outreach and education efforts, a partnership was formed with BASF and SePRO to promote this new technology as an eradication option.

In early fall 2011, approximately twenty acres of slash pine were aerially treated using three rates of "Clearcast" to determine if the herbicide can be safely applied over slash pine. Our goal is to apply thirty-two, sixty-four, and seventy-two ounces of "Clearcast" per acre, applied aerially, to evaluate the percent kill on Chinese tallow and any collateral damage to the hardwood and pine. This field trial was conducted in Hahira, Georgia, and the landowner has agreed to use the results in a field day demonstration to educate other landowners in the region. We will show different application techniques from aerial application, hack and squirt, and ground foliar application using backpack mist blowers, backpack sprayers, and mechanical mounted equipment. These results will be published in 2012.

ARRA

In 2009, the American Recovery and Reinvestment Act (ARRA) funded the Cogongrass and Invasive Species Grant through the U.S.D.A Forest Service with the Georgia Forestry Commission. This program was enacted to create new jobs while assisting private and public landowners with controlling cogongrass, Chinese privet, Chinese tallowtree, Japanese climbing fern, Multiflora rose, and Autumn olive. Of the 387 applications that were received for invasive species control only 101 applications were funded that represented 1,908 acres and $763,396 in funding.

The goal of the ARRA Cogongrass and Invasive Species Grant is the detection and eradication of target non-native invasive species on both state, and private forest land. The majority of funds were budgeted toward private landowner treatment. Six foresters and one program manager were hired to oversee implementation of the program. A public outreach and educational campaign for invasive plant species in Georgia is also being continued.

The timeline for this project allows for at least two treatments on the private lands contracts to ensure adequate coverage and eradication. To date, landowners are continuing their second herbicide treatments to fulfill their contracts under the Invasive Species program, and over half of the landowners have completed their invasive species treatments. Landowners are pleased with the results of the program and look forward to the return of native flora and ecosystems to their sites.

Treatment Accomplishments:

- **558** acres have been treated on Georgia State Parks and Historic Sites as of 9/30/11
- **3,744** acres of private land has been treated for invasive species as of 9/30/11
- Over **2,576** acres of University of Georgia owned forest land has been surveyed for invasive species
- The University of Georgia completed treatments at one of two university properties. Due to the high visibility of the property, much thought was given to how the treatment would be performed. The ground based treatment was effective in eliminating the invasive plants while maintaining the aesthetic qualities of the site. The second site to be treated is sensitive as well. This site will be treated this winter to control privet while protecting the native plants that will be dormant at that time.
- The UGA fact sheets and informational posters featuring the top six Georgia invasive species targeted under the ARRA Program are being displayed at the State Parks, County Forestry Units, and Extension Offices. These resources can be located at http://www.gainvasives.org/arra/ under the title "***Georgia Invasive Plants Outreach Program***".
- Information on invasive species has been published on both websites http://www.invasive.org/ and http://www.gainvasives.org/ and a narrated presentation highlighting Georgia Invasive plants has been developed at http://www.gainvasives.org/presentation.html

Annosum Root Disease

Widespread damage in recently thinned pine plantations (slash and loblolly) was first detected in 2005, and the disease continues to cause ongoing damage with new sites being reported in 2011. The incidence of occurrence of Annosum Root Disease appeared to be less numerous in the past two years, but multiple areas of infection were noted during aerial surveys in 2011. This may be an indication that the disease is once again on the increase. The primary region with the highest incidence and most severe mortality is a zone from Augusta to Columbus and south for about 75 miles (correlating to the sandhills and upper coastal plain regions). Ongoing educational outreach programs and many one-on-one field visits with professional land managers have resulted in most foresters being able to diagnose this condition.

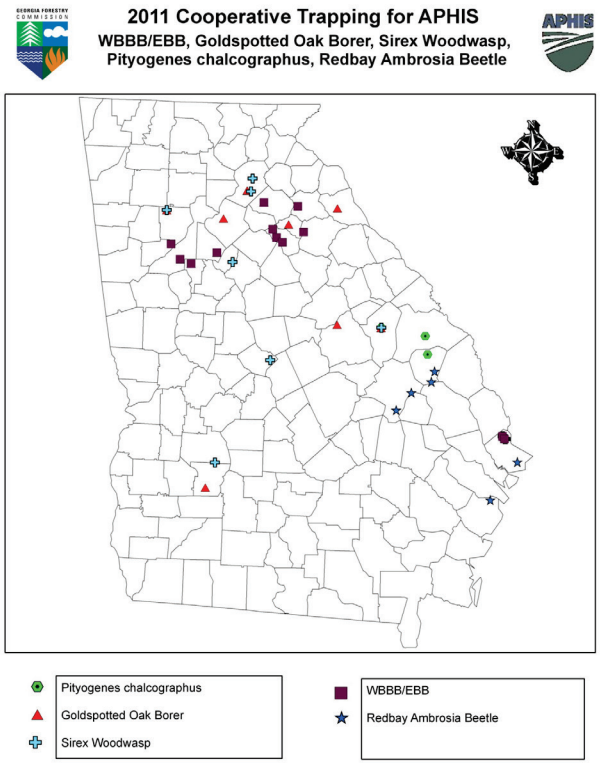
Although GFC field foresters perform the majority of field inspections, the forest health staff responded to **215** forest industry/consultant/GFC forester requests requiring field visits throughout the state. Annosum root disease and pine bark beetles were the primary concern in many of these inspections.

Additional Surveys Supported by Georgia Forestry Commission

Sirex Woodwasp (Not funded, GFC Supported)

Huge losses of both loblolly and slash pine have occurred on other continents due to this insect, and it remains as a high concern pest that hasn't yet arrived in Georgia (or the southeastern U.S). The sirex woodwasp poses a threat to all of Georgia's southern yellow pines and warrants monitoring through our early detection rapid response protocols.

A series of Lindgren funnel insect traps (baited with alpha-pinene lures for sirex woodwasp) were deployed at high risk warehouses receiving solid wood packing materials through the Savannah Port Authority terminals near Garden City, Georgia. Seventeen traps were located in possible ports of entry from June through October to detect any *Sirex noctilio* inadvertently moved into these locations in cargo. These traps are checked every 2 weeks and any suspect nonnative insects are initially screened for identification by the forest health staff. No *Sirex noctilio* have been caught in our traps to date.



Goldspotted Oak Borer (not funded, GFC supported)

Goldspotted oak borer (GSOB) *Agrilus auroguttatus* is an invasive pest contributing to the on-going oak tree mortality occurring in California. In 2008 the GSOB was found attacking coast live oak, canyon live oak, and California black oak on the Cleveland National Forest in California. In cooperation with USDA-APHIS, twelve GSOB traps were deployed in oak stands throughout the state. No GSOB have been caught.

Six-toothed spruce bark beetle - *Pityogenes chalcographus* (not funded, GFC supported)

The *P. chalcographus* is mainly an invasive pest of Spruce, but has been known to attack *Pinus* species. In cooperation with USDA-APHIS, three traps were deployed in the state. No *P. chalcographus* have been caught.

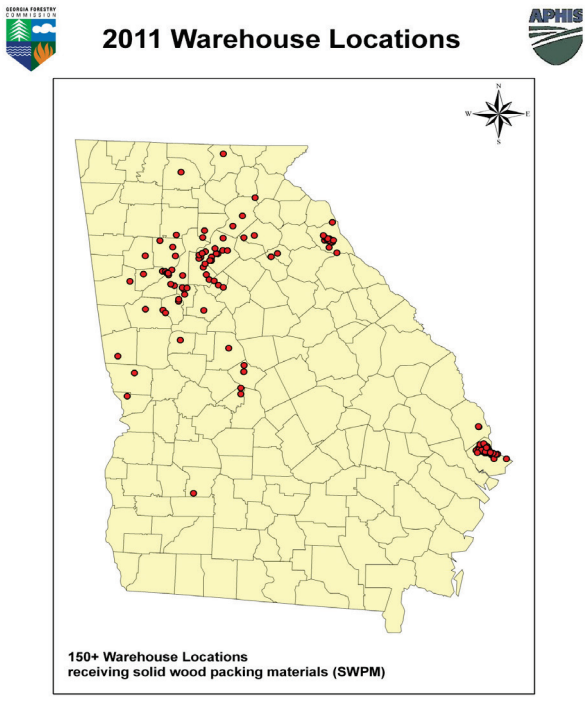
Laurel Wilt/Redbay Ambrosia Beetle Survey (not funded, GFC supported)
Laurel Wilt Disease was introduced into Georgia in 2002 via solid wood packing materials through the port of Savannah. This disease has spread throughout Georgia, South Carolina, Florida, Mississippi, and now Alabama, and is responsible for the death of thousands of trees in the laurel family with redbay and sassafras being the primary trees affected in Georgia. Other plants in the laurel family known to be susceptible to varying degrees include: camphor tree, avocado, pondspice, and pondberry.

Eighteen Lindgren funnel traps were established in six locations across Southeast Georgia in the summer of 2011 to detect the spread of Redbay Ambrosia Beetle and to determine population size in areas where infestations have caused severe damage to native trees in Georgia. These traps were baited with ethanol, manuka oil, and ethanol + manuka oil to determine the optimal trap lure combination.

Exotic Wood Boring / Bark Beetle Survey (USDA – APHIS funded) 11-8213-0457-CA

During the 2011 Exotic Wood Boring and Bark Beetle Survey the Georgia Forestry Commission hired one temporary employee to visit companies accepting international cargo with solid wood packing material (**SWPM**). Sixty-nine (69) new facilities were identified through the Georgia Ports Authority web site and implementation of the new Facility Risk Assessment Scale System (FRASS) that was developed to evaluate and rate each facility for potential risk for exotic pest introductions. Each facility was given a rating based on the type, moisture content, and continent of origin of the SWPM it handled. Facilities scoring 0-5 points are rated as low risk or "cold" for pests; 6-9 points indicate a moderate or "warm" risk; and a score above 9 points indicates a high or "hot" risk for pests. A facility with a cold rating would not require as many visits as those rated warm to hot. (**Refer to The Facility Risk Assessment Scale (FRASS) in the Appendix**).

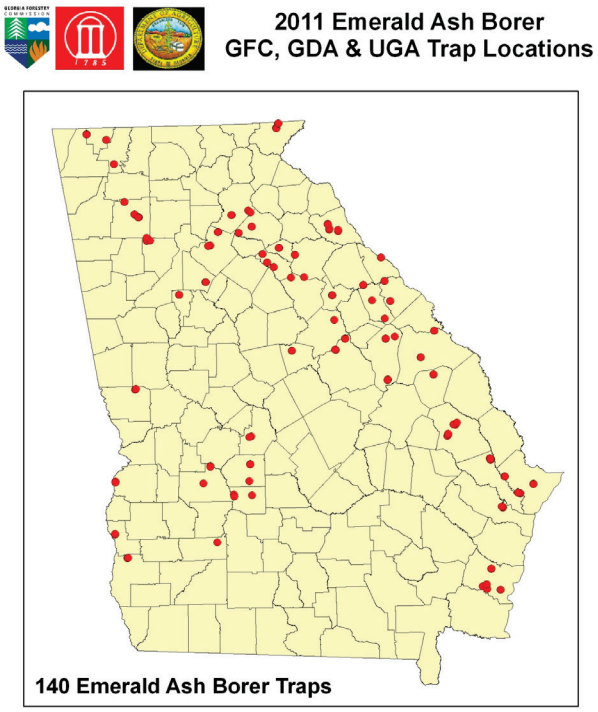
Sixty-nine (69) new facilities were identified as potential risks for exotic pest introductions in 2011 and one hundred seventy-five (175) facilities were identified in 2011and site visits to these facilities were performed between April 1 and October 31, 2011. No new notable pests were intercepted in the 2011 Survey. In addition, twelve of these warehouse facilities were trapped with ethanol, ethanol+alpha pinene and ips lures to detect all non-native bark and ambrosia beetles (Scolytidae) as targets for this survey. An additionally twenty (20) emerald ash borer (EAB) traps were deployed at multiple locations with inspections performed monthly. Ten (10) Sirex woodwasp traps are deployed at multiple locations and were monitored on a two week schedule.



In 2010, a new United States record for *Xyleborinus artestriatus* occurred when the insect was found in a trap placed in an area near a warehouse in Port Wentworth, Georgia. This insect was seen as a potential threat to native species in the region and a delimiting survey was initiated in June 2011. A series of twelve Lindgren funnel traps baited with ethanol or ethanol+alpha-pinene were established around the perimeter of the warehouse where the *Xyleborinus artestriatus* had been caught in CAPS program traps in 2010. Trap data was monitored and recorded from June – August of 2011 and a series of five inspections were completed. During the survey ten of the twelve traps recorded the capture of at least one *X. artestriatus* beetle and a total of forty eight new catches were made during the 2011 survey. (**Refer to Georgia Bark Beetle trapping for the newly detected *Xyleborinus artestriatus* in the Appendix**). Plans have been developed to expand the delimiting survey for 2012 to determine the extent of establishment.

An estimate of the number of trees located at each facility was determined as well as their health. A total of 13,500 trees (hardwood and pine) were estimated and visually examined with each warehouse visit. No "sick" or dying trees were noted during the 2011 survey. It was also noted how long the warehouse had existed at its location. An older warehouse would have more potential for a pest introduction than a facility that had operated for 1-2 years.

Emerald Ash Borer (USDA – APHIS funded) 11-8213-0651-CA



Funding provided by
Animal and Plant Health Inspection Service (APHIS)

The emerald ash borer has devastated ash trees in the northeast and mid-west and could have the same impact in Georgia. EAB was introduced in Detroit, Michigan in 2002 and has since spread as far south as Knox and Louden Counties, Tennessee; placing emerald ash borer within one hundred miles of Georgia. Many infestations are started by human assisted spread through the movement of ash logs and firewood from infested areas. Early detection of this new invasive insect is critical to the protection of the forests of Georgia.

Annually, EAB traps are deployed across Georgia in an attempt to detect new introductions present in Georgia. Between April and September triangular, purple, sticky traps (baited with a manuka oil lures) were established across Georgia and inspected monthly for suspect EAB. No Emerald Ash Borer has been detected in Georgia.

Forest/Wood lot/Camp/Park	82 Traps
Urban/Commercial	24 Trap
Urban Residential	1 Trap
Rural Commercial	16 Traps
Rural Residential	1 Trap
Nursery	10 Traps
Other	6 Traps
Total	**140 Traps – State Wide***

*this includes traps deployed by the Georgia Department of Agriculture, and the University of Georgia

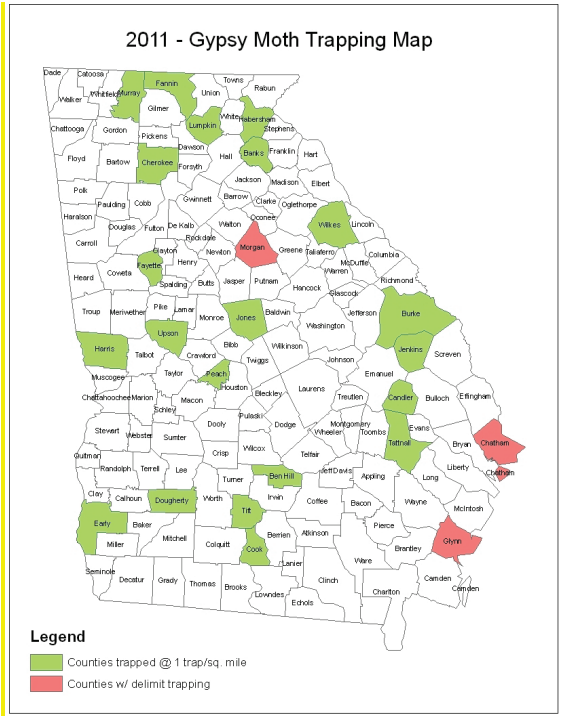
Gypsy Moth Trapping (USDA – APHIS funded) 11-8213-0032-CA

GFC personnel deployed traps across the state in 20+ counties in 2011.

- The following counties were trapped: Banks, Cherokee, Fannin, Fayette, Habersham, Harris, Lumpkin, Murray, Upson, Burke, Candler, Jenkins, Jones, Tattnall, Wilkes, Ben Hill, Cook, Dougherty, Early, Peach and Tift.

- A total of 4550 traps were placed in these counties by GFC Rangers and Foresters plus GFC forest health personnel placed an additional 50 traps around high risk areas in their work areas. No positive catches were made.

- Delimit trapping continued around past positive catches in **Morgan**, **Chatham**, and **Glynn** Counties. A total of 175 traps were placed. No positive catches were made. This is the final year of delimit trapping around the Morgan and Chatham County sites but delimit trapping will continue for at least one more year in Glynn County.



- A grand total of **4775** traps were deployed in Georgia in 2011.

APPENDIX:

1. FACILITY RISK ASSESSMENT SCALE SYSTEM (FRASS)

2. Top Twelve Plant Species and FIA Occurrence Data "The Dirty Dozen"

3. Georgia Bark Beetle trapping for the newly detected *Xyleborinus artestriatus*

FOREST HEALTH PROGRAM

FACILITY RISK ASSESSMENT SCALE SYSTEM (FRASS)

(FACILITY RISK ASSESSMENT SCALE SYSTEM (FRASS) - CRITERIA

Pallet/SWPM Type (Scale Points)

Pallet/SWPM Type	Points
Metal (M)	0
Plastic (P)	0
Foreign Composite (FC)	0
Domestic (D)	0
Composite/Laminate Crate (CC)	0
Cardboard (CB)	0
Laminate Runners (LR)	0
Wooden Racks (WR)	1
Wooden Granite Slab Frames (WGSF)	1
Lumber (Lmbr)	1
Foreign Non-Composite (FNC)	1
Crate (C)	1
Solid Crates (SC)	1
Runners (R)	2
Coil Pallet (CP	4

Moisture Content of Pallet/SWPM Wood (Scale Points)

Moisture Content	Points
0-9%	0
10-20%	1
21-30%	2
31-40%	3

Continent of Origin

Continent	Points
Asia	3
Africa	3
Australia	1
Europe	1
South America	1

FRASS SCALE

0-5 Cold Low Risk	6-9 Warm Moderate Risk	>9 Hot High Risk

An Equal Opportunity Employer and Service Provider

1

FOREST HEALTH PROGRAM

Top Twelve Plant Species and FIA Occurrence Data "The Dirty Dozen"

Top Twelve Species* and FIA Occurrence Data "The Dirty Dozen"		
Species	Acres	
Non-native Privet	347,346	* Top eleven species removing honeysuckle and fescue
Non-native Lespedeza	58,391	
Kudzu	26,669	
Chinaberry	23,057	
Japanese Climbing Fern	9,225	
Tallowtree	7,204	
Non-native Rose	5,799	Cogongrass is a Georgia Forestry Commission estimate
Non-native Olive	5,158	
Chinese / Japanese Wisteria	5,045	
Napalese browntop	4,061	
Mimosa	3,567	
Cogongrass	200	

FOREST HEALTH
PROGRAM
GEORGIA FORESTRY
COMMISSION

Georgia Bark Beetle trapping for the newly detected *Xyleborinus artestriatus*

Trap Date: 7 June 2011

Trap #1 (EtOH + pinene)	14 specimens
Trap #2 (EtOH)	2 specimens
Trap#3 (EtOH + pinene)	1 specimen
Trap #9 (EtOH + pinene)	2 specimens
Trap #11 (EtOH + pinene)	1 specimen

Trap Date: 21 June 2011

Trap #1	1 specimen
Trap #3	1 specimen
Trap #5	1 specimen
Trap # 8	1 specimen
Trap #9	1 specimen

Trap Date: 5 July 2011

Trap #8	1 specimen
Trap #10	1 specimen

Trap Date: 22 July 2011

Trap #1 (EtOH + pinene)	2 specimens
Trap #2 (EtOH)	2 specimens
Trap #8 (EtOH)	1 specimen
Trap #10 (EtOH)	4 specimens
Trap #11 (EtOH + pinene)	1 specimen
Teap #12 (EtOH)	2 specimens

Trap Date: 2 August 2011

Trap #1 (EtOH + pinene)	1 specimen
Trap #2 (EtOH)	1 specimen
Trap # 4 ((EtOH)	1 specimen
Trap # 8 (EtOH)	1 specimen
Trap # 9 (EtOH + pinene)	1 specimen
Trap # 10 (EtOH)	3 specimens
Trap # 11 (EtOH + pinene)	1 specimen

Total Specimens for 2011 - 48 *Xyleborinus artestriatus*