

2005 Forest Insect and Disease Conditions for the Southern Region

Most Significant Conditions in Brief

The impact of serious pests was moderate to low in southern forests in 2005. Abiotic factors, notably hurricanes and drought, were significant, and related effects from salt-water flooding, root damage, broken stems and branches, and drought-induced fire may produce long-lasting effects. Regionally, an unusually wet spring was followed by widespread summer drought. Hurricanes Dennis, Katrina, Rita and Wilma devastated portions of the Gulf Coast and Hurricane Ophelia struck the coast of North Carolina. The late summer drought that continued into the winter in Texas and Oklahoma produced massive wildfire problems at year's end that continued into 2006.

Southern pine beetle populations remained low throughout most of the Region, with notable exceptions in southwestern Alabama and two counties in the Piedmont of South Carolina. Elsewhere, SPB populations were low to immeasurable.

Mortality of red oaks associated with drought, the red oak borer outbreak, and severe oak decline in north central Arkansas and northeastern Oklahoma continued, but is moderating. The oak resource in affected areas has been seriously impacted and severely affected stands are unlikely to regenerate to an oak forest without intervention.

Infestations of the hemlock woolly adelgid spread and intensified dramatically in the Southern Appalachians 2005. The adelgid now infests northern Georgia, upstate South Carolina, western North Carolina, east Tennessee, and the western half of Virginia. Entomologists continue to identify, rear, and release predators from the adelgid's native East Asian range; new rearing facilities are now operational in South Carolina and Tennessee. The use of chemical control measures is also expanding. However, the impact of the adelgid continues to outpace efforts to control the pest. Forest ecologists note that the insect endangers the very survival of both eastern and Carolina hemlocks throughout the range of these species. Because of its important role in riparian ecology, the loss of hemlock could have a devastating impact on these ecosystems.

Balsam woolly adelgids continue to impact the high-elevation spruce-fir stands in the Southern Appalachians. Stands that were destroyed and naturally regenerated in the 1970s are now reaching ages that support large enough adelgid populations to produce new mortality, and it is expected that the entire wild fir population will again crash and regenerate over the next five to ten years. There is no effective control currently available for this pest.

Gypsy moth defoliation in Virginia increased from 0 acres in 2004 to 6,543 acres in 2005. However, it appears that the introduced *Entomophaga* fungus has brought this pest into relative balance with its environment along the generally infested front. The gypsy moth Slow the Spread program continues to monitor populations and, if necessary, treat isolated infestations along the edge of the generally infested area in North Carolina and Virginia.

In the Southern Appalachians, the beech bark disease complex continued its spread in 2005. Infections are confirmed in Virginia, Tennessee, and North Carolina. Beech is an important habitat

component for wildlife, providing both mast and den habitat for species such as black bear. The disease produces heavy mortality in large trees, followed by re-sprouting which generally produces coppice growth of small, generally low quality infected stems.

Insects: Native

Baldcypress leafroller, *Archips goyerana*

Region 8: Louisiana

Host(s): Baldcypress

In 2005, 66,500 acres of mixed baldcypress stands in southern and southeastern Louisiana were defoliated by the baldcypress leafroller. (Ascension, Assumption, Iberia, Iberville, LaFourche, St. Charles, St. James, St. John the Baptist, St. Martin, and Terrebonne Parishes.) Approximately 15,300 acres were severely defoliated ($\geq 50\%$). The primary impact of this defoliation is loss of radial growth, producing an estimated growth loss of 0.1 MBF/acre. Dieback and scattered mortality occurred in some areas. Permanently flooded areas were most severely impacted.

Bark lice or psocids, *Archipsocus* spp.

Region 8: Texas

Hosts: hardwoods, mostly oaks

During the summer of 2005, higher than normal populations of bark lice in east Texas caused many people to inquire about the cause of webbing covering the trunks and branches of their trees. No permanent harm was caused.

Black turpentine beetle, *Dendroctonus terebrans*

Region 8: Regionwide

Hosts: Loblolly pine, longleaf pine, slash pine, shortleaf pine

Much like pine engraver beetles, the black turpentine beetle (BTB) prefers to attack stressed, weakened trees. Stands stressed by multiple factors such as drought and logging injury, compacted soil, or wildfires are especially vulnerable. BTB are active in the lower six to eight feet of the tree's bole. Although generally present at low population levels, when BTB numbers increase significantly, they are capable of attaining primary pest status, attacking trees with no overt damage or other evidence of susceptibility. Levels of activity were variable in 2005; Florida reported higher than normal problems owing to damage from major hurricanes of 2004, with impacts especially harsh in wildland-urban interface areas, where homeowners incur large expenses for removal of residential shade trees. Virginia reported only scattered and moderate BTB occurrence. Georgia reported activity levels similar to 2004, generally in association with stand thinning and annosum root disease. Mississippi reported continuing BTB activity in longleaf pine stands in the southern part of the state where both prescribed burning and harvest treatments had been carried out. South Carolina reported increases in BTB activity in areas previously thinned to control SPB, scattered commercial thinnings, and areas with hot prescribed fires. North Carolina noted increased BTB activity in Sandhills longleaf stands being managed for pine straw production, and in scattered areas as a result of drought stress and the impacts of urbanization. Tennessee reported scattered BTB activity in loblolly pine stands in the eastern and western ends of the state. Alabama predicted an increase in BTB activity as a result of extensive hurricane damage in 2004 and 2005, but this effect has not yet manifested itself.

Buck moth, *Hemileuca maia*

Region 8: Louisiana

Hosts: Live oak and other hardwoods

Buck moth defoliation of live oak has been a problem in New Orleans for many years. The moth continues to be locally abundant in the city and of particular concern in the Federal Historic Districts. The insect population in Louisiana began declining in 2003; the larval populations in 2005 were low, with little obvious defoliation. The effects of flooding from this year's hurricanes may have a

profound effect on future population levels due to the stressed and weakened condition of the trees.

Cypress looper, *Anacamptodes pergracilis*

Region 8: Florida

Host: Baldcypress

Cypress loopers produced heavy defoliation in several stands at the Avon Park Air Force Range and surrounding areas in Florida during the summer.

Eastern tent caterpillar, *Malascoma americanum*

Region 8: Regionwide

Host: Cherry

Heavy infestations occurred over large areas of middle and eastern Tennessee. While defoliation in most areas was less than 50% and involved less than 50% of the trees in the stands, a few areas reported infestation and defoliation rates as high as 95%. Defoliation by this pest rarely causes serious or permanent damage.

Fall cankerworm, *Alsophila pometeria*

Region 8: Regionwide

Hosts: Various oak species

Minimal, localized activity was reported in the spring in post oak forests in central Texas, but caused no serious harm. Virginia reported 2,334 of light to moderate defoliation in Page and Rappahannock Counties.

Fall webworm, *Malascoma disstria*

Region 8: Regionwide

Hosts: Hardwoods

Heavy infestations in northern Tennessee caused partial defoliation of several thousand trees. Scattered defoliation also occurred in the central part of the state.

Forest tent caterpillar, *Malacosoma disstria*

Region 8: Kentucky, Louisiana, South Carolina, Texas

Hosts: Tupelo gum, upland hardwoods

In Louisiana, defoliation occurred on 165,000 acres of forested wetlands in Ascension, Livingston, St. James, and St. John Parishes in 2005. This defoliation was severe (>50%) on 79,500 acres, a decrease from the previous year. Kentucky reported large populations in several counties along the Ohio River, where feeding damage coupled with drought produced significant mortality. In Texas, light, scattered defoliation was noted along the Angelina River in Angelina and Nacogdoches Counties. Mature caterpillars were found along the lower Trinity River in Liberty County, but no defoliation was visible. In North Carolina, moderate defoliation was reported from approximately 640 acres in the Roanoke River National Wildlife Refuge. South Carolina reported severe defoliation on 392,453 acres in 12 counties (Beaufort, Berkeley, Charleston, Colleton, Dillon, Dorchester, Florence, Georgetown, Horry, Jasper, Marion and Orangeburg).

Jumping oak gall wasp, *Neuroterus saltatorius*

Region 8: Tennessee

Hosts: Oaks

Occurrence was reported in post oaks and white oaks from scattered locations across Tennessee, but only light damage resulted.

Locust leafminer, *Odontata dorsalis*

Region 8: Georgia, Kentucky, North Carolina, South Carolina, Tennessee, and Virginia

Host: Black locust

Locust leafminer activity was heavy in Virginia and northeastern Tennessee in 2005. North Carolina reported only light activity, and Kentucky reported it only as an aesthetic nuisance.

Nantucket pine tip moth, *Rhyacionia frustrana*

Region 8: Regionwide

Hosts: Loblolly pine, shortleaf pine

Texas reported a dramatic increase in tip moth activity until late summer in 2005; little mortality was noted. North Carolina reported heavier levels in plantations across the Coastal Plain, often in association with pitch canker. Tennessee reported only scattered, light infestations with no significant damage.

Oak leaf roller, *Archips semiferrana*

Region 8: Texas

Hosts: Various oak species

During the spring of 2005, heavy, localized populations of oak leaf rollers occurred over much of central Texas. No significant damage occurred.

Oak leaf tier, *Croesia semipurpurana*

Region 8: Tennessee

Hosts: various oak species

Scattered light defoliation was reported in middle Tennessee; no other significant occurrences were reported.

Orangestriped oakworm, *Anisota senatoria*

Spiny oakworm, *Anisota stigma*

Pinkstriped oakworm, *Anisota virginiensis*

Yellownecked caterpillar, *Datana ministra*

Region 8: North Carolina, Tennessee, Texas

Host(s): Various oak species

In east Texas, oakworm infestations were seen in numerous localized areas in September and October, causing a nuisance from their droppings but producing no significant impact on the trees. North Carolina reported scattered defoliation to landscape and shade trees. South Carolina reported scattered defoliation in the Piedmont. Tennessee reported moderate defoliation from parklands in the eastern part of the state. Heavy defoliation of oaks by pinkstriped oakworms was reported in south-central Florida during August and September.

Pine bark adelgid, *Pineus strobi*

Region 8: Virginia

Host: White pine

This pest was reported from sites throughout the range of white pine in 2005, including Madison, Green, Albemarle, Nelson, Carroll, Grayson, and Washington Counties. It is likely that drought stress and overstocking were common causes, with the adelgid populations expanding in response to trees in a weakened condition. However, significant decline and mortality are rare.

Pine colaspis beetle, *Colaspis pini*

Region 8: Louisiana, North Carolina, Virginia

Hosts: Southern pines, ornamental cypress

As in previous years, this beetle caused localized defoliation of pine plantations in eastern and central Louisiana. No significant damage occurred, but the defoliation is unsightly and causes landowner concerns, as small brown beetles causing reddening of pine needles is often confused with more serious bark beetle activity. Some mortality of ornamental cypress was noted in Louisiana during droughty periods. North Carolina reported scattered damage to longleaf pine in the Sandhills.

Pine engraver beetle, *Ips calligraphus*, *I. grandicollis*, *I. avulsus*

Region 8: Regionwide

Hosts: Loblolly pine, shortleaf pine, slash pine, Virginia pine

Pine engraver beetle activity was moderate across east Texas in 2005. The dry weather resulted in increased activity compared to 2004 during the late summer and fall months, but only localized problems were reported. North Carolina reported an increase in damage scattered throughout the Piedmont and Coastal Plain in association with drought. Virginia reported only scattered activity in Coastal Plain sites affected by earlier storms. Mississippi reported little *Ips* activity, but expressed concerns over population development in hurricane-affected areas in 2006. Florida reported a heavy infestation in one Christmas tree farm in Escambia County, defoliating about 700 Virginia pines. Georgia and Tennessee reported scattered small infestations as a result of dry weather late in the growing season.

Pine sawflies, *Neodiprion* spp., *Diprion* spp.

Region 8: Florida, Georgia, Louisiana, North Carolina, Tennessee, Texas, Virginia

Hosts: Southern pines

Infestations of pine sawflies were lower than in previous years in Georgia in 2005. Scattered sawfly damage was reported in Louisiana in 2005. North Carolina reported scattered heavy red-headed pine sawfly infestations in the Sandhills. South Carolina also experienced scattered sawfly activity on longleaf pine in the Sandhills. Tennessee reported continuing moderate loblolly pine sawfly activity in the central part of the state, with light and scattered redheaded pine sawfly activity in central and western forests. Redheaded pine sawfly damage was reported for the first time in several years in east Texas. Virginia reported only light, scattered defoliation, while a single infestation was reported in Arkansas.

Red oak borer, *Enaphalodes rufulus*

Region 8: Arkansas, Oklahoma, Virginia

Hosts: Northern red oak, southern red oak, black oak

Virginia reported widespread but locally heavy damage in 2005, evidently resulting from latent effects of past storms. Arkansas also reported continuing effects from the recent red oak borer outbreak there. (See also Oak decline, abiotic and biotic influences under Declines/Complexes).

Reproduction weevils, *Hylobius pales*, *Pachylobius picivorus*

Region 8: Regionwide

Hosts: Southern pines

Texas reported significant weevil damage from a single stand in Walker County in 2005. The feeding had been reported in December 2004 despite the site preparation and planting being carried out according to weevil-preventive recommendations; it is believed that windrows within the stand were the source of the infestation. North Carolina and Tennessee reported only scattered activity; South

Carolina also reported scattered activity in the Coastal Plain.

Southern pine beetle, *Dendroctonus frontalis*

Region 8: Regionwide

Hosts: Loblolly pine, shortleaf pine, slash pine, longleaf pine, Virginia pine, eastern white pine

The highest southern pine beetle (SPB) activity within the Region occurred in Alabama where a total of 4,444 spots were detected during the year and 18 counties in outbreak status. This primarily occurred in the southwestern portion of the state within the area impacted by Hurricane Ivan in 2004. This activity peaked in July and was declining by September. The other state with relatively significant activity was South Carolina where two counties were reported in outbreak status early in the summer, with a total of 2,388 spots. Similar to Alabama activity within the infestations declined and the outbreak was declared over in September.

Florida reported only seven spots totaling 15 acres and producing an estimated 31 MCF of mortality in pine timber. North Carolina reported only very low levels of SPB activity with 23 spots in three counties. Mississippi reported 95 spots, but conditions did not appear to indicate future problems. Tennessee reported only one spot reaching a size of 10 acres; other activity was light and involved only a few mature stands with very high basal areas.

Southern Pine Beetle



USDA Forest Service
Forest Health Protection
Asheville Field Office

Texas leaf-cutting ant, *Atta texana*

Region 8: Louisiana, Texas

Hosts: Southern pines and hardwoods

Localized defoliation of pine plantations occurs annually in east Texas and west central Louisiana on sites with deep, sandy soil. Populations of these ants remain relatively stable from year to year.

Production of Volcano® Leafcutter Ant Bait, which formerly provided excellent control of this insect, has been terminated.

Walnut caterpillar, *Datana integerrima*

Region 8: Florida, Tennessee

Host: Walnut, hickories

A widespread outbreak over northern and central Florida produced heavy to complete defoliation of hickories; hordes of wandering caterpillars prompted calls from many concerned homeowners in the area. Light defoliation of walnut was reported scattered throughout Tennessee.

Insects: Nonnative

Asian Ambrosia beetles, *Xylosandrus crassiusculus*, *Xylosandrus mutilatus*, *Xyleborus similis*

Region 8: *X. crassiusculus*: region-wide; *X. mutilatus*: Mississippi, Florida, and Texas;

X. similis has only been detected in the Houston, Texas area

Hosts: hardwoods

X. crassiusculus was introduced into the port of Charleston, SC in the 1970s and has spread throughout the south. It is known to attack a wide variety of trees and shrubs, including pecan, peach, plum, cherry, persimmon, oak, elm, sweet gum, magnolia, fig, buckeye, crape myrtle, and sweet potato. It is mainly a problem in oaks, cherries, and crape myrtles in nursery and landscape settings. It probably will attack other plants on which it has yet to be found.

X. mutilatus was first detected in Mississippi in 2002. Subsequent, south-wide detection surveys found it to be present in Texas and Florida. It is not known to attack live trees, but infests a wide variety of dead hardwood material.

X. similis was first detected in Houston, Texas in 2002. Additional surveys in Texas and other states have not found more specimens of this species, however it is assumed to be established in Texas. Its effects are unknown, but in all likelihood it is not attacking living trees.

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Red bay ambrosia beetle, *Xyleborus glabratus*

Region 8: Florida, Georgia, South Carolina

Host: Red bay, sassafras

Widespread mortality of red bay has been reported from coastal counties in Florida, Georgia, and South Carolina, centered on the Savannah area and involving a number of coastal barrier islands where red bay is an important vegetative component. *Xyleborus glabratus*, an Asian ambrosia beetle first detected in North America in 2002 near Savannah, has been implicated in this mortality. The beetles apparently are vectoring a blue stain fungus that threatens red bay, and may also destroy sassafras and other more widely distributed species. Further study of this insect/disease complex is scheduled for 2006.

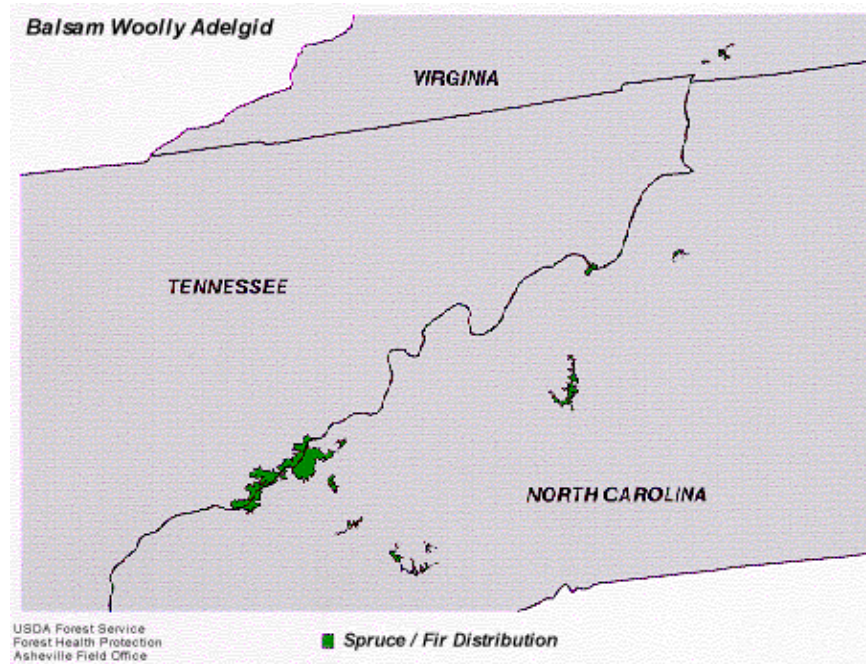
Balsam woolly adelgid, *Adelges picea*

Region 8: North Carolina, Tennessee, Virginia

Host: Fraser fir

Fraser fir has a very limited range in the southern Appalachian Mountains and appears almost exclusively in pure stands on the highest mountain peaks or in combination with red spruce at somewhat lower elevations. Since the introduction of the balsam woolly adelgid, approximately 64,700 acres of Fraser fir have been affected. The insect attacks all age classes, but prefers older trees. The summer of 2003 witnessed high adelgid populations in all infested areas, and scattered

mortality was observed in 2004 and 2005. It is expected that most wild fir populations will undergo another mortality and regeneration cycle within the next five to ten years.



Emerald ash borer, *Agrilus planipennis*

Region 8: Virginia

Trap tree surveys and visual inspections concentrated in Fairfax and Prince William Counties, VA revealed no signs of infestations in 2005. Surveys in a number of other Southern states also produced negative results.

Gypsy moth (European), *Lymantria dispar*

Region 8: Arkansas, Georgia, Kentucky, North Carolina, Tennessee, Virginia

Hosts: Hardwoods, especially oak species

Suppression: There were no gypsy moth suppression projects in Virginia in 2005. Subsequently, that state reported light to moderate defoliation on approximately 6,543 acres in Frederick, Giles, Montgomery and Floyd Counties in the western mountains of the state. Approximately half of the defoliation occurred on the George Washington-Jefferson National Forest. The small increase of gypsy moth defoliation is consistent with the general trend in defoliation throughout the Northeast.

Slow-The-Spread (STS): In conjunction with the STS program, treatments were conducted on 47,890 acres of non-federal lands in North Carolina, and on 73,464 acres of non-federal land, 1,872 acres of National Park Service land, and 10,812 acres of national forest lands in Virginia. The majority of the treatments were specific to the gypsy moth: mating disruption accounted for 90% and Gypchek for another 5%. Since the inception of this program in the South, spread rates have been reduced from an average of 21 km per year to less than 5 km per year, a reduction of more than 75%.

Eradication: North Carolina conducted a 32,000 acre eradication project in Burke County in the western Piedmont region of the state. This area was treated with two applications of *Bacillus thuringiensis* var. *kurstiki* (*B.t.k.*). Post-treatment evaluation using pheromone traps showed continued gypsy moth populations to the northwest and south of the 2005 treatment area. In addition

to treatment of these areas, eradication projects are planned for Henderson and Clay Counties in 2006.

In Tennessee, the continuation of an eradication project was conducted in Claiborne County in the northeastern part of the state. Approximately 5,700 acres were treated with two applications of *B.t.k.* This project began in adjacent Campbell County in 2002 and treatments have steadily moved eastward each year. Post-treatment trapping results showed only three positive trap catches and do not indicate a need for treatment in 2006. However, two years of negative trapping are required before the infestation can be declared eradicated.

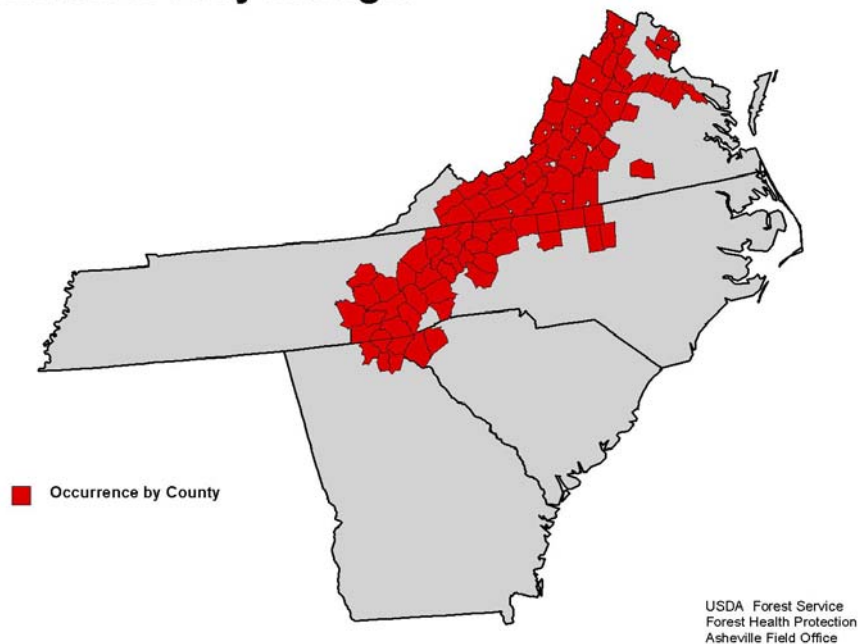
Hemlock woolly adelgid, *Adelges tsugae*

Region 8: Georgia, North Carolina, South Carolina, Tennessee, Virginia

Hosts: Carolina hemlock, Eastern hemlock

Hemlock woolly adelgid populations continue to rapidly expand their range in the Southeast. In Virginia, the infested range was extended into Tazewell and Russell Counties, leaving only four southwestern VA counties uninfested. Populations spread and intensified in Georgia, North Carolina, South Carolina and Tennessee, the latter reporting three new infested counties. North Carolina, Georgia, Tennessee, and South Carolina experienced their first adelgid caused mortality in 2005. Efforts at chemical control continued on a limited basis on several National Forests and in the Great Smoky Mountains National Park, and Blue Ridge Parkway. The rearing and release of various adelgid predators was expanded.

Hemlock Woolly Adelgid



Lobate lac scale, *Paratachardina lobata lobata*

Region 8: Florida

Hosts: *Melaleuca*; over 100 other woody species

This pest, native to India and Sri Lanka, is being controlled biologically by the introduction of natural insect predators, even though it is not currently causing damage to native vegetation. While the damage to *Melaleuca*, itself an invasive non-native species, is not generally considered to be a problem, concerns remain over potential spread of the scale to native species.

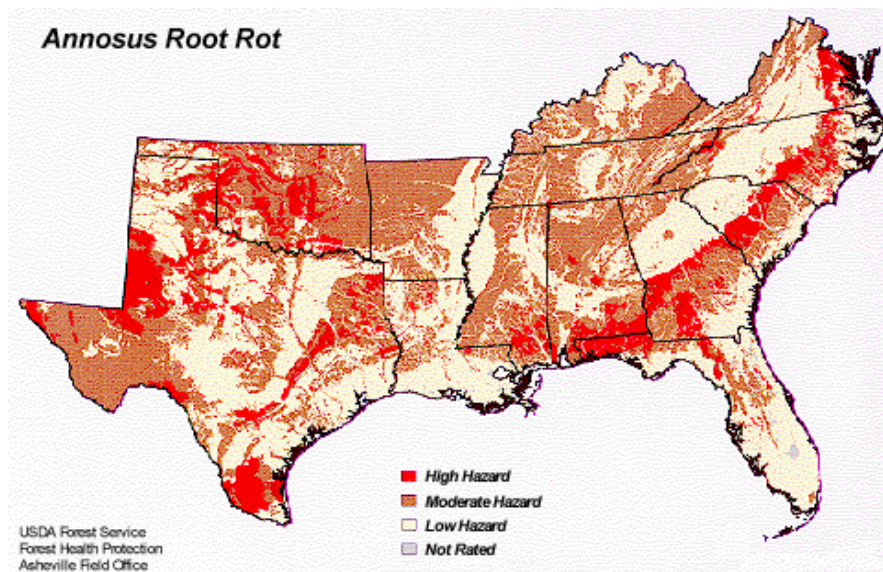
Diseases: Native

Annosum root disease, *Heterobasidion annosum*

Region 8: Regionwide

Hosts: Southern pines

Localized, scattered annosum mortality occurred in east Texas in 2005, but did not cause significant problems. Alabama reported no significant change, but the disease remains a prevalent problem statewide, especially in Conservation Reserve Program plantations damaged by storms. North Carolina also reported scattered problems statewide. Georgia reported increasing incidence of annosum due to the large acreage of young pine plantations that have been thinned in recent years; annosum caused the greatest amount of disease-related mortality of pines in Georgia in 2005. In South Carolina, surveys indicated damage in 29 counties, with an estimated 51,820 acres affected and financial losses totaling \$1,865,520.



Ash anthracnose, *Discula fraxinosa*

Region 8: Tennessee

Host: Ash

Reduced infection levels were reported in middle Tennessee than in 2004, with less than 10% defoliation of infected trees.

***Cercospora* needle blight, *Cercospora* sp.**

Region 8: South Carolina

Host(s): Leyland cypress

Cercospora needle blight continued to be a problem in South Carolina in 2005. Fungicidal control has been suggested for growers experiencing problems with this disease. North Carolina also reported scattered problems across the state. The lack of genetic variation in Leyland Cypress due to asexual propagation is believed to contribute to disease problems in this species.

Fusiform rust, *Cronartium quercuum* f. sp. *fusiforme*

Region 8: Regionwide

Hosts: Southern pines, especially loblolly and slash pines

Fusiform rust continues to be the most significant disease of loblolly and slash pine in the South. Virginia reported unprecedented levels of fusiform rust in plantations statewide, apparently as a result of uncontrolled infections in nursery stock used for outplanting. Although infection rates ranged from 3% to 15%, few stands were impacted enough to require replanting. South Carolina reported scattered rust infections to be a continuing serious problem. In Florida, comparisons of fusiform rust levels in longleaf pine and both “improved” and “rust-resistant” slash pine sold by the Florida Division of Forestry showed that infection levels were significantly lower in “rust-resistant” than in “improved” slash pine, while longleaf pine showed the lowest overall levels of infection. The Resistance Screening Center in Asheville, NC continues to screen seed lots for fusiform rust resistance. Texas reported moderate levels of rust in scattered locations, but noted that infection levels have declined in recent years.

Hypoxylon canker, *Hypoxylon* spp.

Region 8: Regionwide

Hosts: Oaks

Higher than normal levels of hypoxylon canker were reported in eastern Virginia as declining trees impacted by earlier storms began to succumb to secondary infections. North Carolina and Tennessee also reported scattered infections, associated with drought. This disease continues to be a frequent component in the general epidemic of oak decline in the oak forests of Arkansas.

Littleleaf disease, *Phytophthora cinnamomi*

Region 8: Alabama, Georgia, Kentucky, North Carolina, South Carolina, Tennessee, Virginia

Hosts: Loblolly pine, shortleaf pine

Littleleaf disease continues to cause growth loss and mortality across the Piedmont areas of the affected states. Shortleaf pine is highly susceptible while loblolly pine is affected, but at a later age. Many of the stands that were converted from shortleaf to loblolly pine to reduce the impact of this disease are now reaching the age of susceptibility. Bark beetles often attack these stands once they have been weakened by this root disease. Some moderation of littleleaf symptoms over time has been reported. It is believed that root penetration of soil hardpans and gradual increases in soil porosity due to increasing biological activity on previously severely eroded sites will gradually reduce the impact of this disease over a period of a century or more. Alabama reported a slight increase in observations

of littleleaf in loblolly pine stands, but it was not considered significant. In North Carolina, reports of the disease are confined to Piedmont stands of shortleaf pine.

Oak wilt, *Ceratocystis fagacearum*

Region 8: North Carolina, Tennessee, Texas, Virginia

Hosts: Live oak, red oaks

Oak wilt continues to affect more than 60 central Texas counties, mostly between Dallas and San Antonio. Urban, suburban and rural oaks are affected. Live oak, the premier shade tree species in the region and highly valued for beauty, shade, and wildlife benefits, was severely impacted by the disease. Trenches dug between healthy and diseased trees severed interconnected root systems and helped to halt the spread of the disease. During 2005 (the eighteenth year of the cooperative suppression project), approximately 147,000 feet of trenching was installed around 109 oak wilt centers. Aerial surveys to locate new oak wilt centers were carried out on 2.3 million acres. On-site inspections were carried out by field personnel, and integral public information and assistance campaigns continued. Although this problem is also known to be widespread in the mountains of southwestern Virginia, only one report was received from this area. Oak wilt levels have remained essentially unchanged in North Carolina since 1955, with activity in six counties.

Pine needle cast, *Hypoderma* sp., *Lophoderma* sp.

Region 8: Tennessee

Host: Loblolly pine

Increasing incidence of needlecast was reported from plantations in both eastern and western Tennessee.

Pine needle rust, *Coleosporium* spp.

Region 8: Texas, Tennessee

For the first time in several years, pine needle rust was reported in many areas of east Texas in the early summer of 2005. Visible symptoms of this disease cause concern to landowners, but produce little significant damage. Tennessee also reported light incidence of this rust in the eastern and western ends of the state.

Ploioderma needlecast, *Ploioderma lethale*

Region 8: Virginia

Host: Loblolly pine

This disease was very severe (aesthetically) and widespread throughout the Virginia Coastal Plain during April and May, particularly on loblolly pine. Although actual damage was minimal, the appearance of brown foliage during the spring produced many inquiries from landowners. Unusually cool spring weather may have triggered this outbreak.

Diseases: Non-native

Beech bark disease, *Nectria coccinea* var. *faginata*

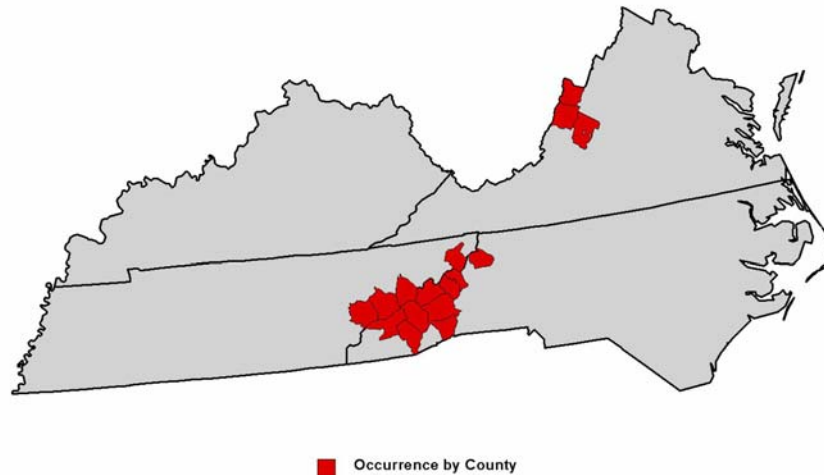
Region 8: North Carolina, Tennessee, Virginia

Hosts: American beech

Beech bark disease (BBD) continues to intensify and spread in eastern Tennessee, western North Carolina, and extreme West-Central Virginia. New infections were detected in Carter County, Tennessee and Watauga County, North Carolina. Tree mortality is a continuing problem in and

around the Great Smoky Mountains National Park. The disease has intensified at a faster rate than predicted, and is moving down-slope into the Cherokee and Pisgah National Forests. Beech is an important species for wildlife, providing both mast and den habitat.

Beech Bark Disease



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Dutch elm disease, *Ophiostoma ulmi*

Region 8: Regionwide

Hosts: American elm

Localized mortality due to Dutch elm disease continues to occur at a low level of severity in urban and wild populations of elm throughout the region. Tennessee reported an increase in disease incidence, which is affecting saplings and larger trees.

Sudden oak death, *Phytophthora ramorum*

Region 8: Not yet known

Hosts: Red and possibly some white oaks, rhododendrons, and numerous other species.

Sudden oak death (SOD) is a disease of concern that has been introduced to California, Oregon and Washington, with potential to be spread into the Southeast through importation of infected nursery stock. A pilot survey to locate the disease if present in the South was initiated in 2003 and was continued in 2004 and 2005. No SOD-positive specimens have yet been found in native forest vegetation in the South.

Sycamore anthracnose, *Discula platani*

Region 8: Tennessee

Host: Sycamore

Infection rates of sycamore were reported as less than 25% in middle Tennessee and less than 50% in the eastern portion of the state.

White pine blister rust, *Cronartium ribicola*

Region 8: North Carolina

Host: Eastern white pine

White pine blister rust continues to be a disease of concern for North Carolina landowners. The northwestern mountains are an area of particularly high hazard. The disease can be especially devastating to growers of ornamentals and Christmas trees, many of whom are centered in this area. The North Carolina Division of Forest Resources continues to review seedling applications for white pine seedlings and to screen or examine areas prior to planting.

Diseases: Origin Unknown

Bacterial leaf scorch, *Xylella fastidiosa*

Region 8: Tennessee

Hosts; Sycamore, pin oak

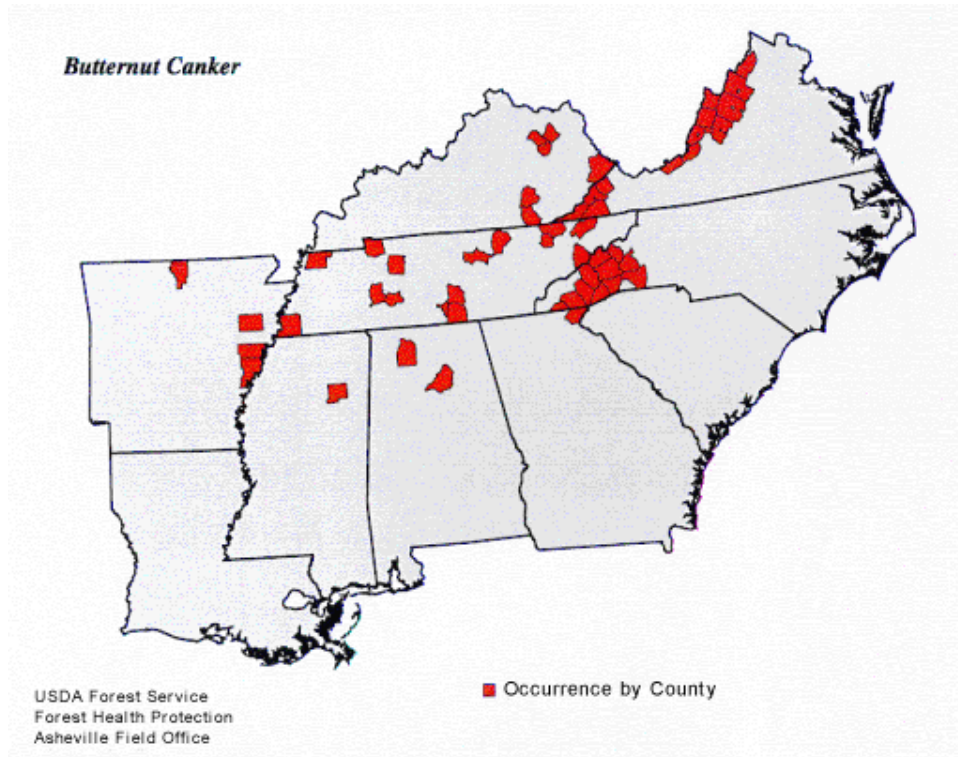
Incidence of this leaf scorch was reported to be increasing in middle and eastern Tennessee, with symptoms becoming apparent in late summer.

Butternut canker, *Sirococcus clavigigenti-juglandacearum*

Region 8: Regionwide

Hosts: Butternut

This disease has been present in the South for at least 40 years and is believed to have killed more than 75% of the butternut across the region. The fungus kills trees of all ages. Butternut canker is expected to spread and kill most of the resource, including regeneration. The species will be replaced by other species (e.g., black walnut). It is too early to predict the benefits of selection and breeding on developing resistance to the disease, but trees exhibiting resistance have been found in Arkansas, North Carolina, Tennessee, Kentucky and Virginia.



Dogwood anthracnose, *Discula destructiva*

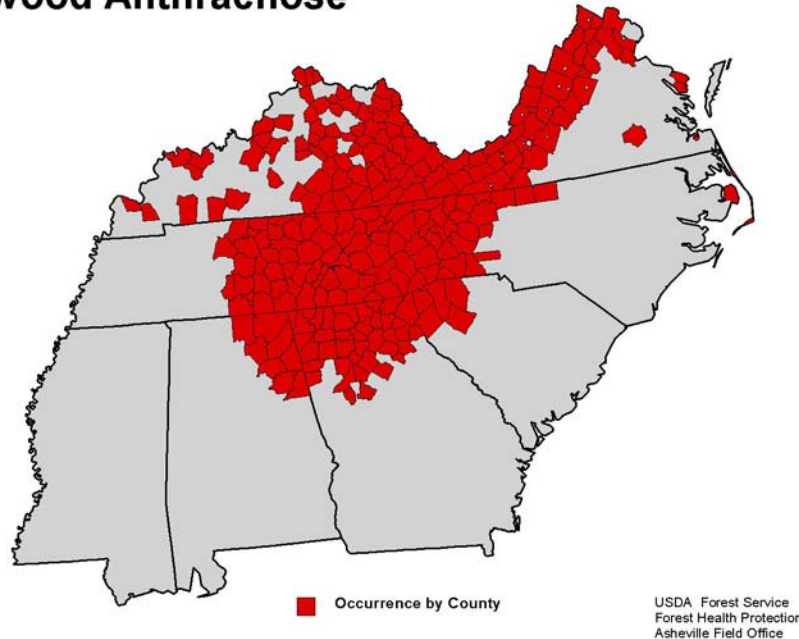
Region 8: Alabama, Georgia, Kentucky, North Carolina, South Carolina, Tennessee, Virginia

Host: Flowering dogwood

The disease continues to intensify within the generally infested area. North Carolina reports continuing mortality attributable to dogwood anthracnose in mountain counties. In 2005 there were no reports of additional counties being impacted. The number of confirmed infected counties in the region is as follows:

<u>State</u>	<u>Counties</u>
GA	38
KY	64
NC	30
SC	6
TN	59
<u>VA</u>	<u>48</u>
Total	245

Dogwood Anthracnose



Pitch canker, *Fusarium circinatum*

Region 8: Regionwide

Hosts: Southern pines

Pitch canker was reported in several counties in east Texas in the spring of 2005, with the heaviest damage in Shelby County. Infections were also reported in loblolly pine stands in Polk County. Problems with the disease also continued in Louisiana and Mississippi, involving some large areas experiencing both top-kill and complete mortality. North Carolina reported scattered infections of pitch canker on shortleaf pine in the Piedmont, possibly as a result of storm damage. Tennessee reported increasing infection rates from plantations in the eastern part of the state. Scattered infections were also reported from South Carolina and Virginia. Georgia reported a significant increase in pitch canker in six southern counties that were heavily impacted by hurricanes in 2004. While mortality was generally less than 5%, many stands had significant dieback on one-third or more of the trees.

Declines/Complexes

Decline of loblolly pine, *abiotic and biotic influences*

Region 8: Alabama, Georgia, South Carolina

Host(s): Loblolly pine

Premature decline of loblolly pines is occurring on many, predominantly upland, sites with history of previous agriculture which are not well suited for long term management of loblolly pine.

Oak decline, abiotic and biotic influences

Region 8: Regionwide

Hosts: Oaks, other hardwoods

The oak resource in the southern United States is significant. Approximately two-thirds of the hardwood forest is classified as upland hardwood, where a malady known as “oak decline” is prevalent. Oak decline has been reported in the United States for over 130 years. It is a syndrome that involves the interaction of factors such as climate, site quality, and tree age; drought and insect defoliation escalate the condition by putting trees under additional stress. Pests such as armillaria root disease and the two-lined chestnut borer, which are ordinarily non-aggressive pests on vigorous trees, successfully attack trees stressed by oak decline. Decline is characterized by a gradual but progressive dieback of the crown. Mortality typically results after several years, with mature overstory trees the most heavily affected.

Virginia reported widespread oak decline due to drought and unusually high temperatures; the problem was most notable in Coastal Plain sites impacted by storms and flooding in recent years. Mortality was highest in trees with the greatest exposure, including yard and landscape trees, and is expected to continue for the foreseeable future. In South Carolina, oak decline continues to affect substantial acreage of red oak stands, especially those subject to water table fluctuations. Similar damage was reported from scattered sites in North Carolina and Kentucky. In north central Arkansas and northeastern Oklahoma, widespread oak decline caused mortality is still prevalent. Although the severe drought stress which incited its occurrence there has abated, mortality and dieback have continued to increase, with 40% of the red oak basal area now dead in severely affected stands. Tennessee reported increasing incidence of oak decline in northeastern counties.

White pine decline, abiotic, *Leptographium procerum*, *Phytophthora* spp., *Pissoides* sp.

Region 8: Virginia

Scattered isolated landscape trees and small clusters of planted Christmas trees were reported to display mortality caused by white pine decline in 2005. The decline is often difficult to diagnose, but in some cases the pathogens can be isolated from diseased trees. Feeding by weevils around the root collars of infected trees has also been observed, but it is not known whether the weevils vector the disease.

Seed Orchard Insects and Diseases

Coneworms, *Dioryctria amatella*, *D. clarioralis*, *D. disclusa*, *D. merkeli*

Region 8: Regionwide

Hosts: Southern pines

Surveys indicated an average 30% loss of second-year cones (2005 cone crop) in untreated trees. Damage levels in slash pine orchards were similar to those in loblolly pine seed orchards. This loss does not include first-year flowers and conelets that fall off or disintegrate during the season and is, therefore, a low estimate of the total damage caused by coneworms. Moderate and unexpected damage to treated orchards occurred throughout the South, including orchards in east Texas, central Alabama, and southern Georgia, indicating higher than average populations. Virginia reported only minimal (<5%) cone losses in orchards with routine spray programs.

Pitch canker, *Fusarium circinatum*

Region 8: Regionwide

Hosts: Southern pines

Damage to second-year cones (2005 crop) was reported throughout the South. Crops from susceptible clones were severely damaged, with some orchards reporting losses as high as 90%. Extensive damage was reported from a few orchards in Alabama, Louisiana, and North Carolina.

Seedbugs, *Leptoglossus corculus*, *Tetyra bipunctata*

Region 8: Regionwide

Hosts: Southern pines

Both species of seedbug were present in pine seed orchards throughout the South. Samples of conelet ovule damage indicated that seedbugs, primarily *L. corculus*, caused about 25% seed loss on untreated loblolly in Louisiana. Large populations of *T. bipunctata* occurred in September and October in orchard trees monitored in Louisiana. In Texas, unsprayed pine seed orchards sustained about 23% damage. These estimates probably reflect those throughout the Gulf Coast states.

Southern cone gall midge, *Cecidomyia bisitosa*

Region 8: Florida

Hosts: Slash pine

This species caused significant localized loss of conelets in northern Florida slash pine seed orchards in 2005.

Abiotic damage – hurricane

Region 8: Alabama, Florida, Louisiana, Mississippi, Texas

Hosts: Southern pines

Damage to Southern pine seed orchards occurred in 2005 as a result of Hurricanes Katrina and Rita. Katrina was catastrophic to some orchards; the Erambert Seed Orchard (De Soto NF, Wiggins MS) was extensively damaged, as was a commercial seed orchard in Louisiana. Many of the first-generation trees were lost, either to uprooting or to crown breakage. New orchard blocks with younger trees (generally less than 8" DBH) were much less severely impacted. Rita caused moderate damage to seed orchards in east Texas and southwestern Louisiana.

Nursery Insects and Diseases

Damping-off, *Fusarium* sp., *Pythium* sp., *Phytophthora* sp., and *Phytophthora* sp.

Region 8: Regionwide

Hosts: Pines, hardwoods

Damping-off continued to be one of the most common disease problems of nurseries in the South.

Nematodes, *Tylenchorhynchus claytoni* and *ewingi*, *Paratrichodorus minor*

Region 8: Several nurseries Regionwide

Hosts: Pines

Patches of stunted seedlings occurred in some fields the second year after fumigation.

Phytophthora root rot, *Phytophthora cinnamomi*

Region 8: North Carolina

Hosts: Fraser fir

Phytophthora root rot affected the end of a field. Infested seedlings were destroyed fungicides were used to protect healthy seedlings remaining in the beds.

Pitch canker, *Fusarium subglutinans*

Region 8: Tennessee and Florida

Hosts: Virginia, white, and slash pines

Low levels of infection were reported at nurseries in the late summer and fall.

Rhizoctonia needle blight, *Rhizoctonia sp.*

Region 8: Regionwide

Hosts: Longleaf pine seedlings

Little *Rhizoctonia* damage was noted in 2005 due to less bare root longleaf pine production in the region and fungicide spray programs.

Animal Damage

Beavers, *Castor canadensis*

Region 8: South Carolina

Host(s): Primarily lowland hardwoods

All but three South Carolina counties experienced some forest loss to beavers in 2005. The majority of this damage was in hardwood stands. The SC Forestry Commission estimated that 13,950 acres were affected, representing 279,000 cords valued at \$5.02 million. New mortality due to beaver impoundments continued to increase, due in large part to increased spring precipitation.

Nutria, *Myocaster coypus*

Region 8: Louisiana

Nutria continue to frustrate reforestation efforts on wetland sites, especially those in which baldcypress is planted to restore environmental damage. Several plantings in southeastern Louisiana were decimated in 2005, requiring re-planting or abandonment of the sites.

Voies, *Microtus spp.*

Region 8: South Carolina, Tennessee, Virginia

Hosts: Loblolly pine, cherrybark oak

Virginia reported that voles had caused considerable amounts of damage in 1- to 5-year-old loblolly pine stands throughout the state, with the greatest impacts in the southwestern part of the state. Almost 1,400 acres of damage was reported from 20 tracts; some entire plantations were destroyed. Alabama reported some vole damage in pine plantations, but there was no significant change from previous years. Tennessee reported approximately 1500 acres of vole damage to pine and oak seedlings.

Invasive Exotic Plants

Bush Honeysuckle, *Lonicera morrowii*

Region 8: Tennessee

Bush honeysuckle was reported to be choking out native vegetation in several areas of central Tennessee in 2004 and 2005.

Cogongrass, *Imperata cylindriclata*

Region 8: Alabama, Florida, Georgia, Louisiana, Mississippi, South Carolina, Texas

Cogongrass has gained increased attention for its impact on natural and silvicultural systems. Large infestations in northwest and central Florida are impacting reforestation, seedling survival, wildlife habitat, and timber management. Large infestations in Mississippi are impacting forested areas prompting the establishment of an aggressive control program on both private and public lands. Other states are also experiencing growing problems with this species. Large infested areas continue to flourish in southwestern Alabama; the establishment of an Invasive Plant Control Program in that state has begun to provide financial aid to control this species on non-industrial private forest lands.

Giant Asian Dodder, *Cuscuta japonica*

Region 8: Texas

Hosts: Various, host range undetermined

One new infestation was found and treated in Houston in 2005; all other known sites have been eradicated. A cooperative effort between the Texas Forest Service, Texas A&M University, the City of Houston, and the U.S. Forest Service is focused both on eradication of, and the dissemination of information regarding, this species.

Japanese climbing fern, *Lygodium japonicum*

Region 8: Alabama, Florida, Georgia, Louisiana, Mississippi

The return of normal precipitation levels in 2003 and 2004 was correlated with a significant increase in reports of Japanese climbing fern occurrence in central and northern Florida. Hurricane-caused disturbances in 2004 and 2005 also favored the spread of this species. The spore-related dispersal of *Lygodium* is raising concerns over the spread of this plant through movement of contaminated persons, equipment, and forest products. The impact on the Florida pine straw industry is of particular concern. Alabama is investigating the problems caused by this species, but to date there has been no change in its status in the state.

Melaleuca, *Melaleuca quinquenervia*

Region 8: Florida

This non-native forest canopy tree affecting much of south Florida for the past 70+ years has been significantly influenced by the release of two insect biological control agents which target this invasive tree. The impacts of the melaleuca weevil, *Oxyops vitiosa* (released in 1998) and the melaleuca psyllid, *Boreioglycaspis melaleucae* (released in 2002) on flowering and new growth have become visibly apparent throughout south Florida.

Old World climbing fern, *Lygodium microphyllum*

Region 8: Florida

Biannual surveys of Old World climbing fern conducted by the South Florida Water Management District indicated population expansion from 27,000 infested acres in 1993 to 109,000 infested acres in 1999. Expansion has continued through 2005, with affected plant communities ranging from cypress domes to pine flatwoods across central and south Florida.

Abiotic Damage

Air pollution

Region 8: Tennessee

Hosts: all species

Tennessee experienced moderate ozone damage on the Cumberland Plateau.

Drought

Region 8: Georgia, North Carolina, Oklahoma, South Carolina, Texas, Virginia

Drought conditions prevailed across eastern Texas and Oklahoma through the summer and fall, with only slight and localized relief from Hurricane Rita in Texas. By November, Lufkin TX was 12" below long-term precipitation averages. Much of the Southeast experienced at least moderate and localized drought, with little rain outside of the areas influenced by hurricanes and episodic severe thunderstorms. The central Piedmont of North Carolina was impacted, forcing the state to implement water use restrictions in Durham, Orange, and Wake Counties. South Carolina was reporting extensive drought-induced hardwood foliar die-back by mid-summer. In Virginia, drought and unusually high temperatures from June through September produced defoliation and mortality in oaks and hickories in several counties, particularly along ridge lines. Tennessee reported late summer brown-up and premature leaf drop on hardwoods in central and eastern stands with shallow soils. Georgia reported widespread stress-induced forest injury from the combination of flooding spring rains followed by extreme summer drought.

Fire

Region 8: Regionwide

Hosts: All species

In Texas, the fall fire season was one of the most serious in many years, and major flare-ups occurred during the final week of the year and continued into 2006, with effects that will not be tabulated for some time. Oklahoma also experienced a disastrous end-of-year fire season, with widespread losses to forests and grasslands as well as major destruction of homes and property and loss of life. No figures on these losses are currently available because of the continuing involvement of all available Forestry Division personnel in the on-going crisis. In contrast, Alabama reported a continuing trend in the decrease in wildfire incidence statewide.

Frost

Region 8: Tennessee

Hosts: hardwoods

Widespread frost damage was reported from two spring episodes in upper east Tennessee in 2005, affecting sycamore in drains and oak/hickory stands above 2,400 feet in elevation. The frosts also delayed insect emergence by about one week in this area.

Ice/Snow

Region 8: Regionwide

Hosts: Southern pines and hardwoods

South Carolina experienced an ice storm in late December 2004, generating an estimated \$1,082,000 worth of damage to pine pulpwood stands in six counties that could not be assessed until 2005. On March 31, a hail storm damaged about 2,000 acres in Panola County, TX. By late summer, considerable mortality was visible on pines of all sized classes in this area.

Wind

Region 8: Alabama, Louisiana, Mississippi, Texas, North Carolina

Hosts: Southern pines and hardwoods

In 2005 Hurricanes Katrina and Rita, striking in rapid succession, caused extensive damage to property, forests, and living conditions, as well as significant loss of life. In Louisiana, Katrina produced severe forest damage in portions of Washington, St. Tammany, and Tangipahoa Parishes, with lesser damage in St. Bernard, Plaquemines, St. Charles, St. Helena, Livingston, Jefferson, and

St. James Parishes. Aerial sketch-mapping indicated more than 200,000 acres of blown-down timber, exclusive of urban and suburban trees. Estimates of commercial timber losses are incomplete, but are currently set at approximate 3.0 billion BF. Much of this timber will decay on-site before salvage can be affected. Effects were generally less to baldcypress than to other species. Future fire and insect problems can be expected to be exacerbated in areas with significant uprooting and breakage; effects from salinity due to storm surge flooding are also expected to become more apparent in 2006. Damage to non-timber values, including recreation and wildlife habitat, have yet to be evaluated.

In Louisiana, Rita caused extensive wind damage in Cameron and Vermillion Parishes, but because of land use patterns, this produced little commercial timber damage. There was extensive moderate to light timber blow down in Calcasieu, Beauregard, Allen, and Vernon Parishes. Acreage estimates are not yet available, but estimates based on FIA data indicate losses of approximately 1.4 billion BF. In Texas, Orange, Jasper and Newton Counties were hardest hit, but damage was seen as far inland as Angelina County. An estimated 771,000 acres of forest land were impacted, with anticipated losses of 967 million CF of timber valued at \$833 million. Mississippi reported damage both from hurricanes and from numerous associated tornados. Damage was most widespread in the southern third of the state. Alabama reported minor flooding and scattered wind damage from tornados and thunderstorms spun off by Hurricane Katrina. North Carolina reported limited forest damage along the coast from Hurricane Ophelia.

Saltwater intrusion/subsidence/erosion

Region 8: Alabama, Louisiana, Mississippi, Texas

Host(s): Cypress-tupelo

In addition to the detrimental effects of defoliating insects (see forest tent caterpillar and bald cypress leafroller entries), erosion, subsidence, and lack of sedimentation affect the Louisiana coastal wetlands resulting in widespread mortality, particularly of cypress-tupelo stands. Thousands of acres have been lost and more are being lost annually. National attention is increasingly being focused on this issue and a number of projects are attempting to mitigate and reverse conditions leading to loss of forested wetlands and marshlands.

The extensive storm surges produced by Hurricanes Katrina and Rita flooded much of the coastal lowlands from Mobile to Galveston, often extending inland for several miles. Because hurricane winds defoliated much of this area, the full extent of forest damage and mortality will not be apparent until the spring of 2006, but effects are expected to be widespread and severe. The maritime forest in this area is important as a haven for neotropical migrant birds as well as for its scenic and recreational values and the impact on non-timber resources is expected to be both extensive and long-lasting.

2005 Conditions Report Tables

Southern Pine Beetle Activity by State and Year

State	Acres in Outbreak Status - 2004	Number of Spots - 2004
Alabama	2,182,900	1,503
Arkansas	0	0
Florida	0	16
Georgia	0	79
Kentucky	0	0
Louisiana	0	0
Mississippi	0	111
North Carolina	0	5
Oklahoma	0	0
South Carolina	500,654	4,178
Tennessee	0	255
Texas	0	0
Virginia	0	0

Total 2,683,554 6,115

State	Acres in Outbreak Status - 2005	Number of Spots - 2005
Alabama	2,604,000	4,444
Arkansas	0	0
Florida	0	7
Georgia	0	0
Kentucky	0	0
Louisiana	0	0
Mississippi	0	95
North Carolina	0	23
Oklahoma	0	0
South Carolina	241,000	2,388
Tennessee	0	5
Texas	0	0
Virginia	0	0

Total 2,845,000 6,962

FOREST PEST INFORMATION SYSTEM (FPIS) 2005

Region: 8 Date: 1/23/3006 Name of Preparer: Brown

Pest	State	Land Ownership Class	Acres Infested (thousands; 1 decimal)	Volume Killed (MCF; 1 decimal)	Number of Trees Killed (thousands; 1 decimal)	Number of Southern Pine Beetle Spots
FR	AL (1990)	1	7.1	N/A	N/A	N/A
		2	0.0	N/A	N/A	N/A
		3	1,704.2	N/A	N/A	N/A
FR	AR (1995)	1	4.9	N/A	N/A	N/A
		2	0	N/A	N/A	N/A
		3	280.5	N/A	N/A	N/A
FR	FL (1995)	1	35.3	N/A	N/A	N/A
		2	6.8	N/A	N/A	N/A
		3	1,426.3	N/A	N/A	N/A
FR	GA (1989)	1	38.0	N/A	N/A	N/A
		2	102.8	N/A	N/A	N/A
		3	4,452.9	N/A	N/A	N/A
FR	LA (1991)	1	85.0	N/A	N/A	N/A
		2	18.4	N/A	N/A	N/A
		3	1,554.9	N/A	N/A	N/A
FR	MS (1994)	1	118.0	N/A	N/A	N/A
		2	60.0	N/A	N/A	N/A
		3	1,043.0	N/A	N/A	N/A
FR	NC (1990)	1	4.9	N/A	N/A	N/A
		2	7.8	N/A	N/A	N/A
		3	956.2	N/A	N/A	N/A
FR	OK (1993)	1	0.0	N/A	N/A	N/A
		2	0.0	N/A	N/A	N/A
		3	33.9	N/A	N/A	N/A
FR	SC (1993)	1	46.0	N/A	N/A	N/A
		2	59.0	N/A	N/A	N/A
		3	1,332.2	N/A	N/A	N/A
FR	TX (1992)	1	21.8	N/A	N/A	N/A
		2	0.0	N/A	N/A	N/A
		3	397.3	N/A	N/A	N/A
FR	VA (1992)	1	0.0	N/A	N/A	N/A
		2	0.0	N/A	N/A	N/A
		3	59.3	N/A	N/A	N/A
GM	VA	1	0.0	0	0	0
		2	0.0	0	0	0
		3	0.0	0	0	0
SPB	AL	1	0	112.5	1	109
		2	0	0	0	0
		3	2604	5013.8	140.6	4,335
SPB	AR	1	0	0	0	0
		2	0	0	0	0
		3	0	0	0	0
SPB	FL	1	0	0	0	0
		2	0	0	0	0
		3	0	5.0	0	7
SPB	GA	1	0	0	0	0
		2	0	0	0	0

		3	0	0	0	0
SPB	KY	1	0	0	0	0
		2	0	0	0	0
		3	0	0	0	0
SPB	LA	1	0	0	0	0
		2	0	0	0	0
		3	0	0	0	0
SPB	MS	1	0	65.2	1	80
		2	0	0	0	0
		3	0	0	0	15
SPB	OK	1	0	0	0	0
		2	0	0	0	0
		3	0	0	0	0
SPB	NC	1	0	0	0	5
		2	0	0	0	0
		3	0	154.8	7.0	23
SPB	SC	1	0	0	0	1
		2	0	0	0	0
		3	241	2,460.8	40.7	2,387
SPB	TN	1	0	0	0	35
		2	0	0	0	0
		3	0	0	0	5
SPB	TX	1	0	0	0	0
		2	0	0	0	0
		3	0	0	0	0
SPB	VA	1	0	0	0	0
		2	0	0	0	0
		3	0	0	0	0

2005 MAP DATA (COUNTIES WITH PEST OCCURRENCE)

Southern pine beetle

	State	County	Total Spots	Status	FIPS
1	Alabama	Autauga	106	Epidemic	01001
2	Alabama	Baldwin	8		01003
3	Alabama	Barbour	28		01005
4	Alabama	Bibb	168	Epidemic	01007
5	Alabama	Bullock	10		01001
6	Alabama	Butler	201	Epidemic	01013
7	Alabama	Chilton	186	Epidemic	01021
8	Alabama	Choctaw	407	Epidemic	01023
9	Alabama	Clarke	323	Epidemic	01025
10	Alabama	Clay	5		01027
11	Alabama	Cleburne	2		01029
12	Alabama	Conecuh	125	Epidemic	01035
13	Alabama	Coosa	11		01037
14	Alabama	Covington	11		01039
15	Alabama	Crenshaw	22		01041
16	Alabama	Dallas	400	Epidemic	01047
17	Alabama	Elmore	18		01051
18	Alabama	Escambia	7		01053
19	Alabama	Geneva	1		01061
20	Alabama	Greene	100	Epidemic	01063
21	Alabama	Hale	157	Epidemic	01065
22	Alabama	Lawrence	1		01079
23	Alabama	Lowndes	292	Epidemic	01085
24	Alabama	Macon	7		01087
25	Alabama	Marengo	351	Epidemic	01091
26	Alabama	Monroe	164	Epidemic	01099
27	Alabama	Montgomery	17	Epidemic	01101
28	Alabama	Perry	174	Epidemic	01105
29	Alabama	Pickens	247	Epidemic	01107
30	Alabama	Pike	4		01109
31	Alabama	Randolph	1		01111
32	Alabama	Russell	5		01113
33	Alabama	Shelby	2		01117
34	Alabama	Sumter	141	Epidemic	01119
35	Alabama	Talladega	3		01121
36	Alabama	Tuscaloosa	33		01125
37	Alabama	Washington	28		01129
38	Alabama	Wilcox	678	Epidemic	01131
	AL Total		4,444		
1	Florida	Citrus	1		12017
2	Florida	Duval	1		12031
3	Florida	Gadsden	5		12039

	FL Total		7		
	GA Total		0		
	KY Total		0		
1	Mississippi	Adams	2		28001
2	Mississippi	Amite	3		28005
3	Mississippi	Benton	2		28009
4	Mississippi	Copiah	1		28029
5	Mississippi	Franklin	42		28037
6	Mississippi	Hinds	1		28049
7	Mississippi	Jasper	1		28061
8	Mississippi	Jefferson	1		28063
9	Mississippi	Jones	5		28067
10	Mississippi	Lawrence	1		28077
11	Mississippi	Lincoln	2		28085
12	Mississippi	Marion	1		28091
13	Mississippi	Monroe	5		28095
14	Mississippi	Scott	6		28123
15	Mississippi	Smith	6		28129
16	Mississippi	Wayne	7		28153
17	Mississippi	Wilkinson	9		28157
	MS Total		95		
1	N. Carolina	Orange	7		37135
2	N. Carolina	Vance	8		37181
3	N. Carolina	Wake	8		37183
	NC Total		23		
1	S. Carolina	Abbeville	90		45001
2	S. Carolina	Anderson	42		45007
3	S. Carolina	Cherokee	41		45021
4	S. Carolina	Beaufort	6		45013
5	S. Carolina	Berkeley	1		45015
6	S. Carolina	Charleston	6		45019
7	S. Carolina	Cherokee	36		45021
8	S. Carolina	Chester	12		45023
9	S. Carolina	Clarendon	12		45027
10	S. Carolina	Colleton	243		45029
11	S. Carolina	Edgefield	155	Epidemic	45037
12	S. Carolina	Fairfield	36		45039
13	S. Carolina	Georgetown	66		45043
14	S. Carolina	Greenville	42		45045
15	S. Carolina	Greenwood	60		45047
16	S. Carolina	Hampton	113		45049
17	S. Carolina	Horry	78		45051
18	S. Carolina	Jasper	84		45053
19	S. Carolina	Kershaw	84		45055
20	S. Carolina	Lancaster	114		45057
21	S. Carolina	Laurens	114		45059

22	S. Carolina	Lexington	126		45063
23	S. Carolina	McCormick	263	Epidemic	45065
24	S. Carolina	Newberry	108		45071
25	S. Carolina	Oconee	83		45073
26	S. Carolina	Pickens	48		45077
27	S. Carolina	Richland	42		45079
28	S. Carolina	Saluda	78		45081
29	S. Carolina	Spartanburg	96		45083
30	S. Carolina	Union	42		45087
31	S. Carolina	Williamsburg	60		45089
32	S. Carolina	York	48		45091
	SC Total		2388		
1	Tennessee	Chester	2		47023
2	Tennessee	Claiborne	1		47025
3	Tennessee	Monroe	1		47123
4	Tennessee	Union	1		47173
	TN Total		5		
	VA Total		0		

Beech Bark Disease

	State	County	FIPS
1	North Carolina	Buncombe	37021
2	North Carolina	Haywood	37087
3	North Carolina	Henderson	37089
4	North Carolina	Jackson	37099
5	North Carolina	Madison	37115
6	North Carolina	Mitchell	37121
7	North Carolina	Swain	37173
8	North Carolina	Watauga	37189
9	North Carolina	Yancey	37199
10	Tennessee	Blount	47009
11	Tennessee	Carter	47019
12	Tennessee	Cocke	47029
13	Tennessee	Sevier	47155
14	Virginia	Bath	51017
15	Virginia	Highland	51091
16	Virginia	Rockbridge	51163

Butternut Canker

	State	County	FIPS
1	Alabama	Blount	1009
2	Alabama	Lawrence	1079
3	Arkansas	Baxter	5005
4	Arkansas	Cross	5037
5	Arkansas	Lee	5077
6	Arkansas	Phillips	5107
7	Georgia	Rabun	13241
8	Kentucky	Bath	21011
9	Kentucky	Laurel	21125
10	Kentucky	Menifee	21165
11	Kentucky	Pike	21195
12	Kentucky	Rowan	21205
13	Kentucky	Whitley	21235
14	Mississippi	Chickasaw	28017
15	North Carolina	Buncombe	37021
16	North Carolina	Clay	37043
17	North Carolina	Haywood	37087
18	North Carolina	Henderson	37089
19	North Carolina	Jackson	37099
20	North Carolina	McDowell	37111
21	North Carolina	Macon	37113
22	North Carolina	Madison	37115
23	North Carolina	Rutherford	37161
24	North Carolina	Transylvania	37175
25	North Carolina	Yancey	37199
26	Tennessee	Claiborne	47025
27	Tennessee	Cocke	47029
28	Tennessee	Coffee	47031
29	Tennessee	Dickson	47043
30	Tennessee	Fentress	47049
31	Tennessee	Franklin	47051
32	Tennessee	Hawkins	47073
33	Tennessee	Lewis	47101
34	Tennessee	Moore	47127
35	Tennessee	Obion	47131
36	Tennessee	Perry	47135
37	Tennessee	Putnam	47141
38	Tennessee	Shelby	47157
39	Tennessee	Stewart	47161
40	Tennessee	Union	47173
41	Virginia	Alleghany	51005
42	Virginia	Augusta	51015
43	Virginia	Bath	51017
44	Virginia	Craig	51045

45	Virginia	Dickenson	51051
46	Virginia	Giles	51071
47	Virginia	Highland	51091
48	Virginia	Lee	51105
49	Virginia	Rockbridge	51163
50	Virginia	Rockingham	51165
51	Virginia	Scott	51169
52	Virginia	Shenandoah	51171
53	Virginia	Wise	51195

Dogwood Anthracnose

	State	County	FIPS
1	Alabama	Calhoun	1015
2	Alabama	Cherokee	1019
3	Alabama	Cleburne	1029
4	Alabama	De Kalb	1049
5	Alabama	Etowah	1055
6	Alabama	Jackson	1071
7	Alabama	Madison	1089
8	Alabama	Marshall	1095
9	Georgia	Banks	13011
10	Georgia	Bartow	13015
11	Georgia	Catoosa	13047
12	Georgia	Chattooga	13055
13	Georgia	Cherokee	13057
14	Georgia	Clarke	13059
15	Georgia	Cobb	13067
16	Georgia	Dade	13083
17	Georgia	Dawson	13085
18	Georgia	De Kalb	13089
19	Georgia	Fannin	13111
20	Georgia	Fayette	13113
21	Georgia	Floyd	13115
22	Georgia	Forsyth	13117
23	Georgia	Franklin	13119
24	Georgia	Fulton	13121
25	Georgia	Gilmer	13123
26	Georgia	Gordon	13129
27	Georgia	Gwinnett	13135
28	Georgia	Habersham	13137
29	Georgia	Hall	13139
30	Georgia	Haralson	13143
31	Georgia	Hart	13147
32	Georgia	Henry	13151
33	Georgia	Jackson	13157
34	Georgia	Lumpkin	13187

35	Georgia	Madison	13195
36	Georgia	Murray	13213
37	Georgia	Pickens	13227
38	Georgia	Polk	13233
39	Georgia	Rabun	13241
40	Georgia	Stephens	13257
41	Georgia	Towns	13281
42	Georgia	Union	13291
43	Georgia	Walker	13295
44	Georgia	Walton	13297
45	Georgia	White	13311
46	Georgia	Whitfield	13313
47	Kentucky	Bell	21013
48	Kentucky	Boone	21015
49	Kentucky	Boyd	21019
50	Kentucky	Boyle	21021
51	Kentucky	Breathitt	21025
52	Kentucky	Bullitt	21029
53	Kentucky	Campbell	21037
54	Kentucky	Carter	21043
55	Kentucky	Christian	21047
56	Kentucky	Clark	21049
57	Kentucky	Clay	21051
58	Kentucky	Daviess	21059
59	Kentucky	Elliott	21063
60	Kentucky	Fayette	21067
61	Kentucky	Fleming	21069
62	Kentucky	Floyd	21071
63	Kentucky	Garrard	21079
64	Kentucky	Grant	21081
65	Kentucky	Green	21087
66	Kentucky	Greenup	21089
67	Kentucky	Hardin	21093
68	Kentucky	Harlan	21095
69	Kentucky	Harrison	21097
70	Kentucky	Henderson	21101
71	Kentucky	Jackson	21109
72	Kentucky	Jefferson	21111
73	Kentucky	Jessamine	21113
74	Kentucky	Johnson	21115
75	Kentucky	Kenton	21117
76	Kentucky	Knott	21119
77	Kentucky	Knox	21121
78	Kentucky	Laurel	21125
79	Kentucky	Lawrence	21127
80	Kentucky	Lee	21129

81	Kentucky	Leslie	21131
82	Kentucky	Letcher	21133
83	Kentucky	Logan	21141
84	Kentucky	McCracken	21145
85	Kentucky	McCreary	21147
86	Kentucky	McLean	21149
87	Kentucky	Madison	21151
88	Kentucky	Magoffin	21153
89	Kentucky	Marshall	21157
90	Kentucky	Martin	21159
91	Kentucky	Mason	21161
92	Kentucky	Menifee	21165
93	Kentucky	Mercer	21167
94	Kentucky	Morgan	21175
95	Kentucky	Nelson	21179
96	Kentucky	Nicholas	21181
97	Kentucky	Perry	21193
98	Kentucky	Pike	21195
99	Kentucky	Powell	21197
100	Kentucky	Pulaski	21199
101	Kentucky	Robertson	21201
102	Kentucky	Rockcastle	21203
103	Kentucky	Rowan	21205
104	Kentucky	Russell	21207
105	Kentucky	Scott	21209
106	Kentucky	Shelby	21211
107	Kentucky	Warren	21227
108	Kentucky	Wayne	21231
109	Kentucky	Whitley	21235
110	Kentucky	Wolfe	21237
111	North Carolina	Alexander	37003
112	North Carolina	Alleghany	37005
113	North Carolina	Ashe	37009
114	North Carolina	Avery	37011
115	North Carolina	Buncombe	37021
116	North Carolina	Burke	37023
117	North Carolina	Caldwell	37027
118	North Carolina	Cherokee	37039
119	North Carolina	Clay	37043
120	North Carolina	Cleveland	37045
121	North Carolina	Dare	37055
122	North Carolina	Graham	37075
123	North Carolina	Haywood	37087
124	North Carolina	Henderson	37089
125	North Carolina	Jackson	37099
126	North Carolina	Lincoln	37109

127	North Carolina	McDowell	37111
128	North Carolina	Macon	37113
129	North Carolina	Madison	37115
130	North Carolina	Mitchell	37121
131	North Carolina	Polk	37149
132	North Carolina	Rockingham	37157
133	North Carolina	Rutherford	37161
134	North Carolina	Stokes	37169
135	North Carolina	Surry	37171
136	North Carolina	Swain	37173
137	North Carolina	Transylvania	37175
138	North Carolina	Watauga	37189
139	North Carolina	Wilkes	37193
140	North Carolina	Yancey	37199
141	South Carolina	Anderson	45007
142	South Carolina	Greenville	45045
143	South Carolina	Laurens	45059
144	South Carolina	Oconee	45073
145	South Carolina	Pickens	45077
146	South Carolina	Spartanburg	45083
147	Tennessee	Anderson	47001
148	Tennessee	Bedford	47003
149	Tennessee	Bledsoe	47007
150	Tennessee	Blount	47009
151	Tennessee	Bradley	47011
152	Tennessee	Campbell	47013
153	Tennessee	Cannon	47015
154	Tennessee	Carter	47019
155	Tennessee	Claiborne	47025
156	Tennessee	Clay	47027
157	Tennessee	Cocke	47029
158	Tennessee	Coffee	47031
159	Tennessee	Cumberland	47035
160	Tennessee	Davidson	47037
161	Tennessee	De Kalb	47041
162	Tennessee	Fentress	47049
163	Tennessee	Franklin	47051
164	Tennessee	Grainger	47057
164	Tennessee	Greene	47059
165	Tennessee	Grundy	47061
166	Tennessee	Hamblen	47063
167	Tennessee	Hamilton	47065
168	Tennessee	Hancock	47067
169	Tennessee	Hawkins	47073
170	Tennessee	Jackson	47087
171	Tennessee	Jefferson	47089

172	Tennessee	Johnson	47091
173	Tennessee	Knox	47093
174	Tennessee	Lincoln	47103
175	Tennessee	Loudon	47105
176	Tennessee	McMinn	47107
177	Tennessee	Macon	47111
178	Tennessee	Marion	47115
179	Tennessee	Marshall	47117
180	Tennessee	Meigs	47121
181	Tennessee	Monroe	47123
182	Tennessee	Moore	47127
183	Tennessee	Morgan	47129
184	Tennessee	Overton	47133
185	Tennessee	Pickett	47137
186	Tennessee	Polk	47139
187	Tennessee	Putnam	47141
188	Tennessee	Rhea	47143
189	Tennessee	Roane	47145
190	Tennessee	Rutherford	47149
191	Tennessee	Scott	47151
192	Tennessee	Sequatchie	47153
193	Tennessee	Sevier	47155
194	Tennessee	Smith	47159
195	Tennessee	Sullivan	47163
196	Tennessee	Sumner	47165
197	Tennessee	Trousdale	47169
198	Tennessee	Unicoi	47171
199	Tennessee	Union	47173
200	Tennessee	Van Buren	47175
201	Tennessee	Warren	47177
202	Tennessee	Washington	47179
203	Tennessee	White	47185
204	Tennessee	Wilson	47189
205	Virginia	Albemarle	51003
206	Virginia	Alleghany	51005
207	Virginia	Amherst	51009
208	Virginia	Augusta	51015
209	Virginia	Bath	51017
210	Virginia	Bedford	51019
211	Virginia	Bland	51021
212	Virginia	Botetourt	51023
213	Virginia	Buchanan	51027
214	Virginia	Carroll	51035
215	Virginia	Clarke	51043
216	Virginia	Craig	51045
217	Virginia	Dickenson	51051

218	Virginia	Dinwiddie	51053
219	Virginia	Fauquier	51061
220	Virginia	Floyd	51063
221	Virginia	Franklin	51067
222	Virginia	Frederick	51069
223	Virginia	Giles	51071
224	Virginia	Grayson	51077
225	Virginia	Greene	51079
226	Virginia	Highland	51091
227	Virginia	Lancaster	51103
228	Virginia	Lee	51105
229	Virginia	Loudoun	51107
230	Virginia	Madison	51113
231	Virginia	Montgomery	51121
232	Virginia	Nelson	51125
233	Virginia	Northumberland	51133
234	Virginia	Page	51139
235	Virginia	Patrick	51141
236	Virginia	Portsmouth	51740
237	Virginia	Prince William	51153
238	Virginia	Pulaski	51155
239	Virginia	Rappahannock	51157
240	Virginia	Roanoke	51161
241	Virginia	Rockbridge	51163
242	Virginia	Rockingham	51165
243	Virginia	Russell	51167
244	Virginia	Scott	51169
245	Virginia	Shenandoah	51171
246	Virginia	Smyth	51173
247	Virginia	Stafford	51179
248	Virginia	Tazewell	51185
249	Virginia	Warren	51187
250	Virginia	Washington	51191
251	Virginia	Wise	51195
252	Virginia	Wythe	51197

Hemlock Woolly Adelgid

	State	County	FIPS
1	Georgia	Dawson	13085
2	Georgia	Fannin	13111
3	Georgia	Gilmer	13123
4	Georgia	Habersham	13137
5	Georgia	Lumpkin	13187
6	Georgia	Murray	13213
7	Georgia	Rabun	13241
8	Georgia	Towns	13281

9	Georgia	Union	13291
10	Georgia	White	13311
11	North Carolina	Alamance	37001
12	North Carolina	Allegheny	37005
13	North Carolina	Ashe	37009
14	North Carolina	Avery	37011
15	North Carolina	Buncombe	37021
16	North Carolina	Burke	37023
17	North Carolina	Caldwell	37027
18	North Carolina	Caswell	37033
19	North Carolina	Cherokee	37039
20	North Carolina	Clay	37043
21	North Carolina	Forsyth	37067
22	North Carolina	Graham	37075
23	North Carolina	Haywood	37087
24	North Carolina	Henderson	37089
25	North Carolina	Jackson	37099
26	North Carolina	Macon	37113
27	North Carolina	Madison	37115
28	North Carolina	Mitchell	37121
29	North Carolina	Orange	37135
30	North Carolina	Rockingham	37157
31	North Carolina	Stokes	37169
32	North Carolina	Surry	37171
33	North Carolina	Swain	37173
34	North Carolina	Watauga	37189
35	North Carolina	Wilkes	37193
36	North Carolina	Yancey	37199
37	South Carolina	Oconee	45073
38	South Carolina	Pickens	45077
39	Tennessee	Blount	47009
40	Tennessee	Carter	47019
41	Tennessee	Cocke	47029
42	Tennessee	Greene	47059
43	Tennessee	Johnson	47091
44	Tennessee	Knox	47093
45	Tennessee	Monroe	47123
46	Tennessee	Sevier	47155
47	Tennessee	Sullivan	47163
48	Tennessee	Unicoi	47173
49	Tennessee	Washington	47179
50	Virginia	Albemarle	51003
51	Virginia	Allegheny	51005
52	Virginia	Amherst	51009
53	Virginia	Appomatax	51011
54	Virginia	Augusta	51015

55	Virginia	Bath	51017
56	Virginia	Bedford	51019
57	Virginia	Bland	51021
58	Virginia	Botetourt	51023
59	Virginia	Campbell	51031
60	Virginia	Caroline	51033
61	Virginia	Carroll	51035
62	Virginia	Clarke	51043
63	Virginia	Craig	51043
64	Virginia	Essex	51057
65	Virginia	Fairfax	51059
66	Virginia	Floyd	51063
67	Virginia	Fluvanna	51065
68	Virginia	Franklin	51067
69	Virginia	Frederick	51069
70	Virginia	Giles	51071
71	Virginia	Grayson	51077
72	Virginia	Greene	51079
73	Virginia	Henry	51089
74	Virginia	Lunenburg	51111
75	Virginia	Madison	51113
76	Virginia	Montgomery	51121
77	Virginia	Nelson	51125
78	Virginia	Orange	51137
79	Virginia	Page	51139
80	Virginia	Patrick	51141
81	Virginia	Pittsylvania	51143
82	Virginia	Prince William	51153
83	Virginia	Pulaski	51155
84	Virginia	Rappahannock	51157
85	Virginia	Roanoke	51161
86	Virginia	Rockingham	51165
87	Virginia	Russell	51167
88	Virginia	Shenandoah	51171
89	Virginia	Smyth	51173
90	Virginia	Spotsylvania	51177
91	Virginia	Tazewell	51185
92	Virginia	Warren	51187
93	Virginia	Washington	51191
94	Virginia	Wythe	51197