2006 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 2006. Abiotic factors were generally limited to latent effects from the 2005 Gulf Coast hurricanes, with some localized problems from windstorms and drought. There was a marked increase in scattered pine mortality across the western Gulf Coastal Plain from Alabama to Texas in response to drought and latent windstorm effects that increased their susceptibility to *Ips* and black turpentine beetle attack.

The most significant new threat was the exotic ambrosia beetle *Xyleborus glabratus*, a native of India, Southeast Asia, and Japan that was first identified at Port Wentwortn, GA in 2002 and is vectoring an as-yet unnamed *Raffaelea* pathogen that kills redbay (*Persea borbonia*) and may pose a serious threat to other members of the family *Lauraceae.* The insect/disease complex currently occurs in fifteen Georgia counties, seven in South Carolina, and eight in Florida, and is spreading at a rate of approximately 20 miles per year.

Southern pine beetle populations remained low throughout most of the Region, with notable exceptions in southwestern Alabama and in South Carolina. An increase in SPB activity was also noted in western Tennessee.

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 has moderated. 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 continued to spread and intensify in the Southern Appalachians in 2006. The adelgid now infests northern Georgia, upstate South Carolina, western North Carolina, eastern Kentucky and 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 devestating impact on these ecosystems.

Balsam woolly adelgid continues to impact high-elevation fir 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 wild fir population will again crash and regenerate over the

next five to ten years. No effective control is currently available for this pest.

Gypsy moth defoliation in Virginia increased from 6,543 acres in 2005 to 14,330 acres in 2006. 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 ahead of the edge of the generally infested area in North Carolina and Virgina.

In the Southern Appalachians, the beech bark disease complex continued its spread in 2006. 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 2006, 101,736 acres of mixed baldcypress stands in southern and southeastern Louisiana were defoliated by the baldcypress leafroller (Ascension, Assumption, Iberia, Iberville, LaFourche, Livingston, St. James, St. John the Baptist, and St. Martin Parishes). Approximately 70,049 acres were severely defoliated (≥50% foliage damaged). The primary impact of this defoliation is loss of radial growth, producing an estimated volume 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: Georgia
Hosts: Hardwoods, mostly oaks
During the summer of 2006, higher than normal populations of bark lice in southeastern Georgia 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.

BTB activity increased in southern Alabama in 2006, probably in combination with summer drought and the lingering effects of hurricane Katrina. A drastic increase in pine mortality following hurricane Katrina occurred in SE Louisiana Parishes (St. Tammany, Tangipahoa, and Washington) in 2006 due to the storm, summer drought, BTB and *Ips* engraver beetle activity. Mortality was very abundant, but widely scattered. Mortality also occurred farther west and into SW Louisiana parishes affected by both hurricanes Katrina and Rita. Activity increased to moderate levels in Texas in 2006, with damage very localized; the summer drought probably increased tree susceptibility. Georgia reported intense activity in the lower Piedmont and upper Coastal Plain, often associated with *Ips* beetles. 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 scattered and moderate BTB activity in the mountains and reduced activity in Sandhills longleaf stands being managed for pine straw production. Tennessee reported small spot infestations, often in association with *Ips* beetles.

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 declined in 2006 with little obvious defoliation occurring. Both adult moth catches and infested tree numbers declined. The effects of flooding from hurricane Katrina may have had a negative effect on diapausing pupae.

Cherry scallop shell moth, *Hydria prunivorata*
Region 8: Alabama, Tennessee
Hosts: Black cherry and other native cherries
A small infestation was detected in Lauderdale County, AL in the spring of 2006. No serious damage occurred and refoliation was present by late summer. Tennessee reported scattered heavy defoliation in Monroe, McMinn, and Polk Counties.

Periodical cicada, *Magicicada septendecim*
Region 8: Kentucky
Hosts: Hardwoods
A localized outbreak was reported in Kentucky just outside Cincinnati.

Eastern tent caterpillar, *Malascosoma americanum*
Region 8: Regionwide
Host: Cherry
Infestations were reported from urban areas in northern Kentucky. Tennessee reported average to declining infestations in middle and eastern portions of the state, with scattered areas experiencing defoliation as high as 50%. Defoliation by this pest rarely causes serious or permanent damage.

Fall cankerworm, *Alsophila pometeria*
Region 8: Regionwide
Hosts: Various oak species
Minimal, localized activity is reported almost annually in the spring in post oak forests in central Texas; little serious damage occurs. North Carolina reported a very heavy infestation and defoliation in Mecklenburg County, centered around Charlotte. Tennessee experienced defoliation levels below 30% statewide except in Claiborne and Union Counties, where damage was somewhat heavier. Virginia reported 790 acres of light to moderate defoliation in an isolated infestation in Shenandoah County.

Fall webworm, *Hyphantira cunea*
Region 8: Regionwide
Hosts: Hardwoods
North Carolina reported heavy infestations in the mountains, with partial to total defoliation occurring. Scattered infested landscape trees were observed statewide. Tennessee reported average to low infestation statewide.

Forest tent caterpillar, *Malacosoma disstria*
Region 8: Kentucky, Louisiana, South Carolina, Texas
Hosts: Tupelo gum, upland hardwoods
In Louisiana, defoliation occurred on 218,069 acres of forested wetlands in Ascention, Assumption, Iberville, Lafourche, Livingston, St. James, St. John the Baptist, and St. Mary Parishes in 2006. This defoliation was severe (>50% foliage damage) on 110,570 acres. Kentucky reported a decline in populations in previously infested counties along the Ohio River due to natural parasitism, but the infestation has moved into urban areas in Boone, Kenton, and Campbell Counties, causing high levels of defoliation in concert with Eastern tent caterpillar. In Texas, light, scattered defoliation was noted along the Angelina River in Angelina and Nacogdoches Counties; this is almost an annual occurrence. North Carolina reported light defoliation along the Roanoke River in Bertie, Halifax, Martin, and Northhampton Counties. South Carolina reported severe defoliation on 371,700 acres in 13 counties (Bamberg, Beaufort, Berkeley, Charleston, Colleton, Dillon, Dorchester, Georgetown, Horry, Jasper, Marion, Orangeburg, and Williamsburg).

Horned oak gall wasp, *Callirhytis cornigera*
Region 8: Alabama
Hosts: Oaks and other hardwoods
A small infestation was detected in Satsuma, Alabama where about 90 percent of the water oaks were infested and may have contributed to the mortality of over 50 trees in the area. The infestation appeared to be several years old.

Jumping oak gall wasp, *Neuroterus saltatorius*
Region 8: Tennessee
Hosts: Oaks
Infestations were at generally low levels across Tennessee.

Lecanium scale, *Lecanium spp.*
Region 8: Virginia
Host: Oaks, hickories, redbud, blackgum
A small infestation (5-10 acres) was reported in Shenandoah County.

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, western North Carolina, and upper eastern Tennessee in 2006.

Longhorned beetle, *Lagocheirus aranaeformis stroheckeri*
Region 8; Florida
Host: Gumbo limbo
A notable infestation was reported from Little Torch Key and some other Florida Keys, probably resulting from flooding stress during 2004-2005 hurricanes.

Mites, *Olygonychus spp.*
Region 8: Tennessee
Hosts: Red oak, spruce
Damage from mites feeding on oaks was generally low across Tennessee, although scattered damage to spruce was noted in high elevation stands in the northeastern part of the state.

Nantucket pine tip moth, *Rhyacionia frustrana*
Region 8: Regionwide
Hosts: Loblolly pine, shortleaf pine
Texas reported a dramatic increase in tip moth activity in late summer 2006, probably related to widespread summer drought conditions. North Carolina reported scattered tip moth activity across the Coastal Plain, often in association with pitch canker. Tennessee experienced light infestations with no significant damage.

Oak leaf roller, *Archips semiferana*
Region 8: Texas
Hosts: Various oak species
High, localized populations of oak leaf rollers occurred over scattered portions of central Texas again in the spring of 2006. No significant damage occurred.

Orangestriped oakworm, *Anisota senatoria*
Spiny oakworm, *Anisota stigma*
Pinkstriped oakworm, *Anisota virginiensis*
Yellownecked caterpillar, *Datana ministra*
Region 8: South Carolina, Texas, Tennessee
Host(s): Various oak species
In east Texas, oakworm infestations diminished to very light. South Carolina reported scattered defoliation in the Piedmont. Tennessee reported late-season damage to landscape pin oaks in northeastern portions of the state, with generally low levels of activity in other areas.

Pine bark adelgid, *Pineus strobi*
Region 8: Virginia, North Carolina
Host: White pine
Numerous reports of this pest occurred from sites throughout the range of white pine in 2006, including Madison, Green, Goochland, Albemarle, Franklin, Nelson, Carroll, Rockbridge, 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. Light infestations were noted in western North Carolina.

Pine colaspis beetle, *Colaspis pini*
Region 8: Arkansas, Louisiana
Hosts: Southern pines, ornamental cypress

As in previous years, this beetle caused localized, minor defoliation of pine plantations in eastern and central Louisiana. In Arkansas, scattered trees were affected in west and northwest White County.

Pine engraver beetle, *Ips calligraphus, I. grandicollis, I. avulsus*
Region 8: Regionwide
Hosts: Loblolly pine, shortleaf pine, slash pine, Virginia pine
Alabama reported a sharp increase in Ips activity in all but the northeastern part of the state. Mortality is significant but scattered. The summer drought was largely responsible plus the lingering effects of Hurricane Katrina. A drastic increase in pine mortality following hurricane Katrina occurred in SE Louisiana Parishes (St. Tammany, Tangipahoa, and Washington) in 2006 due to the storm, summer drought, BTB and Ips engraver beetle activity. Mortality was very abundant, but widely scattered. Mortality also occurred farther west and into SW Louisiana parishes affected by both Hurricanes Katrina and Rita. Mississippi also experienced greatly increased pine mortality in the southern part of the state due to the effects of Hurricane Katrina, summer drought and Ips engraver beetle activity. Mortality was widely scattered, but as many as 56 concentrated spots of mortality were detected during aerial surveys.

Georgia reported intense *Ips* activity in the lower Piedmont and upper Coastal Plain, due to seasonal drought. The activity was often associated with thinning and *Annosum* root disease; many *Annosum*-infected stands suffered severe losses. Pine mortality due to Ips and summer drought was high in southeastern Oklahoma in 2006, but was widely scattered. Pine engraver beetle activity increased across east Texas. The summer drought combined with lingering effects of hurricane Rita probably contributed to this situation. Generally, the highest activity was in an area north of Livingston and Polk Counties, particularly on the edge of the natural pine range in Houston and Anderson Counties. Tennessee experienced scattered small spots statewide, while Virginia reported only scattered activity in Coastal Plain and in south central Piedmont sites affected by earlier storms.

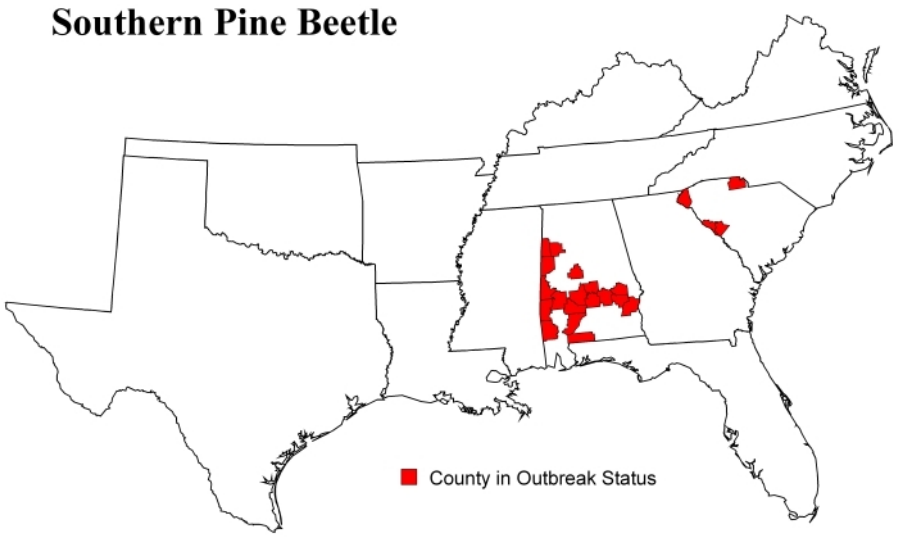
Pine sawflies, *Neodiprion spp., Diprion spp.*
Region 8: Florida, Georgia, Louisiana, North Carolina, Tennessee, Texas, Virginia
Hosts: Southern pines
Infestations of pine sawflies in Georgia were limited to one- to two-year-old plantations, with only light to moderate damage. Scattered sawfly damage was reported in Louisiana in 2005. Redheaded pine sawfly damage was reported in east Texas. Virginia reported light, scattered defoliation, with pockets of heavy defoliation in Westmoreland and Northumberland Counties. Tennessee reported only light damage from red-headed pine sawflies, but noted increasing populations of black-headed sawflies in Jefferson and Polk Counties together with rising populations of loblolly pine sawflies in Wilson, Smith, Putnam, Davidson, Robertson, Coffee, and Rutherford Counties. Surveys indicated approximately 1,400 trees with greater than 50% defoliation.

Red oak borer, *Enaphalodes rufulus*
Region 8: Arkansas, Oklahoma, Virginia

Hosts: Northern red oak, southern red oak, black oak, other red oaks
Virginia reported widespread but locally heavy damage in 2006, evidently resulting from latent effects of past storms, particularly in the Coastal Plain. Alabama reported red oak borer associated with an increase in oak decline in bottomland stands in the southwestern part of the state. This is probably in conjunction with effects of hurricane Katrina and the 2006 summer drought. In Arkansas and Oklahoma, populations of the red oak borer have substantially diminished (see also **Oak decline, abiotic and biotic influences** under **Declines/Complexes**).

Reproduction weevils, *Hylobius pales, Pachylobius picivorous*
Region 8: Regionwide
Hosts: Southern pines
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
Southern pine beetle (SPB) activity decreased somewhat in Alabama, where over 1,100 spots were detected compared to almost 1,700 detected in 2005. A total of 18 counties were considered in epidemic status. Mississippi reported only 9 spots and activity continues to be non-existent in Arkansas, Louisiana, Oklahoma and Texas. South Carolina reported a total of 3,090 spots in 32 counties, four of these in epidemic status. Florida reported only three spots totaling less than one acre. North Carolina reported only very low levels of SPB activity. Tennessee noted low, static populations except in a few western counties, where aerial surveys indicated rising SPB mortality.



Texas leaf-cutting ant, *Atta texana*
Region 8: Louisiana, Texas
Hosts: Southern pines and hardwoods
Localized defoliation of recently planted 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.

Variable oakleaf caterpillar, *Heterocampa manteo*
Region 8: Arkansas, Tennessee
Hosts: Oaks
Defoliation was noted in 2006 for the first time in several years in north central Arkansas, in Conway, Faulkner and Van Buren Counties. Tennessee reported defoliation along the southwestern Highland Rim during late spring, affecting mostly intermediate crown classes of oak.

Walnut caterpillar, *Datana integerrima*
Region 8: Florida, Tennessee
Host: Walnut, hickories
Only low levels of damage were noted.

White oak borer, *Goes tigrinus*
Region 8: Virginia
Host: White oak
Widespread but locally heavy infestations were reported from the Virginia Coastal Plain, evidently due to latent effects of past storms.

White pine weevil, *Pissoides strobe*
Region 8: Tennessee
Host: White pine
Tennessee experienced only average to low levels of defoliation in the northeastern part of the state.

Insects: Nonnative

Asian ambrosia beetles, *Xylosandrus crassiusculus, Xyleboris compactus, Xylosandrus mutilatus, Xyleborus glabratus, Xyleborus similis*
Region 8: *X. crassiusculus*: region-wide; *X. mutilatus*: Mississippi, Florida, and Texas; *X compactus* and *X. glabratus*: Florida, Georgia, South Carolina; *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

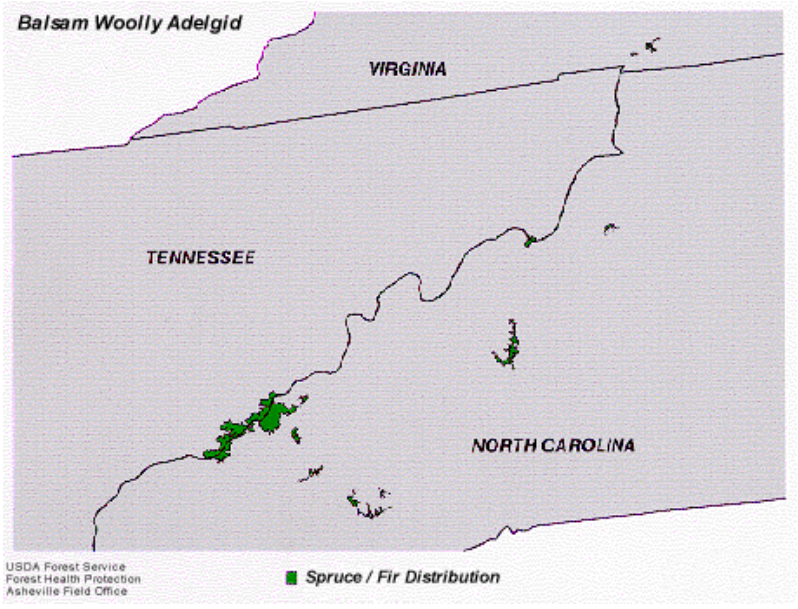
crape myrtles in nursery and landscape settings. It probably will attack other plants on which it has yet to be found.

X. mutilatus was first detected in Mississippi in 2002. Subsequent, south-wide detection surveys found it to be present in Texas (2005 in Houston) 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. Scattered ambrosia beetle infestations have been reported throughout the North Carolina Coastal Plain and Piedmont, mostly in urban areas.

Tennessee reported damage to oaks and redbud from unspecified *Xylosandrus spp.* in the area around Knoxville.

(See **Redbay wilt** under **Diseases: Non-native** for information on *X. compactus* and *X. glabratus*.)

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 has been observed since 2004. 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 planipenis*
Region 8: Virginia
Host: Ash
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. Kentucky has instituted a regular trapping program in northern counties in response to the spreading infestation in Ohio.

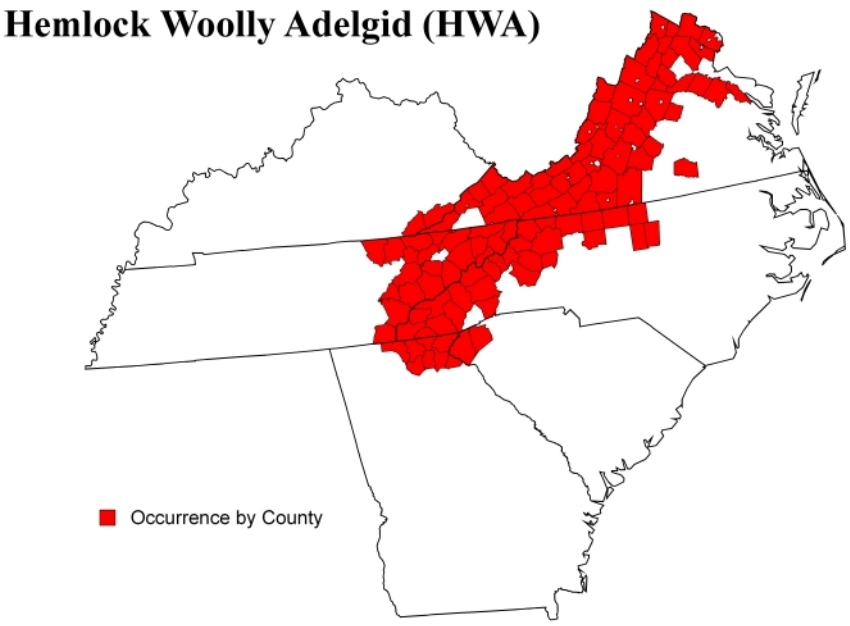
Gypsy moth (European), *Lymantria dispar*
Region 8: Arkansas, Georgia, Kentucky, North Carolina, Tennessee, Virginia
Hosts: Hardwoods, especially oak species
Suppression: Virginia conducted suppression on 2,574 acres in 2006, 2,495 on co-op lands and 79 acres on national forest lands. (Of this, 567 acres were treated with *Bt* and 2,007 were treated with dimilin.) Subsequently, that state reported moderate to heavy defoliation on approximately 14,330 acres in Frederick, Giles, Montgomery and Roanoke Counties in the western mountains of the state. Of this, 2,950 acres occurred on the George Washington-Jefferson National Forest. The 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%. Populations in North Carolina were for the most part under control, with only light defoliation in Currituck County.

Eradication: North Carolina conducted four eradication projects in three counties in the western half of the state, totaling 19,142 acres. This area was treated with Foray 76B. Georgia conducted delimiting trapping in six northern counties and detection trapping in counties surrounding the ports of Brunswick and Savannah and the Hartsfield-Jackson Airport in Atlanta. Five male moths were captured in four counties, but no active infestations were detected. Kentucky reported capturing 116 male moths, primarily in the Cincinnati area. In Tennessee, a single small ground spray project using Dimilin was conducted in Cumberland County. Mass trapping efforts were carried out in Cumberland, Campbell, and Claiborne Counties in the northeastern part of the state.

Hemlock woolly adelgid, *Adelges tsugae*
Region 8: Georgia, Kentucky, North Carolina, South Carolina, Tennessee, Virginia
Hosts: Carolina hemlock, Eastern hemlock
Hemlock woolly adelgid populations continue to rapidly expand their range in the Southeast. Kentucky confirmed its first infestations in Bell and Harlan Counties and initiated suppression activities. In Virginia, the infested range was extended into Buchanan, Dickerson, Wise, Lee, Loudon, and Fauquier Counties, leaving no southwestern VA counties uninfested. Populations spread and intensified in Georgia,

North Carolina, South Carolina and Tennessee; all counties in the western Carolinas with hemlock populations are experiencing significant decline and some mortality. 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.

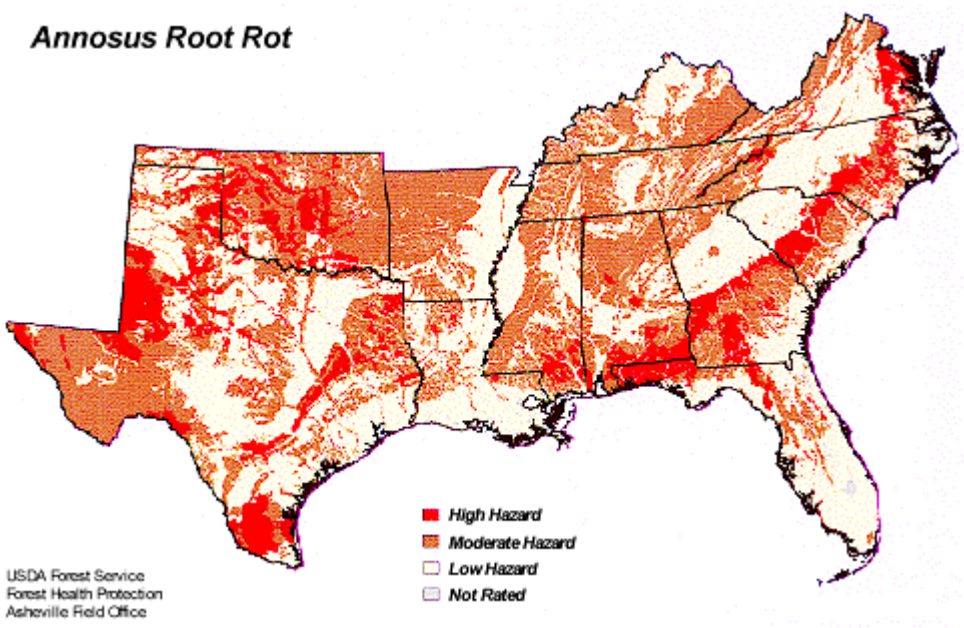


Lobate lac scale, *Paratachardina lobata lobata*
Region 8: Florida
Hosts: *Melaleuca*; over 100 other woody species
This pest, native to India and Sri Lanka, is being controlled biologically by the introduction of natural insect predators, even though it is not currently causing damage to native vegetation. 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 occurs annually throughout the range of southern pines. 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 extremely high levels 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 2006. In South Carolina, surveys indicated damage in 34 counties, with an estimated 50,890 acres affected and financial losses totaling $1,832,040.



Ash anthracnose, *Discula fraxinosa*
Region 8: Tennessee
Host: Ash
Light infection levels were reported statewide in Tennessee than in 2006.

Cercospora needle blight, *Cercospora spp.*
Region 8: South Carolina, Georgia
Host(s): Leyland cypress
Cercospora needle blight continued to be a problem in South Carolina in 2006. Fungicidal control has been suggested for growers experiencing problems with this disease. Georgia and North Carolina also reported scattered problems in landscape trees. The lack of genetic variation in Leyland Cypress due to asexual propagation is believed to contribute to disease problems in this species.

Diplodia tip blight, *Diplodia pinea*
Region 8: Georgia
Host: Loblolly pine
Tip blight was detected in eight counties in lower central Georgia during the winter of 2005-06, producing isolated mortality in five- to ten-year-old loblolly pine plantations.

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. In North Carolina, there were moderate levels of fusiform rust in older stands throughout the state; some reports were also received from younger stands, possibly having started as infected nursery stock. 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. The Resistance Screening Center in Asheville, NC continues to screen seed lots for fusiform rust resistance.

Hypoxylon canker, *Biscogniauxia atropunctatum*
Region 8: Regionwide
Hosts: Oaks
Higher than normal levels of hypoxylon canker were reported in eastern Virginia as declining trees impacted by past storms and drought succumb to the disease. The condition was very widespread in the Richmond-Petersburg area of the Coastal Plain. North Carolina also reported scattered infections, related to oak decline.

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 anthracnose, *Apiognomonia errubunda, Discula umbrinella*
Region 8: Tennessee
Host: White oak
Tennessee reported low levels of this disease statewide.

Oak wilt, *Ceratocystis fagacearum*
Region 8: North Carolina, South 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 2007 (the nineteenth year of the cooperative suppression project), approximately 133,000 feet of trenching was installed around 79 oak wilt centers. 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. South Carolina reported a new county record in Lexington County. Tennessee reported scattered single-tree infections in Cocke and Washington Counties.

Powdery mildew, *Phyllactinia spp.*
Region 8: Tennessee
Hosts: Dogwood, oaks
Scattered infections were reported from eastern and middle Tennessee counties.

Pine needle cast, *Hypoderma spp., Lophiodermium spp*.
Region 8: Georgia, North Carolina, Tennessee
Host: Loblolly pine
Low levels of needlecast were reported from plantations in both eastern and western Tennessee and in eastern North Carolina. Georgia reported fairly high levels of needle cast from southeastern portions of the state.

Pine needle rust, *Coleosporium spp*.
Region 8: Tennessee, North Carolina
Visible symptoms of this disease cause concern to landowners, but produce little significant damage. Tennessee reported light incidence of this rust in the eastern and western ends of the state. Light infestations were reported from western North Carolina.

Pitch canker, *Fusarium circinatum*
Region 8: Regionwide
Hosts: Southern pines
Problems with the disease in west central Louisiana, Mississippi and east Texas in 2005 seemed to dissipate in 2006 with no new reports coming in. In Alabama, however, pitch canker increased, particularly in the southern part of the state in mid-rotation pine plantations. Top kill and stem dieback was prevalent and may be mixed with damage from *Ips* beetles. Hurricane damage may have provided an abundance of infection courts for the fungus.

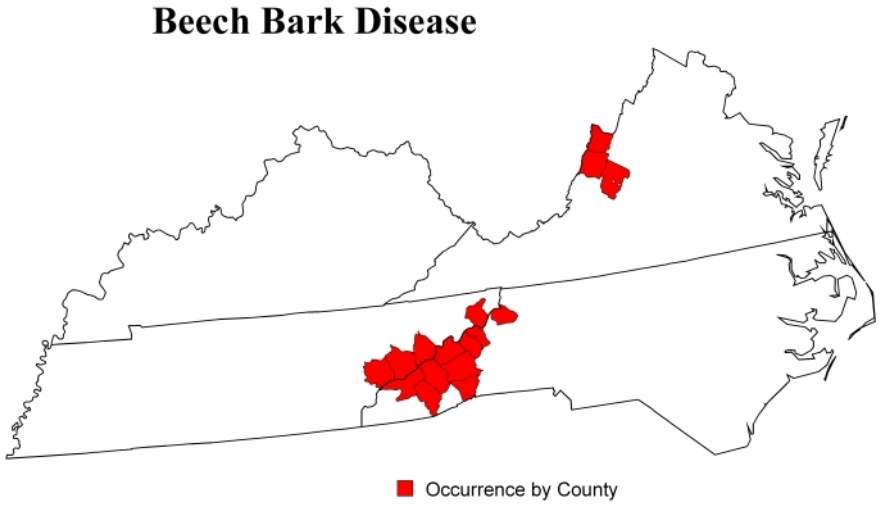
Georgia reported that widespread damage to slash pine plantations in six southern and southeastern counties initially detected in 2005 continued in 2006, but with relatively few

new infection sites. Georgia has undertaken resistance screening of slash pine seedlings for pitch canker in cooperation with the USFS Asheville Field Office. North Carolina reported scattered infections of pitch canker on longleaf and loblolly pines in the Coastal Plain and Piedmont, primarily in "old field" stands. Tennessee reported increasing infection rates from plantations in the eastern part of the state, with 10% infection rates in some stands in Knox and Sevier Counties. Scattered infections were also reported from South Carolina and Virginia.

Sycamore anthracnose, *Discula platani*
Region 8: Tennessee
Host: Sycamore
Moderate to high infection rates were noted in western North Carolina, with scattered infestations in the eastern half of the state. Low infection rates (1-5% leaves infected) were reported from most of Tennessee, with some higher rates (20-30% leaves infected) in northeastern counties.

Diseases: Non-native

Beech bark disease, *Neonectria 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. 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.



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 reduced disease incidence, probably due to dry late summer weather. Georgia reported some problems on winged elm as well as scattered infections of urban and wild American elm.

Redbay wilt or laurel wilt, *Raffaelea spp.* vectored by redbay ambrosia beetle, *Xyleborus glabratus*
Region 8: Florida, Georgia, South Carolina
Host: Redbay, avocado, pondberry, pond spice, sassafras
Widespread mortality of redbay is occurring in coastal counties in Florida, Georgia, and South Carolina, originating near Savannah and now spreading at a rate of approximately 20 miles per year, with occasional longer "jumps" evidently resulting from human movement of infested plant material. The tiny exotic beetles vector an as-yet unnamed *Raffaelea* fungus that infects redbay, pondberry, pondspice (a Federally listed Threatened species), and can also kill avocado, sassafras, and probably many other species in the family *Lauraceae*. Another exotic ambrosia beetle, *X. compactus*, is spreading along with *X. glabratus* and causes branch tip flagging in redbay by feeding on the pith, but is not known to vector the fungal disease. A working group dealing with this insect/disease complex has been formed and research on its biology and control is being undertaken.

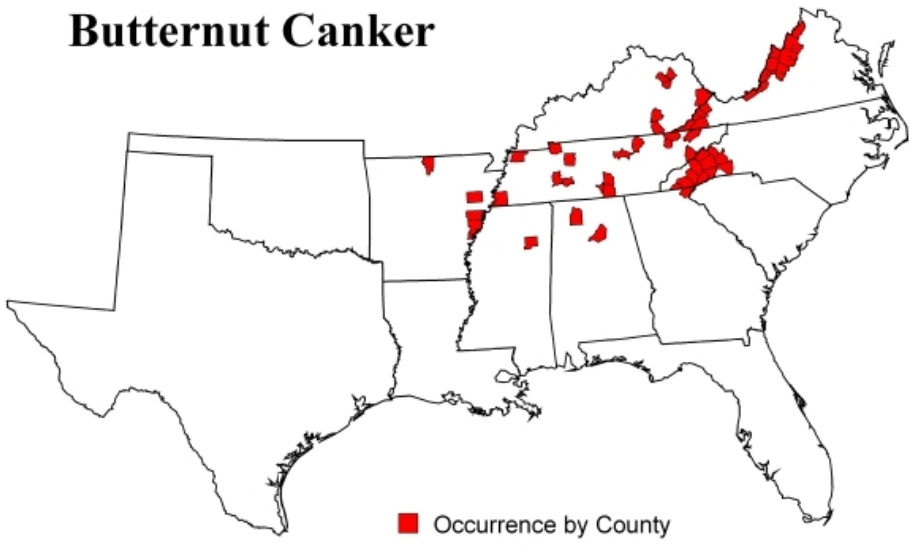
Symptoms of redbay wilt (also proposed to be named "Laurel wilt" because of its potential to infect a wider range of hosts) were first noted on Ossabaw Island in the Wassaw NWR southeast of Savannah, GA by USFWS biologists in 1998, but no causal agent was identified. The exotic ambrosia beetle *Xyleborus glabratus*, a native of India, Southeast Asia, and Japan, was trapped at Port Wentworth, GA in 2002 and has been identified as the vector of the *Raffaelea* pathogen causing the disease. The beetles bore into the xylem and do not feed on the cambium, and a single beetle attack is capable of infecting a tree with the pathogen; host treatment with systemic insecticides will thus probably not be effective in arresting the disease. Sanitation cutting and removal of infested trees has been attempted as a suppression tactic, but appears to be ineffective. Because the beetle/pathogen complex can infect sassafras, it has the potential of affecting virtually all U.S. forests east of the Great Plains.

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 continued through 2006. The surveys were expanded in 2006 to include stream baiting in selected watersheds. No SOD-positive specimens have yet been found in native forest vegetation in the South.

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.

Diseases: Origin Unknown

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.



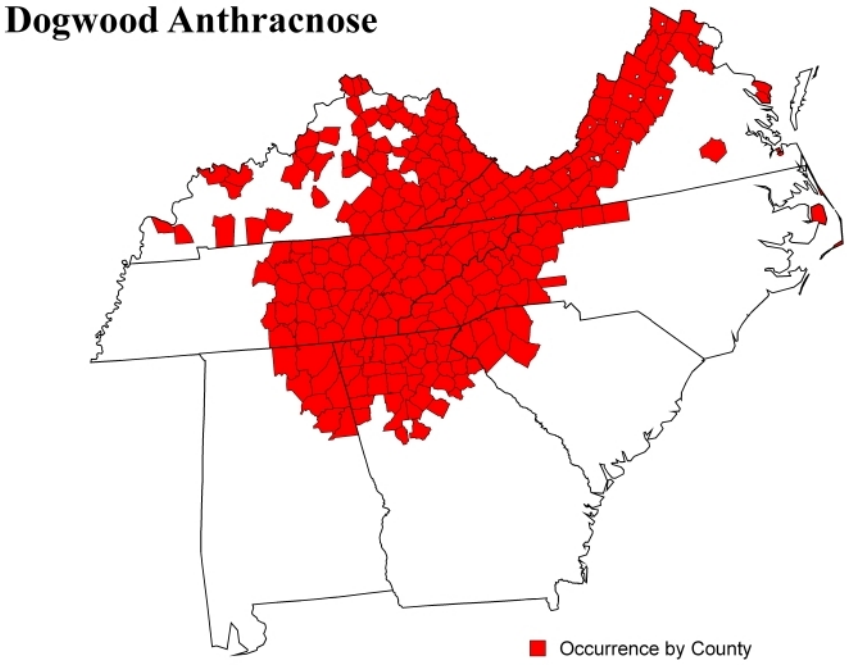
Dogwood anthracnose, *Discula destructiva*

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, while Tennessee experienced increased incidence in some easterncounties. The number of confirmed infected counties in the region is as follows:

State	Counties
AL	8
GA	38
KY	64
NC	30
SC	6
TN	59
VA	48
Total	253



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.

Alabama reported an increase in decline in the southern part of the state, particularly in bottomland stands. These areas are near the Gulf and were probably affected by past hurricanes and the summer drought. Some red oak borer activity was associated with the decline (see also **Red oak borer, *Enaphalodes rufulus*** under **Native Insects**). Florida reported significant oak decline, especially in laurel and water oaks, in areas previously impacted by hurricanes and drought and in association with secondary infections by root disease fung. Including *Armillaria* and *Ganoderma spp.* There is also continuing interest in the possible role of the bacterial leaf scorch pathogen *Xylella fastidiosa* in oak decline and mortality. Virginia reported continuing widespread oak decline due to past drought and storm events; the problem was most notable in Coastal Plain sites. Mortality has leveled off since 2005. 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. Tennessee reported the decline from shallow-soil sites in Davidson and Rutherford Counties and the Nashville Basin. In north central Arkansas and northeastern Oklahoma, widespread oak decline caused mortality has largely abated, although conditions conducive to decline continue to exist. The red oak borer population has diminished substantially.

Maple decline
Region 8: Tennessee
Hosts: Sugar maple, boxelder
Symptoms and scattered mortality were noted in eastern and middle Tennessee counties.

Rhododendron decline
Region 8: Tennessee
Host: Rhododendron
This decline continues to appear in northeastern Tennessee counties.

White pine decline, abiotic, *Leptographium procerum, Phytophthora spp., Pissoides spp.*
Region 8: Virginia, Tennessee
Host: White pine
Scattered isolated landscape trees and small clusters of planted Christmas trees were reported to display mortality caused by white pine decline in 2006. 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. Drought, flooding and poor site conditions may predispose trees to this decline.

Light impacts from this disease were noted in western North Carolina in 2006. Affected stands are typically 5-20 years old, with only small pockets of trees within pure stands usually being injured. Tennessee reported lower incidence of the disease in the middle of the state, but higher incidence in scattered pockets in eastern counties.

Seed Orchard Insects and Diseases

Coneworms, *Dioryctria amatella, D. clarioralis, D. disclusa, D. merkeli*
Region 8: Regionwide
Hosts: Southern pines
Informal surveys indicated 20-30 % loss of second-year cones (2006 cone crop) in untreated trees in slash and loblolly pine seed orchards. This loss does not include first-year flowers and conelets that fall off or disintegrate during the season; therefore, this is a low estimate of the total damage caused by coneworms. Longleaf pine in central Louisiana suffered significant damage from *D. amatella* and *D. merkeli*; this is significant since there was an extremely small first-year crop (2007 cone crop). Surveys in a slash pine orchard in east Texas revealed 11% infested cones, an increase from 5% in 2005. The increase was probably due to the fact that the orchard was sprayed in 2004 but not 2005.

Ensign (Orthezia) scale, *Orthezia insignis*
Region 8: Tennessee
Host: Butternut
An infestation was reported in a butternut progeny test in Polk County, Tennessee.

Pitch canker, *Fusarium circinatum*
Region 8: Regionwide
Hosts: Southern pines

Damage to second-year cones (2006 cone crop) was reported throughout the South. This damage was particularly severe in both loblolly and slash pine orchards located in the south coastal plain of Mississippi and Alabama and the panhandle of Florida. This was associated with tree stress caused by root and crown damage caused by hurricanes in 2004 and 2005 followed by severe drought in these areas during most of 2006. Low levels were also reported form the East Tennessee Nursery.

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 35% seed loss on untreated loblolly in Louisiana.

Abiotic damage – hurricane
Region 8: Alabama, Florida, Louisiana, Mississippi, Texas
Hosts: Southern pines
No direct hurricane damage occurred in the South in 2006. However, damage to southern pine seed orchards that occurred in 2005 as a result of Hurricane Katrina continued in 2006 in the form of tree mortality in pine orchards located in Mississippi and Alabama. The trees received root and crown damage from high winds. Subsequent drought conditions throughout 2006 resulted in severe stress. Trees became susceptible to disease and bark beetle infestations. Loss of large first-generation orchard trees was significant in several orchards.

Nursery Insects and Diseases

Damping-off, *Fusarium* sp., *Pythium spp*., and *Phytophthora spp*.
Region 8: Regionwide
Hosts: Pines, hardwoods
Damping-off continued to be one of the most common disease problems of nurseries in the South. Low levels of post-emergence damping-off were reported in the East Tennessee Nursery.

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 in a North Carolina nursery. Infected 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 spp.*
Region 8: Regionwide
Hosts: Longleaf pine seedlings
Little *Rhizoctonia* damage was noted in 2006 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 South Carolina counties experienced some forest loss to beavers in 2006. The majority of this damage was in hardwood stands. The SC Forestry Commission estimated that 13,870 acres were affected, representing 277,400 cords valued at $4.99 million.

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.

Voles, *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 damage to seedlings in a Nuttall oak plantation in the western part of the state.

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
Eradication efforts over the last few years in Houston have apparently been successful as no new infestations have been found.
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 infestations and the dissemination of information regarding the threat from 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.

Tree-of-Heaven, *Ailanthus altissima*
Region 8: Tennessee
This invasive species continues its spread throughout millde Tennessee and appears to be increasing in abundance in eastern counties as well. One clearcut in Standing Stone State Forest in Overton County regenerated almost entirely in tree-of-heaven.

Abiotic Damage

Air pollution
Region 8: Tennessee
Hosts: All species
Tennessee reported increasing ozone damage in several northeastern counties.

Drought
Region 8: Alabama, Georgia, Louisiana, Mississippi, Oklahoma, Tennessee, Texas, Virginia

Alabama, Louisiana, Mississippi, Oklahoma, Tennessee, and Texas all reported problems with summer drought in 2006. Impacts were primarily related to increases in *Ips* bark beetle-associated pine mortality and somewhat with black turpentine beetle infestations. In Alabama, oak decline in bottomland stands increased with drought conditions and in association with infestations of red oak borer.

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. In Virginia, tree decline due to past drought continued, although overall drought conditions were significantly less severe than in 2005. Tennessee reported low survival rates in 1,007 acres of one-year-old loblolly pine plantations in southwestern counties and white pine sapling and poletimber dieback in northern and eastern counties. Georgia reported widespread stress-induced forest injury from the combination of flooding spring rains followed by extreme summer drought.

Ice/Snow/Hail
Region 8: Regionwide
Hosts: Southern pines and hardwoods
South Carolina experienced an ice storm in late December 2005, generating an estimated $259,193 worth of damage to pine pulpwood stands in five counties that could not be assessed until 2006. Tennessee reported hail damage to 75% of the saplings in a 30-acre loblolly pine plantation in McNairy County.

Wind
Region 8: Tennessee
Hosts: Southern pines and hardwoods
Spring windstorms damaged poletimber and sawtimber stands in middle Tennessee counties and scattered eastern counties. Tornadoes on April 2 damaged 1,014 acres of hardwood forest in Gibson County and another 413 acres in Dyer County. On April 7, tornadoes damaged 50 acres in Dickenson County, 40 acres in Cheatham County, and 45 acres on the Natchez Trace State Forest in Carroll County.

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. The full extent of forest damage and mortality will play out over several years, but effects are expected to be widespread and locally 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.

2006 Conditions Report Tables

Southern Pine Beetle Activity by State and Year

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**	**255**
Texas	**0**	**0**
Virginia	**0**	**0**
Total	**2,845,000**	**6,962**

State	Acres in Outbreak Status - 2006	Number of Spots - 2006
Alabama	**2,607,100**	**1,213**
Arkansas	**0**	**0**
Florida	**0**	**3**
Georgia	**0**	**0**
Kentucky	**0**	**0**
Louisiana	**0**	**0**
Mississippi	**0**	**11**
North Carolina	**0**	**49**
Oklahoma	**0**	**0**
South Carolina	**503,121**	**3,090**
Tennessee	**0**	**14**
Texas	**0**	**0**
Virginia	**0**	**0**
Total	**3,110,221**	**4,380**

FOREST PEST INFORMATION SYSTEM (FPIS) 2006

Region: 8 Date: 2/12/2007 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	38.0	3.6	72
		2	0	0	0	0
		3	2,604.0	597.7	56.3	1,141
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	0	0	3

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	0	0	2
		2	0	0	0	0
		3	0	2.4	0.8	9
SPB	OK	1	0	0	0	0
		2	0	0	0	0
		3	0	0	0	0
SPB	NC	1	0	0	0	0
		2	0	0	0	0
		3	0	22.5	1.2	49
SPB	SC	1	0	0	0	1
		2	0	0	0	0
		3	241.0	2,460.8	41.4	2,388
SPB	TN	1	0	0	0	0
		2	0	0	0	0
		3	0	0	0.5	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

2006 MAP DATA (COUNTIES WITH PEST OCCURRENCE)

Southern pine beetle

	State	County	Total Spots	Status	FIPS
1	Alabama	Autauga	57	Epidemic	01001
2	Alabama	Baldwin	4		01003
3	Alabama	Barbour	54	Epidemic	01005
4	Alabama	Bibb	30	Epidemic	01007
5	Alabama	Bullock	203	Epidemic	01001
6	Alabama	Butler	30		01013
7	Alabama	Calhoun	3		01015
8	Alabama	Chilton	5		01021
9	Alabama	Choctaw	36	Epidemic	01023
10	Alabama	Clarke	12		01025
11	Alabama	Clay	3		01027
12	Alabama	Cleburne	2		01029
13	Alabama	Coffee	1		01013
14	Alabama	Conecuh	14		01035
15	Alabama	Coosa	3		01037
16	Alabama	Covington	8		01039
17	Alabama	Crenshaw	11		01041
18	Alabama	Dale	10		01045
19	Alabama	Dallas	58	Epidemic	01047
20	Alabama	Elmore	15		01051
21	Alabama	Escambia	72	Epidemic	01053
22	Alabama	Fayette	17	Epidemic	01057
23	Alabama	Greene	1		01063
24	Alabama	Hale	3		01065
25	Alabama	Henry	11		01067
26	Alabama	Jefferson	7		01073
27	Alabama	Lamar	18	Epidemic	01075
28	Alabama	Lauderdale	1		01077
29	Alabama	Lawrence	7		01079
30	Alabama	Lee	4		01081
31	Alabama	Lowndes	62	Epidemic	01085
32	Alabama	Macon	43	Epidemic	01087
33	Alabama	Marengo	89	Epidemic	01091
34	Alabama	Marion	2		01093
35	Alabama	Marshall	3		01095
36	Alabama	Mobile	1		01097
37	Alabama	Monroe	33	Epidemic	01099
38	Alabama	Montgomery	49	Epidemic	01101
39	Alabama	Perry	19		01105
40	Alabama	Pickens	20	Epidemic	01107

41	Alabama	Pike	36		01109
42	Alabama	Russell	6		01113
43	Alabama	Shelby	2		01117
44	Alabama	Sumter	13	Epidemic	01119
45	Alabama	Tuscaloosa	17		01125
46	Alabama	Walker	3		01127
47	Alabama	Washington	6	Epidemic	01129
48	Alabama	Wilcox	44	Epidemic	01131
49	Alabama	Winston	65		01133
	AL Total		**1,213**		
	AR Total		**0**		
1	Florida	Alachua	1		12001
2	Florida	Leon	1		12073
3	Florida	Seminole	1		12117
	FL Total		**3**		
	GA Total		**0**		
	KY Total		**0**		
	LA Total		**0**		
1	Mississippi	Attala	4		28007
2	Mississippi	Loundes	1		28087
3	Mississippi	Scott	2		28123
4	Mississippi	Tallahatchie	2		28135
5	Mississippi	Wayne	2		28153
	MS Total		**11**		
1	N. Carolina	Granville	8		37077
2	N. Carolina	Vance	41		37181
	NC Total		**49**		
	OK Total		**0**		
1	S. Carolina	Abbeville	6		45001
2	S. Carolina	Anderson	90		45007
3	S. Carolina	Beaufort	12		45013
4	S. Carolina	Berkeley	48		45015
5	S. Carolina	Charleston	60		45019
6	S. Carolina	Cherokee	12		45021
7	S. Carolina	Chester	111		45023
8	S. Carolina	Clarendon	6		45027
9	S. Carolina	Colleton	156		45029
10	S. Carolina	Dillon	6		45033
11	S. Carolina	Edgefield	441	Epidemic	45037
12	S. Carolina	Fairfield	144		45039
13	S. Carolina	Georgetown	66		45043
14	S. Carolina	Greenville	72		45045
15	S. Carolina	Greenwood	42		45047
16	S. Carolina	Hampton	102		45049

17	S. Carolina	Horry	18		45051
18	S. Carolina	Jasper	96		45053
19	S. Carolina	Kershaw	54		45055
20	S. Carolina	Lancaster	30		45057
21	S. Carolina	Laurens	60		45059
22	S. Carolina	Lexington	132		45063
23	S. Carolina	McCormick	595	Epidemic	45065
24	S. Carolina	Newberry	12		45071
25	S. Carolina	Oconee	126	Epidemic	45073
26	S. Carolina	Orangeburg	66		45075
27	S. Carolina	Pickens	66		45077
28	S. Carolina	Richland	108		45079
29	S. Carolina	Saluda	24		45081
30	S. Carolina	Spartanburg	72		45083
31	S. Carolina	Williamsburg	42		45089
32	S. Carolina	York	155	Epidemic	45091
	SC Total		**3090**		
1	Tennessee	Benton	1		47005
2	Tennessee	Chester	6		47023
3	Tennessee	Cumberland	1		47035
4	Tennessee	Hardeman	6		47069
5	Tennessee	Knox	1		47093
	TN Total		**14**		
	TX Total		**0**		
	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	Fannin	13111
2	Georgia	Gilmer	13123
3	Georgia	Habersham	13137
4	Georgia	Lumpkin	13187
5	Georgia	Rabun	13241
6	Georgia	Towns	13281
7	Georgia	Union	13291
8	Georgia	White	13311
9	Kentucky	Bell	21013
10	Kentucky	Harlan	31097
11	North Carolina	Alamance	37001
12	North Carolina	Alexander	37003
13	North Carolina	Allegheny	37005
14	North Carolina	Ashe	37009
15	North Carolina	Avery	37011
16	North Carolina	Buncombe	37021
17	North Carolina	Burke	37023
18	North Carolina	Caldwell	37027
19	North Carolina	Caswell	37033
20	North Carolina	Cherokee	37039
21	North Carolina	Clay	37043
22	North Carolina	Forsyth	37067
23	North Carolina	Graham	37075
24	North Carolina	Haywood	37087
25	North Carolina	Henderson	37089
26	North Carolina	Jackson	37099
27	North Carolina	Macon	37113
28	North Carolina	Madison	37115
29	North Carolina	Mitchell	37121
30	North Carolina	Orange	37135
31	North Carolina	Rockingham	37157
32	North Carolina	Stokes	37169
33	North Carolina	Surry	37171
34	North Carolina	Swain	37173
35	North Carolina	Watauga	37189
36	North Carolina	Wilkes	37193
37	North Carolina	Yancey	37199
38	South Carolina	Oconee	45073

39	South Carolina	Pickens	45077
40	Tennessee	Anderson	47001
41	Tennessee	Blount	47009
42	Tennessee	Campbell	47013
43	Tennessee	Carter	47019
44	Tennessee	Claiborne	47025
45	Tennessee	Cocke	47029
46	Tennessee	Grainger	47057
47	Tennessee	Greene	47059
48	Tennessee	Hancock	47067
49	Tennessee	Hawkins	47075
50	Tennessee	Jefferson	47089
51	Tennessee	Johnson	47091
52	Tennessee	Knox	47093
53	Tennessee	Loudon	47105
54	Tennessee	Monroe	47123
55	Tennessee	Polk	47139
56	Tennessee	Scott	47151
57	Tennessee	Sevier	47155
58	Tennessee	Sullivan	47163
59	Tennessee	Unicoi	47173
60	Tennessee	Union	47173
61	Tennessee	Washington	47179
62	Virginia	Albemarle	51003
63	Virginia	Allegheny	51005
64	Virginia	Amherst	51009
65	Virginia	Appomatax	51011
66	Virginia	Augusta	51015
67	Virginia	Bath	51017
68	Virginia	Bedford	51019
69	Virginia	Bland	51021
70	Virginia	Botetourt	51023
71	Virginia	Buchanan	51027
72	Virginia	Campbell	51031
73	Virginia	Caroline	51033
74	Virginia	Carroll	51035
75	Virginia	Clarke	51043
76	Virginia	Craig	51043
77	Virginia	Dickenson	51051
78	Virginia	Essex	51057
79	Virginia	Fairfax	51059
80	Virginia	Fauquier	51061
81	Virginia	Floyd	51063
82	Virginia	Fluvanna	51065

83	Virginia	Franklin	51067
84	Virginia	Frederick	51069
85	Virginia	Giles	51071
86	Virginia	Grayson	51077
87	Virginia	Greene	51079
88	Virginia	Henry	51089
89	Virginia	Lee	51105
90	Virginia	Loudon	51107
91	Virginia	Lunenburg	51111
92	Virginia	Madison	51113
93	Virginia	Montgomery	51121
94	Virginia	Nelson	51125
95	Virginia	Orange	51137
96	Virginia	Page	51139
97	Virginia	Patrick	51141
98	Virginia	Pittsylvania	51143
99	Virginia	Prince William	51153
100	Virginia	Pulaski	51155
101	Virginia	Rappahannock	51157
102	Virginia	Roanoke	51161
103	Virginia	Rockingham	51165
104	Virginia	Russell	51167
105	Virginia	Shenandoah	51171
106	Virginia	Smyth	51173
107	Virginia	Spotsylvania	51177
108	Virginia	Tazewell	51185
109	Virginia	Warren	51187
110	Virginia	Washington	51191
111	Virginia	Wise	51195
112	Virginia	Wythe	51197