2005 Insect and Disease Conditions Report
Northeastern Area/Region 9

INSECTS: NATIVE

Arborvitae leaf miners
A complex of four species

Region 9/Northeastern Area: Maine, New Hampshire, Vermont
Host(s): Northern white-cedar

Populations of these perennial pests of arborvitae caused varying degrees of damage across New Hampshire. No significant activity was noted in Maine, and populations in Vermont collapsed in 2005, where only light damage was observed.

Ash defoliator
Palpita magniferalis

Region 9/Northeastern Area: Maine
Host: ash

In Maine, ash along the mid-coast was impacted by a number of stressors including the native pyralid moth, *Palpita magniferalis*. This insect has been reported in forest surveys for years but never at damaging levels in North America until 2003 when severe defoliation was reported in Islesboro and Owlshead, Maine. In 2005, *P. Magniferalis* again caused moderate to heavy defoliation in Islesboro with additional scattered reports along the mid-coast area.

Bagworm moth
Thyridopteryx ephemeraeformis

Region 9/Northeastern Area: West Virginia
Host(s): Miscellaneous conifers, Black locust, boxelder

As in 2004 in West Virginia, light populations of this moth were reported statewide.

No activity was reported in Illinois in 2005.

Balsam gall midge
Paradiplosis tumifex

Region 9/Northeastern Area: Maine, New Hampshire, Vermont
Host(s): Balsam fir

Population levels were very low throughout Maine in 2005. No control projects were necessary and no reports of damage in commercial Christmas tree farms or in wild balsam stands used in the wreath industry were received. Population levels of this pest are cyclic and were expected to show an increase in 2006. In New Hampshire, an increase in gall midge was seen throughout the northern region of the State. Vermont reported very little damage from this pest.

Balsam shoot boring sawfly
Pleroneura brunneicornis

Region 9/Northeastern Area: Maine
Host(s): Balsam fir, Fraser fir

In Maine, there were no reports of significant damage in Christmas tree plantations. Damage in native stands was spotty and generally light.

Balsam twig aphid
Mindarus abietinus

Region 9/Northeastern Area: Maine, New Hampshire, Vermont,
Host(s): Balsam fir

New Hampshire reported statewide populations to be rising particularly in the northern part of the State. In Maine, statewide population levels of this insect were generally low with trace to light damage being reported in forest stands. Populations in many Christmas tress farms were controlled due to a low tolerance for damage in competitive tree markets. Damage did not have a significant impact on the wreath brush harvest in 2005. Vermont reported widely scattered moderate damage.

Basswood thrips
Thrips calcaratus

Region 9/Northeastern Area: Wisconsin
Host(s): Basswood

In Wisconsin, populations remained low in 2005 as they were in 2004.

Beech blight aphid
Grylloprociphilus imbricator

Region 9/Northeastern Area: Ohio
Host(s): American beech

In Ohio, this aphid was again observed in Geauga County but 2005 population levels appeared to decrease from 2004. Aphids were found feeding on twigs and smaller branches but health impacts on trees appeared to be minimal. No significant activity was reported from Pennsylvania in.

Birch skeletonizer
Bucculatrix canadensisella

Region 9/Northeastern Area: Maine, New Hampshire, Vermont
Host(s): Birch species

Birch trees across a wide swath of eastern Maine were heavily impacted by this late season defoliator in 2005. Moderate to severe defoliation was spotty, ranging from individual trees intermingled in mixed hardwood types to 1000 acre patches when stands were predominantly birch. Birch skeletonizer usually stays at high levels for 2-3 years at a time and this was the first year of noticeable defoliation in eastern Maine. Continued impact was expected for the next year or two. In New Hampshire, this insect was present throughout the range of birch but at endemic levels. In Vermont, there was noticeable damage only in central and northern areas.

Bruce Spanworm
Operophtera bruceata

Region 9/Northeastern Area: Maine, New Hampshire, New York, Pennsylvania, Vermont
Host(s): Sugar maple, beech

No significant activity was reported in Maine. In New Hampshire, there were no reports of damage in 2005. In New York, this insect was associated with some moderate to heavy defoliation in the Adirondack

region; however its impacts were usually secondary in comparison to the forest tent caterpillar, which was often noted in the same stands. In Vermont, populations were sharply decreased from previous years.

In Pennsylvania, aerial surveys for Bruce spanworm also included damage done by the fall cankerworm (*Alsophila pometaria*), and halfwing geometer (*Phigalia titea*). An estimated 5,058 acres were reported damaged in some areas. High populations of ground beetle predators (*Calosoma frigidum* and *Calosoma wilcoxi*) were observed associated with some geometrid outbreaks.

Common oak moth
Phoberia atomaris

Region 9/Northeastern Area: Ohio, West Virginia
Host(s): White oak

In Ohio, common oak moth and the half-winged geometer were not as evident this year in southern Ohio and populations appeared to have collapsed. Some white oak mortality was reported to be still occurring as in 2004. In West Virginia, surveys for the common oak moth were done in conjunction with several miscellaneous loopers that cause damage at similar times. Defoliation reported in Braxton, Calhoun, Doddridge, Gilmer, Harrison, Jackson, Kanawha, Lewis, Lincoln, Mason, Pleasants, Putnam, Ritchie, Roane, Tyler, Wayne, Wirt, and Wood Counties totaling approximately 11,000 acres in 2004 was not apparent in 2005. This was the third season that common oak moth was recorded as a primary damaging agent in West Virginia. Populations, while widespread, appeared to be declining in 2005 compared to infestations during the 2003 or 2004 seasons.

Eastern larch beetle
Dendroctonus simplex

Region 9/Northeastern Area: Maine, Michigan, Minnesota, New Hampshire, Vermont
Host(s): Eastern larch

In Maine, pockets of dead and dying larch have been common since the mid 1970's, and continue to be a common sight throughout the range of larch. Stands of larch in southern and central portions of the state exhibited the highest mortality rates. Most tree mortality was generally in association with other stress factors, particularly extremes in water availability. In New Hampshire, populations were found throughout the range of larch. This beetle was found associated with other tree stressors causing mortality in north and central parts of the State. In Vermont, mortality was statewide, especially in the northeast.

Larch beetle continued to be active in Minnesota where 11,593 acres of mortality occurred in 2004, up from nearly 10,000 acres mapped the previous year.

There were 25,717 acres of mortality in the eastern Upper Peninsula of Michigan. Populations were expected to decline following a return to normal moisture conditions during the 2005 growing season.

Eastern spruce budworm
Choristoneura fumiferana

Region 9/Northeastern Area: Maine, Michigan, Minnesota, New Hampshire, New York, Vermont, Wisconsin
Host(s): Balsam fir, white spruce, red spruce, black spruce, hemlock

In Maine, monitoring of low level spruce budworm populations continued in 2005. Monitoring included field observations, a statewide light trap network, and pheromone baited traps that were highly attractive to budworm moths. Field observations were made but no larvae were found and no defoliation was detected. Light traps were operated through the budworm flight period at 25 locations statewide. Fifty-five pheromone locations were trapped this year primarily in north with some in Central and Downeast Maine. Catches continued to average less than three moths per trap with only two sites averaging over 10 moths per trap. Data suggested the budworm population will remain at endemic levels in 2006.

In New Hampshire, no defoliation was detected. Trap catches remained low. In New York, no significant defoliation by spruce budworm was observed in 2005, and trap counts were generally low to moderate. No significant activity was reported in Vermont.

About 92,500 acres were defoliated in Minnesota in 2005, up from 83,000 acres in 2004. Spruce budworm activity had been mapped continuously in Minnesota since 1954.

About 21,000 acres were defoliated in Wisconsin where 3,800 acres of decline and mortality occurred in areas previously defoliated. Also observed in these same areas was spruce needle drop (SNEED) associated with a previously unknown fungus, *Setomeloanomma holmii*.

Michigan had nearly 10,000 acres defoliated and populations were increasing.

Eastern tent caterpillar
Malacosoma americanum

Region 9/Northeastern Area: Illinois, Maine, Massachusetts, New Hampshire, New York, Pennsylvania, Vermont, West Virginia
Host(s): Black cherry, crabapple

In Massachusetts, approximately 55 acres of defoliation was documented in Berkshire County.
In New Hampshire populations remained higher than the 10 year average but no survey work had been done. There was no significant activity reported in New York. In Maine, while not significant, damage was easily seen in 2005. There was defoliation throughout Vermont; the heaviest was in southern areas.

In Pennsylvania, the eastern tent caterpillar damaged primarily black cherry foliage on 2,993 acres scattered over most of the State. The most noticeable defoliation was concentrated on 473 acres in Tioga County. In West Virginia, light to moderate defoliation was observed over most of the State similar to 2004.

Populations were very high in the southern third of Illinois, completely defoliating black cherry in the region.

Fall Cankerworm
Alsophila pometaria

Region 9/Northeastern Area: Maryland, Massachusetts, New Hampshire, New York, Pennsylvania, Vermont, West Virginia
Host(s): Maples, oaks, other hardwoods

In New Hampshire, there were many reports of high moth populations in the southeast region of the State but no defoliation was observed. In New York, this insect was associated with some moderate to heavy defoliation in the Catskills region; however its impacts were usually secondary in comparison to the forest tent caterpillar and the gypsy moth, which were often noted in the same stands. In Vermont, populations collapsed and only light defoliation was observed. No significant activity reported in Massachusetts.

Maryland reported 1,608 acres colonized by the fall canker worm in Anne Arundal County, Pennsylvania surveyed for fall cankerworm along with other geometrid defoliators, including the halfwing geometer (*Phigalia titea*) and the Bruce spanworm (*Operophtera bruceata*) and found damage from the larvae of these moths on 5,058 acres in 2005. This was the third consecutive year of defoliation in some areas of Pennsylvania. Similar to Pennsylvania, West Virginia described fall cankerworm damage in terms of damage caused by several, coexisting geometrid defoliators. Looper defoliation was less severe and less widespread than in 2004. Aerial surveys mapped 1,761 acres of defoliation in Hampshire and Hardy Counties.

Fall webworm

Hyphantria cunea

Region 9/Northeastern Area: Illinois, New Hampshire, New York, Vermont, West Virginia
Host(s): Maple, beech, birch, hickory, walnut, apple, ash, black cherry, cherry, elm, persimmon, oak, other hardwoods

In New Hampshire, populations continued to be high throughout the state with very visible localized damage in the central region of the state. No significant activity was reported in New York. Vermont had scattered heavy damage in northern parts of the State.

Light to moderate defoliation similar to 2004 occurred over most of West Virginia in 2005.

No reports of damage in Illinois in 2005.

Forest Tent Caterpillar
Malacosoma disstria

Region 9/Northeastern Area: Connecticut, Illinois, Indiana, Maine, Massachusetts, Michigan, Minnesota, New Hampshire, New York, Pennsylvania, Rhode Island, Vermont, West Virginia
Host(s): Aspen, basswood, pin oak, red oak, white oak, sweetgum, sugar maple, other hardwoods

Connecticut reported 936 acres of defoliation in Litchfield County. Populations in Maine remained at endemic levels with no defoliation from the insect. Light trap catches in 2004 had shown a significant rise in forest tent moths caught and defoliation was subsequently expected to increase in 2005. However, this situation did not materialize. Those late instar larvae that were encountered had classic disease symptoms which were most likely exacerbated by the cold, wet spring. In Massachusetts, there was severe defoliation on 204,616 acres. This widespread defoliation occurred in Plymouth, Bristol, and Norfolk, Barnstable, Middlesex, Franklin and Berkshire Counties.

New Hampshire aerial survey detected 66,000 acres of defoliation in 2005. The acreage of damage from forest tent caterpillar doubled since 2004. The host was generally red oak with some sugar maple. Trap catches were moderate to high. Inside the traps with high numbers of forest tent caterpillar moths were also high numbers of the “friendly fly”, forest tent caterpillar’s major native biological control.

This insect was the most significant defoliator in New York in 2005. The worst of the damage once again centered on St. Lawrence County and the western Adirondacks, however high populations and severe defoliation were also seen in central New York and the Catskills. Egg mass surveys indicated that there may be heavy defoliation by forest tent caterpillar again in 2006 (however, egg masses were often undersized in stands that had been defoliated 2 or 3 consecutive years).

There was no significant activity reported in Rhode Island. In Vermont, defoliation occurred mostly in southern and western parts of the state on 229,702 acres.

The forest tent caterpillar was reported defoliating 30,759 acres in Pennsylvania during 2005, down from 35,000 acres in 2004. Most of the damage was in Lycoming County both years. West Virginia reported no damage by the forest tent caterpillar in 2005.

The forest tent caterpillar population remained low in the Lake States in 2005. There were only 9,800 acres of defoliation in Minnesota in 2005.

In Michigan, 9,502 acres were defoliated, and populations are increasing in the aspen cover type.

In Indiana, 54,796 acres were defoliated. Mortality was estimated at 192 board feet per acre, with the total volume affected estimated to be worth $1.6 million.

Periodically about 1500 acres of a mixed forest stand in Union County, Illinois are severely defoliated by the forest tent caterpillar. In 2005 the caterpillar infestation was extremely low and the population in 2006 will probably be similar. In previous years a virus infection spread rapidly through the caterpillar population causing a collapse from which it has not recovered.

Hemlock looper (fall flying)
Lambdina fiscellaria

Region 9/Northeastern Area: New England
Host(s): Eastern hemlock, balsam fir, white spruce

No damage or moth flight was detected throughout New England.

Hemlock looper (spring flying)
Lambdina athasaria

Region 9/Northeastern Area: Pennsylvania
Host(s): Eastern hemlock

Previously in 2004, Pennsylvania estimated a total of 25,000 acres defoliation in Tioga County from this looper, but no account of this defoliator was received there this year.

Jack pine budworm
Chorisoneura pinus

Region 9/Northeastern Area: Michigan, Minnesota, Wisconsin
Host(s): Jack pine

About 75,600acres were defoliated in Minnesota, up from 47,000 in 2004. Salvage of jack pine killed by 2-3 years of defoliation continued in Beltrami, Hubbard, and Wadena Counties. Unusual defoliation of red pine was found from Brainerd to Bemidji. Previously this was only documented in 1957 and 1958. Red pine stands miles from any infest jack pine were being defoliated.

In Northwest Wisconsin 222,500 acres of jack pine were defoliated, up from 36,700 acres in 2004.

In Michigan there were 201,470 acres of jack pine mortality. Populations were decreasing in the Northern Lower Peninsula; this was the second year of defoliating populations in the Upper Peninsula.

Jumping oak gall wasp
Neuroterus saltatorius

Region 9/Northeastern Area: Missouri
Host(s): Bur oak, white oak

Jumping oak gall damage was very minimal in Missouri in 2005. Other common gall-forming insects were quite noticeable in recent years, especially the gouty oak gall wasp and the horned oak gall wasp.

Lace bugs
***Corythucha* spp.**

Region 9/Northeastern Area: New Jersey, West Virginia
Host(s): Black cherry, sycamore, oaks

New Jersey reported lace bug infestations defoliating oaks on 614 acres in Atlantic, Burlington, Gloucester, Ocean and Salem Counties in 2005. No report on lace bug infestations was received this year from West

Virginia**;** however, moderate discoloration was observed statewide in West Virginia in 2004 on oak, black cherry, and sycamore trees.

Large aspen tortrix
Choristoneura conflictana

Region 9/Northeastern Area: Michigan, Vermont, Wisconsin
Host(s): Bigtooth aspen, aspen

There was no significant activity reported for this insect in 2005 in Michigan, Vermont, or Wisconsin.

Larch casebearer
Coleophora laricella

Region 9/Northeastern Area: Minnesota, Michigan, Pennsylvania, Vermont, Wisconsin,
Host(s): Eastern larch

There was light defoliation scattered in Vermont.

In Pennsylvania, 20 acres of plantations were reported damaged by the larch casebearer in Tioga and Bradford Counties in 2005. This was a decrease from the 100 acres of damage reported in 2004.

Larch casebearer has been observed in the state continuously since 2,000. In Minnesota, 4,600 acres of defoliation were mapped, down from 6,700 acres in 2004.

Scattered heavy defoliation was reported in Central and Northeastern Wisconsin.

There were 302 acres defoliated in Michigan.

Locust leafminer
Odontota dorsalis

Region 9/Northeastern Area: Maine, Massachusetts, New Hampshire, New York, Ohio, Pennsylvania, Vermont, West Virginia
Host(s): Black locust

In Maine, populations and the resultant defoliation were lower in 2005 than has been seen in many years. However, patches of black locust mortality from previous years of leafminer defoliation were noticeable on stressed sites around the State. In Massachusetts, approximately 200 acres of black locust, mostly along the interstate highways, sustained defoliation. In New Hampshire hundreds of acres of damage have been detected through aerial survey each year for the past decade. Mortality in these areas increased but not significantly. This insect caused some discoloration/defoliation on black locust over portions of Eastern New York, especially the lower to mid-Hudson River Valley. However, the damage was not as severe or noticeable as it had been in 2004. Scattered defoliation and defoliation was reported in Vermont but damage was lower than reported in 2004.

For the second year in 2005, no reports of any significant locust leafminer damage were received from Ohio and Pennsylvania, although there was scattered light damage in both states in both years. In 2005, West Virginia reported moderate to severe damage across most of that State with bronzing most obvious by late June. In 2004, damage was most noticeable on the Monongahela National Forest in Grant and Pendleton Counties.

Loblolly pine sawfly
Neodiprion taedae linearis

Region 9/Northeastern Area: Missouri
Host(s): Shortleaf pine, loblolly pine

Isolated pockets of defoliation of shortleaf pine and planted loblolly pines occurred in east central Missouri in May.

Looper complex – Linden looper and half-winged geometer
Erannis tiliaria*, *Phigalia titea

Region 9/Northeastern Area: Indiana
Host(s): Various oak species

The looper complex defoliated approximately 2,606 acres in Indiana, down from 150,000 in 2004. Heavily forested Brown County sustained all the defoliation, with only 80 acres of heavy defoliation. Based on previous loss estimates, average mortality was 600 board feet per acre. Using a value of $117 per acre, losses on state forests ranged from $468,000 to $936,000.

Maple leafcutter
Paraclemensia acerifoliella

Region 9/Northeastern Area: New Hampshire, Vermont
Host(s): Sugar maple

Populations were present throughout the maple region of New Hampshire; however there was no significant damage. Defoliation and discoloration was occasionally heavy in Northern Vermont.

Maple trumpet skeletonizer
Epinotia aceriella

Region 9/Northeastern Area: Pennsylvania, Vermont
Host(s): Sugar maple, red maple

Light to moderate defoliation was reported statewide in Vermont.

Pennsylvania did not report any skeletonizer damage in 2005.

Oak leaftier
Croesia semipurpurana

Region 9/Northeastern Area: Maine, West Virginia
Host(s): Black oak, northern red oak, scarlet oak

No defoliation was detected in Maine in 2005.

There was no significant activity in West Virginia. West Virginia surveyed for oak leaftier eggs in 2005 again for the third year in Barbour, Pendleton, Pocahontas, Randolph, and Tucker Counties in January and early February. No eggs of the oak leaftier were found on sample twigs during the survey.

Orange-striped oakworm
Anisota senatoria

Region 9/Northeastern Area: Connecticut, Maryland, New Jersey, New York, Pennsylvania, Rhode Island, West Virginia
Host(s): Black oak, red oak

No activity was reported in Connecticut. There was no significant defoliation in New York. In Rhode Island 15,932 acres were defoliated. That included the same area that was affected by gypsy moth in the late spring (Providence and Kent County).

For the second year in 2005, no reports of defoliation by this insect were received from Maryland, New Jersey, Pennsylvania, or West Virginia.

Oystershell scale
Lepidosaphes ulmi

Region 9/Northeastern Area: Maine, Vermont
Host(s): Beech

There was no significant activity in Maine. Vermont reported scattered light damage with occasional heavy populations.

Peach bark beetle
Phloetribus liminaris

Region 9/Northeastern Area: New York
Host(s): Black cherry

Populations of this bark beetle remained spotty in New York, but detectable throughout much of the range of cherry in the state. The most severe damage was associated with build-up of downed slash from storms or logging operations.

Periodical cicada
Magicicada septendecim

Region 9/Northeastern Area: New Jersey, New York, Ohio, Pennsylvania, West Virginia
Host(s): Hardwoods

There was no significant activity in New York.

No reports of cicada were received from New Jersey or Ohio although other broods had large emergences in 2004. Pennsylvania reported no damage and limited populations in 2005 compared to 37,000 acres that were affected by brood X in 2004. West Virginia reported that brood X1 emergence was expected in Nicholas and Fayette Counties according to historical records, however, no emergence was observed.

Pine needleminer
Exoteleia pinifoliella

Region 9/Northeastern Area: Massachusetts
Host(s): Pitch pine

In Massachusetts, severe damage was observed on Pitch Pine in Plymouth and Barnstable Counties. There were 22,624 acres of damage detected with aerial survey.

Scarlet oak sawfly
Caliroa quercuscoccineae

Region 9/Northeastern Area: Pennsylvania, West Virginia
Host(s): Black oak, pin oak, red oak

No reports of this sawfly were received from Pennsylvania or West Virginia for 2005. Although in Pennsylvania in 2004, damage was most noticeable on 100 acres each in Perry and Tioga Counties, but less noticeable over 100,000 acres in Clinton and Lycoming Counties.

Southern pine beetle
Dendroctonus frontalis

Region 9/Northeastern Area: Delaware, Maryland, New Jersey, Ohio, West Virginia
Host(s): Austrian pine, loblolly pine, pitch pine, Scotch pine, Virginia pine

Aerial flights for southern pine beetle infestations conducted during June 2005 in Delaware found no evidence of southern pine beetle spots. Delaware continued to participate in the Southern Pine Beetle Pheromone Survey for the fifth year. Although, southern pine beetle adults were detected in three of four traps used for the study, their counts indicate that southern pine beetle populations are at low or declining levels. In Maryland, southern pine beetle populations continued to remain low, but populations usually build up to damaging levels in a 7-8 year cycle within the state. The last outbreak in Maryland occurred ended in 1994. Talbot County experienced, for the first time ever, a minor southern pine beetle infestation on 99 acres within 22 isolated spots. The outbreak was significant to many of the landowners because most of the spots occurred on residential property. In New Jersey, southern pine beetle killed pines on 634 acres in 2005 in Cumberland, Atlantic, and Salem Counties. Ohio reported no southern pine beetle activity similar to 2004. A Lindgren funnel trapping survey was conducted for southern pine beetle in Mingo and Mason Counties, West Virginia, during the spring of 2005. Traps were set at sites where pine mortality indicated past southern pine beetle activity, but no southern pine beetles were collected. In 2004 southern pine beetle traps were placed in the two above mentioned counties plus Jackson and Wayne Counties. Despite capturing 373 southern pine beetles, predatory clerid beetles were numerous enough to indicate static or declining southern pine beetle populations.

Spruce beetle
Dendroctonus rufipennis

Region 9/Northeastern Area: Maine, Vermont
Host(s): White and red spruce

There was no significant activity reported in Maine or Vermont.

Variable Oakleaf Caterpillar/Saddled Prominent/Green Striped Mapleworm Complex
Lochmaeus manteo et al

Region 9/Northeastern Area: Maine
Host(s): Oak, maple, beech, birch

Heavy defoliation of red oak caused by variable oakleaf caterpillar was detected in western Maine as well as in a small pocket in Westbrook and Falmouth in Cumberland County. Other intermixed hardwood species were affected to a lesser extent by the other defoliators in the complex. Heavy defoliation was noticeable from the air on approximately 1600 acres, but ground checks detected lighter amounts of defoliation extending well beyond the mapped areas. This complex usually increases for 2 to 3 years and then subsides.

White pine weevil
Pissodes strobi

Region 9/Northeastern Area: Connecticut, Maine, New Hampshire, New York, Vermont
Host(s): White pine, spruce

Connecticut reported more problems than in previous years, on white pine and especially on spruce; this has been a trend for the past three years. In Maine, this perennial problem continued to limit the growth of white pine as well as Colorado blue and Norway spruce. Stem deformities, resulting from the loss of the

terminal leader, were very common on white pine and caused heavy economic losses to landowners annually. This insect is common throughout the pine regions of New Hampshire. This insect remains endemic to New York Statewide. No significant activity was reported in Vermont.

INSECTS: NONNATIVE

Ambrosia Beetles
Xylosandra crassiusculatus; X. germanus

Region 9/Northeastern Area: Missouri
Host(s): Black walnut, possibly other hardwoods

The granulate ambrosia beetle (*Xylosandrus crassiusculus*, also known as the Asian ambrosia beetle) and the black stem borer (*X. germanus*) are exotic species of ambrosia beetles established in the eastern U.S. that attack a variety of deciduous host trees. The presence of "frass toothpicks" (stick-like accumulations of excrement and wood particles) protruding from bark is an indicator of attacks by these insects. Both of these species are rather aggressive and will attack healthy, as well as stressed trees. These insects create branched tunnels in the sapwood. Damage to hosts can be severe and sometimes fatal.

Reports of attacks by these beetles in Missouri have become more common in recent years. The granulate ambrosia beetle was identified as infesting black walnut trees in a southwest Missouri plantation in May 2005. This may be one of the first reports of this insect attacking walnut. During 2002-2005, "frass toothpicks" were observed in Missouri on American elm, sugar maple, red maple, Japanese maple, yellow poplar, northern red oak, goldenrain tree and Chinese chestnut. Identities of the specific ambrosia beetles involved were not determined in these instances.

Asian longhorned beetle
Anoplophora glabripennis

Region 9/Northeastern Area: Illinois, New York, New Jersey
Host(s): Ash, birches, black locust, elm, horse chestnut, maples, poplar, willow

In New York, low numbers of newly detected infested trees were found in 2005. There were 6 in Manhattan, 18 in Queens, 21 in Brooklyn, and 38 in Amityville. Two of the six Manhattan trees were elms adjacent to Central Park; they brought much needed public awareness and media attention. No new infested trees were found in Islip (none since 2002) and the area was reported close to being deregulated. Soil injections and a new low-pressure stem injection system to deliver the pesticide Merit made the chemical control program much more efficient (in 2004, 11,000 trees were soil injected and 47,000 stem injected; in 2005, 51,000 soil were injected and 11,000 stem injected). With a focus on public awareness, the organization Central Park Conservancy helped to gain access to private residences in Manhattan, which has been a longstanding program barrier. A group called Trees NY provided the same service in Brooklyn and Queens.

In New Jersey, an Asian longhorn beetle quarantine remained in effect in parts of the borough of Carteret and the Avenel section of Woodbridge Township in Middlesex County, and the cities of Rahway and Linden in Union County. In Union and Middlesex Counties, Asian longhorned beetle infested trees on 1,363 acres in 2005. The first discovery of Asian longhorn beetle in New Jersey was in 2002. Presently multi-agency efforts to manage potential infestations are underway.

There were no new infested trees found in Chicago, Illinois.

Balsam woolly adelgid
Adelges piceae

Region 9/Northeastern Area: Connecticut, Maine, New Hampshire, Vermont, West Virginia

Host(s): Balsam fir

There was no significant activity reported in Connecticut. In Maine, balsam woolly adelgid populations continued at very low levels in 2005. While mortality from past years is striking, the consistent rainfall of 2004 and 2005 coupled with low population levels of the adelgid allowed a number of the light to moderately damaged trees to recover. Mortality of heavily damaged fir continues to occur but it becomes less obvious as old stands are salvaged or fall to the ground. Patches, two to ten acres in size, of dead fir will remain a common sight in eastern Maine for several more years. Firs grown for Christmas production should be watched closely for signs of this pest. In New Hampshire, this insect caused damage and mortality throughout the range of balsam fir, except in the most northern part of the State. All stands inspected below 2,000 feet were infested but no infestation was found above that elevation. Annual mortality caused by this pest is found on approximately 5,000 acres per year. There was scattered mortality in southern Vermont.

No report was received from West Virginia for 2005, but in 2004, this insect was reported causing mortality in Randolph, Pocahontas, and Tucker Counties.

Banded elm bark beetle
Scolytus schevyrewi

Region 9/Northeastern Area: Illinois, Maryland, Michigan, Missouri, New Jersey
Host(s): Elms

No new states reported this Asian bark beetle in 2005. This exotic was discovered in Maryland for the first time in 2004 in Laurel and Ijamsville, Prince George's County and Frederick County, respectively, as part of the USDA APHIS CAPS program. This beetle also was found in 2004 for the first time in Carteret, New Jersey, during the USDA Forest Service Rapid Detection of Exotic Bark Beetles (RAPDET) Pilot Project.

This exotic beetle of uncertain importance is widespread in Missouri and Illinois. This beetle also was found in 2004 in Detroit, Michigan.

Birch leafminer
Fenusa pusilla

Region 9/Northeastern Area: Massachusetts, New Hampshire, Vermont
Host(s): Birch

Approximately 60 acres of moderate damage was observed in northern Worcester County, Massachusetts. In New Hampshire, defoliation was light and scattered in Carroll, Grafton, and Sullivan Counties. Damage was common in Vermont.

Browntail moth
Euproctis chrysorrhoea

Region 9/Northeastern Area: Maine, Massachusetts
Host(s): Red oak

The browntail moth population in Maine collapsed during the summer of 2005. There was a moderate to high population going into the spring, and larvae emerged from overwintering webs and begin feeding on new foliage. However, the larvae failed to continue normal development because of the cold, wet spring. Many were found covered with fungal spores, most likely *Entomophaga aulicaie*. Larval samples brought back to the lab had a high number of Diptera parasites in them as well. Numerous properties in the Casco Bay area were treated with ground applications of pesticide before the collapse occurred. Initial results from the fall/winter overwintering web survey showed very few webs and the ones that were present were small. In Massachusetts, defoliation continued to be limited to the Provincetown, Truro areas of Cape Cod.

There were 49 acres of defoliation detected through aerial survey, approximately half of that reported in 2004.

Common European pine shoot beetle
Tomicus piniperda

Region 9/Northeastern Area: Delaware, Illinois, Indiana, Maine, Maryland, Michigan, Minnesota, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Vermont, West Virginia, Wisconsin
Host(s): Scotch pine, white pine, pines

The Maine Forest Service has trapped for pine shoot beetle in Maine since 1999. Oxford and Franklin Counties are both under a state and federal quarantine for pine shoot beetle, *Tomicus piniperda*. It was collected in Oxford and Franklin Counties during trapping surveys performed between 2000 and 2003. During 2005, trapping with 138 Lindgren funnel traps was done in 45 sites (23 pine processing sites, 2 log yards, and 20 plantations and natural stands with hard pines). No pine shoot beetle adults were trapped in Maine in 2005. Pine shoot borer is found at two small isolated locations in Northern New Hampshire and the populations have not increased or moved in four years. In New York, pine shoot beetle was trapped in three new counties in 2005: Columbia, Orange and Ulster. No significant damage by the insect was reported. In Vermont there was scattered shoot mortality and very light damage. Traps were placed in Windsor, Rutland, Bennington, and Windham Counties.

Delaware did not report this exotic species in 2005, but it was found in several northern counties of New Jersey. Pine shoot beetle was surveyed in 10 Maryland counties in 2005. This beetle, first found in western Maryland in 1995, is now present in all five western Maryland Counties (Allegany, Frederick, Montgomery, Garrett, and Washington). Significantly more beetles were trapped in 2005 than in previous years. Consequently, a federal quarantine restricts pine material moving from these counties. No report was received form Ohio in 2005. In 2004, this beetle became established in Lawrence and Meigs Counties and became present in 80 counties statewide. No reports from Pennsylvania were received in 2005. In 2004, this beetle was detected for the first time in Sullivan, Snyder, Union, and Wayne Counties bringing the total to 39 counties statewide. No report was received from West Virginia in 2005, but the 2004 report added to the 18 counties known to harbor this beetle. A Federal quarantine was summarily initiated for this insect in West Virginia.

In Minnesota, a quarantine of all counties was established in 2005 by USDA in September after the state repealed a state quarantine in August. In 2004 the following counties had reported the pine shoot beetle: Anoka, Dakota, and Ramsey.

Infestations have been found throughout the northern half of Illinois but populations have always been low and damage usually regarded as insignificant. Foresters and Christmas tree growers are well informed on cultural practices such as stump treatments and slash removal as a means to keep the population of beetles in check.

No significant activity was reported in Indiana.

Elongate hemlock scale
Fiorinia externa

Region 9/Northeastern Area: Connecticut, New York, Pennsylvania
Host(s): Eastern hemlock

There was no significant activity reported in Connecticut.

This insect is common in approximately the same range as hemlock woolly adelgid, and often found in the same stands. However, it was recently discovered in Rensselaer County, New York where hemlock woolly adelgid has not yet been seen.

In Pennsylvania, the density of elongate hemlock scale in 2005 was recorded as part of a general hemlock survey for 22 eastern counties where populations ranged from low to high. In 2004, Pennsylvania reported this exotic scale causing foliar and shoot damage in isolated Eastern hemlocks in Berks and Pike Counties, Pennsylvania.

Emerald ash borer
Agrilus planipennis

Region 9/Northeastern Area: Indiana, Michigan, Ohio
Hosts(s): Ash species

In Ohio, emerald ash borer infestations have been identified in ten northwestern counties. Trap tree and visual surveys are used by Ohio Department of Agriculture (ODA) and APHIS to locate infested areas. Several counties have multiple infestation sites. ODA and APHIS address each spot infestation (single trees) by removing all ash trees within a ½ mile radius of each infested tree. Over 250,000 ash trees have thus far been removed, chipped, and burned in northwestern Ohio since emerald ash borer was found in 2003. New infestation spots were found in 2005 in Delaware, Auglaize, Ottawa, Hancock, Erie and Lorain Counties. In 2004, Ohio discovered the beetle for the first time in Fulton and Henry Counties. These were added to the previously known infested counties. In Maryland, Emerald ash borer infested trees from Michigan were found at a Maryland nursery. MDA Plant Protection personnel destroyed these nursery plants including those that were traced forward after being sold. Additionally, ash trees within ½ miles of the infested nursery were destroyed. MDA FPM and Plant Protection staff continues emerald ash borer surveillance throughout the state using trap trees and visual surveys of individual trees. In 2005, no additional infested ash trees were found and no emerald ash bores were found in trap trees.

Currently, the contiguous quarantined area in Southeast Michigan encompasses 21 counties. To date, Michigan has detected 31 isolated emerald ash borer infestations outside the contiguous quarantined area. The first infestation to be detected in Michigan's Upper Peninsula was identified in Brimley State Park (Chippewa County). This site was eradicated (1/2 mile radius of ash trees removed) and will monitored for future infestation. As part of the eradication efforts, 25,000 infested or at-risk trees were cut in a total of four outlier sites across the state. These sites have been prioritized based on: pest population; location; risk of spread; and national/international significance. The program is based upon the Science Advisory Panel's "Gateways of Exit" strategy that focuses resources to areas where emerald ash borer has the potential to spread out of the Lower Peninsula of Michigan. Approximately MDA 10,500 detection trees were located throughout the state, except in the generally infested areas within the quarantine of Southeast Michigan. Trees were established in higher densities in gateways on the southern border of the state, along the St. Clair River bordering Canada, and the tip of the "mitten" and the Eastern Upper Peninsula. Additional trap trees were placed throughout the state in "high risk" areas such as campgrounds and recreation areas by Michigan Tech University. In 2005, $12.8 went to Michigan for regulatory/control (49%), detection/survey (24%), sanitation/disposal (17%), outreach/education (7%), and data management (3%).

This is latest exotic pest in Indiana and is a very serious threat to eliminate Indiana's ash resource. The beetle originally was found in 2004 in Steuben County. Presently there are four infestations two of which have received eradication treatment (Jellystone and Manapogo) and two are currently undergoing eradication measures (Shipshewana and Grand View Bend). For this effort to date, over 118,500 ash trees has been killed or destroyed on over 12.5 square miles of Indiana. The eradication work in 2004/2005 has been supported by an estimated $2,502,341 of federal funds from the USDA. Surveys have been and are still being conducted to detect new infestations. Approximately 1,000 trap trees are spread across the northern tier of counties to detect emerald ash borer. Presently, the movement of infested firewood and logs is the greatest risk to the introduction and spread of emerald ash borer.

European fruit lecanium scale
Parthenolecanium comi

Region 9/Northeastern Area: New York, Vermont

Host(s): Hardwoods

This soft-bodied scale was reported in dense populations on many hardwoods in Northern New York. Heavy populations occurred statewide in Vermont, with some dieback observed in infested stands; sharp increase from 2004.

Gypsy moth
Lymantria dispar

Region 9/Northeastern Area: Connecticut, Delaware, Illinois, Indiana, Maine, Massachusetts, Maryland, Michigan, Minnesota, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, West Virginia, Wisconsin
Host(s): Apple, aspen, basswood, black walnut, northern red oak, pin oak, red oak, white oak

Connecticut reported defoliation on 63,337 acres. In Maine, no defoliation of hardwoods resulting from gypsy moth larval feeding was recorded in 2005. *E. maimaiga*, virus and parasites continued to keep the gypsy moth population at low levels throughout southern Maine. The 2005 fall egg mass survey indicates that the population will remain at endemic levels next season. In Massachusetts, Plymouth, Bristol, and Norfolk Counties sustained heavy defoliation on about 36,771 acres. In many cases this insect was defoliating the same areas as the forest tent caterpillar. Permanent survey sites indicated the start of a buildup statewide. In New Hampshire, approximately 6,300 acres were defoliated in Belknap and Carroll Counties. In New York, moderate to heavy defoliation occurred in scattered locations mostly in the Southeastern and Central parts of the state. Many of the stands defoliated were also hit in 2004, and egg mass surveys suggest that we will see a significant amount of acreage defoliated by gypsy moth in 2006. Rhode Island reported defoliation on 3,102 acres in the central part of the State. Most of the damage was located in south Scituate and central Coventry in Providence and Kent Counties. Scattered light defoliation occurred in southwestern Vermont. Eggmass counts indicated that populations may increase in 2006.

Pennsylvania reports increased defoliation and egg mass counts. Aerial and ground surveys recorded 333,335 acres of damage occurring mostly in Northeastern Pennsylvania. Suppression programs are planned for 2006. With very few gypsy moth suppression projects deployed in 2005, Ohio reported about 7,700 acres of defoliation this year. Credit was given to the various slow the spread projects occurring in 2005. New Jersey reported 45,367 acres of defoliation. Scattered areas in West Virginia experienced small increases in gypsy moth defoliation and a suppression program is planned for 2006. Aerial surveys in Delaware did not detect gypsy moth defoliation in 2005 and egg mass counts were insignificant during 2004 egg mass surveys. No gypsy moth defoliation was recorded throughout Maryland for the first time since 1981. There were no treatments in 2005. However, egg mass counts were observed in several counties and treatments for 2006 have been proposed.

In Minnesota, record high numbers of moths were trapped in 2005. There were 1,310 moths caught, surpassing the 1998 record of 953. Most of the moths were caught in Cook County, the far northeastern county. Treatments in the area are planned for 2006. No defoliation was detected in the state. A 640 acre block on the Superior National Forest, in the vicinity of the Boundary Waters Canoe Area, was successfully treated.

In Wisconsin, about 2,700 acres were successfully treated. There was only about 20 acres of damage reported.

Gypsy moth populations in Michigan were increasing statewide. Nearly 150,000 acres were defoliated in 2005.

Populations in 2005 continued to remain spotty in the northeastern Illinois counties with little noticeable defoliation.

Indiana reported a total of only 2 acres of gypsy moth damage, in Allen and Scott Counties.

Hemlock woolly adelgid
Adelges tsugae

Region 9/Northeastern Area: Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, West Virginia
Host(s): Eastern hemlock

Hemlock Wooly Adelgid was first detected in native hemlocks in Maine two years ago and occurs in light spot infestations scattered over a total of 5,000 acres in five towns in the southern most tip of the state. During 2005 new spot infestations were found scattered in an abutting area of 1,500 acres in the towns of Eliot, York and South Berwick. Hemlock wooly adelgid was previously detected in the towns of Kittery, Wells and in other parts of York. The Maine Forest Service is carrying out an integrated Slow-the-Spread management program to reduce the spread and impact of established adelgid populations in York County. A total of 7,500 *Sasajiscymnus tsugae* were initially released in 2004 by the Maine Forest Service on Gerrish Island to establish this predator in a forested part of the island. An additional 10,000 *S. tsugae* were released during the spring of 2005 on Gerrish Island. In October 2004, native hemlocks on 9 sites in Kittery, York and Wells were sprayed with Talstar plus oil. Treated sites were monitored throughout 2005 and all showed excellent control. In October 2005, three additional sites in Eliot, York and Kittery were similarly treated. These sites were chosen for treatment because the use pattern by the landowner was deemed to present a high risk of artificial spread of hemlock wooly adelgid.

This insect continued to be a major concern. In Massachusetts, no new communities were found to be infested this year. The State continued to monitor predator release sites but was unable to recover this ladybird beetle at 10 of the 11 release sites. The severe cold experienced during 2004 resulted in adelgid mortality in most locations however buildup in the adelgid population was beginning.

No new infestation sites were found in 2005 in New Hampshire. Populations decreased at the few remaining infestation sites in Rockingham County.

In New York, the hemlock woolly adelgid, continued to cause damage and mortality to native forest and ornamental eastern hemlock trees. Damage was most severe in areas that have been infested for several years (the Catskills and South). In some areas a majority of the trees are infested and many of those are in declining health or dead. Pockets of hemlock mortality were seen from the air in infested areas. However, no new county occurrences were found in 2005 (for the 2nd consecutive year). It was also noted that some stands seem to be in a recovery phase, but there was no optimism about long-term recovery.

In Rhode Island, populations and new damage were down for the second year in a row. Mapping and evaluation of stands 10 acres and larger in Kent and Washington Counties was ongoing.

Hemlock woolly adelgid continued to spread throughout the generally infested area causing hemlock decline and tree mortality. Biological control activities continued in 2005 in many Northeast States. The first effort to establish *Scymnus sinuanodulus* occurred in 2005 and more than 4000 beetles were released in Connecticut, New Jersey, Pennsylvania, West Virginia, and Maryland. New infestations in West Virginia included Upshur and Wyoming Counties. This brought the total number of infested counties to 24 within the State. Pennsylvania reported Elk and Tioga Counties as newly infested which brought their total infested counties to 44. Normal winter temperatures during the past winter resulted in growing adelgid numbers in many areas of the Mid-Atlantic States.

Larch casebearer
Coleophora laricella

Region 9/Northeastern Area: Minnesota, Michigan, Pennsylvania, Vermont, Wisconsin
Host(s): Eastern larch

Light defoliation in scattered locations was reported in Vermont.

In Pennsylvania, 20 acres of plantations in Tioga and Bradford Counties were reported to be damaged by the larch casebearer. This was a decrease from the 100 acres of damage reported in 2004.

Larch casebearer had been observed in the state continuously since 2,000. In Minnesota, 4,600 acres of defoliation were mapped, down from 6,700 acres in 2004.

Scattered heavy defoliation was reported in Central and Northeastern Wisconsin.

There were 302 acres defoliated in Michigan.

Larch sawfly
Pristiphora erichsonii

Region 9/Northeastern Area: Vermont
Host(s): Eastern larch

There was no significant activity reported in Vermont.

Pale bark beetle
Hylurgops palliatus

Region 9/Northeastern Area: New York, Ohio, Pennsylvania
Host(s): Pine, larch, spruce

There was no significant activity reported in New York, Ohio, and Pennsylvania.

Pear thrips
Taeniothrips inconsequens

Region 9/Northeastern Area: Vermont
Host(s): Red maple, sugar maple

Populations were very low with widely scattered moderate to heavy damage in central Vermont.

Red pine scale
Matsucoccus resinosae

Region 9/Northeastern Area: Connecticut, Massachusetts, Rhode Island
Host(s): Red pine

The known infestations in Hampden and Hampshire Counties, Massachusetts, continued to slowly spread.

There was no significant activity reported in Connecticut and Rhode Island.

Satin moth
Leucoma salicis

Region 9/Northeastern Area: Maine, New Hampshire, Vermont
Host(s): Aspen

In Maine, there was no defoliation observed in 2005. In New Hampshire, satin moth was highly visible on several acres along the interstate. No other known damage occurred. Scattered defoliation was reported in Northern Vermont.

Sirex woodwasp
Sirex noctilio

Region 9/Northeastern Area: New York
Host(s): Pine

In New York, this new invasive pest was identified from a 2004 exotic bark beetle trap in early 2005, and since trapped in dozens of locations centering around Fulton and Oswego counties, but as far away as 40+ miles (not even considering Canadian finds near the St. Lawrence River. So far Sirex woodwasp has been confirmed infesting Scots and red pine, however we cannot yet rule out other pines as susceptible hosts. Much more delineation work is necessary before we can confidently or competently begin eradication and/or management of this pest.

Winter moth
Operophtera brumata

Region 9/Northeastern Area: Massachusetts, Rhode Island
Host(s): Apple, northern red oak, American elm, red maple, basswood, poplar, willow

In Massachusetts, 20,468 acres of defoliation were documented in Plymouth, Barnstable, Norfolk and Essex Counties. A lack of natural enemies was confirmed by surveys conducted by the University of Massachusetts and resulted in the importation and rearing of a parasitic fly, *Cyzenis albicans.* In Rhode Island, defoliation was confirmed in all east bay communities and as far west as Westerly on the Connecticut border, in Bristol, Newport, Kent and Washington Counties.

Xyleborus Bark Beetle
Xyleborus seriatus

Region 9/Northeastern Area: Massachusetts
Host(s): Conifers

In Massachusetts, as part of the Early Detection/Rapid Response survey for exotic bark beetles, *Xyleborus seriatus* was confirmed for the first time in North America. This insect was trapped in Worcester, Middlesex and Franklin Counties using funnel traps.

DISEASES: NATIVE

Annosus root rot
Heterobasidion annosum

Region 9/Northeastern Area: Michigan, Vermont, Wisconsin
Host(s): Red and white pine

The disease was scattered throughout Vermont with no new infection centers reported.

The status of the disease remained unchanged in Michigan.

In Wisconsin, annosum root rot was found in a red pine stand in Waushara County. This brings the total number of counties with this disease to fourteen (Adams, Buffalo, Dunn, Green, Iowa, Jefferson, LaCrosse, Marquette, Richland, Sauk, Trempealeau, Walworth, Waukesha, and Waushara Counties).
Annosum root rot was found primarily on red pine, and occasionally in white pine.

Anthracnose
Gnomonia* spp.*, Apiognomonia veneta

Region 9/Northeastern Area: Regionwide
Host(s): American sycamore, ash, beech, birch, maples, oaks, miscellaneous hardwoods

Anthracnose occurred throughout in the region, depending on weather. Anthracnose was present in Connecticut on many hardwoods again in 2005. Hosts included sycamore, oak, ash, beech, elm, and maple. In New Hampshire, anthracnose was identified as a serious forest damage causal agent on 5,642 acres in the southern part of the State. In southern Vermont there was widespread heavy damage on sugar maple.

Pennsylvania reported that anthracnose along with other foliage diseases tended to be less damaging to sycamore, maple, ash, and oak than in 2004 due to dry and warmer spring conditions in 2005. Only 6,058 acres of moderate damage was reported statewide. In 2004, above average precipitation starting in the spring and continuing into the fall created optimal for anthracnose development. Sugar maple anthracnose plots were monitored in Bedford, Blair, potter, Susquehanna, and Tioga Counties and exhibited sparse anthracnose activity in 2005. Moderate to severe anthracnose infections were found in Pendleton County and moderate levels in Hardy County, West Virginia in 2005 despite prevailing dryer conditions. Stressed induced fungal infection by Hypoxylon and Armillaria were present at many investigated sites.

During 2005, moderate to heavy severity sycamore anthracnose was reported in 23 Illinois counties mostly in the northern half of the State. In the early half of the spring the weather was cool with moderate amounts of rain which contributed to the increase.

Armillaria root disease
Heterobasidion annosum

Region 9/Northeastern Area: Regionwide
Host(s): All species

Dieback and mortality occurred on many hosts throughout the Northeastern Area with various degrees of damage. A high incidence of Armillaria root disease was noted in declining stands in 2004 and 2005 in New York.

Ash Leaf and Twig Rust
Puccinia sparganioides

Region 9/Northeastern Area: Maine
Host(s): Ash spp.

In Maine, ash trees, especially white ash, along coastal sections of Maine were partially or completely defoliated by the ash leaf and twig rust organism in 2005. Trees in mid-coast Maine, especially in the Rockland /Thomaston area, were the most heavily affected but the disease was apparent at varying intensities along the entire coast from Ellsworth to Kittery. This disease has been building for several years now, and is likely to be epiphytotic at many coastal locations in 2006.

Botryosphaeria canker
***Botryosphaeria* spp.**

Region 9/Northeastern Area: Connecticut, Pennsylvania, Vermont
Host(s): Beech, dogwood, chestnut oak, Leyland cypress, maple, red oak

In Connecticut the disease continued to be prevalent on many species including Leyland cypress, maple, dogwood, beech, peach, and oak. There was no significant activity in Vermont.

In Pennsylvania, shoot and twig damage caused by the periodical cicada in 2004 produced ideal substrate for this fungus. Extensive canker development was expected but no twig damage or defoliation was observed in 2005.

Diplodia Shoot Blight
Diplodia pinea

Region 9/Northeastern Area: Michigan, Minnesota, Wisconsin
Host(s): Red pine

Diplodia shoot blight and canker was having a significant impact on survival of red pine plantings throughout the Lake States. Latent infections in nursery seedlings and infected overstory trees were the sources of infection.

Eastern dwarf mistletoe
Arceuthobium pusillum

Region 9/Northeastern Area: Maine, Michigan, Minnesota, Wisconsin, New Hampshire, New York, Vermont
Host(s): Black spruce, red spruce, white spruce

Severe damage as the result of infection by this parasitic plant continued to occur in stands of white spruce in coastal areas of Maine although trends for this disease were stable. The disease remained at endemic levels in New Hampshire and in New York. Scattered damage occurred statewide in Vermont.

The disease remained at endemic levels in Michigan, Minnesota, and Wisconsin.

Fir-Fern Rust
Uredinopsis mirabilis

Region 9/Northeastern Area: Maine
Host(s): Balsam fir

Balsam fir in southern and central Maine was heavily infected by the fir-fern rust pathogen in 2005. The disease was especially severe in Christmas tree plantations, but woodland trees were affected as well. Long term impacts to forest trees are negligible, but the disease has the potential to be serious again in Christmas tree plantations in 2006. Infection of the fern species which serve as alternate hosts was heavy last summer, so inoculum's potential will be high next year. If weather conditions are favorable as new needles emerge next spring, infection levels may be damaging to Christmas tree producers again in 2006.

Hemlock needle cast
Fabrella tsugae

Region 9/Northeastern Area: Pennsylvania
Host(s): Eastern hemlock

In Pennsylvania, this needle cast fungus was less noticeable in 2005 with only scattered areas of low infection found statewide. Areas previously affected in 2003 and 2004, however, exhibited extensive twig and branch dieback in the lower canopy. Previous reports list defoliation on 156 acres in Bedford, Carbon, Fulton, Huntingdon, Monroe, Pike, Potter, Schuylkill, Wayne and Mercer Counties.

Oak wilt
Ceratocystis fagacearum

Region 9/Northeastern Area: Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, West Virginia, Wisconsin
Host(s): Red oaks

West Virginia did not report any new counties with oak wilt during 2005. An aerial survey in 2004 observed for oak wilt in Grant and Hardy Counties where oak wilt was formerly established, and in four historically oak wilt free counties of Ohio, Brooke, Tucker and Webster.

Oak wilt continued to be the single most important disease in the Central States of Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, and Wisconsin. Most states have only limited control programs.

Minnesota has an aggressive survey and control program. An assessment of the oak wilt suppression program revealed that incidence of disease is highly correlated to the lack of suppression programs and the presence of sandy soils. A significant reduction in oak wilt was highly correlated to communities with active suppression programs. Oak wilt suppression grant recipients had oak wilt pockets averaging 1.71 infected acres per square mile, infected communities ranging from 0 to10.54 acres per square mile. In those areas receiving grants, there were 3,122 active centers affecting 3,616 acres. The average was 1.13 acres per pocket.

Seventeen of 40 samples submitted to Missouri Department of Conservation were positive from Boone, Cass, Platte, Greene, Jasper, Pettis, St. Charles, and St. Louis Counties.

There were 104 oak wilt pockets identified on the Nicolet National Forest and intermingled private lands in Oconto and Marinette Counties, Wisconsin. A control program was initiated.

Together with white oak decline, 1,422 acres were mapped in Iowa. There were 205 acres of new mortality mapped in Michigan.

Pine needle cast
Lophodermium pinastri

Region 9/Northeastern Area: Maine
Host(s): Pines

Large stands of pitch pine in western Maine were affected by needlecast disease in 2005. Symptoms were most conspicuous in the Fryeburg, Brownfield and Waterboro areas, with a total of 7,650 acres affected. The severity of this problem was dependent on the timely occurrence of favorable infection periods, so we are unable to predict the future trend of this disease.

Rhizosphaera needlecast
Rhizosphaera kalkhoffii

Region 9/Northeastern Area: Vermont
Hosts(s): White and Blue spruce

There was widespread heavy damage on Christmas trees and ornamentals in Vermont.

DISEASES: NONNATIVE

Beech bark disease
Cryptococcus fagisuga* and *Nectria coccinea* var. *faginata* and *Nectria galligena

Region 9/Northeastern Area: Connecticut, Maine, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, West Virginia
Hosts(s): American beech

In Connecticut, the disease continued to be endemic throughout the State and was not particularly noteworthy based on inquiries and samples. In Massachusetts, trees in Berkshire and Franklin Counties continued to experience decline and mortality caused by this disease. This disease, which was introduced to Maine in the early 1930's, continued to kill or reduce the quality of beech stems

statewide. But beech bark disease did not threaten to eliminate beech from the Maine forest because some trees were resistant, and even susceptible trees sprouted profusely from roots when trees were damaged, killed or harvested. Beech stands on certain sites exhibited higher levels of infection and mortality than was apparent on other, even nearby, sites. Although assessment of the beech bark disease damage was complicated by the effects of drought, oystershell scale, late spring frosts, and various hardwood defoliators, losses were know to be extensive. In the past 10 years in the four northern counties, beech mortality averaged approximately 5% per year; resulting in an annual net loss of 1-2% of the beech basal area. Trends regarding the presence of this disease were static, with about 20% of stems exhibiting some resistance. New Hampshire reported beech bark disease common on beech throughout the State. Beech bark disease was found readily throughout New York State. It was not reported in any new counties in 2005. The outbreak in Vermont was progressing with widespread beech mortality and dieback occurring statewide.

Beech scale was discovered in 2003 in the southern part of Garrett County, Maryland. Surveys in Ohio continue to find beech scale in many NE counties (Lake, Geauga, Cuyahoga, Portage, and Ashtabula). Only on site, located in Geauga County at The Holden Arboretum, has been confirmed to have the disease fungus. In Pennsylvania, declining and dead beech trees due to beech bark disease occur over extensive areas of Warren, McKean, Forest, Elk, and Cameron Counties and an isolated pocket of trees with beech bark disease was found in 2004 in Monroe County. There was no report of beech bark disease conditions in 2005. In West Virginia, beech bark disease surveys were continued in 2005. Two new counties (Webster and Preston Counties) were added to 12 previously listed counties with beech bark disease totaling an area of 1,390,298 acres. Areas were delimited where only the beech scale is present. A total of 3,279,217 acres in 14 counties now are infested with the beech scale.

Michigan has over 7 million acres of Maple-Beech-Birch type with an estimated 138 million trees in all size classes. There were 421,810 acres of beech bark disease reported, and an additional 612 acres had the scale but no evidence of *Nectria sp.* infection yet.

Dutch elm disease
Ophiostoma (=Ceratocystis) ulmi* and *Ophiostoma novo-ulmi

Region 9/Northeastern Area: Regionwide, Washington D.C
Hosts(s): American elm

Connecticut reported the disease continued to be endemic throughout the State, with greater than usual incidence and severity the past few years, possibly associated with several years of drought stress in combination with other weather and site-related stresses. Symptoms of Dutch elm disease were conspicuous throughout Maine during 2005. While most elm mortality observed was to ordinary American elms, there were observations of infection on Liberty elms as well. Symptoms of this disease were conspicuous statewide in New York. Many of the trees that were succumbing were mature individuals in urban and suburban settings, which survived the initial wave of the disease through the region.

No major state surveys were conducted for this disease in the Mid-Atlantic States in 2005. Surveys, however, continued in Washington, DC. Two independent surveys in Washington, DC by the Casey Tree Foundation and USFS Forest Service determined disease incidence rates of 4.0 percent and 3.6 percent, respectively, within the city proper. An additional survey within the historic and governmental areas by the NPS determined a 1 percent disease incidence. These percentages are low and are approaching the standards of disease acceptance levels established by the DED District Task Force. Despite the lack of major state surveys, reports of Dutch elm disease from several states are still received yearly from arborists and state tree specialist.

There were 560 acres with Dutch elm disease mapped in 2005 in Minnesota. Iowa mapped 1,362 acres of detectable mortality. In 2005, there were 45 Illinois counties that reported moderate to heavy elm tree mortality caused by Dutch elm disease. Each year there are more reports of elm tree mortality especially in the northern half of Illinois. The reason for the increase remains unclear but there is some concern that the

beetle, *Scolytus schevyrewi*, might be implicated. Studies need to be conducted to see if *S. schevyrewi* might be a more aggressive vector of the Dutch elm fungus than the smaller European elm bark beetle.

European larch canker
Lachnellula willkommii

Region 9/Northeastern Area: Maine
Host(s): Larch

European larch canker is a fungal disease which originated in Europe and was first found on native larch (tamarack) in southeastern Maine in 1981. Information gathered from existing cankers indicates this disease has been present in Maine since at least the 1960's and perhaps much longer. This disease may infect any species of the genus *Larix* or *Pseudolarix*. Since larch canker has the potential for causing serious damage to both native larch stands and reforestation projects utilizing non-native larches in Maine and elsewhere, the disease is under state and federal quarantine. The trend for this disease is static; no evidence of spread from infested areas to non-infested areas was noted in 2005.

White pine blister rust
Cronartium ribicola

Region 9/Northeastern Area: Connecticut, Maine, Massachusetts, Michigan, Minnesota, New Hampshire, New York, Vermont, West Virginia, Wisconsin
Host(s): Eastern white pine

Connecticut reported the disease was endemic in several areas and not particularly active in 2005. This disease remained static at moderate levels, but was common throughout Maine. Isolated spots in white pine regeneration continued to be observed in Massachusetts. Most observations were in southern Berkshire and central Worcester Counties. The disease occurred statewide in Vermont.

No significant changes were reported in West Virginia.

No significant changes were reported in the Lake States.

DISEASES: ORIGIN UNKNOWN

Bacterial leaf scorch
Xylella fastidiosa

Region 9/Northeastern Area: Maryland, New Jersey, New York
Host(s): Maples, Northern red oak, scarlet oak, and pin oak

There was no significant activity reported in New York.

New Jersey bacterial leaf scorch surveys continued. The disease increased throughout the state particularly in urban areas. In Delaware, oak mortality occurred on numerous city streets because of this disease. These 2005 surveys compliment the New Jersey and Maryland statewide surveys done previously that showed significant and rapid increases in disease intensity and spread.

Butternut canker
Sirococcus clavigignenti-juglandacearum

Region 9/Northeastern Area: Regionwide
Host(s): Butternut

The disease is widespread in Connecticut. Butternut canker was first found in Maine in 1993 in Kennebec County. It was now reported in all Maine counties except Washington. The trend of this disease in Maine

was presently static. In New Hampshire, 99% of the surveyed trees over 6" dbh are now infected. Our small intraspecific tree breeding program continues. We have four trees still considered resistant that we are collecting scion material from. Two small orchards of grafted trees have been established. Butternut canker was common in New York wherever butternut was found; it was uncommon to see a symptom-free butternut. This disease was not reported from any new counties in 2005. The Department of Environmental Conservation began to archive locations of healthy butternut, but the dataset was far from complete. Dieback and mortality statewide in Vermont, uninfected trees are rarely observed.

The disease remains endemic through the range of butternut in the Mid-Atlantic states.

The disease remains endemic throughout the central region.

Dogwood Anthracnose
***Discula* spp.**

Region 9/Northeastern Area: Regionwide
Host(s): Flowering dogwood

This disease has spread throughout the range of flowering dogwood in the Northeastern States and has eliminated flowering dogwood in localized areas.

In Connecticut, despite the dry season, there were enough periods of free moisture to allow infections from dogwood anthracnose. It seemed worse than usual on a tree-by-tree basis; this was especially problematic on heat and drought-stressed trees. Dogwood anthracnose was present in all counties in Connecticut.

Dogwood anthracnose continued to affect understory and ornamental flowering dogwood across New York. This disease was not reported from any new counties in 2005. In Vermont it was present throughout the host range of dogwood in the State.

There was no significant change in the Mid-Atlantic States.

There was no significant change in the Central States.

Sudden oak death (Ramorum blight)
Phytophthora ramorum

Region 9/Northeatestern Area: Not Present
Host(s): Various oak species

Surveys conducted in all states in the Northeastern States were negative for *P. ramorum*.

DECLINES/COMPLEXES

Ash decline

Region 9/Northeastern Area: Connecticut, Illinois, New York
Host(s): White ash

In Connecticut, there were reported incidences of "unexplained" death of mature white ash throughout the state possibly associated with ash yellows and drought.

In New York, there were many stands with various symptoms of "decline" mapped.
There has been a general decline in the vigor of ash trees for many years in Illinois. In 2005 there were 8 counties that reported moderate to severe ash decline. Surveys conducted in Illinois in previous years

showed that ash yellows is common throughout the state and is probably responsible for the general decline.

Birch decline

Region 9/Northeastern Area: New Hampshire, Vermont
Host(s): White birch

In New Hampshire, 3288 acres of dieback and mortality were mapped by aerial survey on state and private lands in the Northern part of the State. There was also considerable damage reported at the higher elevations on the White Mountain National Forest. Dieback and mortality of white birch were reported statewide in Vermont at higher elevations.

Black ash/brown ash decline
Fraxinus nigra

Region 9/Northeastern Area: Maine, Minnesota
Host(s): Black ash (brown ash)

There was no significant activity reported in Maine.

Black ash decline continued to expand in Minnesota. An additional 4,322 acres in 58 stands were detected across the northern 2/3's of the state. This was down from 27,000 acres detected in 2004. No insects or pathogens appeared to be associated with the decline, although occasionally secondary root disease and bark beetles were present. Site and weather conditions were thought to be primary predisposing factors. Research was underway to determine more fully the causes of the widespread phenomenon.

Elm yellows

Region 9/Northeastern Area: Pennsylvania, West Virginia
Host(s): American elm, slippery elm

Pennsylvania recorded elm yellows widely distributed in northeastern areas of the state mostly in riparian habitats, fence rows, and along roadways. Elm yellows appeared to affect individual elms and not large groups of elms known as disease "flair-ups". As in 2004, Pennsylvania reported this elm disease as continuing to persist in Bradford, Centre, Clinton, Lycoming, Potter, and Union Counties. West Virginia reported static levels of elm yellows disease continued to occur within the Eastern Panhandle in 2005. No significant activity was reported in Ohio and Maryland.

Hickory decline

Region 9/Northeastern Area: New York, Wisconsin
Host(s): Bitternut and shagbark hickory

In New York, many declining hickory stands were found in the Finger Lakes region in 2004, but after further investigation in 2005 the relationship of causal factors remained undetermined. Shagbark hickories were unaffected; leading to speculation that drought was a major factor (the shagbarks being somewhat deeper-rooted than our other hickories). Armillaria root disease was another common factor between stands, but it was not known to be the primary pathogen in this case.

Severe decline and mortality of hickory has been observed from southern to northeastern Wisconsin. Most of the mortality was of bitternut hickory, but there was some mortality of shagbark hickory as well. The symptoms progress from thinning crowns to branch mortality to complete tree mortality. Epicormic branches often sprout from the main stem only to wilt and die later. Some of the pests that have been associated with dying hickory trees include a bark beetle, a flatheaded borer, and possibly fungi that cause canker and wilt diseases. The hickory bark beetle (*Scolytus quadrispinosus*) is believed to introduce a

canker fungus (*Ceratocystis smalleyii*), which creates oblong sunken cankers with discoloration under the bark. A flatheaded woodborer (*Agrilus otiosus*) was also observed attacking these declining and dying trees although it is not clear if this flatheaded woodborer is the primary cause of decline or is secondary. Additionally, there may be a fungal disease associated with dying trees that causes wilt (*Ceratocystis caryae*), in which the affected trees have dead crowns with wilted epicormic branches. Armillaria root disease was also found in the roots of dead hickory trees in some sites, but in other sites, there was no Armillaria. Armillaria was not found in the northeast part of the state where hickory in Calumet, Shawano, and Oconto counties were most affected.

Oak decline

Region 9/ Northeastern Area: Connecticut, Iowa, Minnesota, Missouri
Host(s): Red oaks

In Connecticut there was considerable, unexplained dying of oaks. There were many contributing factors such as drought and Armillaria root rot. Oak decline decreased in Vermont due to a recovery from drought conditions.

In Minnesota about 768 acres of oak mortality associated with the two-lined chestnut borer in areas previously affected by drought, and defoliation by the forest tent caterpillar were detected in northern counties in 2005.

No large increases in wood borer activity were observed in northwest Missouri where prolonged drought conditions existed from 2002-2004. Oak decline was an ongoing phenomenon in red oak stands across much of the state. Decline was observed occurring in white oak stands in a few locations.

Iowa continued to report scattered decline of white oak. Together with oak wilt, 1,422 acres were detected.

Sugar maple decline

Region 9/Northeastern Area: Connecticut, New York, Vermont
Host(s): Sugar maple

There were incidences of “unexplained” death of mature sugar maples in Connecticut, possibly associated with drought, salt (roadside trees), Armillaria, Verticillium, and other factors. In New York the rate of mortality among declining sugar maple seems to have increased over the previous few years. In Vermont, dieback and mortality increased due to impact of forest tent caterpillar; in some cases associated with lecanium scale.

Red pine pocket mortality

Region 9/Northeastern Area: Minnesota, Wisconsin
Host(s): Red pine

Red pine pocket mortality was discovered for the first time in Sherburne County, Minnesota.

In Wisconsin, pockets of dying red pine are expanding. Mortality is associated with turpentine beetles and a fungus, *Leptographium* sp. About 123 pockets in over 50 stands in southern Wisconsin have been mapped. Isolating pockets by severing roots between diseased and healthy trees was attempted. On 13 sites 2,800 total trees were isolated, 106 died, and only 1 tree was outside the plow line.

White pine decline

Region 9/Northeastern Area: Connecticut, New York
Host(s): White pine

There were reports of declining white pine (young and mature trees) in Connecticut. In New York, declining white pine were again mapped and investigated in Eastern parts of the Hudson River Valley, but the relationship of causal factors remained undetermined. Root disease, root weevils, and drought have all impacted the site in previous years. One of the major sites was a former industrial site on the Hudson River, and it was speculated that pollutants in the soil played a role in the decline.

ABIOTIC DAMAGE

Drought

Region 9/Northeastern Area: Connecticut, Massachusetts, Pennsylvania, Vermont, West Virginia
Host(s): Black oak, red oak, white oak, hardwoods and softwoods

In Connecticut, drought was a major factor contributing to tree stress this year. Periods of prolonged unusually high temperatures exacerbated the drought situation. Symptoms were evident on many woody species, especially hemlock, pine, maple, dogwood, and ash. In Massachusetts, the effects of the 2004 drought continued to be observed. A total of 107 acres, mostly on the higher elevation of Berkshire County, was mapped during the annual aerial survey. In Vermont, various hardwoods were affected statewide. Mortality of stressed trees continued, but the impact was lessened following three years of adequate water availability.

Pennsylvania reported fluctuating moisture conditions in 2005. Winter precipitation was well above average statewide and averages decreased to normal during the spring months and then reached levels below average in May. West Virginia reported that from January through September conditions were much dryer and warmer compared to normal. Dieback and mortality was reported.

Flooding

Region 9/Northeastern Area: Connecticut, Iowa, Minnesota, Vermont
Host(s): Hardwoods and softwoods

Heavy rain in Connecticut in October 2005 resulted in flooding and standing water in many areas. It was thought that root damage from these conditions would be evident next season. In Vermont flooding occurred statewide with 11,078 acres mapped.

About 3,700 acres in Minnesota sustained damage from floods.

In Iowa, Boone, Tama, Marshall, Polk, Louisa, and Linn counties had 2,910 acres with a high incidence of chlorotic silver maple and cottonwood trees, and 776 acres of mortality.

Frost

Region 9/Northeastern Area: Vermont
Host(s): Hardwoods and softwoods

Occasional light damage on balsam fir Christmas trees occurred in northern Vermont.

Ice/snow

Region 9/Northeastern Area: Vermont
Host(s): Hardwoods

In Vermont, there was widespread breakage and mortality of beech , birch, oak, and aspen following heavy wet snow in October.

Leaf tatters
Herbicide

Region 9/Northeastern Area: Illinois, Wisconsin, Minnesota
Hosts(s): White oaks, hackberry

For about the last 15 years this condition has appeared sporadically across the landscape in Illinois, Wisconsin, and Minnesota. Symptoms appear in the spring when leaves develop without mid-vein tissue. The second flush of leaves develops normally. Experiments were initiated at the University of Illinois in 2004 and then repeated in 2005 in which small potted white and red oak trees were exposed briefly to various herbicides inside a spray chamber. Trees were treated in the tight bud stage, when the leaflets were unfolding, and when the leaves were fully expanded. Leaf tatters developed in the group of trees that were exposed to the chloroacetanilide herbicides acetochlor + atrazine (Harness Xtra) and metolachlor (Dual Magnum) when they were in the unfolding leaf stage. The same herbicides when applied when the trees where in the tight bud stage or when the foliage was fully developed did not produce leaf tatters. The leaf symptoms that were produced in the experiments were similar to the leaf symptoms seen on trees in forests near agricultural fields.

What long term affects leaf tatters may have on trees remained unclear. The stage of leaf development, the kind of herbicide applied, wind currents, and temperature are all variables that will influence whether leaf tatters injury is produced. Trees with leaf tatters one year do not necessarily have leaf tatters the following year. Foresters, nurserymen, and homeowners need to communicate with the herbicide applicators to find ways of reducing herbicide drift. During 2005 there were 22 Illinois counties that reported severe to moderate leaf tatters injury.

No significant activity was reported in Minnesota and Wisconsin.

Other

Region 9/Northeastern Area: Minnesota
Hosts(s): Aspen

There were 587 pockets of aspen with thin foliage throughout northern Minnesota this summer; acreage totaled 410,500. The trees had leaves but they were small, approximately the size of a nickel to a quarter. These trees often were the largest and oldest on the sites. This situation was not examined until late in the summer making it somewhat difficult to make a positive determination of the cause. There appeared to be a number of causes of this across the State. In most locations insects did not appear to have been involved. In some places spring frosts at the time of aspen leaf break killed portions of the tender new leaves and caused other trees to drop all their new leaves. In northeastern Minnesota another common cause appeared to be stress from past years of forest tent caterpillar and drought. The affected trees were putting on little or no growth and the shoot growth was abnormally short.

Wind/tornado/hail

Region 9/Northeastern Area: Connecticut, Minnesota, Vermont
Host(s): Hardwoods and softwoods

Sporadic hail damage occurred in Connecticut, but nothing widespread. There was considerable breakage from ice storms, especially in northern areas. In Vermont, there was scattered breakage and mortality of various tree species following tropical storms, with increased windthrow due to wet soil conditions.

About 3,400 acres were damaged by winds in Minnesota.

INVASIVE PLANTS

Region 9/Northeastern Area: Regionwide
Host(s): Various forest and landscape trees

Field crews in New York collected data on the presence and relative abundance of a limited set of invasive plants during the 2005 Sudden Oak Death survey, and in other locations as appropriate. Vermont reported buckthorn, barberry, Japanese honeysuckle, multiflora rose, Norway maple and oriental bittersweet to be problematic.

The most prevalent invasive species reported in Indiana was multiflora rose (*Rosa multiflora*). It occurred on over two thirds of Forest Inventory sample plots. The second most common was Japanese honeysuckle, occurring on almost 25% of sample plots. The most common introduced tree species was tree-of-heaven (*Ailanthus altissima*).