

2004 Insect and Disease Conditions Report Northeastern Area/Region 9

INSECTS: NATIVE

Arborvitae leaf miners **A complex of four species**

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

Populations of these perennial pests of arborvitae caused varying degrees of damage across the State of Maine. Arborvitae in northwestern Maine and eastern Washington County sustained the heaviest damage again in 2004. Many infested native stands as well as ornamentals showed signs of stress and increased mortality especially on sites affected by past drought. Damage was reported on 1,030 acres in central Vermont.

Bagworm moth *Thyridopteryx ephemeraeformis*

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

No activity was reported in Connecticut in 2004.

In West Virginia, light populations were reported statewide on miscellaneous conifers.

Scattered moderate to high populations occurred in the southern half of Illinois. It was found most commonly in urban landscapes.

Balsam gall midge *Paradiplosis tumifex*

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

This pest has caused very significant damage to the Christmas tree and wreath industries of Maine in the past, but currently population levels were very low throughout Maine in 2004. 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 in Maine and were expected to show an increase in 2005 or 2006 Vermont reported very little damage from this pest.

Balsam shoot boring sawfly *Pleroneura brunneicornis*

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

In Maine, no survey was conducted on this insect in 2004 and there were no reports of significant damage in Christmas tree plantations. Damage in native stands was spotty and generally light. There was no significant activity reported in Vermont.

Balsam twig aphid *Mindarus abietinus*

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

In Maine, statewide population levels of this insect were down with trace to light damage being reported in forest stands. Populations in many Christmas tree farms were controlled due to a low tolerance for damage in competitive tree markets. Damage did not have a significant impact on wreath brush harvest in 2004. There was very light damage reported in Vermont.

Beech blight aphid
Grylloprociphilus imbricator

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

In Ohio, this aphid was extremely numerous this year in Geauga County, but the feeding on twigs and small branches was only a nuisance to residents and a curiosity to entomologists. This aphid was also abundant on the Allegheny National Forest in Elk County, Pennsylvania.

Birch skeletonizer
Bucculatrix canadensisella

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

Heavy defoliation of birches resulted from feeding by the birch skeletonizer over most of northern and eastern Maine in 2003, but, in 2004, populations had returned to endemic levels throughout the state. No significant damage was reported in New Hampshire. In Vermont, there was only light damage in the central and northern part of the State, a downward trend from the heavy damage reported in 2003.

Bruce spanworm
Operophtera bruceata

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

There was 615 acres of defoliation mapped in Penobscot and Franklin Counties in Maine. This pest was reported to be common in central and northern New Hampshire. New York reported moderate to heavy defoliation associated with this insect occurred in the Adirondack region. In many stands, one or more other defoliators were also active. Moderate to heavy defoliation was scattered in south-central Vermont. Egg traps were placed to monitor the population.

Defoliation by this insect was reported on 1,060 acres in Potter County, Pennsylvania.

Common oak moth
Phoberia atomaris

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

Common oak moth and the half-winged geometer again defoliated trees in scattered locations throughout southern Ohio. Some white oak mortality was reported. In West Virginia, approximately 11,000 acres of defoliation were reported in Braxton, Calhoun, Doddridge, Gilmer, Harrison, Jackson, Kanawha, Lewis, Lincoln, Mason, Pleasants, Putnam, Ritchie, Roane, Tyler, Wayne, Wirt, and Wood Counties. This was the second season that common oak moth was recorded as a primary damaging agent in West Virginia.

Populations, while widespread, did not seem as severe in 2004. This insect occurred in conjunction with several miscellaneous loopers.

Eastern larch beetle
Dendroctonus simplex

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

Pockets of dead and dying larch infested with this species have been common since the mid 1970s and continued to be a common sight throughout the range of larch in Maine. 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 Vermont, the insect occurred statewide, especially in the northeastern part of the State, and was found associated with larch decline.

In Minnesota, nearly 10,000 acres of mortality occurred in 2003, and in 2004 an additional 6,000 acres of trees were killed. Over 29,000 acres of larch mortality occurred in Michigan.

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

Monitoring of low level spruce budworm populations continued in Maine in 2004. Monitoring included field observations, a statewide light trap network, and pheromone baited traps that were highly attractive to budworm moths. Field observations showed no larvae were found and no defoliation was detected. Light traps were operated through the budworm flight period at 25 locations statewide. Moths caught in the network of light traps were of no consequence and indicated a continuation of endemic levels in 2005. Pheromone traps were placed in the same locations utilized in 2003. Catches continued to average less than ten moths per trap with many traps catching no budworm. Data suggested the budworm population will remain at endemic levels in 2005. No defoliation was detected in New Hampshire, but there was an increase in insects caught in pheromone traps. In New York, no significant defoliation by spruce budworm was observed in 2004, and trap counts were generally low to moderate. There was no damage observed in Vermont.

Michigan had nearly 26,000 acres defoliated. About 83,000 acres were defoliated in Minnesota in 2004, up from 35,000 in 2003. This was the 51st consecutive year of detectable spruce budworm defoliation in the State. More than 26,000 acres were defoliated in Wisconsin, about 3,800 acres of decline and mortality occurred in areas previously defoliated. Also observed in these same areas was spruce needle drop associated with a previously unknown fungus, *Setomeloanomma holmii*.

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, minimal damage was observed in Essex, Middlesex, Norfolk, Bristol, and Berkshire Counties. There was heavy defoliation throughout New Hampshire. While not a significant forest pest in Maine, the eastern tent caterpillar is easily seen and reports received from the general public were up in 2004. In New York, moderate to heavy defoliation associated with this insect occurred at scattered locations across the State. In many stands, one or more other defoliators were also active. There was heavy defoliation reported statewide in Vermont, an increase from 2003.

In Pennsylvania, eastern tent caterpillar damaged foliage on 500 acres in Tioga County. Surveys also revealed that it was present but not causing damage on approximately 35,000 acres of black cherry in Lycoming County. In West Virginia, light to moderate defoliation was observed over most of the State. Nucleopolyhedrosis virus was reported primarily in the Eastern Panhandle counties.

In Illinois, populations were very high in the southern third of the State, completely defoliating black cherry trees in the region.

Fall cankerworm
Alsophila pometaria

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

In Massachusetts, observations during peak defoliation indicated that in the counties of Plymouth, Norfolk, and Bristol were experiencing a complex of both the fall cankerworm and winter moth. New York reported moderate to heavy defoliation associated with this insect occurred in the Catskill region. In many stands, one or more other defoliators were also active. Vermont reported 60 acres of defoliation in Chittenden County, and larvae were observed throughout the western and southern part of the State.

Surveys in Maryland detected defoliation on 179 acres in Carroll County and 21 acres in Anne Arundell County. Aerial surveys in Pennsylvania found 58 acres of defoliation in Dauphin County. Aerial surveys in Grant, Hampshire, Hardy, and Mineral Counties, West Virginia, mapped approximately 39,000 acres of defoliation (33,973 light and 5,034 heavy) from a complex of spring inchworms associated with the fall cankerworm.

Fall webworm
Hyphantria cunea

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

No significant activity was reported in New York. There was scattered, light defoliation statewide in Vermont.

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

Very high populations in the northern third of Illinois in 2003 shifted to the west-central counties in 2004.

Forest tent caterpillar
Malacosoma disstria

Region 9/Northeastern Area: 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, other hardwoods

Massachusetts aerial survey documented 44,787 acres of heavy defoliation from this insect. This was approximately double the defoliation reported in 2003. Widespread defoliation was observed in Plymouth, Bristol, and Norfolk Counties with small patches of defoliation observed in Berkshire County. In Maine, light defoliation caused by the forest tent caterpillar was noted around the Bagaduce River in Penobscot in 2004. The areas are predominantly forested with a mix of aspen and red oak, and were heavily defoliated in 2003. Populations elsewhere in the State remained at endemic levels. There was an increase in populations in New Hampshire where there was 30,000 acres of scattered defoliation reported throughout Cheshire, Grafton, Merrimack, and Sullivan Counties. There was also an additional 2,628 acres of defoliation

mapped in Carroll and Coos Counties in the White Mountain National Forest. There were moderate numbers of moths caught in pheromone traps for the first time in over a decade. New York reported moderate to heavy defoliation associated with this insect in St. Lawrence County (primarily) and scattered other locations throughout the eastern and central parts of the State. There was also 49 acres of defoliation, discoloration, and dieback mapped on the Seneca Nation of Indians lands in Erie County and 166 acres of defoliation on Mohawk Nation lands. In many stands, one or more other defoliators were also active, so it was difficult to precisely quantify how much of the damage was caused by this particular pest. However, forest tent caterpillar was probably the single most significant defoliator in New York in 2004. In Rhode Island, a small, but healthy, infestation became established in the towns of East Providence, Warwick, and East Greenwich. Damage was minimal but this population was poised to expand in 2005. In Vermont, defoliation was mapped on 90,300 acres, mostly in the southern and western part of the state, a large increase from the previous year. Many defoliated trees failed to re-leaf and some trees re-leafed in early fall. The numbers of moths caught in pheromone traps was up slightly.

Forest tent caterpillar defoliated 35,000 acres in Lycoming County, Pennsylvania. There was no significant defoliation reported in West Virginia in 2004.

Populations remained very low in Illinois, down from an outbreak that occurred in the southeastern counties in 2002. This was the second consecutive year of defoliation in the southeastern Indiana counties of Jefferson and Switzerland. About 100,000 acres were defoliated in an area north of the Ohio River, west to the town of Madison and east to the town of Patriot. Populations finally collapsed in the Lake States in 2004. At its peak in 2002, forest tent caterpillar defoliated over 7 million acres in Minnesota alone. In 2004, only 10,500 acres were defoliated in Minnesota. Four years of defoliation resulted in aspen mortality on over 27,500 acres, and declining aspen occurred over an additional 22,900 acres. About 3,200 acres of paper birch mortality and 200 acres of decline also occurred.

Hemlock looper (fall flying)

Lambdina fiscellaria

Region 9/Northeastern Area: Maine, Massachusetts, New York, Pennsylvania, Vermont

Host(s): Eastern hemlock, balsam fir, white spruce

No damage or moth flight was observed in Massachusetts. Maine reported that no significant hemlock looper populations were found in 2004. No activity was reported in New York in 2004. Populations remained low in Vermont and no damage was observed.

There was 25,000 acres of defoliation in Tioga County, Pennsylvania.

Jack pine budworm

Chorisonneura pinus

Region 9/Northeastern Area: Michigan, Minnesota, Wisconsin

Host(s): Jack pine

In Michigan, 314,164 acres of defoliation occurred and activity was expected to decline in coming years. About 47,000 acres were defoliated in Minnesota, up from 18,500 in 2003. About 36,000 acres were defoliated in northern Wisconsin, and populations were expected to increase over the next couple of years.

Jumping oak gall wasp

Neuroterus saltatorius

Region 9/Northeastern Area: Missouri, Ohio

Host(s): Bur oak, white oak

This insect did not cause significant damage in Ohio in 2004.

Jumping oak gall damage was very minimal in Missouri in 2004. 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: Connecticut, West Virginia
Host(s): Black cherry, sycamore, oaks

No significant activity was reported in Connecticut in 2004.

In West Virginia, moderate discoloration was observed statewide on oak, black cherry, and sycamore.

Large aspen tortrix
Choristoneura conflictana

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

There was an increase in defoliation that was associated with satin moth in southeastern Vermont.

There were 1,187 acres of defoliation in Michigan. Tens of thousands of acres of defoliation occurred in pockets ranging in size from 100 to 2,000 acres scattered across the northern part of Wisconsin. The same areas were in the process of recovering from several years of forest tent caterpillar defoliation. Growth loss was expected.

Locust leafminer
Odontota dorsalis

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

Massachusetts reported spotty defoliation in black locust, mostly along the interstate highways. Populations and the resultant defoliation caused by this species remained very high throughout the range of the host in Maine in 2004. Mortality of black locust on stressed sites continued around the State. In New Hampshire, defoliation was limited, a decline from 2003. This insect caused severe defoliation on black locust over large portions of eastern New York. Some damage and noticeable population increases were also noted in the western parts of the State, but the worst damage was located in the Hudson River Valley. There was occasional, moderate defoliation and discoloration in Vermont. Some mortality occurred in stands defoliated in previous years.

Aerial surveys in Ohio and Pennsylvania did not detect any significant damage in 2004. In West Virginia, this beetle caused noticeable damage 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

Widely scattered pockets of severe defoliation of shortleaf pine and planted loblolly pines occurred across southern Missouri in May of 2004.

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 150,000 acres in Indiana. The areas most affected were the Jackson-Washington State Forest, Yellowwood State Forest, Brown County State Park, and the northeastern part of the Hoosier National Forest. For 2005, no defoliation was expected in the southern areas of the epidemic, and similar defoliation was expected in the northern part of the epidemic. Tree mortality was expected to occur and increase in 2005 because of the defoliation and the late summer drought.

Maple leafcutter
Paraclemensia acerifoliella

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

There was moderate defoliation and discoloration reported in central Vermont; approximately 330 acres of damage was mapped.

Maple trumpet skeletonizer
Epinotia aceriella

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

A trace amount of defoliation was reported in Vermont.

Scattered, light defoliation was observed in McKean County, Pennsylvania.

Oak leaftier
Croesia semipurpurana

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

In Maine, no defoliation resulting from this pest was recorded in 2004.

Surveys for oak leaftier eggs were conducted again in West Virginia in Barbour, Pendleton, Pocahontas, Randolph, and Tucker Counties in late winter, but no eggs were observed and follow-up summer larval surveys reported very light populations only in Randolph, Tucker, and Pocahontas Counties.

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

In Connecticut, there was defoliation detected by aerial survey on 261 acres in the town of Canterbury in Windham County, a decline from 2003. New York reported that the populations on Long Island were significantly lower than the previous several years and that the worst of the outbreak was likely over. Insect populations were low in Rhode Island in 2004.

In Maryland, New Jersey, Pennsylvania, and West Virginia, this insect did not cause any significant defoliation in 2004.

Oystershell scale
Lepidosaphes ulmi

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

In Maine, oystershell scale remained in the townships of T12 R12 and T3 R13 along the southwest side of Caribou Lake. Regeneration as well as codominant trees exhibited damage. Scattered light dieback and occasionally heavy populations were reported in Vermont, an increase in damage from 2003.

Peach bark beetle
Phloeotribus liminaris

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

Populations of this bark beetle remained spotty but detectable throughout much of the range of cherry in New York. The most severe damage was associated with buildup 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

Despite media hype, very few Brood X cicadas were seen in New York.

In Hunterdon, Mercer, and Somerset Counties, New Jersey, hordes of the periodical cicada brood X emerged, and annoyed residents by their singing, and damaged deciduous trees. A large emergence of the periodical cicada also occurred in the southwestern part of Ohio in 2004. In Pennsylvania, there were nearly 37,000 acres affected by the periodical cicada in Adams, Bedford, Cumberland, Dauphin, Franklin, and Fulton Counties. In West Virginia, emergence of brood X was reported causing damage to branches in the six Eastern Panhandle counties of Berkeley, Grant, Jefferson, Hampshire, Mineral, and Morgan. There also was a small, light emergence at Beech Fork Lake in Wayne and Cabell Counties in the western part of the State.

Scarlet oak sawfly
Caliroa quercuscoccineae

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

In Pennsylvania, this sawfly together with a related sawfly, *Periclista sp.*, caused noticeable defoliation on 100 acres in Perry County and 100 acres in Tioga County. Although this sawfly was present on about 100,000 acres in Clinton and Lycoming Counties, no noticeable damage occurred. In West Virginia, this insect did not cause any significant damage in 2004.

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

In Delaware, the southern pine beetle was at a low or declining level statewide. In Maryland and Ohio, no activity was reported. In New Jersey, southern pine beetle infestations continued to decline and only scattered spots were seen in Cumberland, Atlantic, and Cape May Counties. In West Virginia, baited Lindgren funnel traps were placed in Jackson, Wayne, Mingo, and Mason Counties. Although 373 adults were trapped, predatory clerid beetles were numerous and indicated populations were static or declining.

Spruce beetle
Dendroctonus rufipennis

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

There were no reports for spruce beetle in Maine in 2004. Populations decreased in Vermont and no damage was reported, probably due to the declining impact of the previous year's drought.

Variable oakleaf caterpillar
Heterocampa manteo

Region 9/Northeastern Area: Maryland, Pennsylvania
Host(s): Beech

In Maryland and Pennsylvania, this insect did not cause defoliation in 2004.

White pine weevil
Pissodes strobi

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

In Connecticut, extensive damage on white pine and spruce continued for the second consecutive year. This perennial problem continued to limit the growth of white pine as well as Colorado blue and Norway spruce in Maine. Stem deformities, resulting from the loss of the terminal leader, were very common on white pine and caused heavy economic losses to landowners. This pest occurred statewide in New Hampshire. This insect remained endemic to New York statewide. Populations decreased in Vermont but shoot mortality was common statewide. There was less noticeable wilting due to adequate rainfall.

INSECTS: NONNATIVE

Asian longhorned beetle
Anoplophora glabripennis

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

In New York, new finds of infested trees were located in Queens, Brooklyn, and Manhattan in 2004. The number of new finds was down from 2003. An example of the difficulty of surveying for this beetle in New York City was that one of the finds, a willow, had been suspected infestation (and in fact had been infested) for several years, but access to the tree was only gained this past year.

In New Jersey, there were two known infestations. The first one was discovered in 2002 in Jersey City, Hudson County, and the second was discovered in 2004 in Carteret, Union County.

No new infested trees were found in Chicago, Illinois, in 2004.

Balsam woolly adelgid
Adelges piceae

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

This insect was seen on an occasional landscape fir in Connecticut, but did not seem to threaten managed fraser fir Christmas trees. In Maine, balsam woolly adelgid populations continued to be at very low levels in 2004 apparently as a result of winter mortality. While mortality from past years was striking, the consistent rainfall of 2004 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 continued to occur, but it became less obvious as old stands were salvaged or fell to the ground. Patches of dead fir, 2 to 10 acres in size, were expected to remain a common sight in eastern Maine for several more years. In New Hampshire, this insect caused damage and mortality throughout the range of balsam fir, except in the most northern part of the State. Stands inspected below 2,000 feet were infested but no infestation was found above that elevation. In Vermont, no live adelgids were observed following the cold winter of 2003–2004, but mortality increased from the previous years' infestation, especially in southern part of the State. Approximately 10,800 acres were mapped.

In West Virginia, this insect was still present and causing mortality in Randolph, Pocahontas, and Tucker Counties.

Banded elm bark beetle
Scolytus schevyrewi

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

This Asian bark beetle was discovered in Maryland for the first time in 2004 in Laurel, Prince George's County and Ijamsville, Frederick County, respectively, as part of the USDA APHIS CAPS program. This beetle also was found in 2004 for the first time in Detroit, Michigan, and Carteret, New Jersey, during the USDA Forest Service Rapid Detection of Exotic Bark Beetles Pilot Project.

This exotic beetle of uncertain importance was found in many counties in central Illinois.

Birch leafminer
Fenusa pusilla

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

In New Hampshire, defoliation was light and scattered in Carroll, Grafton, and Sullivan Counties. There was also about 12,900 acres of defoliation and mortality mapped in Grafton County in the White Mountain National Forest. No significant activity was reported in Vermont.

In Pennsylvania, this pest caused no significant damage in 2004.

Browntail moth
Euproctis chrysorrhoea

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

In Maine, the Casco Bay region northeast to the Penobscot River continued to support moderate to high population levels of browntail moth in 2004. Low winter temperatures slowed expansion to inland areas but coastal lands remained heavily infested. Webs collected to assess winter mortality showed that webs

located 5 miles or more from the coast line exhibited 88 percent larval mortality while webs adjacent to the ocean had little if any winter losses. Aerial control projects against the browntail moth were not conducted by municipalities in 2004 due to mixed landowner acceptance in prior projects. Many lots were treated with ground-based applications using various pyrethroids in private projects. A survey of overwintering webs in the fall of 2004 indicated a continued problem with this pest in 2005. Initial data indicated the 2005 infestation will be similar in acreage to 2004, but will not be as intense in many coastal communities. In Massachusetts, defoliation continued to be limited to the area of Provincetown and Truro on Cape Cod. There was 77 acres of defoliation detected by aerial survey.

Common European pine shoot beetle
Tomicus piniperda

Region 9/Northeastern Area: Delaware, Illinois, Indiana, Maine, Maryland, Michigan, New Hampshire, New York, Ohio, Pennsylvania, Vermont, West Virginia, Wisconsin

Host(s): Scotch pine, white pine, pines

Pine shoot beetle was collected in Maine in Oxford and Franklin Counties during trapping surveys performed between 2000 and 2003 by the Maine Forest Service. There was both a State and Federal quarantine; Oxford and Franklin Counties were designated regulated counties. During 2004 trapping was done at nine mill yards and bark processing plants operating under compliance in the unregulated zone. The USDA APHIS PPQ trapped for pine shoot beetle at seven trap sites with red pine in Somerset and Penobscot Counties. No adults were trapped in Maine in 2004. There were 598 insects trapped in Coos County in northern New Hampshire. In New York, this insect was trapped in five new counties in 2004 (Clinton, Essex, Rensselaer, Warren, and Washington), but no significant damage was observed.

In Delaware and New Jersey, this beetle was not detected. In Maryland, pine shoot beetle continued to be present in Allegany, Frederick, Garrett, Montgomery, and Washington Counties. In Ohio, pine shoot beetle presence was established in 2004, in Lawrence and Meigs Counties, which brought the total number of counties to 80. In Pennsylvania, this beetle was detected for the first time in 2004 in Sullivan, Snyder, Union, and Wayne Counties, which brought the total to 39 counties statewide. In West Virginia, no new counties in 2004 were added to the 18 counties known to harbor this beetle. A Federal quarantine remained in effect for this insect.

This exotic beetle of uncertain importance was found in many counties in central Illinois.

Elongate hemlock scale
Fiorinia externa

Region 9/Northeastern Area: Connecticut, New York, Pennsylvania

Host(s): Eastern hemlock

Infestations continued to be heavy throughout Connecticut on both landscape hemlock and plantation grown fir. There was no significant activity reported in New York.

This exotic scale insect damaged foliage and shoots in isolated eastern hemlocks in Berks and Pike Counties, Pennsylvania, in 2004. Hemlocks on 10 acres in Berks County experienced extensive dieback.

Emerald ash borer
Agrilus planipennis

Region 9/Northeastern Area: Indiana, Maryland, Michigan, Ohio

Host(s): Ash species

State detection surveys were conducted in Connecticut, Massachusetts, New Hampshire, and Vermont, along with surveys of declining ash on Federal lands in Connecticut, Massachusetts, New Hampshire, and New York, with all negative results.

In Prince George's County, Maryland, infested nursery trees imported from Michigan that were destroyed in 2003 were the only threat in the State. In Ohio, intensive emerald ash borer surveys with trap trees in northwestern counties discovered this beetle in Fulton and Henry Counties for the first time in 2004, joining Lucas, Defiance, Wood, Franklin, and Paulding Counties. In an effort to prevent further spread, the Ohio Department of Agriculture quarantined Defiance, Fulton, Lucas, and Henry Counties for the movement of ash trees, logs, lumber, bark, chips, and firewood from infested areas. Eradication of earlier infestations in Lucas, Defiance, Wood, and Franklin Counties were successful.

This insect was considered established in the six southeast Michigan counties of Livingston, Macomb, Monroe, Oakland, Washtenaw, and Wayne. Eradication was being attempted in 10 counties in southern Michigan, from Ottawa and Kent Counties to the west, and a ring of counties surrounding where the insect was established. The beetle infested over 2 million acres in 2004. Plans include a statewide detection survey in 2004. Trap trees will be used in high-risk areas throughout the State in an effort to detect below-damage threshold populations and to help define the advancing front. In Ohio, emerald ash borer surveys found 336 trees within survey sites to be infested in Lucas, Defiance, Wood, Franklin, and Paulding Counties. In an effort to prevent further spread, the Ohio Department of Agriculture imposed quarantine on ash trees, logs, lumber, bark, chips, and firewood from infested areas. In addition, the agency enacted an external quarantine on all such products from Michigan.

Emerald ash borer was detected on April 19, 2004, in a campground (Jellystone) in Jamestown Township, Steuben County, Indiana. By the end of May 2004, the ash within a ¼-mile radius of the initial tree were removed and destroyed. The remaining outer ¼ mile radius to complete the ½-mile eradication area was left for completion by the spring of 2005. Approximately 1,100 ash trees were removed and destroyed at a cost of \$87,000. While conducting the eradication in Steuben County, a landowner in LaGrange County near Shipshewana reported emerald ash borer in his ash tree. Investigation of this report and subsequent surveys found the insect in Clay and Van Buren Townships of LaGrange County. This infestation was believed to have entered Indiana through logs and may have occupied the location for 3 to 5 years.

While completing the trap tree survey in the five northeastern counties, an infested tree was found at a second campground (Manapogo) in Mill Grove Township, Steuben County. Subsequent surveys found eight infested trees. The township has been quarantined and was undergoing the process to be included in the eradication project. Plans are to mark the trees in January 2005 and remove them by spring. This area was expected to increase as more trees may be found during the marking project.

Gypsy moth *Lymantria dispar*

Region 9/Northeastern Area: Connecticut, Delaware, Illinois, Indiana, Iowa, Maine, Massachusetts, Maryland, Michigan, Minnesota, Missouri, 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

In Connecticut, larger than usual numbers of egg masses were found in statewide surveys, but there was no corresponding increases in defoliation, which was reported on 626 acres. No defoliation of hardwoods resulting from gypsy moth larval feeding was recorded in Maine in 2004. *Entomophaga maimaiga*, virus, and parasites continued to keep the population at low levels through out the southern part of the State. The 2004 fall egg mass survey indicated that the population will remain at endemic levels in most locations in 2005. In Massachusetts, there was heavy defoliation on approximately 34,760 acres in Plymouth, Bristol, and Norfolk Counties. There was approximately 5,000 acres of defoliation throughout the southern counties in New Hampshire. New York reported that moderate to heavy defoliation associated with this insect occurred in scattered locations, mostly in the southeastern and central parts of the State. In many stands, one or more other defoliators were also active, so it was difficult to precisely quantify how much of the damage was caused by this particular pest. Insect populations were low in Rhode Island in 2004. In Vermont, no damage was reported. There was some larval mortality attributed to the fungus *E. maimaiga*. Egg mass counts indicated that populations would remain low in 2005.

There was no defoliation reported in Delaware or Maryland in 2004. In New Jersey, there was 7,966 acres of defoliation reported. In Ohio, there were 5,731 acres with defoliation on State lands and 239 acres in the Wayne National Forest. Pennsylvania reported 16,843 acres affected by gypsy moth. There was no significant activity in West Virginia.

Populations were established in the northeast counties of Illinois, but no discernable defoliation occurred. There were 6,616 acres treated with *B.t.*, and 18,500 acres were treated with pheromone flakes. The gypsy moth population was down in 2004 in Indiana; 9,014 moths were trapped versus 23,090 in 2003 and 15,569 in 2002, respectively. There were 39 sites totaling 39,757 acres treated in 2004. Iowa caught only 27 moths in about 5,000 traps, down from 159 in 2003. Michigan sustained over 45,000 acres of defoliation. In Minnesota, moth catches were down in the central and southeastern part of the State, with only 107 trapped. Cook, Lake, and St. Louis counties in northeast Minnesota had 286 moths trapped. Two egg masses were found north of Tower, Minnesota, 1 mile south of the Boundary Waters Canoe Wilderness Area. Wisconsin populations increased steadily since 2000, with heavy defoliation occurring over 65,000 acres in 2003, up from 24,000 acres in 2002. About 51,450 acres were treated successfully in 2004, resulting in only 20 acres of defoliation. Defoliation was expected in 2005 in Marinette and Oconto Counties. In Missouri, 18 moths were trapped, 8 in St. Louis County, on a statewide monitoring network of more than 11,800 traps.

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

In Connecticut, landscape populations were down and mortality of the insect was high due to predator release. Lower insect populations and favorable weather conditions resulted in widespread recovery of hemlocks. Hemlock woolly adelgid was found for the first time in native hemlocks in Maine a year ago on Gerrish Island in Kittery Point, where a low-intensity population was confirmed to be established. Delimiting surveys conducted during 2004 detected scattered light spot infestations over an area of 3,500 acres of hemlock stands in Kittery, Kittery Point, and York, and on two abutting trees in a stand in the town of Wells. Detection surveys were performed in every town in York County to determine the insect's presence. No new infestations were found on hemlock nursery stock in Maine in 2004. The Maine Forest Service implemented an integrated Slow-the-Spread management program to reduce the impact of established adelgid populations and reduce the rate of natural and artificial spread. A total of 7,500 *Sasajiscymnus tsugae* (Sasaji and McClure) were released by the Maine Forest Service on Gerrish Island during the late spring and early summer to establish this predator in a forested part of the island. In October the Maine Forest Service treated nine sites in Kittery Point, York, and Wells with Talstar plus horticultural oil to control populations around residential and urban forest areas. In early 2005, the state quarantine will be expanded to include the towns of Kittery, York, and Wells in York County, Maine. This insect continued to be a major concern in Massachusetts. In 2004, there were five new communities with known infestations. A total of 148 acres of decline and mortality were observed during the aerial survey. Monitoring of the predator insect, *Pseudoscymnus tsugae*, continued and a total of 11 release sites and 65,000 beetles was reported. The severe cold experienced during January and February 2004 resulted in adelgid mortality between 86 and 100 percent in most locations. This mortality combined with the increased rainfall during the growing season increased the health of the hemlock substantially. In New Hampshire, this insect was found in four counties: Cheshire, Hillsborough, Merrimack, and Rockingham. In 2004, three new sites were found: Nashua and Hollis in Hillsborough County and Kensington in Rockingham County. The infestation at these new sites was believed to be spread by birds. Due to the small number of trees infested, eradication attempts were considered successful, and Cheshire, Hillsborough, Merrimack Counties were not added to the quarantined area and Rockingham County remained the only county in quarantine. New York reported continued damage and mortality to native forest and ornamental eastern hemlock trees. Damage was most severe in areas that were infested for several years (the Catskills and the South). In some areas a majority of the trees were infested and many of

those were 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 2004. In Rhode Island, insect populations seem to have diminished in 2004. Damage to hemlocks was readily apparent, however, as the trees continued to decline. It was theorized that the severe cold temperatures of the previous winter adversely affected the adelgid populations in southern New England. In Vermont, the insect was introduced on nursery stock from North Carolina, Pennsylvania, and New Hampshire. All but 14 of the 768 trees in these shipments were located and destroyed, and State quarantine regulations were being modified. Detection surveys were in progress.

Hemlock woolly adelgid continued to spread throughout the generally infested area causing hemlock decline and tree mortality. New infestations in West Virginia included Monongalia and McDowell Counties, bringing the total number of infested counties to 22. Below-normal temperatures during the previous two winters reduced adelgid numbers in many areas of the Mid-Atlantic and New England States. Lower adelgid densities in addition to above-average precipitation benefited hemlock recovery in many areas throughout the region. Biological control activities to establish natural enemies of this pest continued in 2004. Nearly 162,000 of the lady beetle predator *Sasajiscymnus tsugae* (formally *Pseudoscymnus tsugae*) were released in Maine, Maryland, New Jersey, Pennsylvania, and West Virginia, and 2,400 of the derodontid beetle, *Laricobius nigrinus* were released in Maryland, Pennsylvania, Massachusetts, and West Virginia.

In 2004, Pennsylvania expanded its efforts to control hemlock woolly adelgid by improving survey techniques, expanding its biological control program, and instituting a statewide chemical suppression program to protect select, high-value trees on State forests and State parks. No new counties were reported infested but adelgid populations remain heavy in many areas currently infested. Maryland's hemlock resource is found primarily in the western portion of the State, including Garrett, Allegheny, and Fredrick Counties. A task force involving Maryland State fisheries, wildlife, forestry, and park agencies was created to identify high value hemlock forests where management efforts would focus. These efforts included increased survey and monitoring efforts, chemical suppression of adelgids, and continuation of efforts to establish natural enemies of the hemlock woolly adelgid. In West Virginia, efforts to survey and further identify hemlock resources were underway. Chemical suppression and establishment of natural enemies was focused primarily along the leading edge of the infestation on State lands located in the north and central portions of the State.

Larch casebearer
Coleophora laricella

Region 9/Northeastern Area: Minnesota, Pennsylvania, Vermont
Host(s): Japanese larch

Vermont reported light defoliation in widely scattered locations, a decrease from 2003.

In Pennsylvania, plantations totaling 100 acres (50 acres each in Bradford and Tioga Counties) had damaged foliage or shoots from this insect.

In Minnesota, 6,700 acres sustained damage, an increase from 1,660 acres in 2003.

Larch sawfly
Pristiphora erichsonii

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

Dieback and mortality of tamarack occurred statewide in Vermont, especially in the northeastern part of the State. Damage was mapped on approximately 2,700 acres and was due to both larch sawfly and eastern

larch beetle, *Dendroctonus simplex*. The area affected was a decrease from 2003 probably due to decline in the impact of recent drought.

Pale bark beetle
Hylurgops palliatus

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

This European bark beetle, discovered for the first time in North America in a forest stand of Norway spruce, Scotch pine, and red pine in Erie, Pennsylvania, in 2001, was the subject of delimiting surveys in 2003 and 2004 as part of the USDA Forest Service Rapid Detection for Exotic Bark Beetles project. It was reported to be the third most frequently intercepted exotic bark beetle species at ports in the United States, and was known to breed in log stumps and basal portions of dead and dying host trees in Europe, but its threat to conifers in North America was unknown. This exotic bark beetle was found in 10 western Pennsylvania counties, 11 northeastern Ohio counties, and 2 western New York counties.

Pear thrips
Taeniothrips inconsequens

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

Vermont reported that populations remained low, with light widely scattered defoliation and discoloration.

Red-haired pine bark beetle
Hylurgus ligniperda

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

There were no new reports of this insect in New York in 2004.

Red pine scale
Matsucoccus resinosae

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

In Massachusetts, new infestations totaling 100 acres were identified in Hampden and Hampshire Counties. There were no reports of significant activity in Connecticut and Rhode Island in 2004.

Satin moth
Leucoma salicis

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

Maine reported that the outbreak of satin moth that started in the late 1990s in the Millinocket region ended. Branch mortality was apparent but larval populations were at very low levels and no defoliation was observed in 2004. There was no defoliation in New Hampshire in 2004, a decline from the previous year. Vermont reported moderate defoliation of scattered trees in the southeastern part of the State.

Smaller Japanese cedar longhorn beetle
Callidellum rufipenne

Region 9/Northeastern Area: Connecticut
Host(s): Northern white-cedar or eastern arborvitae and junipers

No significant activity was reported in Connecticut in 2004.

Winter moth
Operophtera brumata

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

For a number of years, coastal Massachusetts was experiencing defoliation by loopers, presumably fall cankerworm or Bruce spanworm. Concern arose about the continued defoliation and an effort was made to confirm the identification of the defoliator. In December 2003, Cornell University positively identified the samples as winter moth. A total of 34,489 acres of defoliation was documented in Plymouth, Barnstable, Norfolk, Suffolk, and Essex Counties in 2004.

DISEASES: NATIVE

Annosus root rot
Heterobasidion annosum

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

This disease was scattered throughout Vermont and observed occasionally causing significant butt rot in saw timber white pine.

In Wisconsin, annosus root rot was first reported in 1993 as a cause of mortality. In 2004, there were 11 counties known to have diseased stands. There were 222 acres of annosus root disease in red pine plantations mapped in Michigan.

Armillaria root disease
Heterobasidion annosum

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

In Massachusetts, an increase in armillaria was observed in conifer stands where harvest had previously occurred. A total of 117 acres were documented. In Vermont, there was some dieback and mortality throughout the State but reports of the disease decreased due to the declining impact of the previous year's drought.

Anthracnose
Gnomonia spp.

Region 9/Northeastern Area: Connecticut, Pennsylvania, Vermont, West Virginia
Host(s): American sycamore, ash, beech, birch, maples, oaks, miscellaneous hardwoods

Anthracnose was present throughout Connecticut on many hardwoods, including sycamore, oak, ash, beech, maple, and hickory. Defoliation caused by the disease was widely scattered in Vermont.

In 2004, above average precipitation in most Northeastern Area States starting in the spring and continuing into the fall created optimal for anthracnose development. Pennsylvania ground surveys noted numerous tree species, including American sycamores affected by anthracnose, particularly in Elk County where

4,588 acres were affected. West Virginia aerial surveys found moderately discolored and defoliated hardwoods statewide.

Botryosphaeria canker
Botryosphaeria spp.

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

The disease continued to be prevalent on a wide assortment of drought stressed woody plants in Connecticut, including Leyland cypress, maple, dogwood, beech, and oak. There was scattered dieback on red oak statewide in Vermont.

Pennsylvania did not report any significant damage by this disease in 2004.

Eastern dwarf mistletoe
Arceuthobium pusillum

Region 9/Northeastern Area: Maine, 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. Trends for this disease were stable, however favorable growing conditions, with ample precipitation, reduced mortality from the higher levels observed in recent drought years. There was scattered damage statewide in Vermont.

Hemlock needle cast
Fabrella tsugae

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

In Pennsylvania, this fungus damaged foliage and shoots of eastern hemlock in isolated pockets totaling 5 acres in Juniata, Pike, and Union Counties. This fungus also caused defoliation on 156 acres in Bedford, Carbon, Fulton, Huntingdon, Monroe, Pike, Potter, Schuylkill, and Wayne Counties. In Mercer County, 4 acres showed symptoms of dieback and decline.

Oak wilt
Ceratocystis fagacearum

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

In West Virginia, aerial surveys for oak wilt disease surveys were conducted over four high disease incident 7½ minute quads in Grant and Hardy Counties. Additionally, aerial surveys were conducted over the four historically uninfested counties of Ohio, Brooke, Tucker, and Webster, and no oak wilt was detected in these counties.

There was 1,235 acres of oak wilt mapped in Michigan.

Oak wilt continued to be the single most important disease in the Central States. Despite aggressive control efforts in Minnesota, the number of new centers continued to exceed the number of controlled centers. About 3,000 acres of oak wilt was detected in 2004. A comprehensive survey was undertaken, and an assessment of the management strategy was under review.

Missouri counties with confirmed cases of oak wilt in 2004 included Audrain, Bates, Boone, Callaway,

Clay, Green, Harrison, Henry, Johnson, Monroe, Montgomery, St. Charles, and St. Louis.

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

Connecticut reported the disease continued to be endemic throughout the State. This disease, which was introduced to Maine in the early 1930s, 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 scattered through most stands are a few smooth barked, resistant trees. It was recommended that landowners managing for beech may wish to leave these resistant stems during thinning or selective harvesting operations, while poisoning cut stumps of susceptible trees to prevent root sprouting. Losses attributable to beech bark disease were extensive, but assessment of the damage was complicated by the effects of drought, oystershell scale, late spring frosts, and various hardwood defoliators. Maine Forest Service and University of Maine researchers have initiated a forest health evaluation of the role of beech bark disease and other stress agents/events in elevated levels of beech mortality in northern and eastern Maine. Trends for this disease are static. In Massachusetts, Berkshire and Franklin Counties continued to experience decline and mortality caused by this disease. Damage was recorded on 2,405 acres. The disease continued to be widespread throughout New Hampshire. Beech bark disease can be found readily throughout New York. In Vermont, mortality and dieback was statewide, with approximately 78,000 acres mapped. Outbreak progressed and widespread damage occurred.

In Maryland, a beech scale survey was conducted throughout Garrett County in 2004 after its initial discovery in the southern part of that county in 2003. In 2004, extensive surveys in beech stands throughout northeastern Ohio were conducted after the discovery of the exotic beech bark disease fungus, *Neonectria coccinea* var. *faginata*, during 2003 at the Holden Arboretum in Lake County, Ohio. The beech bark disease scale can be found in many northeastern Ohio counties, but the exotic fungus remains restricted to the Lake County site where the native, *Nectria galligena*, is not present. 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 Monroe County. Similarly, in West Virginia, beech bark disease continues to kill American beech throughout several million acres in parts of 14 counties as reported in previous pest conditions reports.

Michigan has over seven million acres of maple-beech-birch type with an estimated 138 million trees in all size classes. Approximately 428,162 acres were affected by the disease, up from about 200,000 in 2003.

Dutch elm disease

Ophiostoma (=Ceratocystis) ulmi* and *Ophiostoma novo-ulmi

Region 9/Northeastern Area: Regionwide

Hosts(s): American elm

Connecticut reported the disease was endemic throughout the State, with greater than usual incidence and severity. Symptoms of Dutch elm disease were conspicuous throughout Maine during 2004 and generated occasional inquiries of our staff. While most elm mortality observed was to ordinary American elms, we are now observing infection of Liberty elms as well. Many old elms that escaped the initial wave of infection have succumbed, at least partially the result of the development of more aggressive strains of the disease organism. While protecting these older specimens was the concern of most of our clients, we occasionally received calls regarding mortality of younger elm trees (4-8" dbh and 20-30 feet tall). Such trees were frequently numerous in old field areas and along roadsides, the progeny of susceptible old elms

now long gone. The trend for this disease is static. In New York, symptoms of this disease were conspicuous statewide. Many of the trees that were now succumbing were mature individuals in urban and suburban settings that survived the initial wave of the disease through the region. Mortality was reported statewide in Vermont.

No major surveys were conducted for this disease in the Mid-Atlantic States in 2004. Symptoms of this disease are still conspicuous throughout this region. Reports from arborists and city managers in Washington, DC, and Wilmington, Delaware, describe the ongoing symptoms of this disease in American elms on numerous city streets and within recreational areas.

The largest concentration of urban elms grows in Minneapolis, Minnesota, which recorded the third worst year of elm mortality in history. Over 8,000 trees were lost, exceeded only by 1977 and 1978 when 20,823 and 13,668 were lost, respectively. A survey of 194 communities in central Minnesota revealed over 18,000 trees killed, nearly double that of 2003.

European larch canker
Lachnellula willkommii

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

European larch canker was first found on native larch (tamarack) in southeastern Maine in 1981. Information gathered from existing cankers indicated this disease was present in Maine since at least the 1960s and perhaps much longer. Since larch canker has the potential for causing serious damage to both native larch stands and reforestation projects utilizing nonnative larches in Maine and elsewhere, the disease was under State and Federal quarantine. The trend for this disease was static; no evidence of spread from infested areas to noninfested areas was noted in 2004.

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 endemic in several areas and not particularly active in 2004. In Maine, this disease remained static at moderate levels, but was common throughout the State. Due to personnel reductions and other work priorities, especially surveys for hemlock woolly adelgid and sudden oak death, no *Ribes sp.* eradication was practiced in 2004 for the first time since 1917. In Massachusetts, isolated infections in white pine regeneration continued to be observed, especially in Berkshire and Worcester Counties. In New Hampshire, it was reported that the average incidence of the disease statewide was still 2.4 percent. In New York, the only blister rust found or reported in 2004 was located at a nursery in Albany County on a few planted pines. Follow-up surveys were planned for 2005. Vermont reported the disease continued to occur statewide.

In West Virginia, this disease continues to be common, but static, at moderate levels in Mercer, Monroe, Pocahontas, and Summers Counties.

For years, managers were reluctant to manage white pine in the Lake States for fear of losses to blister rust. Observations of many disease-free and minimally affected trees prompted surveys that confirmed an increase in the numbers of white pine throughout Lake States forests. Blister rust still had a significant impact in localized areas where conditions were favorable for infection, but management focused on underplanting, pathological pruning, and planting at higher densities to successfully grow white pine within the blister rust zone. Outside the high hazard zone, blister rust had little impact on eastern white pine.

DISEASES: ORIGIN UNKNOWN

Butternut canker

Sirococcus clavignenti-juglandacearum

Region 9/Northeastern Area: Regionwide

Host(s): Butternut

The disease remained endemic through the range of butternut. No new counties were discovered that harbored the disease and the trend was static.

Connecticut reported the disease continued at endemic levels. In New Hampshire, widespread mortality was reported statewide. Butternut canker was common in New York wherever butternut was found. It was reported to be uncommon to see a symptom-free butternut, but the Department of Environmental Conservation began archiving locations of healthy butternut. Mortality and dieback was reported statewide in Vermont, with uninfected trees rarely observed.

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.

The fungus was endemic throughout Connecticut and, in spite of the wet season, did not appear to be worse than usual. Butternut canker was first found in Maine in 1993 when it was located in Kennebec County. A survey for this disease continued in succeeding years, and it was located in all Maine counties except Washington County. It was recommended, since no effective chemical controls were available to manage this disease in the forest, that logging injuries should be minimized when harvesting. In nurseries, and perhaps in some homeowner situations, application of fungicides may be appropriate. There was considerable evidence that resistant individual butternut trees exist within the native population, and researchers were developing strategies to exploit that resistance to protect the species. The trend of this disease in Maine was static. In New York, dogwood anthracnose continued to affect understory and ornamental flowering dogwood across the State. This disease was not reported found in any new counties in 2004. In Vermont, the disease occurred throughout the range of the host. Flowering dogwood, an endangered species in the State, was reported to be eliminated from some sites.

Leaf tatters

Unknown Cause

Region 9/Northeastern Area: Illinois, Wisconsin, Minnesota

Host(s): White oaks, hackberry

For about the last 14 years this condition appeared sporadically across the landscape. Symptoms appear in the spring when leaves develop without mid-vein tissue. The second flush of leaves develops normally. The cause was unknown, but herbicide, weather, or insects may have been involved. Very little tatters were reported in Illinois in 2004. No significant activity occurred in Minnesota and Wisconsin.

Sudden oak death

Phytophthora ramorum

Region 9/Northeastern Area: Connecticut, New York, Maryland

Host(s): Various oak species

The 20 Northeastern and Midwestern States participated in a national survey to determine if infected nursery stock had reached the region from western coastal States. Infected nursery plants, which had been imported from an Oregon nursery, were discovered at three locations in Connecticut. The plants were quarantined and will be destroyed. In New York, a preliminary positive test result for *Phytophthora ramorum* was reported from Long Island in June 2004. However, subsequent surveys and samples all indicated that *P. ramorum* was not present on the site, and none of the State's other surveys, which centered mostly on Long Island, found the pathogen. It is the opinion of experts that the initial positive was false, although the APHIS quarantine of the site remained in place as a precaution. The organism was also discovered infesting nursery stock in Maryland, which was quarantined.

DECLINES/COMPLEXES

Ash decline

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

There was no significant activity reported in Connecticut in 2004. Ash yellows was confirmed for the first time in Massachusetts, in Concord (Middlesex County). New York reported that surveys conducted for emerald ash borer resulted in no finds of the insect, but many stands of ash with various symptoms of "decline" were mapped. In Vermont, there was dieback and mortality statewide and decline of trees increased sharply on some sites with variable water availability.

Bacterial leaf scorch *Xylella fastidiosa*

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

In Connecticut, there were no official diagnostic samples, but the disease was probably present. New York reported the organism that causes bacterial leaf scorch was found on oaks in a New York City cemetery. It was believed to be the first confirmed detection of the disease in New York State, and follow-up surveys were planned.

In 2004, bacterial leaf scorch surveys continued delineating the infection rate and spread of the disease within select cities in New Jersey and in Rockville, Maryland. Surveys have shown that the disease has increased within several communities in both these States. These surveys complement the New Jersey and Maryland statewide surveys done previously that showed significant and rapid increases in disease intensity and spread throughout these States and within individual communities. City-based increases in disease incidence are measured as the total number of trees infected, newly infected trees, disease spread into new localities, and infection spread on individual trees.

Black ash/brown ash decline *Fraxinus nigra*

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

No brown ash plots were measured in Maine in 2004. The plots were not measured in 2003, but some plots were visited to check for drought effects. It was found that brown ash condition was stable with no obvious decline due to drought.

About 27,000 acres of scattered black ash were declining in a swath through northeastern counties of Minnesota. No insects or pathogens appeared to be associated with the decline, although secondary root disease and bark beetles were occasionally present. Moisture relations and lack of snow cover were possible predisposing factors.

Elm yellows

Region 9/Northeastern Area: Connecticut, Maryland, Ohio, Pennsylvania, West Virginia

Host(s): American elm, slippery elm

In Connecticut, there were no official diagnostic samples, but the disease was probably present.

No report of this disease was received from Maryland or Ohio in 2004. In Pennsylvania, the elm yellows disease continues to be present in Bradford, Centre, Clinton, Lycoming, Potter, and Union Counties. In West Virginia, the elm yellows disease continues to remain static within the Eastern Panhandle.

Oak decline

Region 9/ Northeastern Area: Connecticut, Minnesota, Missouri, Vermont, Wisconsin

Host(s): Red oaks

There was considerable mortality of oaks in Connecticut. Vermont reported the condition stable with some widely scattered dieback and mortality.

In Minnesota, about 12,500 acres of oak mortality were detected in northern counties in 2003. About 4,300 acres were associated with the two-lined chestnut borer in areas previously affected by drought, and defoliation by the forest tent caterpillar. In 2004, mortality continued but at a much slower pace; only 250 acres were detected. Precipitation was higher than during the previous 2 years, but some areas were still below normal. Cooler temperatures slowed development of two-lined chestnut borer larvae.

Oak decline remained stable in Missouri with no increases in red oak borer activity. Abundant rainfall may have played a role in limiting wood borer activity in previously drought-stressed areas. Oak decline in the Ozarks was a complex phenomenon, involving primarily red oaks of advanced age that were growing on soils that were shallow, rocky, and drought prone. Drought conditions of the past several years accelerated the decline and led to attacks by secondary fungal agents and wood boring insects. Armillaria root rot and Hypoxylon canker were commonly associated with decline and mortality, as were the red oak borer, two-lined chestnut borer, carpenter worms, and a variety of other borers (Cerambycidae, Buprestidae, and Brentidae). It was estimated that over 100,000 acres of Mark Twain National Forest land sustained scattered mortality due to oak decline. In addition, *Tubakia* leaf spot was very evident in late spring to August.

Tubakia dryina was detected on oak in Wisconsin, and together with drought from previous years and the two-lined chestnut borer, caused top dieback and some scattered mortality of white and bur oak.

Spruce Decline

Region 9/Northeastern Area: Maine, Vermont

Host(s): Spruce

Spruce trees continued to decline on coastal islands in Maine. Decline was scattered statewide in Vermont, with approximately 12,000 acres mapped.

Sugar maple decline

Region 9/Northeastern Area: Connecticut, New York, Pennsylvania, Vermont

Host(s): Sugar maple

There was mortality of sugar maple reported in Connecticut. New York reported a high incidence of Armillaria root disease in declining stands in 2004, and the rate of mortality among declining sugar maple

has increased over the previous few years. In Vermont, there was approximately 32,000 acres of scattered mortality and dieback mapped statewide. This was a decrease in acres of damage from 2003, attributed to the declining impact of the previous year's drought.

Since the mid-1980s, the health and decline of sugar maple in northern Pennsylvania has been associated with several droughts and several insect defoliations across the unglaciated and glaciated regions of the Allegheny Plateau. Studies across elevation gradients in this region have shown that low soil pH adversely influences tree growth and crown vigor. In recent years, the lack of major insect defoliators and excessive soil moisture reduced the role of defoliation and drought as stressors.

Red pine pocket mortality

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

Pockets of dying red pine were expanding in Wisconsin. Mortality was associated with turpentine beetles and a fungus, *Leptographium* sp. About 123 pockets in over 50 stands in the southern part of the State were mapped.

White pine decline

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

Connecticut reported incidences of declining white pine. This drought-related situation appeared to have stabilized in Maine. Maine Forest Service forest inventory crews continued to monitor pine condition in the core area of the previous outbreak. In New York, declining white pine trees were mapped in eastern parts of the Hudson River Valley, but the relationship of causal factors remained undetermined. Root disease, root weevils, and drought all impacted the site in previous years.

ABIOTIC DAMAGE

Drought

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

The after-effects of drought in Connecticut continued to be evident in many woody species, especially hemlock, pine, maple, dogwood, and ash. The effects of the previous season of droughts in Massachusetts continued to be observed although somewhat less than in previous years. A total of 391 acres, mostly in the higher elevations of Berkshire County, were mapped during the annual aerial survey. In Vermont, some drought damage was scattered statewide but was a decrease from 2003. Drought-related mortality of stressed trees continued on shallow or disturbed sites, but impact lessened following 2 years of good water availability.

In Pennsylvania, drought caused localized damage to approximately 387 acres of white and chestnut oak in Elk and Potter Counties. Dieback occurred locally on black oak in Montgomery County and red oak in Montour County, Pennsylvania.

Drought stress occurred on over 34,406 acres in Michigan.

Fire

Region 9/Northeastern Area: Minnesota, Vermont, West Virginia

Host(s): Hardwoods and softwoods

Fire was not a significant stressor in Vermont, but some widely scattered mortality was reported.

In West Virginia, 7,830 acres were destroyed by wildfires.

There were 200 acres of wildfire mortality in Minnesota.

Flooding

Region 9/Northeastern Area: Connecticut, Massachusetts, Minnesota, Vermont

Host(s): Hardwoods and softwoods

In Connecticut, wet conditions in spring 2004 caused limited root damage in many areas and continued root damage from the previous season's wet conditions. A total of 183 acres of flooding caused by beavers was recorded in Massachusetts. In Vermont, approximately 19,000 acres of dieback and mortality due to flooding were mapped statewide.

About 4,000 acres in Minnesota sustained damage from floods.

Frost

Region 9/Northeastern Area: Vermont

Host(s): Hardwoods and softwoods

Vermont reported that a small amount of shoot mortality occurred on Christmas trees.

Ice/snow

Region 9/Northeastern Area: Connecticut, Maine, Vermont

Host(s): Hardwoods

In Connecticut, there was considerable breakage from ice storms, especially in northern areas of the State. In Maine, most trees damaged by the "Ice Storm of 1998" showed significant recovery of affected crown, and impact assessment work of the 1998 ice storm was largely complete. Survey results showed that (1) there was only minor impact of the ice storm on softwood species; (2) even in the most heavily damaged areas, trees on average now have 40-75 percent of the crowns they had prior to the ice storm; and, (3) crown recovery was due predominantly to sprouting. Ice and snow was not a significant stressor in Vermont in 2004.

Wind/tornado/hail

Region 9/Northeastern Area: Connecticut, Minnesota, Missouri, Pennsylvania, Vermont

Host(s): Hardwoods and softwoods

Sporadic hail damage occurred in Connecticut, but nothing widespread. In Vermont, there was heavy branch breakage and mortality in scattered locations; approximately 250 acres were mapped. Most damage followed a thunderstorm on June 9, 2004.

In Pennsylvania, 118 acres of hardwoods were damaged in Cameron County.

About 500 acres of forest were damaged by winds in Minnesota. A series of destructive storms occurred in Missouri in late May. Severe winds and tornados occurred in scattered areas throughout the State.

Winter injury

Region 9/Northeastern Area: Connecticut, Vermont
Host(s): Fir, hemlock, spruce

In Connecticut, dramatic and conspicuous damage was observed on eastern red cedar in all age and size classes, and locations, including natural stands and managed landscapes. One possible explanation included damage from winter weather conditions that occurred on trees previously stressed by several years of dry conditions and the extremely wet conditions of the 2003 season. Vermont reported only 100 acres of discoloration mapped, a large decrease from 2003.

INVASIVE PLANTS

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

New York reported to have little hard data on most invasive plant populations; however, there was clear anecdotal evidence that invasive plant species were increasingly becoming an important issue for public and private land managers. For example, black swallowwort had become so populous in some woodlots in the Finger Lakes area that some locals had dubbed it “dog-strangle vine.” The number of public inquiries about and reports of giant hogweed in 2003 was greater than in previous years, indicating the potential need for a systematic survey for this plant, which presents a serious human health concern. Contact with the plant can cause very severe photodermatitis to sensitive people and is native to the Caucasus Region of Eurasia.

However, that trend did not continue into 2004. Vermont reported nonnative species of buckthorn were widespread in Windham County and nonnative species of Japanese and bush honeysuckles were widespread in Bennington County. Also reported was the presence of barberry species, multiflora rose, Norway maple, and oriental bittersweet.

In Wisconsin, giant hogweed, *Heracleum mantegazzianum*, was discovered for the first time in two locations in Iron County (Hurley and Iron Belt).

Bush honeysuckle, buckthorn, garlic mustard, and multi-flora rose were of major concern to Iowa, in addition to oriental bittersweet.