

Pennsylvania - 2008

Forest Health Highlights



The Resource

Pennsylvania is roughly 59 percent forested. Seventy-five percent of the forest land in the State is privately owned by 513,900 landowners. Yet with a population of 12 million people, forest landowners account for only 4 percent of the total population. Pennsylvania's 2.1 million-acre State Forest system, found in 48 of Pennsylvania's 67 counties, comprises 12 percent of the forested area in the Commonwealth. The State Forest represents one of the largest expanses of public forest land in the Eastern United States.

Weather Conditions

Weather conditions influence Pennsylvania forests in a variety of ways. Water stress in combination with insect pests and disease agents can significantly influence host condition and forest health. The 2008 snowpack was below normal in many areas. Cool wet weather during May and early June helped promote tree foliage diseases, especially on sycamore. Summer rainfall averaged 20 percent below normal in most areas of the Commonwealth. As a result, drought stress was widespread in many areas. Dry conditions during 2008, combined with gypsy moth defoliation, resulted in scattered oak mortality throughout the State. A higher incidence of oak mortality was observed in the ridge and valley areas that were defoliated by gypsy moth in the previous year. By mid-November a drought watch was declared for 29 counties.

Forest Pest Issues

Gypsy Moth — Gypsy moth remained the dominant hardwood defoliator in Pennsylvania in 2008. Gypsy moth defoliation increased in central and northeastern Pennsylvania, but decreased in the southern portion of the Commonwealth. A total of 766,507 acres of defoliation were reported through aerial and ground surveys. Entomophaga maimaiga infection of gypsy moth was present throughout

most infested areas of the State, but the extent of larval mortality was variable, ranging from 100 percent (complete collapse) to less than 20 percent. Gypsy moth infestations actually increased in some areas, particularly the Pocono Region, where decline or collapse was expected after four straight years of significant impacts.

In 2008, aerial and ground tree mortality surveys were conducted in nine Forest Districts. A total of 182,587 acres containing significant tree mortality were reported in gypsy moth-defoliated areas. Widespread defoliation was observed in 77 percent of the areas surveyed, where up to 60 percent of the trees died due to gypsy moth and other defoliators. The greatest incidence of tree mortality occurred in central and northeastern Pennsylvania. Affected counties include Centre, Lackawanna, Luzerne, Monroe, and Pike where a total of 155,190 acres with significant tree mortality were observed.

Hemlock Woolly Adelgid (HWA) — Hemlock woolly adelgid advanced into Potter County in 2008. The largest active HWA infestations are in Berks, Carbon, and Franklin Counties. A significant increase in defoliation acreage was reported for Huntingdon and Luzerne Counties in 2008. However, HWA damage in Mifflin and Snyder Counties decreased significantly during this same period. A total of 10,936 acres of hemlock were defoliated in 2008. The Pennsylvania Department of Conservation and Natural Resources (DCNR) continues to work on the biological control of HWA through the release of predator beetles. In 2008, 1,000 *Laricobius nigrinus* beetles were released in Little Pine State Park and Loyalsock State Forest. In addition, a total of 300 Idaho-strain *L. nigrinus* beetles were released at two sites in Tiadaghton State Forest in cooperation with researchers from the University of Massachusetts. A total of 2,592 hemlocks were chemically treated at seven State parks.

Emerald Ash Borer (EAB) — Emerald ash borer was first detected in Butler County in June 2007 when two adult beetles were collected from infested ash trees in Cranberry Township. Additional infested sites were found in Jackson and Adams Townships, Butler County; and in McCandless, Pine, and Townships in Allegheny County. Both counties were placed under Federal and State quarantine. Beaver and Lawrence Counties were added to the quarantine due to their close proximity to the infestation in Cranberry Township and to known infestations in Ohio.

A total of 57 counties were targeted for surveys in 2008, including 35 counties for delimiting survey and 22 for national survey. The delimit survey uses a 1.5- by 1.5-mile grid (1 trap/grid) in areas within 100 miles of a known infestation to define the leading edge of EAB infestation. The national survey targets areas outside the general

infestation to determine whether any additional pocket infestations are present. In June 2008, two EAB adults were collected from the picnic area at the Welcome Center on eastbound Interstate 80 near Wheatland Borough of Mercer County. Further investigation later revealed large infested white ash trees. Based on the damage and symptoms on those trees, EAB may have been present for at least 5 years.

Disease Conditions

***Phytophthora Ramorum* Survey** — The *Phytophthora ramorum* stream baiting program has been conducted for the past 3 years and will continue in 2009. The objective of the survey is to determine where *P. ramorum* may have been introduced in the Eastern United States. Forest Pest Management participated in the national survey to examine forested areas or nursery perimeter areas in conjunction with USDA APHIS and the Pennsylvania Department of Agriculture.

In 2006, the program began to evaluate forest streams for the presence of *P. ramorum* associated with interior forest communities across the United States. In Pennsylvania, 10 streams were designated for stream baiting using matured leaves from local populations of *Rhododendron maximum* in proximity to the selected streams. A total of 228 out of 240 leaves deployed were examined in 2006, and *P. ramorum* was not detected. In 2007, stream baiting was continued on four streams. A total of six baiting periods were made and 152 out of 160 leaf samples were deployed. *P. ramorum* was not detected. In 2008, six baiting periods were completed by the beginning of November with a total of 192 leaf samples deployed. Although various *Phytophthoras* and *Pythium* species have been recovered in each bait period, *P. ramorum* has not been detected.

Oak Wilt — Periodic reports of dying oaks have been received throughout 2008. Oak wilt appears to be static with regard to its activity and distribution throughout the Commonwealth. Diagnosis of oak wilt is usually masked in areas where extensive insect defoliation is prevalent. Widespread gypsy moth outbreaks and defoliation have been occurring throughout the eastern

and central regions of the Commonwealth for several years (2005-2008). Oak mortality in gypsy moth-impacted areas is also influenced by drought and *Hypoxyylon* fungi.

Beech Bark Disease — The Pennsylvania DCNR is cooperating with the U.S. Forest Service Northern Research Station to evaluate beech varieties exhibiting field resistance to beech scale and beech bark disease. Scion material representing five selected genotypes was collected and submitted for grafting using a hot-graft procedure. A total of 36 successful grafts were made from 65 attempts. Six of the grafts flowered with three genotypes exhibiting flowering. Those materials were cross pollinated with other resistance materials to produce seed for germinating. Eventually, seedlings will be challenged with scale insects, and resistant lines may be available for outplanting in seed orchards at a later date. Preparations for collection of additional scion material will be made for the 2008-2009 grafting season.

Pennsylvania Forest Health Analysis Highlights

A 2007 report of Pennsylvania's forest conditions published by USDA Forest Inventory and Analysis describes the conditions of Pennsylvania forests. The following are highlights from this publication.

Significant changes were found in forest composition and structure, notably red maple establishment as a dominant stabilized species, significant increases in black birch, and substantial decreases in sugar maple stands. Mature hemlocks, sugar maples, and oaks also are decreasing in forests. In general, low levels of advance tree regeneration have been observed especially in northern and southern counties. Approximately only one half of Pennsylvania's forested lands have adequate advance regeneration with high-canopy species and only one-third have adequate regeneration by commercially desirable timber species. The most alarming finding from forest inventory is the general lack of desired under-story tree regeneration across much of Pennsylvania due to deer browsing and competing vegetation. Fencing to control deer brose and herbicide applications to control unwanted vegetation like ferns and some grasses often becomes a mandatory forestry practice. Often confounding issues such as acid precipitation effects on soil chemistry and invasive plant species increase the complexity of understanding soil-plant-deer interactions.

For More Information



Pennsylvania
Department of Conservation
and Natural Resources

Bureau of Forestry
P.O. Box 8552
Harrisburg, PA 17105-8552
Phone: (717) 787-2703
www.dcnr.state.pa.us/forestry/

USDA Forest Service
Northeastern Area
State and Private Forestry



Forest Health Protection
180 Canfield Street
Morgantown, WV 26505
Phone: (304) 285-1541
www.na.fs.fed.us/