

# Pennsylvania - 2007

## Forest Health Highlights



### The Resource

Pennsylvania covers a land area of 25,333 square miles and is 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. Forests provide timber, watershed protection, wildlife habitat, and recreational benefits for all Pennsylvanians.

### Weather Conditions

In 2007, the Commonwealth experienced warmer than normal conditions throughout the growth period; similarly, precipitation patterns were such that severe storm events deposited large volumes of rain over short periods. For most areas of the Commonwealth, the precipitation totals tended to below normal. Soil moisture conditions for agricultural purposes were 30 percent very short, 45 percent short, and 24 percent adequate at the end of September. Generally, the latter half of the growing season was influenced by drought conditions. The lack of rainfall was clearly evident throughout the upper elevations of the Commonwealth's forests. The combination of drought and heavy insect defoliation damage has resulted in significant areas of forest tree mortality in just one growing season. Expectations of continued insect defoliation in 2008 will contribute to increased tree mortality where multiple stressors (i.e., drought and defoliation damage) affect forest communities.

### Forest Pest Issues

**Gypsy Moth** — Gypsy moth defoliation increased in 2007. A total of 681,435 acres of defoliation was reported through aerial and ground surveys. *Entomophaga maimaiga* infection of gypsy moth was generally low in most infested areas due to dry spring conditions. Several areas of the

Commonwealth reported extremely high gypsy moth infestations. The extensive defoliation that resulted from these high gypsy moth populations is believed to be the result, in part, of high larval migration, including blow-in, and extensive larval feeding resulting from favorable host tree condition. Host trees were generally stressed as a result of drought in most regions of the State.

The 2007 gypsy moth suppression program was conducted in 20 counties: Bedford, Blair, Centre, Clinton, Cumberland, Dauphin, Franklin, Fulton, Huntingdon, Juniata, Lackawanna, Lebanon, Luzerne, Mifflin, Monroe, Perry, Pike, Somerset, Union, and Wayne. A total of 64,515 acres in 324 spray blocks was treated. Products applied included Foray 48F (62,947 acres, 320 blocks) applied at 24 BIU per acre, Foray 76DF (749 acres, 1 block) applied at 24 BIU per acre (0.5 gallon per acre), and Gypchek applied on 819 acres (3 blocks) at 1 gallon per acre. Seventy-five percent of spray blocks treated with *Bacillus thuringiensis* met the operational goal of sustaining less than 30 percent defoliation of favored host trees (100 percent in treated blocks with third-year infestation). The Gypchek block had a 65 percent rate of success, and the Foray 76DF block was 100 percent successful.

**Hemlock Woolly Adelgid (HWA)** — In 2007, HWA was detected for the first time in Beaver and Cameron Counties, bringing the total number of infested counties up to 49. The total land area with reported HWA damage in 2007 was 6,183 acres.

Pennsylvania continued efforts to control HWA by continuing already established surveillance, biological control, and chemical suppression programs. The General Hemlock Survey (GHS) program was established in 2004 and provides data on HWA, elongate hemlock scale, other stressors, crown vigor, and tree growth. This program continued in 2007, with data collected at 1,414 survey points.

**Elongate Hemlock Scale (EHS)** — EHS damaged 241 acres this year, and was detected for the first time in Susquehanna and Wyoming Counties.

A biological control program for EHS was established in 2003. The program relies on releases of a predatory Nitidulidae beetle, *Cybocephalus nipponicus*, which is native to Korea. A total of 3,250 *C. nipponicus* was released at four sites in Pennsylvania in 2007. This brings the total number of beetles released to 121,250 at 46 sites since 2003. Evaluations of previous release sites yielded the recovery of 539 adult *C. nipponicus* beetles in 2007.

Over 1,397 adults have been recovered since the *C. nipponicus* release program began, indicating that this predator is establishing very well on elongate hemlock scale.

**Emerald Ash Borer (EAB)** — The Pennsylvania Department of Conservation and Natural Resources Forest Pest Management (DCNR-FPM) program participates in a multiagency effort with the Pennsylvania Department of Agriculture, USDA APHIS, and U.S. Forest Service to detect this destructive pest. This insect was detected in Pennsylvania for the first time in 2007. It has also been found in Michigan, Ohio, Indiana, Illinois, Maryland, West Virginia, and Ontario, Canada.

Two emerald ash borer adults were collected north of Pittsburgh in Butler County, Cranberry Township, on June 22, 2007, prompting emergency delineation surveys in the western part of the State. A 1- by 1-mile grid survey was established that extended to 5 miles from the initial detection point. Two-person survey teams from APHIS, the Pennsylvania Department of Agriculture, Pennsylvania DCNR, U.S. Forest Service, Penn State University Extension, and local arborists were assigned grids for EAB inspection. Approximately 30 of the 98 1- by 1-mile grids turned out to be positive.

**Sirex Wood Wasp** — The DCNR-FPM participated in a multiagency effort to detect the presence of *Sirex noctilio*. In May and June 2007, the Pennsylvania DCNR placed 67 Lindgren traps baited with alpha and beta pinene in grids located within a 50- to 100-mile band from the nearest positive detection site in 2007. As a result, the U.S. Forest Service and APHIS obtained *Sirex noctilio* in Erie, Elk, McKean, and Monroe Counties in 2007.

## Disease Conditions

**Anthracnose** — Anthracnose was not evident throughout the 2007 growth period due to prolonged periods of dry weather conditions. However, 34 acres of damage was reported statewide on maples and sycamores in Potter, McKean, Tioga, and Wayne Counties. Negative reports were filed for anthracnose in Clinton, Sullivan, and Bradford Counties.

**Elm Yellows** — Damage caused by elm yellows was widespread in Pennsylvania in 2007, with 19 acres of heavy damage to elms reported in Cambria, Centre, Clearfield, Dauphin, Juniata, and Potter Counties in July.

**Sudden Oak Death** — In 2007, all stream-collected samples were negative.

**Bacterial Leaf Scorch** — Bacterial leaf scorch of red oak has been observed in urban areas, including FDR Park in Philadelphia, the Morris Arboretum, and adjacent communities in southeastern Pennsylvania. During drought periods, the symptoms of bacterial leaf scorch are likely to be more prevalent on stressed trees.

## Pennsylvania Forest Health Analysis Highlights from Assessment Inventories

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 browse 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



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