

# Serious Tree Pests

By ARNOLD MERCER '07

The trees of Hunterdon County and the surrounding area are plagued by a number of serious pests, both insects and diseases. There has been partial success in controlling some of these, but for others the outlook is not good.

The Emerald Ash Borer (EAB) tops the list of tree pests and is probably the deadliest. New Jersey has an estimated 50 million ash trees, and the fatality rate for untreated trees is said to be 99.7%. The EAB was discovered in New Jersey in May 2014, in Somerset County. In Hunterdon County, as of July 2017, it has been found in West Amwell, Alexandria, and

and some selected for removal can become martyrs to save others. The selected trees are stripped of their bark and the thin layer of living tissue beneath it, at the base of the tree. This quickly starves the tree, and the dying trees release sugars, which the EAB's crave. They swarm to the trees, which are then chopped down and destroyed, killing the pests.

The Gypsy Moth is one our most destructive forest pests. In the late 1860's, it was accidentally introduced near Boston, MA, and since then, it has spread throughout North America. It feeds on the foliage of hundreds of species of plants, but most commonly on oaks and aspen.

Gypsy moth populations are typically eruptive, and when densities become very high, trees may become completely defoliated. When gypsy moth populations have erupted, aerial spraying of insecticides has been widely used, some of which may be toxic to other moth and butterfly larvae, bees, and gypsy moth parasites. However, there are natural enemies which help to control gypsy moth populations: pathogens, birds, mammals, and insects.

The most important natural control is NPV (a nucleopolyhedrosis virus). The virus is always present in a gypsy moth population, but during a gypsy moth outbreak, caterpillars become more susceptible to it because of the stress of competing with others for food and space. Typically, one to two years after an outbreak begins, the NPV disease causes a major die-off of caterpillars.

Birds that feed on gypsy moth caterpillars include blue jays, orioles, towhees, and others. Others, such as the black-capped chickadee, also feed on egg masses and can cause substantial egg mortality. Shrews, mice, voles, and other small mammals often feed on gypsy moth caterpillars and pupae that they find on the



*gypsy moth and its egg mass*



ground and around the bases of trees.

The non-native Calosoma beetle (*Calosoma sycophanta*) feeds almost entirely on gypsy moths. Adults and larval stages of this beetle feed on the caterpillars and pupae.

Also, several native insects such as ground beetles and ants will attack gypsy moths. Many other insect predators and spiders will consume gypsy moth larvae or pupae. There are a number of parasitic wasps and at least one fly that attack gypsy moth eggs or caterpillars.

Bacterial Leaf Scorch (BLS) is an incurable disease caused by a bacterium. It is most common in red and pin oaks, but also infects ash, elm, red and sugar maples, sweet gum, and sycamore trees. The bacterium physically clogs the tree's xylem (water conducting tissue), restricting the upward flow of water, resulting in leaf tip browning or tree scorching. It is transmitted by leaf hoppers and spittlebugs and possibly other xylem feeding insects. These insects acquire the bacteria by feeding on infected trees, and possibly other hosts. Goldenrod, alfalfa, clover, and some grasses may serve as hosts.



**USDA  
Cooperative  
EAB project**  
*Approximate  
range of ash  
species with EAB  
positives and  
Federal  
quarantines*

Delaware Townships. Attempts at controlling the spread of the EAB are meeting with some success. Treating with insecticides, removal of infested or at risk trees, and parasitoids are all being used.

Insecticide options include systemic insecticides, applied as soil injections or drenches, trunk injections or lower trunk sprays, and protective spraying, which can be applied to the trunk, main branches, and foliage.

Tree removal is necessary in areas where falling trees are hazardous,

Typically, the scorching appears between mid-August and October. In the first years after infection the trees will leaf out as usual, but more and more leaves will turn brown prematurely. Eventually twigs, branches, and large limbs will die. Young trees may live up to four years following BLS infection. Older, large trees may survive up to ten years.

Currently there is no known cure. Injecting diseased trees with antibiotics reduces the symptom development, but is very expensive, does not eliminate the bacterium, and must be repeated. A tree's life can be extended by monitoring and improving its health. It is recommended that soils where young, smaller-diameter oaks are growing be tested for pH and nutrients and amended as necessary. Irrigation and pruning needs should be monitored regularly.



When symptoms are limited to one or two branches, these branches can be removed, possibly preventing or slowing the spread of the disease in the tree. The NJ Forest Service website has brief articles on these and other serious tree pests:

[http://www.state.nj.us/dep/parksand-forests/forest/njfs\\_forest\\_health.html](http://www.state.nj.us/dep/parksand-forests/forest/njfs_forest_health.html)