

FACT SHEET

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Forest Management and the Gypsy Moth

The Gypsy Moth is the most devastating insect pest of hardwood trees in the eastern U. S. Although recognized as a serious pest in Europe for centuries, it was brought into Massachusetts by an entomologist working on a “get rich” scheme to produce silk. In 1869, he allowed it to escape and it has now spread over 200,000 square miles throughout the northeastern and several other states. The larvae spread naturally via wind currents and artificially by hitchhiking on automobiles and camping trailers on which egg masses were laid when the vehicles were parked in or near wooded areas. It will ultimately spread throughout the entire nation and it very probably will make the growing of quality oak trees unprofitable and maybe impossible. Spread was termed inevitable in the 1980’s by politically correct researchers who opted to develop ways of living with the insect instead of continuing with eradication efforts. It is now so widespread that we have to do so.

The Gypsy Moth is easy to identify during all four life stages – egg, larva, pupa and adult - of its annual life cycle. The damage is done during the larva or caterpillar stage. The inch-long egg masses covered with a dense layer of buff-colored hair are laid primarily on the branches and trunks of trees, but they are deposited on nearly any object during heavy infestations.

The eggs hatch about the time that sarvis and redbud bloom, mid-April through mid-May and begin to feed immediately. The older larvae with five pairs of blue spots and six pairs of red spots on their backs, do the damage by feeding on the leaves, usually at night, but also during the day in heavy populations. Preferred foods are the oaks, basswood, apple, alder, hawthorn, but heavy infestations will feed on pines and hemlock. Fortunately, the insect does not like yellow poplar, sycamore, black walnut, butternut, and American holly. The larvae last for about seven weeks after which they pupate for one to two weeks.

The non-feeding adults begin to emerge from the pupa cocoons about mid-July, males first. The female, white with wavy black bands across the fore wings, does not fly. She attracts the dark brown male, also with dark wavy bands on the wings, to her by releasing a chemical sex attractant into the air. Each female deposits one mass of up to 1,000 brown to black pellet-like eggs sometime in July and August. The adults die shortly thereafter.

If no more than half a trees leaves are eaten, it will have a reduced diameter growth and the top will develop dead twigs and limbs, but may not die. Trees under stress from drought or other causes, however, may die the first year if more than 50% of the leaves are removed. Many more trees die after successive defoliations. Diameter growth is essentially halted during defoliations and for the next two or three years if the tree survives. Trees put out a new flush of leaves if about 60% or more of the initial leaves have been eaten. This removes starch reserves in the roots and stresses the tree to a point that invites other insects and fungi to attack. An uncontrolled outbreak lasts for two to five years. The population then collapses to low levels for four to 12 years when it again builds up. Gypsy Moth essentially doubles the rotation age for growing trees.

Trees killed by the Gypsy Moth are ruined for veneer as soon as the trees death is apparent. Killed trees can be used for sawlogs for six months up to a year after dying, but the lumber value is soon reduced by stain and decay and is said to chip when milling. In addition to the dead trees, a tremendous loss is realized from the decreased growth on surviving trees, from decreased vigor that may later lead to death, in increased fire hazards, and in the downgrading of aesthetics. Gypsy Moth killed trees, due to low starch reserves in the roots, produce almost no stump and root sprouts which greatly reduces reproduction.

There are natural enemies of the gypsy moth, but none will prevent damage. Each has special requirements, such as wet weather for a fungus predator to -20° F or lower temperature lasting for more than 48 hours for winter kill. There are three insecticides, one a bacterium (*Bacillus thuringiensis* or *Bt*), one a nucleopolyhedrosis virus (NPV) and the other a chemical (diflubenzuron or Dimilin) in common use. Acephate (Orthene) and Carbaryl (Sevin) are also registered for use. All are affected by the weather and are very expensive. *Bt* and Dimilin are currently the two most used. *Bt* sprays can kill non-target butterfly and moth species. In addition, the timing of the application is critical and two applications may be necessary to get control. Dimilin has a much less critical application time, results in far better control and is apparently no more harmful to non-target insects.

When considering long term forest management, the gypsy moth has to be considered because defoliation in fully stocked oak – hickory stands costs the landowner about \$60 per acre per year in growth if no trees are killed. Dead trees add greatly to the loss. For the latest information, contact the WV Division of Forestry or the WV Department of Agriculture, which also has a cost-sharing program for spraying. Information can also be had from the U. S. Forest Service Laboratory at Morgantown which has conducted a nearly \$50 million dollar research program centered in Virginia and West Virginia during recent years in an attempt to improve control and slow the spread.

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