Gypsy Moth Background Information

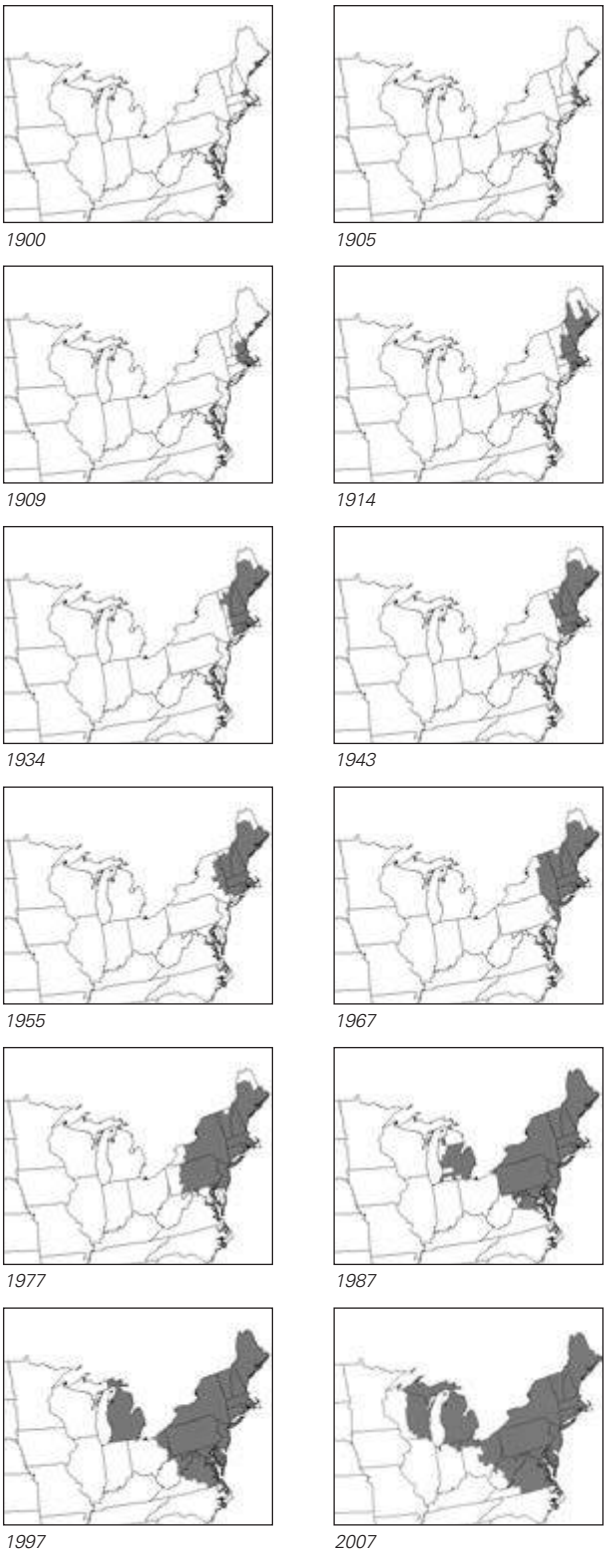
The gypsy moth, *Lymantria dispar*, is the most notorious insect pest for hardwoods in the eastern United States and is becoming a major pest in other parts of North America. In any given year, the gypsy moth can defoliate trees on millions of acres of forests, parks, and residential home lots, giving trees a winter appearance in the spring and summer.

The gypsy moth is an nonnative species, brought into Massachusetts in 1869 by a French naturalist who was trying to develop the silkworm industry in the United States. The gypsy moth escaped from his laboratory. Because the gypsy moth has no natural control agents (such as predators) in North American forests, the moth colonized rapidly, expanding its range and becoming a first-class pest. Since then, the social and economic costs have been enormous. The costs include loss of timber, the cost to remove and replace park and residential trees, and the loss of income in public and private recreation areas because of the presence of "millions" of caterpillars.

Confrontational public meetings and neighborhood conflicts have arisen over control (such as use of insecticides) and cost issues. Some concerns over costs include the expense of conducting surveys, developing environmental impact statements and recommendations, and implementing control techniques.

In 1890, the insect was so abundant that it began to attract public attention. The Massachusetts legislature appropriated $25,000—a considerable sum in those days—to help control the pest. This appropriation was the beginning of a long history of unsuccessful attempts to stop the gypsy moth. By 1910, five northeastern states were infested. By 2007, much of the Northeastern U.S. was infested. Every year, isolated populations of the gypsy moth are discovered beyond the contiguous range shown here. It is inevitable that the gypsy moth will continue to expand its range into the future.

Gypsy Moth Infestation 1900-2007

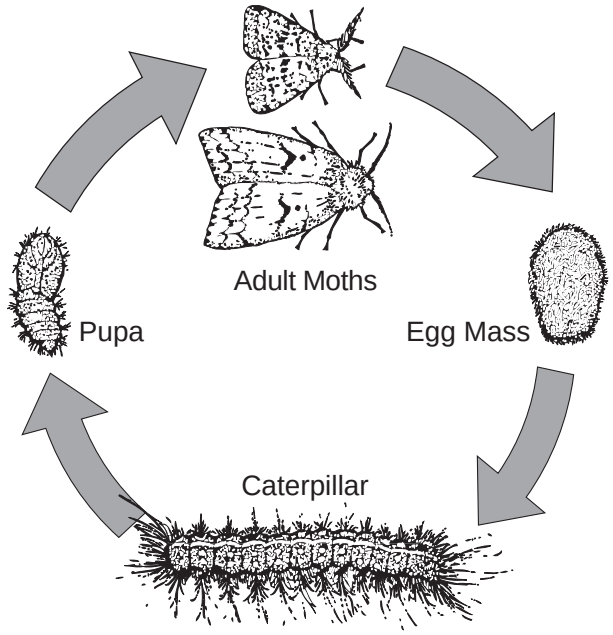


Gypsy Moth Background Information (cont.)

Gypsy Moth Life Cycle

Gypsy moth eggs hatch in the spring at about the time that oak leaves begin to grow. During the next 6–8 weeks, the larvae will molt several times. This molting is the stage in which the gypsy moth does all of its damage. Each larva consumes about 10.8 square feet (1 square meter) of leaves during its development. Finally, the larva crawls to a bark crevice or other protected place and pupates.

During the 10–12-day pupal stage, the gypsy moth completes development. Adults emerge and mate but do not feed. The female has white wings but cannot fly. She secretes a chemical called a pheromone, which attracts males. After mating, the female lays 200–800 eggs in a single mass and covers them with body hair so that they can survive the winter. The egg masses are laid primarily on trees, but interestingly, the eggs are also laid on cars and other vehicles, a factor that contributes to the spread of the gypsy moth. In the spring, the eggs hatch, and the cycle begins again.



Effects of gypsy moth defoliation vary. When more than 50 percent of a tree's leaves are eaten, the tree will releaf during the summer, although the leaves will be smaller. The refoliation process uses stored nutrients that would normally have been used in the following year. This weakens the tree, making it more susceptible to opportunistic organisms such as the two-lined chestnut borer or shoestring root fungus. The tree can survive defoliation and refoliation for 1–2 years, but it will most likely die if the opportunistic organisms are present.

Result of gypsy moth infestation. Photo by Tim Tigner, Virginia Department of Forestry.