

## Gypsy Moth

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The gypsy moth is native to Europe, Asia and North Africa. It was inadvertently introduced into North America in 1869 in a misguided attempt to breed a hardy silkworm. As a result, the gypsy moth has escalated into the most important insect pest of forest and shade trees in the eastern U.S. The gypsy moth caterpillar is the destructive life stage that defoliates entire trees and forests. Repeated defoliation often weakens trees resulting in greater susceptibility to disease and insect pests.

Gypsy moth caterpillars can also pose nuisance problems to humans because they typically aggregate on the sides of buildings and homes, and their ability to produce large quantities of frass (i.e., fecal pellets), that fall from trees onto lawns and patios. Some people may experience an allergic reaction when they contact the many hairs covering the body of caterpillars.

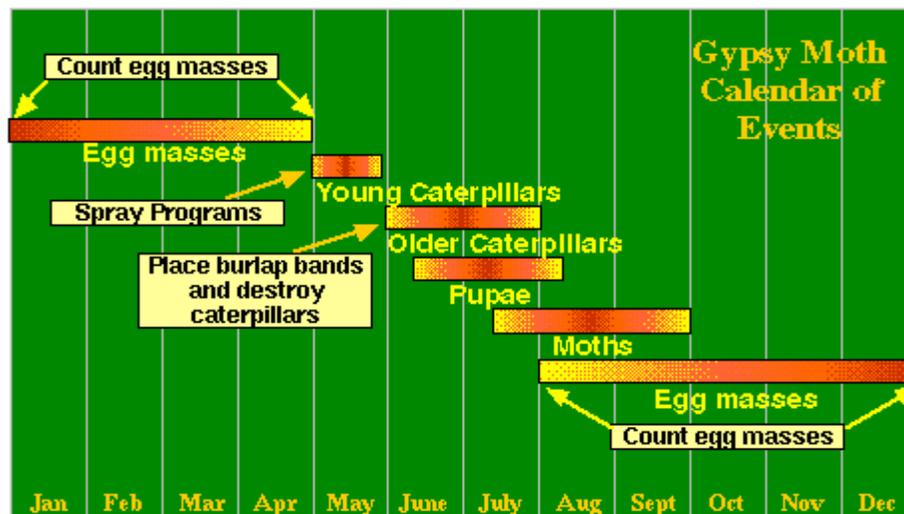


Gypsy moth larva

**Plants Attacked and Damage** Gypsy moth caterpillars have been reported to feed on over 600 species of trees and shrubs. Preferred hosts include aspens, birches, crabapples, hawthorns, lindens, mountain ash, oaks, sweetgums, and willows. Some trees such as dogwood, green ash, honeylocust, silver and red maples, tulip tree, and white ash are resistant. Typically, most evergreen trees are also resistant, however blue spruce and white pine are susceptible. Feeding damage frequently results in severe and/or complete defoliation; decreasing the energy reserves of the tree. However, rarely are trees that are defoliated by gypsy moth killed. In fact, tree often recover and produce new leaves in July.

**Life Cycle** The gypsy moth has four distinct developmental stages: egg, larva (caterpillar), pupa, and adult. Each life stage look and behaves very differently from another. Adult females lay eggs in masses of up to 1000 or more eggs in August. Egg masses are frequently attached to houses, lawn furniture, mail boxes, rocks, trees, and most any other objects. Often, egg masses are well hidden. Approximately one month after eggs are laid, the tiny larva is fully formed within the egg and ready to hatch. However, at this point, the larva goes into an overwintering diapause, shutting down metabolic activities and becoming insensitive to temperature. The larva passes through the winter within the egg. In the early spring, as temperatures increase, the larva inside the egg slowly becomes more active, and in mid-May, as the leaves expand, the eggs hatch.

Newly hatched caterpillars climb into tree canopies and begin feeding. If the first tree is not suitable, they will produce a silken thread whereby they disperse to a new host. This process is known as ballooning. Once the larvae have completed ballooning, they begin feeding and continue throughout the spring months for approximately five to six weeks. About once a week the larva will grow too large for its exoskeleton and it will molt. These molts separate the larval period into five or six stages called instars. Early larval instars (one - three), feed during the day. Once they reach the fourth instar, larvae begin feeding at night and hide beneath rough bark or in leaf litter during the day. Approximately 90% of the leaves consumed by larvae are eaten in the last two instars. After they have completed feeding, caterpillars enter the pupal life stage from which the adult moths emerge sometime in July. The adults are not damaging because they do not feed and only live long enough to mate and produce eggs.



**Control** Successful management of gypsy moth requires an integrated approach that includes several integrated strategies. When population densities are high or in outbreak situations, the most effective approach for preventing widespread defoliation and reduction of the population is aerial applications of a biologically derived insecticide called *Bacillus thuringiensis* var. *kurstaki*, commonly known as Bt. Bt sprays are only effective on the caterpillar life stage, and are essentially harmless to other animals, including birds, fish, humans, and pets. However, Bt can affect other, non-target butterfly and moth species. Insect growth regulators (IGR's) such as dimilin are viable alternative controls available for both commercial and homeowner use. IGR's mimic insect hormones, and target-specific to only insects. In areas where the gypsy moth has been established for a few years, natural controls can help maintain populations below damaging levels. Natural enemies include insect parasites that attack eggs and caterpillars, predators such as birds, and disease organisms. A fungal disease of gypsy moth called *Entomophaga maimaiga* is currently being used by researchers, and is a promising control of gypsy moth.

Homeowners can impact gypsy moth populations in the trees on their properties by removing and destroying egg masses in the fall and winter. In spring, they can wrap bands covered in sticky material around the trunks of trees to entangle climbing caterpillars. Older larvae can be collected and destroyed daily from under burlap skirts placed around tree trunks. Such control methods can reduce gypsy moth numbers on isolated trees, but can not prevent defoliation over wider areas.

**For pesticide recommendations:** See UW-Extension Bulletin A3597 or contact your County Extension Agent.

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