Gypsy moth

Lymantria dispar
Order Lepidoptera, Family Lymantriidae;
tussock, gypsy and brown-tail moths
Introduced pest

Host plants: Oak, apple, crabapple, aspen, poplar, basswood, birch, blue spruce, and over 300 other species

Description: Adult male moths are dark brown with black markings. Females are larger than males, whitish with black markings. They are flightless. Newly hatched larvae are 3 mm long and black. Mature larvae can reach 50 mm in length and can be easily recognized by the five pairs of blue spots toward the front and six pairs of red spots toward the rear on their bodies.

Life history: Eggs are deposited in a mass (100–1,000 eggs) in mid July to mid August. Larvae hatch in early to mid May the following spring. Young larvae disperse on silk. Mature larvae feed during the night and descend at dawn to find a protected location in which to spend the day. Pupation occurs in June to mid July. There is one generation a year.

Overwintering: Egg masses.

Damage symptoms: Young larvae cause shot hole damage in leaves. Mature larvae in severe infestations can strip foliage from a wide variety of trees. Growth loss in healthy trees occurs when defoliation exceeds 50%. Healthy, deciduous trees can enter into a period of decline following consecutive years of defoliation. The decline and death of unhealthy hardwood trees will be accelerated when they are defoliated for two or more years. Trees in poor health become susceptible to secondary attack by twolined chestnut borer.

Monitoring: Eggs begin to hatch when Eastern redbud and crabapple blooms in late April to early May (Herms). Pheromone traps may be used to detect the presence of male gypsy moths. They should be placed out usually from late June to mid September. Look for larval shot hole damage in May. Egg masses may be monitored in the winter.

Chemical control: Use biorational insecticides such as spinosad, *Bacillus thuringiensis* var. *kurstaki,* or insect growth regulators (IGR), such as diflubenzuron. Most conventional insecticides kill caterpillars. Gypsy moth management is often a complicated issue for a community. Be sure to contact your state department of agriculture, state department of natural resources, or local extension educator for information on gypsy moth management plans.

Biological control: An extensive list of parasitoids have been introduced to control this introduced pest. A few of those introductions include the encyrtid egg parasitoid *Oencrytus kuvanae*, the larval braconid parasitoid *Cotesia melanoscela,* the larval tachinid parasitoids *Compsilura concinnata* and *Blepharipa pretensis*, and the ichneumonid pupal parasitoid *Coccygomimus disparis*. Rodents are important predators of pupae. The carabid

Summer defoliation of trees in urban area caused by gypsy moth. (133)
Photo: USDA Forest Service Archives, USDA Forest Service, The Bugwood Network, University of Georgia

Shot hole leaf damage caused by early instar gypsy moth larvae on chestnut oak. (132)
Photo: unknown

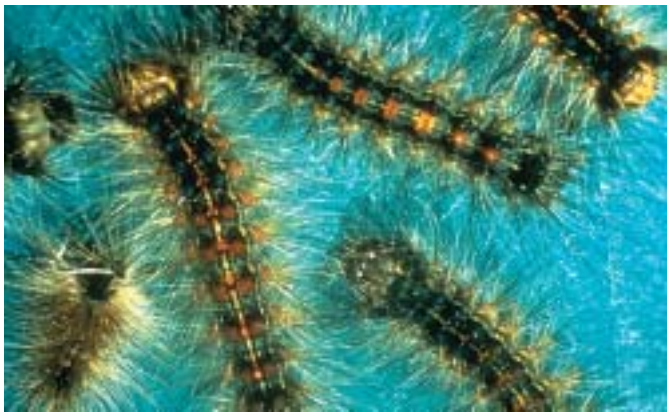
Gypsy moth female (mottled white) and male (dark and mottled) on tree trunk after mating. Large feather-like antennae on the male are used to locate females by detecting her pheromone. (133)
Photo: John H. Ghent, USDA Forest Service, The Bugwood Network, University of Georgia

Gypsy moth (continued)

beetle *Calasoma sycophanta* was also introduced to eat on pupae. NPV is produced in governmental programs and distributed by state and federal agencies for use in quarantine programs. Since 1989, a fungal pathogen, *Entomophaga maimaiga*, has been killing larvae and controlling populations during wet springs.

Plant mortality risk: High, if repeated defoliation for 3 years. Quarantine pest, please contact your Department of Agriculture.

Gypsy moth female with egg mass; hairs pulled from the female's abdomen cover the egg mass. (133)
Photo: John Davidson

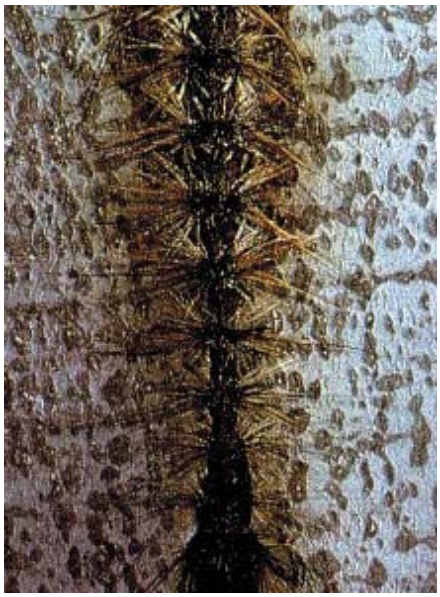


Gypsy moth third and fourth instar larvae. (134)
Photo: John Davidson

Gypsy moth larva killed by NPV virus. (136)
Photo: Vera Krischik

Biorational pesticides: *Bacillus thuringiensis* var. *kurstaki*, insecticidal soap, pyrethrins, spinosad, tenbufenozide. State programs: diflubenzuron, pheromone flakes, *Entomophaga maimaiga* fungus, nuclear polyhedrosis virus (NPV)

Conventional pesticides: acephate, bifenthrin, carbaryl, chlorpyrifos (nursery only), cyfluthrin, deltamethrin, fluvalinate, lambda-cyhalothrin, malathion, permethrin



Cadaver of a late instar gypsy moth filled with *Entomophaga maimaiga* resting spores. Note the remains of some of the conidia attached to larval hairs, the dried appearance of the cadaver, and the vertical position with head down.
Photo by D. Specker, US Forest Service

Cadaver of a late instar gypsy moth killed by NPV. Note the moist appearance of this older cadaver and inverted "V" position. Photo by D. Specker, US Forest Service