

## Least-toxic Control of Gypsy Moths

Gypsy moths have been a periodic problem in the U.S. since 1969, when it escaped from cultures maintained by a scientist trying to establish a “native” silk industry. It is identified as a destructive pest, causing individuals, and local and state governments to intervene.

The best way to attack a gypsy moth problem is to attempt non-chemical pest management strategies first. There are inherent risks associated with all pesticides, and a number of steps that can be taken as alternatives to chemical insecticides.

Gypsy moth caterpillars prefer to eat oak, birch, apple, willow, linden, hawthorn, and sweet gum trees. Older caterpillars may also attack crabapple, cherry, beech, hickory, walnut, hemlock, and pine trees. They avoid tulip, poplar, sycamore, eastern red cedar, American holly, ash, and black locust trees.

### **Prevention**

- Trees should be maintained in a healthy and vigorous condition.
- Remove debris that may provide shelter gypsy moth larvae.

### **Monitoring**

Look for and destroy any egg masses in late summer, and again the following spring.

### **Control**

- **Destroy egg masses** in the winter and spring before they hatch. Egg masses are light tan to pale yellow and are laid in June or July. They overwinter and hatch around April 1 the following spring. An egg mass can be as large as a 50 cent piece, is usually oval and flat, and has a felt-like texture. They are found in sheltered locations, such as under tree limbs, tree trunks, tree wounds, corners around windows and doors, house eaves, gutters, fences, and woodpiles. Egg masses should be destroyed whenever possible by scraping them into a container
- **Sticky barrier bands** keep caterpillars from climbing up the tree trunks. A barrier can be made with sticky gum products that are applied directly on the tree bark, such as Tree Tanglefoot, Roxo Bug Glue, and Bug Gum Mastic Barrier. Sticky tape products are also available – the best type for rough bark is an aluminum foil called Repel'm II or III. Barriers are most effective when placed around the trunk by the first week in April. The barrier should be checked at least once a week, and removed when caterpillars are not seen for several days (probably around the end of June). To capture larger gypsy moth

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caterpillars in trees, place a burlap hiding band above the tape or sticky trap in early May.

Barriers should be at least two inches wide and not be easily torn. The adhesive on the underside of the band must securely adhere to the tree bark surface and be pliable enough to fit snugly into cracks and crevices. The sticky material on the outre surface of the band must retain its tackiness for the entire period of gypsy moth activity, without runoff because of warm temperatures or rain. Repair or replace any barrier that becomes separated from the bark; periodically check the barrier bands for dirt, trapped insects and other debris. Remove large insects, silken mats and debris to keep the barriers sticky, or, if it is easier, replace the barriers themselves.

- Place **burlap hiding bands** around tree trunks to reduce the number of wandering caterpillars and detect very low population levels. To make a burlap hiding band, wrap and tie a strip of burlap about 12" wide around the trunk of the tree about 5' off the ground. Fold the upper burlap portion down over the tie. The larger caterpillars will come down the trunk to hide during the daytime and can be captured and killed in soapy water. You must destroy the caterpillars daily from May through June for this method to be effective.
- If populations of gypsy moths get high enough that an insecticide is necessary, ***Bacillus thuringiensis* (Bt)** is an option. This biological pesticide is a bacterium that attacks the gypsy moth caterpillar. It is very effective if applied properly and can be applied by commercial applicators. It should be used only after all caterpillars have hatched, but before they get to be about 1 inch in length, and good leaf coverage is essential. Two applications are necessary, five to seven days apart. Bt is harmless to predators of worm pests and allows the populations of natural predators to grow, resulting in less of a need to spray and less chemicals needed when spraying occurs.

As with any pesticide application, use extreme caution when applying Bt. It is non-specific and causes fatal disease in many species of butterflies and moths that are non-target and even beneficial or rare organisms. Use it only as a last resort when all other control tactics have failed.

- **Natural predators** help to control gypsy moth populations, such as birds, spiders, beetles, flies, and wasps.

Dimilin™, active ingredient diflubenzuron, has been widely used in gypsy moth control. An insect growth regulator, it inhibits the ability of the insect to produce its hard, chitin exoskeleton. Though it is relatively non-toxic in terms of its short-term effects to mammals by both oral and dermal routes, it has been shown to adversely affect the oxygen-carrying capacity of blood and may depress

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testosterone levels. It is also being scrutinized for its carcinogenicity because of “strongly suggestive evidence” that one of its breakdown products (4-chloroaniline) causes tumors in mammalian systems. Dimilin™ is extremely toxic to a wide variety of beneficial insects that help control the populations of pest insects, including gypsy moths, and also to many invertebrates, including many aquatic organisms that are essential parts of the food chain or commercially important, such as the blue crab.

The chemical will wash off of foliage and persist in the environment for longer than 90 days, yet there are still many unanswered questions about how far it will travel in surface water and whether its use poses a threat to bodies of water like the Chesapeake Bay.

## **References**

Beyond Pesticides/NCAMP. “Least Toxic Control of Pests In the Home & Garden: A series of pest control & chemical factsheets.” Washington, DC.

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