

Controlling Gypsy Moth Caterpillars with Barrier Bands

In recent years, the gypsy moth has had a serious impact on Maryland's woodlands, suburbs, and urban areas. Defoliation caused by dense populations of caterpillars has killed valuable timber and shade trees. Additionally, swarming caterpillars and their debris are a nuisance to the homeowner.

In a vigorous move to reduce gypsy moth populations and to prevent defoliation, the Maryland Department of Agriculture participates in a Cooperative Suppression Program with the U.S. Forest Service and participating counties in Maryland. However, not every wooded property qualifies for the state's program and some property owners object to the aerial application of insecticides to their property.

Many homeowners are concerned for the welfare of their trees when, for various reasons, their property is not included in the state program. Several options are open to such homeowners:

1. The property owner—either alone, with neighbors, or as part of an entire community—may arrange for aerial application of an insecticide by private contractors. However, such programs are sometimes difficult to arrange.

2. The property owner may contract for application of pesticides by ground equipment; but ground application is more costly than aerial application and also uses more pesticide per unit area.
3. The property owner may use sticky barrier bands. This tactic has been shown to reduce the number of caterpillars in the canopies of trees, the amount of defoliation caused by caterpillars, and the number of egg masses on isolated trees. However, recent studies have concluded that results of barrier bands are highly variable and may not adequately protect the foliage of trees under all conditions.

This fact sheet describes methods of making and using sticky barrier bands to control gypsy moth caterpillars. (For more information about moth identification and management, ask for the Maryland Cooperative Extension Fact Sheet 242, "The Gypsy Moth and the Homeowner.")

Sticky Barrier Bands

Sticky barrier bands prevent gypsy moth caterpillars from crawling up tree trunks and into tree canopies where they feed on the foliage. Sticky barrier bands can protect

trees from defoliation by preventing primary and secondary invasions by caterpillars. The bands should be in place before the eggs hatch and must be maintained all season.

Preventing Primary Invasions

Sticky barrier bands prevent the primary invasions of newly hatched caterpillars from egg masses found near the base of a banded tree, in surrounding leaf litter, in woodpiles, or on nearby lawn furniture.

Preventing Secondary Invasions

Sticky barrier bands also prevent three types of secondary invasions of gypsy moth caterpillars. First, “ballooning” caterpillars (those that hang by silken threads from tree branches or foliage and are then dispersed by the wind) will generally fall to the ground. These tiny, young caterpillars will be prevented from reentering the tree canopy by the sticky barrier band. Second, older caterpillars that began life in the tree, above the band, and did not balloon out of the tree when very young, still periodically drop out of the tree’s canopy because of irritation by natural enemies—wind, rain—or for other reasons. The larger the population, the more likely caterpillars are to move out of trees. The sticky barrier band can prevent reinfestation of the tree by these larger caterpillars. Finally, large caterpillars may swarm into your yard from neighboring properties where the trees have been completely defoliated. Well-maintained barrier bands help protect your trees from this late-season threat (typically occurring about mid-June).

Types of Sticky Barrier Bands

Sticky barrier bands are either commercially produced or homemade. Several companies have marketed sticky barrier bands for use against gypsy moth caterpillars. Because these products come and go, they are not listed individually in this fact sheet. Consult your local hardware store or home-and-garden center for their availability. Whatever brand/type you buy, be sure to follow the directions on the label.

Making a Barrier Band

Barrier bands are easy to make with low-cost materials. To be effective, a sticky band must meet these criteria:

- The barrier band must be at least 2 inches wide and not be easily torn.
- The adhesive on the underside of the band must securely adhere to the tree bark surface.
- The band must be pliable enough to fit snugly into cracks and crevices.
- The sticky material on the outer surface of the band must retain its tackiness for the entire period (early April until late June) of gypsy moth activity, without runoff because of warm temperatures or rain.

Remember, do not put the sticky material directly on the bark because many sticky materials can injure the bark.

You can make an effective barrier band system using duct tape (available at hardware stores). The 2-inch-wide, gray tape has a sticky back that adheres well to tree bark. However, duct tape alone will not stop caterpillars from moving up the tree until a sticky material has been placed on the outer surface of the duct tape. (Materials such as petroleum jelly or axle grease can be placed on the duct tape as sticky agents. However, such materials can damage the tree bark if they flow off the duct tape onto the surface of thin-barked trees such as beech or birch.)

- **Tangle foot and Tangle trap.** These thick, tacky materials can be applied with a stick. They are available at hardware and garden supply stores, and online sources. They come in a 1-pound tub, tube, aerosol can, or as precoated bands.

If necessary, use mineral spirits to remove any of these materials from your hands.

Applying Sticky Barrier Bands

All barrier bands should be in place just before gypsy moth eggs hatch. Since gypsy

moth egg masses will hatch in Maryland from early to mid-April, depending on the temperature, place sticky barrier bands on the trees during the first week in April to block the ascent of newly hatched caterpillars. On the tree, select an acceptable height that has the least number of bumps and crevices on the bark. Chest level is the ideal height to place the barrier band for proper maintenance. At this height the sticky barrier band will be out of reach of small children and pets. Before application, use a dust brush to brush off loose bark, moss, and dirt so that the barrier band will adhere to the bark surface. **Do not apply the barrier bands onto a wet surface.**

For the initial application, press one edge of the barrier band firmly against the bark. Proceed to wrap the barrier band horizontally around the tree, making sure the band is pressed securely into all the cracks and crevices of the bark. Any gaps or spaces left under the band will allow gypsy moth caterpillars to slip under the barrier band and gain access to the foliage. Overlap the ends of the band to ensure a complete barrier around the tree trunk.

After applying and securing the barrier band, place the sticky material on the outside surface as needed. Use a brush or a spreader stick to apply the material on the surface of the barrier band. Leave a margin of at least a quarter of an inch untreated on the top and bottom edges of the barrier band to ensure that the tacky material is not applied directly on the tree. (Sticky material applied directly on the tree can cause bark discoloration or tree injury and is difficult to remove.) Check for any gaps or spaces under the barrier bands and repair if necessary.

You may remove the sticky barrier bands in August after the adult female gypsy moths have laid their egg masses. Carefully roll off the barrier band in the same manner as rolling up a carpet. Place the old barrier band in a plastic or paper bag and dispose of it in the trash.

Maintaining Sticky Barrier Bands

Periodically, inspect the sticky barrier bands to ensure their effectiveness against gypsy moth caterpillars. Check for dirt, trapped insects, and other types of debris. Occasionally, in high gypsy moth population densities, silk strands left from descending caterpillars can form a mat over the sticky barrier bands. Excessive amounts of silk or other debris on the bands can act as a bridge for ascending caterpillars. Remove large insects, silken mats, and other debris to prevent the caterpillars from crossing the barrier bands. Sometimes, when the barrier bands become too soiled, it is easier to reapply the sticky material or to apply a new barrier band. This assures a continuous barrier against the caterpillars.

Repair or replace any band that has become separated from the bark. Occasionally, small animals (especially squirrels) and birds will pull up the bands while feeding on trapped insects. **Always remember to keep the sticky material from contacting the bark.**

Do not be discouraged if you find few or no caterpillars directly on the sticky barrier. The tacky material prevents caterpillars from crossing the barrier; it is not a trapping device. The caterpillars will avoid the sticky material and will not attempt to cross it. Instead, they will move horizontally around the tree, just below the barrier band, and attempt to find a space under the barrier. After a period of time these caterpillars will crawl down the trunk in search of another food source. In early spring, many of the newly hatched caterpillars will die of starvation and accumulate below the sticky barrier bands.

Once again, be sure the sticky barrier bands are in place before the eggs hatch (early to mid-April). The newly hatched caterpillars may appear to be small and insignificant, but as they develop, they can eat large quantities of foliage.

Burlap Bands

An additional aid in combating the gypsy moth is to wrap a strip of burlap, or similar material, around the trunk of the tree at least 6 inches higher than sticky barrier bands. Take a 12-inch-wide piece of burlap and wrap it loosely around the entire tree trunk. Use string or staples to fasten the middle of the strip, allowing it to fold in half to form a double flap 6 inches wide. Be sure to cut off any loose strands hanging from the burlap band. These loose strands can become attached to the sticky barrier band and act as a bridge for the caterpillars.

Burlap bands provide an excellent shelter for the larger caterpillars that crawl down from the foliage during the day to rest. At least once a day, destroy any gypsy moth caterpillars, pupae, adult moths, or egg masses found under the burlap bands. Scraping the egg masses onto the ground does not destroy the individual eggs; they should be put in a paper bag and disposed of in the trash. Daily destruction of eggs, larvae, pupae, and adults under these burlap bands can further reduce the gypsy moth population on a tree.

Avoid skin or eye contact with the gypsy moth eggs, caterpillars, and adult moths by wearing gloves and using a stick or other tool when removing the insects. Gypsy moth caterpillars have irritant hairs, and the adult moths have scales on their wings. These can cause allergic reactions in some people. Reactions include sneezing, watery eyes, and small welts on the skin. Long sleeved shirt, gloves, hat, and dust mask may help reduce skin irritations and inhalation of irritating hairs.

If you are considering the use of burlap bands, keep in mind that life stages under the bands must be killed on a regular basis. This means a **minimum of several times a week**. Burlap bands provide a refuge for gypsy moths, which can allow populations to build up if the larvae, pupae, adults, and eggs are not removed. Homeowners not willing to regularly monitor the bands and kill the life stages should not use burlap bands.

Sticky Barrier Bands: Benefits

Sticky barrier bands have several advantages over other methods for the control of gypsy moth caterpillars. Commercial sticky barrier bands are reasonably priced compared to the cost of aerial application or ground application of insecticides. Homemade bands can cost less than \$1 per tree. This is especially good for homeowners who need to protect only a few trees. Sticky barrier bands are an effective alternative to insecticides under some conditions. The application of sticky barrier bands is relatively easy and can be done within a reasonable time frame. Homeowners can place sticky barrier bands without consulting neighbors. Using sticky barrier bands can have a definite impact on high and low gypsy moth populations on the individually treated trees.

Sticky Barrier Bands: Drawbacks

The use of sticky barrier bands has its disadvantages, however. Application and maintenance of sticky barrier bands can be time-consuming for a homeowner who wants to protect a large number of trees. Remember, the effectiveness of either burlap bands or sticky bands is directly related to the willingness of the homeowner to maintain them. Some homeowners also may object to having sticky barrier bands around their trees for aesthetic reasons.

Summary

The gypsy moth will remain firmly established in Maryland, and the homeowner must learn to deal with its presence. The use of sticky barrier bands is an alternative method to independently manage the gypsy moth in individual settings. Sticky barrier bands can protect a tree's foliage by reducing the number of larvae gaining access to the tree canopy. If the bands are properly maintained, damage to trees caused by gypsy moth may be reduced. Burlap bands are also a gypsy moth management tool. Sticky barrier bands and burlap bands may provide added protection even if you are having your property sprayed for gypsy moths.

The use of commercial and trade names above does not imply approval or constitute endorsement of the product by the U.S. Department of Agriculture, the Agricultural Research Service, the Maryland Department of Agriculture, or the University of Maryland Cooperative Extension.

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