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## Mechanical Controls

Many of the mechanical management controls used today were initiated when the first major outbreaks occurred from 1889-1899 in Medford, Massachusetts. Some of these control measures or tactics have been improved over the years. They can be useful tools for gypsy moth management; however, they will not eliminate populations nor will they prevent major outbreaks.

### Tree Banding

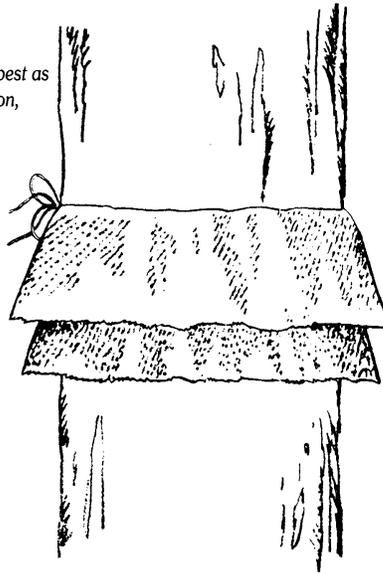
**Burlap Bands**—Physically removing late instar caterpillars and pupae from under burlap bands is a time-honored control tactic used by homeowners against gypsy moth. It takes advantage of a quirk in larval behavior in that late instar caterpillars tend to feed at night and rest during the day (this occurs primarily during low or moderate larval densities). The caterpillars descend the trees at dawn in search of a suitable refuge. Burlap bands make an excellent refuge, and descending caterpillars tend to congregate under the bands.

On the other hand, several factors make this an inefficient control strategy:

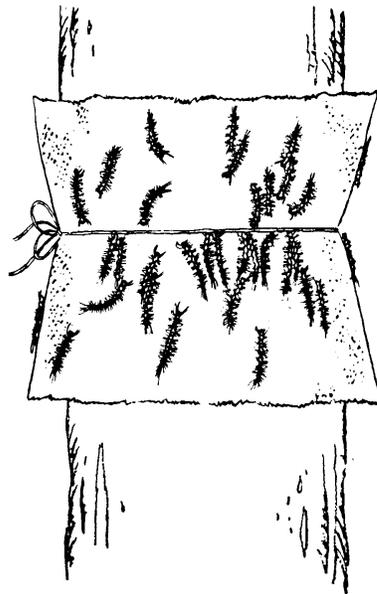
1. Not all caterpillars will descend even under the best of circumstances.
2. In high-density populations where protection is truly needed, the caterpillars feed day and night, with only a small percentage seeking daytime refuge. Under these conditions there will be constant reinfestation from other trees. Burlap bands will not stop this reinfestation.
3. Tending burlap bands requires sustained effort.

4. Workers are exposed to allergenic hairs.

*Burlap bands can serve best as a control in early detection, particularly in areas not previously infested.*



**Burlap Bands are an excellent refuge for caterpillars.**



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**Barrier Bands**—Do barrier bands work? Can they prevent defoliation? Can they reduce populations? Theoretically, barrier bands have been shown to significantly restrict caterpillar movement into the canopy. Research indicates that barrier bands will provide some level of caterpillar reduction and has resulted in substantial foliage protection. However, population reduction, as measured by year-to-year egg mass levels, may not be achieved by banding alone.

Barrier bands are most effective when put in place before gypsy moth egg hatch. Many newly hatched caterpillars end up on the ground, even if they hatched on the trees. Newly hatched caterpillars crawl to the tips of branches and dangle silken threads into the wind. They frequently are caught by the wind and carried to the ground, another tree, or whatever intercepts their flight. This is called “ballooning,” and has been identified as the insect’s major

method of natural dispersal. If the barriers are in place, they will prevent these caterpillars from reascending.

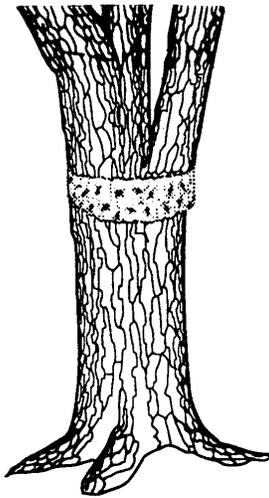
However, a considerable number of caterpillars may still end up in the tree after hatch. A small percentage of these caterpillars will leave the tree each day; well-maintained barriers will prevent their reascending the tree, and over time, larval reduction will reach the point where defoliation is reduced.

One obvious use for barrier bands is to prevent treated trees from being reinfested. Large numbers of caterpillars will line up below the barrier bands. It is generally useful to destroy these caterpillars (by brushing them into soapy water) to prevent them from moving to shrubs and unbanded trees.

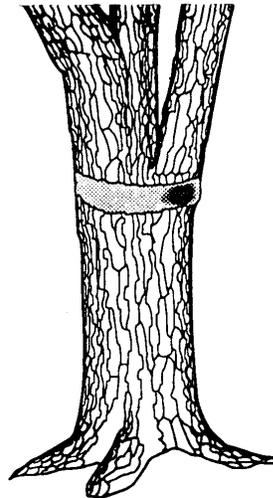
Homeowners can buy prepared bands and follow label instructions, or they can make their own bands. To make a band, wrap a band of duct tape tightly around the tree, sticky side towards the tree. Be

sure to tuck the tape tightly into every fissure and crevice in the bark. A few well-placed staples or tacks (you will want to remove these at the end of the season, so nails should be avoided) will keep the bands in place.

Apply the sticky material (Vaseline, Tree Tanglefoot, etc.) to the band; avoid getting this material on the tree bark unless it is known to be safe for the tree. Tree Tanglefoot is safe to apply directly to the bark, but it is difficult to remove, and will discolor the bark. Therefore, Tree Tanglefoot should still be applied to duct tape or some similar band. Smooth-barked trees (red oak) present no problem, but it is difficult to get a good seal on rough-barked (white oak) trees. On rough-barked trees, the Tree Tanglefoot should be applied toward the bottom of the band, lapping over the edge of the band onto the bark at those spots where the band is not flush against the tree. Bands without some sticky material are usually not as effective.



**Sticky bands trap the caterpillars.**



**Slippery bands keep caterpillars from climbing trees.**