

## **Environmental impact of Gypsy Moths**

Gypsy moth larvae or caterpillars will feed on tree leaves. If the larvae population is high, they can defoliate whole trees and forests in a short amount of time. Gypsy moths prefer oak trees but will feed on a variety of hardwood and conifer tree species. Under normal circumstances, defoliation caused by gypsy moth will not kill a tree. However, trees can decline to the point of death in some cases when defoliation is coupled with dry hot summers or impacted by other forest pests like Spring or Fall Cankerworm. As well conifers are greatly impacted by defoliation as they can not re-foliate. Instead it must rely on live buds at the tips of each branch to grow needles the next year. Gypsy moths are an invasive species that we need to collectively come together to eradicate to save our tree health and climate.

Male Gypsy Moth:

The Female Gypsy Moth:



## **How Homeowners can do their part**

Homeowners are encouraged to monitor their trees such as, oaks, maples, white pine, white and blue spruce, balsam fir and larches, for the presence of Gypsy Moth larvae, moths and/or egg masses. You can help manage Gypsy Moths by following these techniques dependent on the season:

## **May to July: Hand Pick Caterpillars**

Handpicking caterpillars is still one of the most effective ways to help control Gypsy moths on small newly planted trees, shrubs, and plants. If possible, you can also gently shake the tree, so caterpillars fall from the leaves. Thoroughly inspect the remaining foliage, branches, and trunk for caterpillars, and using gloves, pick them off your tree. Fallen and collected caterpillars should be placed and left to soak in soapy water, burned or just simply squished.



## **Late May to early June: BTK Application**

You can apply a product that contains BTK (*Bacillus Thuringiensis* “*kurstaki*”) to foliage at the early stage of caterpillar development when caterpillars just begin feeding. This is usually around mid-May. The pesticide must be ingested by the caterpillar to be effective. Residents should have their trees sprayed with BTK by a qualified pesticide applicator if choosing this method. This method may need to be repeated throughout the season dependent on the weather, any rainfall or prolonged solar radiation can reduce the effectiveness of the product.

For small trees and shrubs that you can reach, products like Safer® Brand Caterpillar Killer can be purchased at local garden supply stores. Such as:

<https://www.homedepot.ca/product/safer-btk-caterpillar-killer-100ml-concentrate/1000419082>

There is a variety of legislation regarding spray rules dependent on private land, farms with adjacent land. See and become knowledgeable on spraying with <http://www.omafra.gov.on.ca/english/crops/resource/using-pesticides.htm>

For private acreage aerial spraying contact: <https://zimmerair.com/>

## **Pesticide information**

### **BTK**

The pesticide used in aerial spray programs is *Bacillus thuringiensis* 'kurtaki' (Btk). This is a soil-borne natural bacterium that is applied to the leaves of the affected trees while caterpillars are in their early stages. This product has been used for over 30 years successfully both to save forestry and agriculture.

BTK works when ingested by only a specific group of insects called lepidopterans, this includes destructive tree pests such as gypsy moths, spruce budworms, and forest tent caterpillars. BTK internal toxins are only activated in the digestive systems present in certain alkaline conditions of specific insects. BTK does not have any detrimental effects to humans, birds or bees stated by Health Canada (Health, 2009).

For questions surrounding the health and safety of BTK see attached links:

<https://www.canada.ca/en/health-canada/services/consumer-product-safety/reports-publications/pesticides-pest-management/fact-sheets-other-resources/bacillus-thuringiensis-subspecies-kurstaki.html>

SDS Sheet can be found at:

<https://www.valentbiosciences.com/foresthealth/products/foray/>

## **May to July: Burlap Banding**

Once European Gypsy Moth caterpillars grow to about an inch (2.5 cm) in length by mid-June, they will move down the trunk to seek shelter from predators and heat. Reduce the number of larvae on the trees in your yard by trapping them using burlap.



## **Step-by-Step Instructions**

1. Wrap and secure a piece of burlap cloth around the stem/trunk of your tree
2. Tie twine or rope around the center or slightly below the center of the burlap
3. Drape the burlap cloth over the twine or rope so there is an overhang where the caterpillars can crawl underneath to seek shelter during the day
4. Check the trap by lifting the overhanging burlap cloth every afternoon and collect any hiding caterpillars
5. Put them into a bucket of soapy water for a few days to destroy them

Burlap can be purchased at your local dollar or hardware store.

## **June to July: Gypsy moth trap**

You can trap adult moths to reduce the mating of Gypsy Moths on your property.

### **Step-by-Step Instructions**

1. You can purchase the traps at various retail stores or online throughout your area
2. Put the traps out when the moths are active after coming out of their pupa stage of growth. Only male moths are attracted to the traps.
3. Homemade traps can be created with various designs found on websites. The traps have a bait inside their lid that smells like female gypsy moth pheromone for attracting males.



Caution this product used pheromones to attract male moths. Only use with proper knowledge and information surrounding moth species.

Product can be purchase at: <https://www.homedepot.ca/product/oak-stump-gypsy-moth-trap/1000700312>

## **August to May: Egg Mass Removal**

Egg masses are about 4 cm long, tan colored, and can be found on tree trunks, furniture, buildings, etc. Observe the tree trunks and branches on your property, looking for egg masses, and scrape them off surfaces into soapy water, a bag or burn them to destroy said masses. The egg masses are likely to survive on the ground if not properly destroyed. This method of eradication is the most important as it will assist in reducing infestation levels for the preceding spring.

### **Step-by-Step Instructions**

1. Place your catchment container below the egg mass
2. Use your scraper tool to remove the egg mass from the surface.  
Ensure that all eggs are scraped. Try not to leave any residual eggs in bark ridges or crevices.
3. Empty the contents of your catchment container or bag into a bucket of soapy water
4. Leave the eggs sitting in the bucket for a day or two, then dispose of the contents

Egg masses can be located high up in trees. Proper care needs to be taken if trying to access anything aloft, especially if using ladders. Some private tree care companies can be hired to provide this service at heights.



For Further Instruction on Egg Mass removals see:  
<https://www.youtube.com/watch?v=z5gn-zG9JYw>

## Natural Enemies

The gypsy moth has a variety of predators that help aid in a decline including mice, some birds and predator insects. The best natural eradicators are two diseases, both diseases have potential to affect outbreak levels of gypsy moth caterpillars. The nucleopolyhedrosis virus (NPV) and a fungus called *Entomophaga maimaiga*. Both diseases are control mechanisms that can work at a population level.

### The NPV

This virus affects the health of gypsy moths but does not cause full mortality. It affects the egg production of moths when they have a high level of NPV. With less egg development, there will be less gypsy moths produced the forthcoming year.

During outbreaks, the gypsy moth caterpillars compete for leaves and space to rest. This natural competition for survival increases caterpillar's vulnerability to NPV. NPV usually occurs in the second or third year of an outbreak. It can be seen with caterpillars hanging limply from a trunk or branch in an upside-down V-shape.



NPV Disease in Gypsy Moth Caterpillar

### Entomophaga maimaiga- The fungus

This fungus can be digested by the caterpillars dependent on its presence in the winter. If temperature levels and moisture is high in the following



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springtime, resting spores germinate and create a sticky fungal spore. This fungus is digested by the caterpillar, grows inside it, and then kills the caterpillar in a week.

After surveys of local trees in the area we can determine whether these diseases will affect the outbreak in following years.

### **Enhance Tree Re-foliation**

If you have noticed significant defoliation of trees on your property. To help the tree gain strength, water the trees around your house regularly to reduce long term stress on the trees.

*Together we can make an impact on Gypsy Moth infestations in Lanark County.*