



ENVIRONMENT BULLETIN

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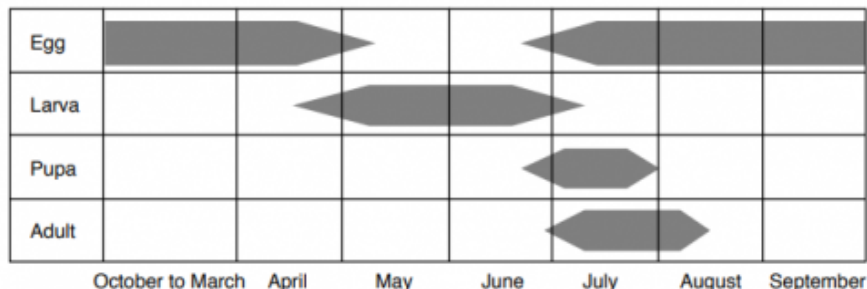
Control of Gypsy Moth Infestation

Last year we issued an Environment Bulletin on the current gypsy moth infestation in the forests surrounding White Lake. It is apparent from our observations of trees during the fall and through the winter that the situation may be even worse in 2021. We have found trees hosting as many as 100 egg masses waiting for warm weather to hatch and wreak havoc on emerging foliage. Many trees will not survive two to three years of foliage loss. Coniferous trees are especially vulnerable because these trees retain three years of pine needle growth which can all be lost in a single year from the ravages of gypsy moth caterpillars. These trees can die during a single infestation season.

Gypsy moth numbers rise and fall during an approximately 10-year cycle so they will eventually (almost) disappear and then return in threatening numbers. Cold winter temperatures of below -20C for extended periods can kill a percentage of the eggs waiting to hatch. However, winter has not been severe, and with the effects of climate change steadily changing our seasons, we can expect even more trouble from gypsy months.

Is there anything we can do to prevent the loss of trees on our cottage and home lots? The answer is yes, but a concerted effort is required over more than one year to achieve success. The actions we can take are centered around the life cycle of the gypsy moth as illustrated by the diagram below.

Life Cycle of the Gypsy Moth



1. From September to late April: Remove and/or Destroy Egg Masses.

During this time period, the gypsy moth is in the egg stage and masses can be found on tree trunks, branches, buildings, rocks, and even your car. Egg masses are often found at the base of a tree, but also can be found all the way up a tree trunk, especially for badly affected trees. One egg mass contains about 300 eggs.



Scraping egg masses; assemblage of egg masses; single Egg mass

The easiest way to eliminate and destroy these eggs is to scrape them off into a container using a narrow putty knife or a small spatula. The collected eggs can be killed by soaking them in a soapy solution for a couple of days. The soap and water combination wets the egg mass and deprives it of oxygen.

A word of caution: The egg masses are covered with protective hairs and these can irritate your eyes and throat. We recommend wearing glasses and a mask to prevent adverse effects.

A second approach to eliminating egg masses is to use a spray of natural insecticide oil or vegetable oil such as soya oil. By simply mixing one cup of soya oil with one cup of water and a quarter cup of liquid dish soap, one can produce an effective spray that coats egg masses and leaves a layer of asphyxiating oil on the surface of the eggs (see Appendix 1). Shake well before using. This approach can be also be used in concert with scraping as a way to kill eggs tightly lodged into the cracks and crevices of tree bark, especially oak.

Additionally, products as pictured below, can be purchased on the internet by searching their brand names. Any household sprayer which can produce a 'jet' can be used for this purpose.



A third approach cited in the literature is removing egg masses with the use of a vacuum cleaner. Proper disposal of the filter bag is essential to prevent caterpillars from escaping back into the wild.

2. From late April to early May: Place sticky barriers or bands on the trees.

Wrap duct tape or other suitable material (sold at hardware stores) around the trunk of a tree about 5 feet off of the ground. This band is then coated with a sticky material called tree tanglefoot which serves to capture hatchling caterpillars as they make their way up the tree trunk from lower down or from areas such as buildings or objects.



Tree tanglefoot is a plant-derived resin which resembles caramel in colour and texture. In order to make spreading of this material easier, especially in cooler weather, the resin can be thinned by adding 25% acetone and applying the mixture using a paint brush. Note that acetone, available at hardware stores, is the only solvent we have found that dissolves tanglefoot. Once applied, the acetone evaporates very quickly.



3. From late May to August: *Replace sticky barriers with burlap bands.*

Caterpillars feed at night and hide during the day in places to protect themselves from the heat and predators. In doing this, they often crawl down the trunk of the tree to seek shelter.

At this point, they can be captured by placing burlap cloth bands on the trees as shown below:



Wrap burlap that is about 1/2 to 1 metre wide around the tree trunk. Tie it at the middle with a length of twine. Then fold the top half of the burlap wrap over the lower half. Simply collect and destroy the caterpillars that emerge from under the burlap. The best time to 'harvest' your catch is during later afternoon before they rouse themselves and crawl back up to the crown of the tree.

From late June to early August, caterpillars will pupate in the same location and can also be harvested. Both caterpillars and pupa can be destroyed by placing them in a soapy solution for a day or two. Your challenge may be finding someone in your family who is willing to do this.

4. Involve your family and your neighbours.

One approach to getting this work done is to make it a family affair. The collection of gypsy eggs, larva and pupa can be a multi-generational activity carried out all year long. Make this year's easter egg hunt of a different kind!

Ridding gypsy moths from your property does not guarantee that caterpillars will not find their way to you from your neighbours. It's a good idea to get them involved as well, and if they are not interested, perhaps they will let you treat the most affected trees on their property and save you work later on.



5. Aerial spraying.

One additional option available to White Lake residents and cottagers is engaging a licensed crop-duster to overfly properties and apply an insecticidal spray. Aerial spraying for gypsy moth is often done using a commercial product called Foray 48B®.



Foray 48B® is a water-based product containing a bacterium called *Bacillus thuringiensis* variety *kurstaki* (Btk). Btk is found naturally in the soil and is known to

cause illness in many insect larvae when ingested, including caterpillars of pest species such as the gypsy moth. Larvae are most susceptible to Btk when they are in the early developmental stages.

Foray 48B® is not toxic or harmful to people, dogs, cats, fish, birds, reptiles, or insects such as honeybees, beetles, or spiders. Pest control products containing Btk have been registered for use in Canada for about 40 years. It is now the most widely used pest control product in the world.

Aerial spraying of Foray 48B® for gypsy moths is usually done in the spring between April and June and takes place between 5:00 a.m. and 7:30 a.m. Three separate applications are done every 7 to 10 days. These applications are usually required to treat the gypsy moth larvae, which hatch during the treatment period.

Depending on the size of the treatment area, the aircraft used and any weather delays, it may take several mornings to complete 1 application.

For aerial spraying to occur, everyone in the area would have to agree to have it done as well as to share in the cost. It is not possible to spray individual properties and so universal buy-in from everyone on a shoreline is required before proceeding. The fact that we cannot spray on public lands, which is only done by the province when warranted, means that the efficacy of spraying only on private land is somewhat compromised by the large pool of moths located on nearby public land.

Suggestion: If you are planning to implement any of the measures outlined above, be sure to buy your supplies early to avoid disappointment.



Female and Male Gypsy Moths



Appendix 1

The efficacy of two different solutions for killing gypsy moth egg masses

An experiment was conducted to determine the efficacy of two different preparations reportedly used to kill gypsy moth eggs. Samples were collected in mid-February by scraping egg masses off of tree trunks. Three separate samples were made by placing 5 egg masses in each of three 250 ml canning jars. A piece of cheese cloth was used rather than the sealing disk to allow oxygen to enter the jars.

The three samples, shown below in the photo were:

- 1) No treatment
- 2) Solution made from 10% dish (Sunlight) soap and 90% water by volume.
- 3) Solution made from 10% dish (Sunlight) soap, 45% vegetable (rapeseed) oil and 45% water, by volume.

After saturating the second and third samples with their respective solutions, the three samples were placed together in front of a south facing window. Eggs hatched in about 14 days.

Results: It is apparent from the photo below that a simple soap solution was not effective in killing gypsy moth eggs. The relative number of newly-hatched caterpillars from untreated eggs appear to be about the same as for those eggs treated only with a soap solution. The third sample, treated with the soap/water/oil emulsion, did not produce any hatchlings. When the egg mass was saturated with a spray this emulsion, effective control of this pest was achieved.





Gypsy moth 2020

Areas in Ontario where gypsy moth caused defoliation

Light = 17,002 ha

Moderate to severe = 569,384 ha

- Area of light defoliation
- Area of moderate to severe defoliation



Disclaimer:
This map is illustrative only. Do not rely on this map as being a precise indicator of routes, locations of features, nor as a guide to navigation. This map was produced by the Ministry of Natural Resources and Forestry.

