



Gypsy Moth and the summer of 2021 – what to expect, and what to do

The populations of European gypsy moth (*Lymantria dispar dispar*) seemed to intensify in the summer of 2020 in a broad area across Southern Ontario. But the signs were there that the populations were building before then, as forests in Southwestern Ontario were heavily defoliated in 2019. Gypsy moth can easily spread as egg masses that are laid on surfaces such as cars and campers. Once they hatch, the new larvae hang on silken threads and disperse locally by the wind. By the end of the feeding cycle in early July 2020, the damage was described by the Forest Health team at the Ministry of Natural Resources and Forestry (MNR) as “moderate - severe”.

What should we expect in 2021?

Anyone who has had the time to patrol their property and look for gypsy moth egg masses will know that there are a lot of egg masses out there! The Ministry of Natural Resources and Forestry did some detailed sampling across the infected zone and have forecasted that, should all of these eggs hatch successfully and develop through all of their larval stages, we should expect “severe” defoliation. [Click here](#) for MNR's forecast and other related information.

The hatch of 2021

There are many factors which will impact the hatching success of egg masses. After they have been laid in July until they hatch in April / May the following year, they will be subject to predation by birds and small mammals. Birds such as chickadees, nuthatches and brown creepers will feed on them, which may keep low populations in check. However, in years of abundant egg masses, there are simply too many for this type of natural control to help limit the population of caterpillars.

Extended periods of low winter temperatures may also cause egg mass mortality. Some reports state that prolonged periods of -20°C will be enough, while other reports state that -30°C is required. Again, while this may affect some eggs, it may not be enough.

Once spring arrives, the egg masses lie dormant until the environmental conditions are favourable for the hatch. Accumulated heat and increasing day length are the primary triggers, so the hatch will likely start in Southwestern Ontario before Eastern Ontario. There are reports from Southwestern Ontario that the hatch in 2021 began as early as April 16th, with some early hatching seen in Lanark County on April 19th.

BioForest is a company based out of Sault Ste. Marie, that specializes in innovative product development and consulting strategies for urban and commercial forest protection. BioForest's purpose is to save trees from insect pests and diseases, while having minimal impact on the surrounding environment. Using a science-based approach, BioForest is committed to implementing effective pest management and forest health strategies. They have provided



predictive mapping on the 2021 gypsy moth egg hatch based on environmental modelling. For instance, they forecast that 10% of the egg masses in Eastern Ontario will hatch by May 2 to 4, while 90% will have hatched by May 17 to 19. For more details, [click here](#) for the BioForest website.

What can homeowners and woodlot managers do?

1. **Remove the egg masses.** Between July and the following April, you can remove and destroy egg masses. They can be found on any tree that the gypsy moth fed on last summer and other surfaces such as decks, rocks, trailers, and lawn furniture. The best way to remove egg masses is to use a butter knife and scrape them into a coffee can or other receptacle. Once you have accumulated them, destroy them in what ever way you decide. Official recommendations are to soak them in soapy water for 48 hours, but it may be more satisfying to throw them into your wood stove. Do not simply scrape them off the tree and onto the ground as they are likely to hatch and survive. Some useful video links:

- [Removal \(City of Toronto\)](#)
- [Removal \(City of London\)](#)

2. **Spray the newly emerged and feeding larvae.** Once the eggs hatch, the larvae tend to remain close to the hatching site for a day or so before moving up the tree to begin their feeding. This gives you a chance to verify that they have hatched, and that the battle will be moving on to the next stage – which calls for different tactics. You won't even notice the defoliation at this point, and you might be lulled into thinking "it won't be so bad". Now is the time to take any kind of spraying action. At a smaller scale, you can purchase BTK in 100 ml containers at the hardware store or garden centre. Last year, most suppliers sold out quickly so make sure you have your supply. You can mix this up in a hand or back-pack sprayer, following the mixing instructions on the package. Spray directly on the foliage. Early morning or later in the evening is best. Avoid spraying if it has just rained or is likely to rain, as this will wash the insecticide off the foliage. You may need two or more applications. [Click here](#) for more info.

At a larger scale, landowners may participate in an aerial spraying program. This is logistically challenging, given the regulations that apply to aerial spraying companies, the relatively small blocks that will be sprayed, and the need to time the spray at the right time of larval development, and with the right environmental conditions on the day of spraying. The areas that are sprayed should be monitored for effectiveness by laying out some white sheets or tarps on the ground before the spraying, and then seeing how many larvae die and fall out of the trees.



3. Trap and destroy the growing larvae. About three to four weeks after the hatch, the larvae are getting big enough that they begin to descend from the treetops and find a place to hide near ground level. This is the ideal time to use the burlap bag trap method. Basically, you are providing them with an ideal hiding spot so that you can then remove and destroy them. [Click here](#) for more information.

Or watch this video: [Burlap around tree \(City of Toronto\)](#)

You can also trap gypsy moth larvae using a “Tanglefoot” type product. This gummy substance traps the caterpillars as they travel up and down the tree. Do not apply this directly to the tree. Wrap your bark in plastic wrap first, and then apply the Tanglefoot on top of the wrap.

4. Hope for Nature to come to the rescue. While all of the above tactics can help to protect individual trees, or smaller areas, none of these will have an impact on the overall population of gypsy moth. There are simply too many of them, and there is a lot of forest out there where no one is trying to control them. The good news is that nature can, and will, come to our rescue. There are two main control factors – one is a virus, and the other is a fungus.

The **NPV (nucleopolyhedrosis virus)** is usually the most important factor in the collapse of gypsy moth outbreaks in North America. The virus is always present in a gypsy moth population and can be transmitted from the female moth to her offspring. It spreads naturally through the gypsy moth population, especially when caterpillars are abundant. During a gypsy moth outbreak, caterpillars become more susceptible to this virus disease because they are stressed from competing with one another for food and space. Typically, 1 to 2 years after an outbreak begins, the NPV disease causes a major die-off of caterpillars.

Another natural killer of gypsy moth caterpillars is a fungus called **Entomophaga maimaiga**. Fungal spores that overwinter in the soil will infect young caterpillars early in the summer. When the young caterpillars die, their bodies produce windblown spores that can spread and infect older caterpillars. Large caterpillars killed by the fungus will hang head down from the tree trunk, and the bodies of the dead caterpillars appear dry, stiff, and brittle. Within several days, the cadavers fall to the soil and disintegrate, releasing the spores that will overwinter back into the soil. The fungus is most active in cooler, wetter periods.

Some birds, mammals and rodents will also feed on the growing larvae – but this type of predation is unlikely to cause a population decline.

What happens after the trees have been defoliated?

Most of the hardwood trees can produce a new set of leaves if they have been completely defoliated. But this puts a stress on the tree as it uses valuable resources. It is especially stressful if they are trying to do so in a period of hot, dry weather. Fortunately, hardwoods rarely die after defoliation.

Conifers such as white pine and white spruce will have a harder time. They cannot re-foliate, and must rely on the photosynthesis of older needles to sustain their growth. If gypsy moth defoliates a conifer in successive years, it will likely die.

The best thing you can do in both of these cases is to try to keep your trees as healthy as possible to begin with. If you can, water your trees in those hot, dry periods.

For more information email MNRF at: info.mnrfscience@ontario.ca

Or

The Invasive Species Centre at: info@invasivespeciescentre.ca

The Early Detection & Rapid Response (EDRR) Network Ontario is a community action project coordinated by the Invasive Species Centre in collaboration with the Eastern Ontario Model Forest and the Ontario Invasive Plant Council. This project aims to train and equip volunteers with the skills and resources needed to better detect and reduce invasive species in Ontario, one community at a time. To learn more and get involved, [click here](#) to visit the EDRR webpage.

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