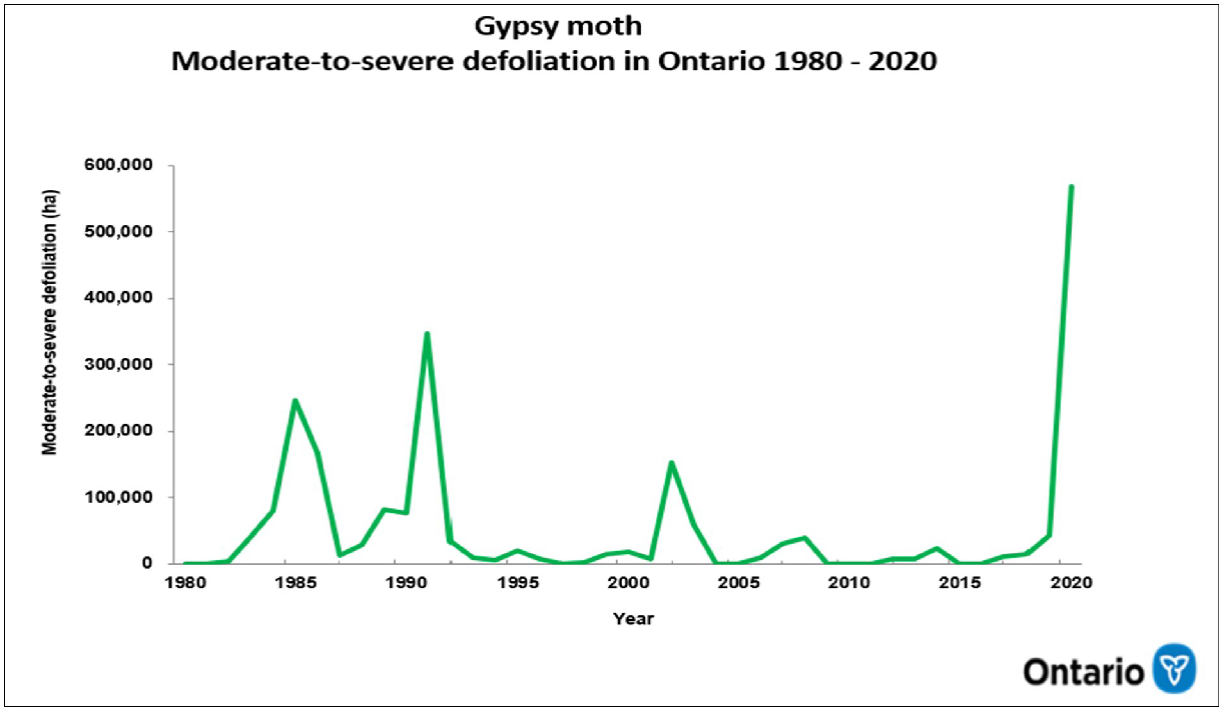
Spongy Moth in the Georgian Bay Biosphere

Following a sharp increase in areas affected by Spongy moth in Ontario during 2020, there have been many questions about Spongy moth, its impacts in our area, and what can be done to control it. This information package will aim to provide answers to some of these questions.

What is Spongy moth?

The Spongy moth – formerly known as the European Gypsy Moth or LDD (*Lymantria dispar dispar*) – is an invasive pest that defoliates trees. It was first introduced to North America in the 1860s and first detected in Ontario in 1969. Despite being an invasive species, the Spongy moth has reached a state of naturalization. As a result, the Spongy moth population may have periodic predictable outbreaks – as illustrated in the graph below.



Moderate-to-severe defoliation in hectares (100,000 ha = 247,105 acres)

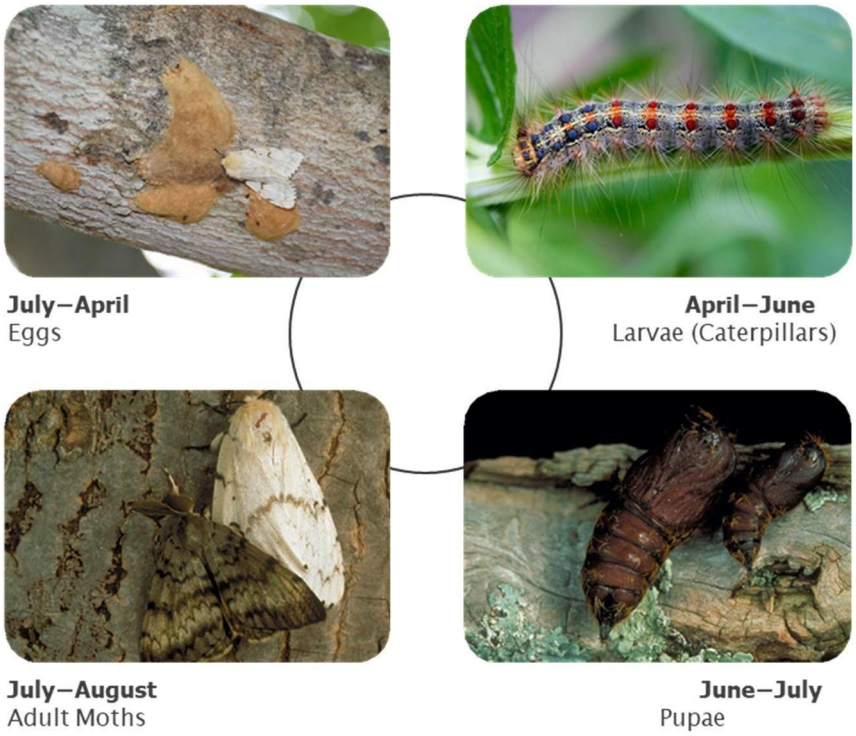
Life Stages

1. The Spongy moth egg stage occurs from July to April on tree trunks, bark, or other hard surfaces. These tan-coloured masses are about 2-8 cm long and can contain 100-1000 eggs.

2. In spring, the eggs hatch and the larvae or caterpillars feed on the new foliage of trees. Mature caterpillars have five pairs of blue spots followed by 6 pairs of red spots along their backs. Feeding is normally completed by June.

3. The larval stage is followed by the pupa stage when the caterpillars turn into moths in cocoons.

4. The adult moth stage occurs during July and August, but adult Spongy moths do not eat anything. The male moths are brown in colour and can fly while female moths are larger than the male, cream-coloured, and cannot fly.



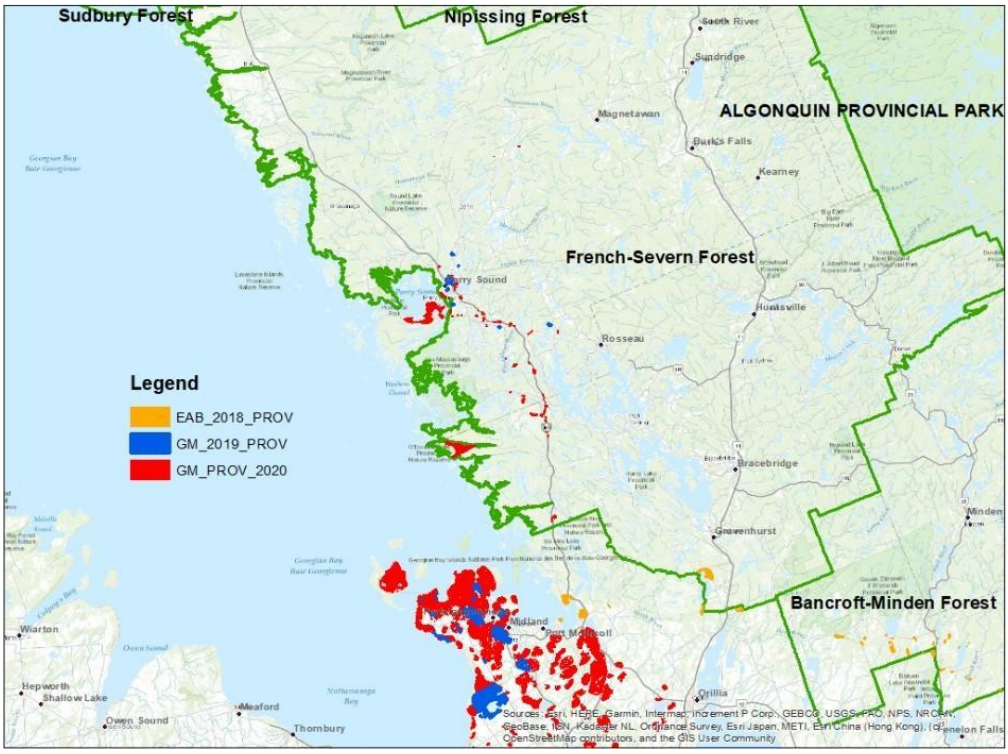
Source: www.invadingspecies.com/invaders/forest/ldd-moth/

What are the impacts of Spongy moth?

Spongy moth prefers oak trees as a host, as well as maple, birch, white pine, and white spruce; however, Spongy moth has over 300 plant hosts. A single caterpillar can eat one square meter of leaves before becoming an adult. Although Spongy moth can cause severe defoliation, most healthy trees can withstand one or more years of defoliation. These trees should be able to produce a new crop of leaves over the summer. However, defoliation can lead to growth loss and mortality if combined with other stresses such as drought, disease or other pests.

Where have we recently seen local impacts of Spongy moth?

In the Parry Sound district, also called the French-Severn Forest, 2,046 ha of defoliation was mapped in 2020 compared to 177 ha in 2019. 2019 area is shown in blue on the map below and 2020 area is shown in red. Much of the 2020 defoliated area was south of Parry Sound along the highway 400 corridor or near Georgian Bay. During ground surveys, defoliation and egg masses were observed in Port Carling, Lake Muskoka, Tobin Island, Lake Rosseau, and Go Home Lake.



Source: Ministry of Natural Resources and Forestry

How can we manage the Spongy moth?

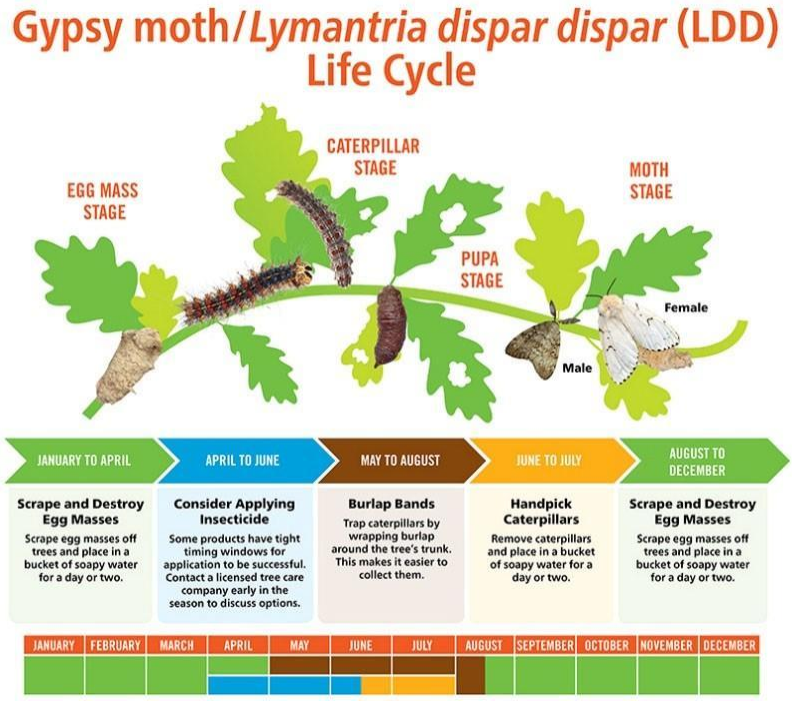
Natural Predators

Thankfully, Spongy moth does have some natural predators including a fungus, a virus, and a small wasp. The rapid increase in Spongy moth population seen during outbreaks leads to an increase in natural predators that can reduce the population back to lower densities within 1-3 years of the outbreak.

Physical Removal

Throughout the life cycle of the Spongy moth, landowners can monitor their trees and reduce the population of Spongy moth. Egg masses can be destroyed by scraping them off surfaces and into soapy water. Once caterpillars emerge, a piece of burlap can be wrapped around the trunk of the tree with rope so that there is an overhang.

Caterpillars will crawl underneath this burlap to seek shelter and will become easier to collect and destroy. These caterpillars can be destroyed in soapy water. Caterpillars can also be handpicked from trees and destroyed. If you see Spongy moth cocoons, these can be collected and destroyed.



Source: York Region
www.york.ca/wps/portal/yorkhome/environment/yr/forests/lddmoth

Pesticide Application

Another option for landowners is a biological pesticide called Btk (Bacillus thuringiensis kurstaki). This is a naturally occurring bacteria found in soil that can be applied to foliage of trees. The caterpillars must ingest the pesticide in order for it to be effective. The timing of application is particularly important and must be done in the early stage of caterpillar development when caterpillars are beginning to feed on foliage, typically in mid-May to mid-June.

Application timing is also important to ensure that Btk does not affect other Lepidoptera species (e.g. butterflies and moths). Affecting non-target species is a common concern; other Lepidoptera species could also be actively feeding. This risk is low since Btk application for Spongy moth is done at about 50% leaf out, and in a forest setting, and generally not around water, there are few Lepidoptera species getting indirectly treated. BtK breaks down on the leaves in about 48 hours.

Although Btk can help to reduce the population to more manageable levels, it does not eradicate all Spongy moth insects. BtK can be applied by a registered pesticide application company or by homeowners who have thoroughly and carefully read application instructions. For larger scale projects, only certified pesticide application companies can apply Btk.

An alternative pesticide that is effective against Spongy moth is TreeAzin. This is an insecticide derived from the Neem Tree (*Azadiracta indica*). TreeAzin is injected directly into the the base of the tree, and is ingested by Spongy caterpillars when they consume the leaves of the trees. TreeAzin can be used for select trees of concern on a property. This product is effective against several pest species, including Emerald Ash Borer (*Agrilus planipennis*), but will also affect non-target species.
Trees treated with TreeAzin will remain protected for up to 2 years. Currently, TreeAzin can only be applied by companies with pesticide certification.

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Further Reading

Ministry of Natural Resources Gypsy moth webpage (includes mapping and forecasting information)

- https://www.ontario.ca/page/Gypsy-Moth European

Gypsy moth Fact Sheet (Invasive Species Centre)

- https://www.invasivespeciescentre.ca/wp-content/uploads/2020/08/european-Gypsy- Moth-fact-sheet.pdf

European Gypsy moth FAQs (Invasive Species Centre)

- https://www.invasivespeciescentre.ca/wp-content/uploads/2020/08/Gypsy-Moth-FAQs- 1.pdf

Making a Burlap Barrier Band Trap for European Gypsy moth caterpillars

- https://www.toronto.ca/wp-content/uploads/2020/02/8b53-european-Gypsy-Moth- resident-make-burlap-caterpillar-trap.pdf

Locating and Destroying Gypsy moth Egg Masses

- https://www.toronto.ca/wp-content/uploads/2020/02/8b15-european-Gypsy-Moth- resident-locate-destroy-egg-masses.pdf

Learn more about Westwind Forest Stewardship Inc.

- www.westwindforest.ca

Township of The Archipelago – Environment pages:

- https://www.thearchipelago.on.ca/p/environment