Gypsy Moths

What are Gypsy Moths?

Gypsy Moths are an invasive insect from Europe and Asia. Gypsy Moth caterpillars feed on the leaves of oak and other deciduous trees. Caterpillars chew small holes in leaves and can potentially decrease canopy leaf coverage. They are five to 60 millimetres long, dark and hairy with five pairs of blue dots and six pairs of red dots on the back.

How much damage can they cause?

High levels of Gypsy Moth caterpillars can cause trees to experience a loss of leaves, which could lead to weakness and make them more susceptible to diseases or weather fluctuations. The City continues annual IPM practices in 2020 to decrease Gypsy Moth populations and mitigate impacts to the urban forest canopy.

What types of trees do Gypsy Moth caterpillars affect?

They are known to feed on hardwood trees such as apple, ash, birch, cherry, elm, hickory, oak, willow and maple species. Other deciduous trees and even conifers such as pine or spruce could be susceptible when Gypsy Moth populations are high.

Why does it matter if trees lose a few leaves from hungry caterpillars?

As the caterpillars grow, they consume more leaves. As the growth cycle winds down in late June, trees can look as if they have lost their leaves overnight. Healthy trees are able to grow back their leaves within the season. However, several years of defoliation weakens trees and can have negative impacts on long-term health. Therefore, the City continues annual IPM practices in 2020 to decrease Gypsy Moth populations and mitigate impacts to the urban forest canopy.

The urban tree canopy provides health, social, environmental, and ecological benefits to communities. Trees help to:

- Improve air quality and reduce smog and pollution
- Provide shade
- Reduce energy demand for cooling in summer (shades buildings) and heat in winter (windbreak)
- Reduce the negative effects from urban heat (reducing the ‘heat island’ effect by shading paved surfaces and provides water vapor that cools the air)
- Prevent flooding and reduce peak storm water run-off volumes
- Increase property values and aesthetics and strengthens communities
- Improve emotional well-being and mental health (stress reduction)
- Increase outdoor activity and walkability, leading to improved health (e.g. cardiovascular)
- Provide habitat for birds and other wildlife in the city

Why are Gypsy Moths such a nuisance?

Besides defoliating trees, Gypsy Moth caterpillars can become a nuisance to property owners. When populations are high, they tend to crawl everywhere including up the sides of homes, on outdoor toys, decks and patio furniture. You can hear them munching on leaves and their droppings can cause a mess.

Exposure to Gypsy Moth hairs, silken threads and shed skins can cause skin rashes and upper respiratory tract irritation in some people.

Can Gypsy Moths affect my health directly?

It is recommended that residents avoid exposure to Gypsy Moth caterpillars. Children should be discouraged from playing with any Gypsy Moth caterpillars. The spiny hairs on the caterpillars can cause welts or a patchy rash that can persist for four to five days.

Ground Spraying

What is ground spraying?

Ground spraying involves the spraying of the canopies of selected trees with a product containing *Bacillus thuringiensis* subspecies *kurstaki* (Btk), naturally occurring bacteria found in soil and a substance used frequently in organic agriculture to manage Gypsy Moth populations. For maximum efficacy, two rounds of spraying will be conducted, approximately 10 days apart.

Ground spraying is a targeted application using a hand-held applicator by a licenced operator. In this way considerable precision can be ensured in the application to target only those trees identified for treatment.

Is Btk safe for humans?

Btk is an effective pesticide that has been shown to successfully manage Gypsy Moth populations. It has been extensively studied by Health Canada and the US Environmental Protection Agency (EPA). Research shows that Btk poses minimal risk to human health when used as directed.

For more information on Btk, consult the fact sheet provided by Health Canada.

Is Btk safe for animals?

According to Health Canada, Btk is only toxic in the caterpillar stage of the Gypsy Moth life cycle. Btk does not affect adult moths and butterflies, including the Monarch Butterfly, as it is not in the caterpillar stage at this time of year. Btk does not affect other insects, honeybees, fish, birds or mammals. There is also no impact on animals or pets if they are exposed to or ingest Btk.

How does Btk affect the environment?

Once applied, Btk biodegrades quickly in approximately 1-4 days through exposure to sunlight and microorganisms. There are no groundwater contamination concerns, as Btk does not travel through the soil beyond 25 cm.

Will it be safe to walk in parks while/after trees are being treated?

Ground spraying of Btk will only be conducted in certain City parks and only in small areas of those parks. During the spray, the specific work area and trails will be signed and cordoned off to park users to ensure that members of the public are not within the affected area. Depending on the scale of the work, certain parks may be closed to visitors during day of the spray to minimize exposure. The spray is applied directly to trees, minimizing drift to adjacent areas. If you come in proximity of City staff or contractors, please maintain a physical distance of at least 2 metres (or 6 feet) for your safety and theirs.

Tree Injections

What are tree injections?

Tree injections are conducted using the insecticide TreeAzin®. TreeAzin® is a botanical injectable insecticide that protects treated trees from Gypsy Moth defoliation during the year it is injected. When caterpillars eat leaves that contain the insecticide, it kills the caterpillars. As such, caterpillars will not grow to their largest and most damaging size. TreeAzin® is injected in a controlled way by a licenced operator directly into the individual tree which limits the exposure to the general public.

Is TreeAzin® safe?

When used as directed in the label, TreeAzin® poses minimal risk to applicators, bystanders, pets, wildlife, soil and aquatic ecosystems. It is considered suitable for use in Urban Settings and environmentally sensitive areas. For more information about TreeAzin®, visit the Bioforest website.

Will it be safe to walk in parks and streets while/after trees are being treated?

Yes. TreeAzin® is injected directly into the tree's conductive tissue through the bark and injection wounds are sealed immediately. If you come in proximity of City staff or contractors, please maintain a physical distance of at least 2 metres (or 6 feet) for your safety and theirs.

Scope of Work

Which trees will receive treatment?

Trees have been selected for treatment based on research that was conducted by a private consultant over winter 2019-2020 as well as follow up surveys conducted by Forestry staff. These surveys identified areas of the City with higher Gypsy Moth populations. Trees within these areas have been selected for treatment based on quantity of Gypsy Moth egg masses observed during surveys.

When will work occur?

There is a very narrow window in which the application of ground sprays and tree injections will be effective against Gypsy Moths. Treatment is restricted to the late spring when Gypsy Moth caterpillars are present and active. The City plans to undertake this work during the month of May and will provide updates at mississauga.ca/gypsymoth.

How will residents be notified if the City plans to treat trees on their street or in their neighbourhood?

Residents in areas where work is occurring will receive a Resident Guide in the mail approximately one or two weeks before work begins. The work is time sensitive and will vary based on weather conditions and when caterpillars hatch.

Residents are encouraged to sign up for news alerts by joining our Tree Pest Management mailing list. Updates will also be posted online at mississauga.ca/gypsymoth and on the City's Parks & Forestry Facebook and Twitter channels.

What actions to residents need to take?

Given the targeted nature of the Gypsy Moth treatment this year, no specific safety measures are required on the behalf of residents this year. However, if you come in proximity of City staff or contractors, please

maintain a physical distance of at least 2 metres (or 6 feet) for your safety and theirs.

Residents are also able to sign up for news alerts for up-to-date news and IPM suggestions from Forestry staff.

Will the City be conducting an aerial spray in 2020?

No, the City will not be conducting an aerial spray in 2020. Aerial sprays are conducted in response to large scale, widespread increases in Gypsy Moth populations, when there is concern that increases in Gypsy Moth in addition to other stressors are a high risk to the tree canopy, and no other control measures are able to keep populations within manageable thresholds. Management for 2020 will focus on trees along particular streets and in parks that are have higher Gypsy Moth populations this year. As such, an aerial spray will not be necessary.

Why is this work taking place now while COVID-19 still persists?

The City continues to provide essential Forestry services at this time and is prioritizing work to keep residents and our urban forest safe and healthy. Left untreated, Gypsy Moth caterpillars will likely decrease the health of Mississauga's urban forest canopy. If you come in proximity of City staff or contractors, please maintain a physical distance of at least 2 metres (or 6 feet) for your safety and theirs. For more information about the City's response to COVID-19, please visit mississauga.ca/coronavirus.

Did the 2018 aerial spray work?

Based on monitoring studies undertaken since the last aerial spray in 2018, the aerial spray was successful at lowering Gypsy Moth populations in areas that were sprayed. Overall, trees in these areas are considered to be low risk although some localised areas of higher Gypsy Moth populations exist within this zone.

When will the next aerial spray be?

Gypsy Moth populations are known to fluctuate over time, with long periods of low population levels climbing rapidly to outbreak conditions, and then collapsing to pre-outbreak levels. The cyclical nature of outbreaks makes control difficult as the pattern is not predictable. The City closely monitors Gypsy Moth population and distribution each year. The timing of the next aerial spray will be determined by several factors including:

- Population size and distribution of Gypsy Moth in previous years;
- Defoliation forecasts and management recommendations provided by consultants hired by the City to conduct scientific research and monitoring; and
- Compounding stressors that are anticipated to impact tree health (e.g.: major storms, tree diseases, etc.).

The City usually puts up burlap and traps on the trees in my neighbourhood. Why isn't this being done?

Forestry staff are prioritizing management activities in areas of the City with higher Gypsy Moth populations based on scientific monitoring studies conducted over the winter.

It's possible that your neighbourhood is outside of this area. If your neighbourhood is an area that is receiving IPM this year, you may notice one of the other management methods being implemented which were determined to be the most effective measures to manage the Gypsy Moth population on publicly owned trees this year.

However, installing burlap and traps in trees are effective strategies that homeowners can take to reduce Gypsy Moth populations on private trees given that there is more opportunity to check the traps and burlap on a regular basis. For more recommendations, visit mississauga.ca/gypsymoth.

A limited quantity of pheromone traps and/or lures will be made available to interested residents through contacting 3-1-1 (or 905-615-4311 from outside Mississauga). Traps and lures can also be ordered online or ordered for curbside pickup from the Urban Nature Store in Mississauga.

Will all trees with Gypsy Moth egg masses be treated?

No. Forestry staff are prioritizing management activities in areas of the city determined to have higher Gypsy Moth populations based on scientific monitoring studies conducted over the winter. Only trees or groups of trees within these areas will be treated.

Unfortunately, Gypsy Moth is well established in the City and complete eradication is not possible. The intention of the program is to keep Gypsy Moth populations within acceptable thresholds.

Why aren't you treating trees in my area?

Research was conducted over the winter in areas that have known Gypsy Moth presence to determine which areas are anticipated to have higher populations of Gypsy Moth. Trees and groups of trees within these areas were prioritized.

If you have concerns about the health of trees in your area, contact 3-1-1 (or 905-615-4311 from outside Mississauga) or email public.info@mississauga.ca.

My area was sprayed in 2018 during the aerial spray. Will it be treated again this year?

Not necessarily. Overall, the 2018 aerial spray program was successful and most areas that were sprayed are considered low risk areas and no new aerial spray is proposed for 2020. Research was conducted over the winter in areas that have known Gypsy Moth presence to determine which areas are anticipated to have higher populations of Gypsy Moth. Specific trees and groups of trees within these areas were prioritized for tree injections or ground sprays of insecticides.

The City has been doing work in my area for several years but I don't see it listed. Why?

Research was conducted over the winter in areas that have known Gypsy Moth presence to determine which areas are anticipated to have higher populations of Gypsy Moth. Trees and groups of trees within these areas were prioritized. If trees in your area are not being treated, your area was not identified as a treatment area for 2020. If you have concerns about the health of trees in your area, contact 3-1-1 (or 905-615-4311 from outside Mississauga) or email public.info@mississauga.ca.

I still see a lot of defoliation on the trees outside my house. Are they high risk?

Gypsy Moth is well established across the City and some defoliation can be expected if Gypsy moth is present in your neighbourhood. Most trees are able to withstand some defoliation. Concern exists when trees suffer multiple years of severe defoliation. The City's monitoring program covers areas known to have, or have had higher populations of Gypsy Moth. If you are noticing high levels of defoliation, contact 3-1-1 (or 905-615-4311 from outside Mississauga) or email public.info@mississauga.ca.

Private Trees

What can I do to protect trees on my private property?

- MAY: Install a burlap skirt around the trunk of the tree. Gypsy Moth caterpillars will crawl under the burlap to find shade during the day, and can also pupate in the burlap. Check all layers of the burlap once daily and place Gypsy Moths in a bucket of soapy water for a minimum of 48 hours.
- JULY: Install pheromone traps. Male Gypsy Moths attracted to the pheromone will become trapped. Replace soapy water as the traps become full.
- SEPTEMBER–APRIL: Scrape egg masses from all surfaces (e.g. trees, sheds, eaves troughs) and place a bucket of soapy water for a minimum of 48 hours. Remove burlap skirt and pheromone traps and exterminate attached egg masses by soaking the burlap in a bucket of soapy water for a minimum of 48 hours.

Visit the Gypsy Moth webpage for more information. Residents are also able to sign up for news alerts for up-to-date news and IPM suggestions from Forestry staff.

Will the City provide me with tools and materials to address gypsy moths on my property?

A limited quantity of pheromone traps and/or lures will be made available to interested residents through contacting 3-1-1 (or 905-615-4311 from outside Mississauga). Traps and lures can also be ordered online or ordered for curbside pickup from the Urban Nature Store in Mississauga. Most other materials can be purchased at most local hardware stores, garden centres and nature stores around the City.

Does the City inspect trees on private property?

The City does not inspect trees on private property.