



Office of the Commissioner  
Environmental Services Department

## MEMORANDUM

To: Members of Committee of the Whole

From: Erin Mahoney, M. Eng.  
Commissioner of Environmental Services

Date: October 22, 2021

Re: Invasive Moth (*Lymantria dispar dispar*) Outbreak in York Region

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### **York Region experienced a significant invasive moth outbreak in 2021**

This memorandum updates Council on the *Lymantria dispar dispar* (LDD) moth outbreak observed across many parts of York Region in 2021, including actions taken to proactively mitigate impacts, and discusses expected LDD moth levels and proposed actions for 2022.

LDD moth, formerly known as European gypsy moth, is a non-native defoliating insect first discovered in Ontario in the 1960s. York Region last experienced a significant LDD outbreak in the 1990s. Outbreaks resulting in heavy to severe tree defoliation typically occur every 7 to 10 years and last 1 – 3 years on average. At outbreak levels, trees can be heavily defoliated resulting in resident concerns regarding the health of their trees and nuisance issues related to caterpillar feeding, including caterpillar droppings and bits of foliage dropped creating a mess on walkways and decks.

### **Staff monitored tree defoliation levels through spring and summer, noting severely defoliated trees put out new leaves by end of summer**

While most healthy trees can withstand several years of defoliation, trees in poor health may have a harder time recovering. Trees in urban areas typically face a number of potential stressors including hot, dry weather, compacted soils, or other pests and diseases which, when coupled with LDD defoliation, may result in tree decline or in extreme cases, mortality. Staff monitored the infestation throughout the spring and summer and its impacts to urban trees and woodlands, noting that severely defoliated trees re-leafed as the season progressed.

## **Region coordinates surveys and information sharing while implementing integrated pest management approaches to mitigate impacts of LDD**

In the fall/winter of 2019 and 2020, LDD egg mass surveys were conducted on a mix of urban and woodland trees including the York Regional Forest to monitor LDD population levels across the Region. Results of the 2020 egg mass surveys indicated the potential for widespread defoliation in 2021.

To effectively communicate to residents, a communications plan was developed including key messages, frequently asked questions, graphics, social media content, signage and multilingual advertisements. Staff shared the communications plan and products with local municipalities and conservation authorities and collaborated to align key messages to residents.

The Region is undertaking an integrated pest management approach to LDD moth impacts by identifying Regional assets at greatest risk and implementing strategies such as manual removal of egg masses, use of burlap bands, treating select high-value street trees with the biological insecticide TreeAzin™, and treating high-risk newly planted trees with ground-based treatment of *Bacillus Thuringiensis Subspecies Kurstaki* (Btk). TreeAzin™ and Btk are biological insecticides and are considered safe when applied properly.

## **Evidence of naturally occurring virus responsible for collapsing LDD populations observed throughout the Region**

LDD is considered a naturalized pest in Ontario, as there are a number of natural controls (diseases and predators) that contribute to the eventual collapse of outbreaks. Squirrels, chipmunks, raccoons, skunks, over 15 species of birds, and several native insects will all help reduce LDD numbers, as will a naturally occurring fungus (*Entomophaga maimaiga*) and virus (*nucleopolyhedrosis*). Signs of the *nucleopolyhedrosis* virus were observed across the Region in 2021 which indicates that the LDD population is beginning to collapse.

Historically, some jurisdictions have undertaken aerial sprays of public lands using Btk, a biological insecticide, to mitigate severe defoliation in specific areas, usually focusing on high-value mature forests or areas of high public use. For example, in 2021, the TRCA conducted limited aerial sprays of select high-use conservation parks where camping and recreational activities such as Treetop Trekking exist.

## **Biological insecticide treatments do not collapse LDD populations but reduce defoliation, mitigating impacts to tree health, aesthetics and nuisance issues**

Biological insecticide treatments (both aerial and ground-based sprays) do not reduce LDD populations over the landscape in the long term especially with the current widespread presence across York Region and southern Ontario. Historically, biological insecticides treatments have been used to reduce defoliation levels in targeted areas in an attempt to mitigate impacts to tree health, maintaining aesthetics and reduce nuisance issues. It should be noted that biological insecticide treatments are non-selective and can impact non-target

caterpillars, who are an important source of food for many birds and other wildlife. Due to the public perception associated with widespread spraying of pesticides, some residents and environmental groups may oppose aerial spraying of biological insecticides or the use of pesticides in general.

The Region has evaluated the possibility of an aerial spray for select parts of the York Regional Forest. Based on the level of defoliation coupled with the natural resiliency observed over the course of the summer, it was determined that an aerial application is not warranted at this time and that focus should remain on individual high-risk and high-value street trees.

On September 10, 2021, staff met with local municipalities, conservation authorities and other agencies to review the LDD outbreak, outreach and control initiatives undertaken in 2021, as well as plans for 2022. At that time, no municipalities or agencies within York Region had committed to aerial spraying of biological insecticides within their respective jurisdictions.

### **York Region, local municipalities, conservation authorities and private landowners are taking action to manage impacts of LDD**

York Region, local municipalities and conservation authorities have taken action to mitigate impacts to street and park trees and public owned forests using an integrated pest management approach. This approach includes egg mass scraping, treatment of select high value trees with pesticides and burlap banding. TRCA completed a limited aerial spray of biological insecticide in high use areas of several conservation parks.

Similar to managing other tree pests such as emerald ash borer, landowners are responsible for protecting trees on their property. Communication efforts have focussed on providing landowners with correct information at the right time to act. In addition, several municipalities provided free burlap banding kits to residents during the spring and summer to capture LDD caterpillars. York Region, local municipalities and conservation authorities are committed to continuing this integrated pest management approach and support for residents in 2022.

### **Collaboration, coordination and mitigation of LDD impacts will continue in 2022**

LDD egg mass surveys are underway to help predict LDD populations for 2022 and results will be shared with the local municipalities, conservation authorities and other partners. Based on previous surveys and historical outbreaks, we expect some amount of heavy-to-severe defoliation in 2022. The presence of the *nucleopolyhedrosis* virus observed in 2021 is promising and combined with the naturally occurring fungus (*entomophaga maimaia*), will contribute to the collapse of LDD populations in York Region.

Staff will update the Region's communications plan incorporating lessons learned from 2021. We will continue to collaborate with the local municipalities, conservation authorities and partners on messaging, information resources, and act as a liaison within York Region and surrounding jurisdictions for a coordinated approach to this pest. The Region will build upon the

integrated pest management approaches already underway, expand public education and awareness in preparation for 2022 and continue to monitor the status of LDD across the Region throughout 2022.



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Erin Mahoney, M. Eng.  
Commissioner of Environmental Services



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