



REPORT

TO: Mayor Bonnette and Members of Council

FROM: Mark Covert, Director of Public Works

DATE: March 9, 2022

REPORT NO.: TPW-2022-0012

SUBJECT: Lymantria Dispar Dispar Moth Response Plan

RECOMMENDATION:

THAT Report No. TPW-2022-0012, dated March 9, 2022 regarding the Lymantria Dispar Dispar Moth Response Plan be received;

AND FURTHER THAT the Lymantria Dispar Dispar Moth Response Plan as described in this report be approved.

KEY POINTS:

The following are key points for consideration with respect to this report:

- LDD moth outbreaks follow a boom-and-bust cycle, occurring about every 7 to 10 years. LDD populations within Halton Hills increased noticeably in 2020 and again in 2021.
- The Town contracted CVC to undertake a “Town of Halton Hills Lymantria Dispar Dispar Population Assessment”.
- The assessment identified defoliation potential based on egg mass concentration to be extremely sporadic, with 75% of sites assessed as moderate to trace, and 25% as having severe defoliation potential.
- There was minimal defoliation of Town trees observed in 2021 and there are signs that an LDD population collapse may be on the horizon.
- The recommended LDD Response Plan for the Town will include a combination of enhanced communications, deployment of moth traps, limited ground spraying of bio-pesticide (select feature trees), offering burlap kits, and a survey of actual defoliation in 2022.

- An aerial spraying program is not recommended for the Town in 2022. None of the three conservation authorities in the area (CVC, CH and GRCA) are planning an aerial spray program for 2022.
- If necessary, another egg mass survey will be performed in fall 2022 to forecast potential defoliation in 2023.

BACKGROUND:

Lymantria Dispar Dispar (LDD, formerly known as gypsy moth) are an invasive insect that can cause moderate to severe defoliation of certain types of trees. The LDD moth was introduced into Massachusetts in 1869 in a failed attempt to create a North American silk industry. The first detection of LDD moth in Ontario was in 1969.

The caterpillar or larva stage of the LDD moth eats the leaves of trees, preferring deciduous species such as oak, poplar, birch, willow, maple, and beech. If faced with a shortage of deciduous leaves, they will feed on conifers and ornamental shrubs. Healthy trees can usually withstand losing their leaves for a few years, but several years of defoliation can weaken and even kill vulnerable trees. While defoliated trees will typically produce a new crop of leaves over the summer, the damage can affect growth.

In addition to defoliation impacts on trees, high populations of LDD caterpillars also bring nuisance impacts such as frass (caterpillar droppings), as well as possible allergic reactions in some people from hairs on the LDD caterpillar coming in contact with bare skin.

LDD moth outbreaks follow a boom-and-bust cycle, occurring about every 7 to 10 years, wherein populations reach epidemic proportions, only to collapse again. The insect has become naturalized to Eastern North America due to viral and fungal pathogens, as well as parasitic and natural predators which act to control outbreaks. Extended days of extreme cold temperatures can also kill overwintering larvae in exposed egg masses.

The LDD lifecycle has four stages:

- Egg Mass Stage (Late August to early May)
- Caterpillar Stage (Early May to mid-July)
- Pupa Stage (Mid-July to early August)
- Moth Stage (Late July to mid and late August)

In spring, eggs hatch and larvae (caterpillars) ascend the trees to feed on the new foliage. Feeding is completed in July. It is during this caterpillar stage that defoliation can occur.

DISCUSSION:

Outbreaks in Halton Hills

Halton Hills has experienced several LDD outbreaks over the last few decades and previous outbreaks have not resulted in any formal or specific action taken by the Town. LDD populations have again been reaching outbreak levels throughout Ontario over the last few years.

LDD populations within Halton Hills increased noticeably in 2020 and again in 2021, resulting in increased inquiries received from residents. This recent concern with LDD may not only be due to outbreak severity, but also partially due to increased use of outdoor spaces stemming from COVID pandemic isolation and restrictions. These concerns were not only related to defoliation of trees, but also caterpillar frass and irritation potential hindering enjoyment of outdoor spaces. The actions taken by the Town in 2020 and 2021 were limited to the deployment of moth traps to capture flying male moths, thereby reducing mating opportunities. These traps were deployed to Town trees where caterpillars were known to be present.

2021 Egg Mass Assessment

As a result of the increased resident interest in the current LDD outbreak as well as a desire expressed by some for the Town to consider additional mitigation efforts, Town staff began working with Credit Valley Conservation (CVC) and Conservation Halton (CH) on LDD monitoring and response planning. Ultimately, the Town contracted with CVC to undertake a “Town of Halton Hills Lymantria Dispar Dispar Population Assessment”. This assessment report is attached as Appendix A to this report.

The goals of the assessment were to determine the number and extent of LDD egg masses present in 2021, estimate the severity of defoliation that might be expected in 2022, and provide recommendations for management techniques that could be considered to limit defoliation severity. CVC and Town staff collaborated to identify key locations based on tree species, topography, Town property locations, accessibility, and reports of LDD activity.

CVC staff surveyed a total of 80 sites, including Town-owned woodlot, park, and street tree locations. Defoliation potential based on egg mass concentration was found to be extremely sporadic, with 75% of sites assessed as moderate to trace, and 25% as having severe defoliation potential. The northern and western areas of Georgetown had the highest concentration of sites with a potential for moderate to severe defoliation in 2022. Further detail on these findings can be found in Appendix A.

In addition to monitoring for the Town, CVC also surveyed the neighbouring conservation authorities of Conservation Halton (CH) and Grand River Conservation Authority (GRCA) to obtain a more comprehensive understanding of LDD severity forecasts for 2022 across the region. Like the results of Halton Hills’ monitoring program, sporadic distribution of egg mass numbers was reported, with some areas expected to experience high defoliation and others expected to experience very little.

Although egg mass numbers are high in some areas, there are signs that an LDD population collapse may be on the horizon, especially in areas that have been experiencing outbreaks for the last three to four years. Throughout the growing season all three Conservation Authorities reported anecdotal evidence of heavy viral and fungal

loads as well as parasite and natural predator activity. There is optimism that naturally occurring controls will noticeably diminish LDD in 2022.

Aerial Spraying

During previous outbreaks, and as recently as 2021, some area municipalities and conservation authorities have undertaken aerial spraying programs to help control LDD populations. A low-flying helicopter is used to apply a bio-pesticide over publicly-owned wooded areas, public and private forest tracts, or in some cases generally over community areas. Main detractors of this approach include cost, and that aerial spraying is not targeted to LDD caterpillars alone, and so other butterfly or moth caterpillars in the Lepidoptera family present at the time of spraying may be affected. None of the three conservation authorities in the area (CVC, CH and GRCA) are planning an aerial spray program for 2022.

The Town does not possess significant woodlots with host trees that would benefit from an aerial spray program and, since the distribution of sites with high egg mass numbers is extremely sporadic both in the Town and across the landscape, CVC does not recommend an aerial spray program in its report, nor is it recommended by staff at this time.

2022 LDD Response Plan

It is important to note that there was minimal defoliation of Town trees observed in 2021. Any significantly defoliated Town trees were sporadic and limited in number, nor was there any general defoliation of Town wooded areas. Given that trees can typically withstand a few years of defoliation, there is little reason to consider costly and/or aggressive mitigation efforts at this time. Similarly, CVC suggests a combination of ground tactics and public outreach for 2022.

Upon consideration of the CVC report, staff is recommending the following actions to be taken as a 2022 LDD Moth Response Plan:

1. Enhanced public communication and education. Staff are partnering with CVC and CH on virtual public information workshops that will focus on invasive pests (including LDD) within the Halton Hills Public Library Lecture Series and potentially CH's Naturescapes Series.
2. Deployment of moth traps on Town trees, as in prior years, to minimize reproduction.
3. Pilot limited ground spraying of bio-pesticide on small to medium feature trees within Town parks and/or facility grounds, as appropriate.
4. Pilot the offering of free burlap kits (i.e., length of burlap, string, instruction sheet) to residents for use on private and/or Town trees.
5. Perform a survey of actual defoliation in 2022 to better understand any potential need for increased response actions in 2023 or beyond (i.e. to track tree stress from potential repeated defoliations).
6. Perform another egg mass survey in fall 2022 to forecast potential defoliation in 2023 (if required with no significant LDD population collapse in 2022).

Staff is confident that these actions will increase the Town's understanding of the current LDD moth outbreak and provide increased tools to mitigate any impacts in 2022.

STRATEGIC PLAN ALIGNMENT:

This report aligns to the Town's Strategic plan recognizing the value to preserve, protect and enhance our natural environment for the health benefits and enjoyment it provides to present and future generations.

RELATIONSHIP TO CLIMATE CHANGE:

This report impacts and/or helps address climate change and the Town's Net Zero target through climate mitigation.

PUBLIC ENGAGEMENT:

Public Engagement has been conducted as follows: In October 2021, residents were invited to share their LDD observations through a survey posted on letstalkhaltonhills.ca. The survey was live and promoted for approximately three weeks with a total of 155 contributions/completions.

INTERNAL CONSULTATION:

Staff from the Tree Canopy Management Sub-committee were consulted in the preparation of this report, as well as Corporate Communications staff.

FINANCIAL IMPLICATIONS:

This report will be funded through an existing approved budget source.

Reviewed and approved by,

Bill Andrews, Commissioner of Transportation and Public Works

Chris Mills, Chief Administrative Officer