

Date: March 7, 2022	Originator's files:
To: Chair and Members of General Committee	
From: Jodi Robillos, Commissioner of Community Services	Meeting date: March 30, 2022

Subject

2022 Lymantria dispar dispar (LDD) Integrated Pest Management Program Update.

Recommendation

That the Corporate Report dated March 7, 2022 from the Commissioner of Community Services entitled "2022 Lymantria dispar dispar (LDD) Integrated Pest Management Program Update" be received for information.

Executive Summary

- LDD is a non-native pest that has been present in Mississauga for more than 30 years and eradication is not possible. Through a variety of Integrated Pest Management (IPM) measures, including an aerial spray, the City aims to reduce impacts on tree health from LDD in a given year, until such a time as natural pathogens cause a population level collapse.
- In 2006, 2007 and 2018 the City conducted an aerial spray in targeted areas to mitigate the impact on City and private trees.
- The most recent (2018) aerial spray program, combined with other management practices suppressed the LDD population in sprayed areas for approximately 2 years after the spray; since then populations in these and other areas in the city have been on the rise.
- The population of LDD in the most severely impacted areas of the city would be best treated by an aerial spray. Original estimates for severely impacted areas of LDD infestation in 2022 were set at 3322 hectares (8209 acres). Subsequent refinements to the mapping, the extent of localized hotspots have reduced the total area of the 2022 aerial spray to 2091 hectares (5167 acres).
- The exact timing and execution of the Aerial Spray program is contingent upon Ministry of Transportation approval of the flight plan and coordination of spray application for weather conditions and the development of the insect but is expected to occur between April 25, 2022 and June 12, 2022.

- *Bacillus thuringiensis* subspecies *kurstaki* (Btk) will be utilized during the aerial spray and is a low risk product from a public health and environmental perspective. It is governed by Health Canada's Pest Management Regulatory Agency (PMRA), and the same product used for the City's 2006/2007 and 2018 aerial spray programs.
- In partnership with the Parks, Forestry & Environment section, the Communications division has developed a comprehensive communications plan for the City's 2018 Aerial Spray program.
- As with previous aerial spray programs undertaken by the City of Mississauga, the Region of Peel – Public Health is committed to support the Aerial Spray Program by addressing any health questions raised by residents.

Background

The City conducted an aerial spray program in 2006, 2007 and 2018 to mitigate LDD moth population and since then have continued to monitor and manage pests for City owned trees.

The total spray areas of these previous aerial sprays were:

- 2006/2007: 800 hectares;
- 2018: 2058 hectares.

These previous aerial spray programs included publicly owned city parkland and woodlands, as well as residential areas with affected urban forest canopy where severe defoliation was expected.

On June 16 2021, a motion was brought forward to Council by Councillor Ras asking for the City of Mississauga to commit to budgeting and planning for an aerial spray of *Bacillus thuringiensis* subspecies *kurstaki* (Btk) for LDD affected areas in 2022.

This matter was considered by Budget Committee at its meeting on November 29, 2021 and subsequently adopted at Council on December 8, 2021 (BC-0057-2021 see Appendix 1).

Parks, Forestry & Environment section recommended a 2022 aerial spray program be implemented in public and private lands:

1. Areas predicted to be severely defoliated by LDD in 2022 and,
2. Areas predicted to be heavily defoliated by LDD in 2022 and severely defoliated in 2021.

At the time of the report in November of 2021, staff had LDD moth infestation data to support spraying 3322 hectares of land. That area represented a generalized boundary determined through the egg mass monitoring. Subsequent analysis and assessment has led to a reduction in the spray area and the determination of final spray area boundaries, provided in Appendix 2.

Present Status

1. 2022 Aerial Spray Treatment Areas

As detailed in the November 2021 Corporate Report, surveys conducted in fall 2021 demonstrated an LDD moth population on the rise in many areas of the City of Mississauga. This information indicates that there are select areas within the City where we can anticipate severe defoliation due to LDD.

Treatment zones were identified throughout severely impacted areas in Wards 1, 2, 3, 5, 6, 7, 8, 9, 10 and 11. The maps of the specific aerial spray areas are included in Appendix 2 of this report. The total proposed aerial spray area for 2022 is 2091 hectares (5167 acres).

2. 2022 Aerial Spray Timing of Application

In order for the Btk spray to be effective, the leaves and caterpillars both have to be of a certain size. Timing estimates will be developed using comparisons between the historical data temperature, this year's temperatures and on-site observations. The Btk application is scheduled to occur between April 25, 2022 and June 12, 2022.

3. Contractors

The corporate report approved by Council on December 8, 2021 gave authorization for the City to enter into a sole source contract with Zimmer Air Services Inc. in the amount up to \$3 million for the provision of the aerial spray application services. Since then Forestry has been working with Procurement Services to complete the contract with the vendor. Based on the quote at the time of this report and the anticipated spray area of 2091 hectares (5167 acres), the aerial spray component is estimated to cost approximately \$1,934,175.

Furthermore, the December 8, 2021 Council approval also gave authorization for the City to enter into a sole source contract with Lallemand Inc. /BioForest in the estimated amount of \$25,000 to inform and advise on the 2022 aerial spray. Since then Forestry has been working with Procurement Services to complete the contracts with the vendors. Based on the quote at the time of this report and the anticipated spray area of 2091 hectares (5167 acres), the aerial spray advisory services is anticipated to cost approximately \$40,000.

4. Bylaw

A by-law (BL0029-2022) to declare *Lymantria dispar dispar* (LDD) infestation in the City a matter of public nuisance was passed by Council on February 16, 2022, please see Appendix 3. The bylaw authorizes Parks and Forestry Division to implement an aerial spray program using Btk to control LDD within treatment areas identified by the Commissioner of Community Services. The 2022 Aerial Spray Treatment areas identified in Appendix 2 are these areas.

5. Communications Plan

In partnership with the Forestry section, Strategic Communications and Business & Marketing Solutions have developed a comprehensive marketing communications plan about the City's 2022 Aerial Spray program happening in late spring. A creative look and feel was developed to assist residents in identifying information related to the program. A sample graphic is found in Appendix 4.

The plan provides a clear understanding about the importance of LDD moth populations in Mississauga, while ensuring the community is well informed about aerial spray details such as dates, times, spray zones and flight paths. A key focus remains on ensuring that residents in the affected areas have advanced notice of when the spray will take place and what to expect before, during and after the spray.

The plan uses a mix of internal and external communications strategies, such as public engagement, social media, media relations, employee communications, online engagement and electronic and paper-based outreach.

The project team will continue to work with both internal and external stakeholders, like the Region's Medical Officer of Health, to ensure the plan is effective and addresses all aspects of the aerial spray. The health and safety of Mississauga residents and protecting the environment are our top priorities.

While key messages have already begun to be communicated, the public engagement will ramp up beginning in April with resident notifications, a dedicated project webpage and a virtual public meeting regarding the aerial spray planned for the evening of April 20, 2022. A councillor toolkit containing key information and FAQs will be provided in advance.

Comments

1. Btk and Human/Environmental Health and Safety

The compound used in an aerial spray program is called is *Bacillus thuringiensis* subspecies *kurstaki*, commonly referred to as Btk. It is a rod-shaped bacterium that occurs naturally in soils worldwide and is cultured specifically for pesticide use.

Health Canada's Pest Management Regulatory Agency (PMRA) is responsible for assessing the risks to human health and the environment of all pest control products prior to their approval for use in Canada. Manufactures of products must provide the agency with a full analysis of the products formulation, as well as extensive health and environmental data so that the agency can do an extensive risk assessment on the product. Only products that are reviewed and found to be effective for use with little to no risk to human health and the environment are then registered for use.

Each time the City of Mississauga has conducted an aerial spray program, Peel Public Health has reviewed the peer-reviewed scientific evidence to ensure that Btk and the Foray 4B formulation are not associated with adverse health impacts. Furthermore, even after many years of widespread use of Btk in forestry, agriculture and urban settings, no public health problems have been identified or any significant environmental concerns arose.

In fact, strains have been used by both organic and non-organic farmers through the world in many countries. Btk is one of the few pesticides acceptable to organic growers, as it is a naturally occurring biological organism, rather than a synthetic chemical. The product does not survive in warm blooded organisms or in residues on food passed through the digestive system without any effect.

According to Health Canada, Btk is only toxic in the caterpillar stage of the LDD life cycle. When Btk is ingested by the caterpillars, their alkaline gut pH triggers the bacteria to release an endotoxin that is lethal to the insect. The caterpillar must ingest Btk for it to be effective. However, because aerial sprays of Btk are non-selective they can impact non-target caterpillars, which are an important source of food for many birds and other wildlife.

One example is the Mottled Duskywing (*Erynnis martialis*), a medium-sized butterfly that is listed as Endangered under the Ontario Endangered Species Act (ESA). Since the recovery of this species is threatened by aerial sprays for LDD, permits under the ESA may be required. The City of Mississauga will continue to work with Ministry of Environment, Conservation and Parks staff as well as local Conservation Authorities to identify any potential conflicts where species at risk such as the Mottled Duskywing may be present prior to selecting areas for aerial application of Btk.

Btk does not affect adult moths and butterflies (Lepidopterans), including the Monarch Butterfly, which are not in the caterpillar stage at this time that Btk is applied for LDD.

Btk does not affect other insects, fish, birds or mammals. There is also no impact on animals or pets if they are exposed to or ingest Btk.

Strategic Plan

The Green Pillar for Climate Change within the Strategic Plan identifies the need to conserve, enhance and connect natural environments in the City of Mississauga.

Engagement and Consultation

Engagement with all of the relevant technical stakeholders and City Departments has begun to address any requirements or concerns associated with these organizations and agencies. The technical stakeholders group consists of representatives from RCMP, OPP, Peel Police, Ministry of Transportation, Ministry of Natural Resources and Forestry, Ministry of Environment

Conservation and Parks, Trillium Health Care Centre, Region of Peel Public Health, Environmental Control, Ambulance and Emergency Programs, and Transport Canada. City staff will continue to work closely with these agencies as well as representatives from Mississauga Fire and Emergency Services, Transportation and Works, Communications, Legal Services, Risk Management, and Parks, Forestry & Environment.

City staff will continue to work with other municipalities considering a 2022 spray program with its vendor to provide the most cost effective program.

Financial Impact

The anticipated cost of \$3 million for the 2022 LDD IPM program will be allocated to PN 22402: Aerial Spray Program – LDD. This PN has sufficient funding for all direct costs reasonably related to the aerial spray including: aerial spraying, consulting services, road and highway closure costs, policing, communications, signage, equipment and materials, etc.

Conclusion

Based on data collected in the fall of 2021, the LDD population (and therefore risk of defoliation and negative impacts to the urban tree canopy) is anticipated to be severe in many areas of Mississauga. These are primarily concentrated along the Credit River Valley, in parks and woodlands in northwest and central Mississauga, and residential areas in southern Mississauga where there is high tree canopy.

To ensure the protection of our city's tree canopy a 2022 aerial spray program was recommended and approved by Council on December 8, 2021.

The integrated pest management program for LDD in 2022 will consist of an aerial spray in targeted areas with high LDD populations where severe impacts to the urban forest are projected. This totals a spray area of 2091 hectares (5167 acres). Other integrated pest management techniques will be used in areas with lower LDD populations and risks to the urban forest to ensure that significant trees are protected.

Btk aerial spray is low-risk from a human and environmental perspective as per Health Canada Regulations.

A comprehensive communication plan and public engagement tools are in place to support the program. City staff are working with other City departments, Region of Peel, Provincial and Federal agencies, Emergency Services, Peel Public Health, contractors and residents to ensure a successful program.

Attachments

- Appendix 1: BC-0057-2021, “Lymantria dispar dispar (LDD) Integrated Pest Management Program for 2022” dated November 4 2021
- Appendix 2: Proposed Treatment Area maps
- Appendix 3: Bylaw BL-0029-2022: A bylaw to declare LDD infestation in the City a matter of public nuisance
- Appendix 4: Aerial Spray Graphic



Jodi Robillos, Commissioner of Community Services

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