REPORT
COMMUNITY SERVICES COMMITTEE
MEETING DATE: NOVEMBER 13, 2017

FROM: Parks and Open Space Department
DATE: September 15, 2017
SUBJECT: Gypsy Moth and Cankerworm Mitigation Plan
LOCATION: Town Wide
WARD: Town wide

RECOMMENDATION:

1. That the report “Gypsy Moth and Cankerworm Mitigation Plan” dated September 15, 2017, from the Parks and Open Space department, be received.

2. That the recommended 2018 Gypsy Moth aerial spraying program outlined within the staff report, at an estimated cost of $205,000, be referred to the 2018 Budget Committee for consideration as a capital project.

KEY FACTS:

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

- According to the 2016 iTree Report, Gypsy Moth, if left untreated, has the potential to impact 409,000 trees in The Town of Oakville. This equals to 23% of the Town’s tree canopy.
- According to the iTree assessment, the financial impact of untreated Gypsy Moth on Town’s Urban Forest is estimated to be $325 million.
- In the spring of 2017, the Town’s urban forests experienced severe defoliation due to gypsy moth and cankerworm on approximately 102.54 hectares of woodland.
- Subsequent annual defoliations from gypsy moth and cankerworm will cause tree mortality.
- The most effective management strategy for both gypsy moth and cankerworm is the aerial application of Bacillus thuringiensis var. kurstaki (BTK) concurrently.
• To prevent significant tree mortality from gypsy moth and cankerworm, the Forestry Section is recommending aerial spraying in the spring of 2018 on 102.54 ha. of municipal woodlands having moderate to severe defoliation. (see Appendix A.)

• Mississauga and Hamilton are also recommending aerial spray programs in 2018 for approximately 1,400 hectares and 1,946 hectares respectively.

• The estimated cost for the aerial spraying is $205,000, although the cost could potentially be reduced through a cooperative program with the City of Mississauga.

• It is recommended that this report be referred to the 2018 Budget Committee for consideration.

BACKGROUND:

Oakville’s urban forest is susceptible to a variety of pressures including drought, disease and insect pests. Gypsy moth is an invasive insect pest that has the potential of inflicting serious damage in several forest areas in 2018. Cankerworm is a native insect pest in Oakville that undergoes cyclical population increase every 10-15 years. Canker worm has a significant impact on tree canopy in peak population years.

In spring of 2017, the Town’s Forestry consultant recorded significant increase in the density and population of Gypsy Moth (GM) and Cankerworm (CW) in 14 woodlands south of Dundas Street. Staff inspected those areas and verified the information.

Insect Profiles:

Gypsy moth (Lymantria dispar dispar) is an exotic forest insect pest that is native to Europe and considered to be a serious defoliator of trees and shrubs. Severe defoliation can reduce tree growth and predispose trees to attack from other insect pests and diseases. All species of Oak are susceptible to GM. The larva of this insect also feed on Poplar, Birch, Willow, Maple, Beech, and Cherry and if faced with a shortage of deciduous leaves, they will feed on conifers (Hemlock and Pine) and ornamental shrubs. The Canadian Food Inspection Agency (CFIA) recognizes Gypsy Moth as an important exotic forest pest, and is regulated by the CFIA, however due to its widespread distribution, CFIA is not involved in the implementation of any control programs.

Cankerworm has two species, spring cankerworm (Paleacrita vernata) and fall cankerworm (Alsophila pometaria). Adult spring cankerworms emerge and deposit eggs in late March and throughout April, whereas fall cankerworm adults emerge and deposit eggs from late September throughout October. The larvae of both species emerge in the spring just as the leaves begin to appear and will feed on the
foliage until mid-June. When feeding is complete, the larvae enter the soil where they remain until they emerge as adults.

Forestry staff follow an Integrated Pest Management (IPM) approach in dealing with many forestry issues including invasive exotic insect pests. IPM is a sustainable approach to managing pests by combining biological, cultural, physical, and chemical tools in a way that minimizes economic, health, and environmental risks. IPM does not attempt to eradicate a particular pest, but targeted at keeping pest populations below the threshold level so they cannot cause significant tree damage and mortality.

Forestry staff have been actively monitoring gypsy moth since 2005 using integrated pest management. Staff applied the threshold density of 2,500 egg masses/ha, as the prediction value for “high risk” of defoliation. This threshold number is based on the adaptation of the study done by USDA, Forest Service in 1994 “The relationship between defoliation and egg mass density thresholds for tree damage criteria”.

Monitoring Program

Historical Monitoring Results

An outbreak of Gypsy Moth in Iroquois Shoreline Woods weakened the Oak trees and resulted in oak decline and two-lined chestnut borer infestation in 2002. The resulting decline and infestation within the woodland caused devastating tree mortality. Forestry staff has been monitoring the changes in the population of Gypsy Moth since then. In 2005, staff observed an increase in Gypsy Moth population, and undertook a more comprehensive monitoring program.

As the result of the 2007 surveys, Oakville participated in a collaborative spray program in 2008 with neighbouring municipalities to spray 63 hectares (155 acres) of municipally infested woodlands with BTK. The aerial spray program was considered a success, in a post-spray evaluation conducted by an outside consultant. The gypsy moth population in the following years was negligible and an integrated pest management approach that did not require aerial spraying was implemented. Forestry staff manually removed egg masses from the trees, where possible, prior to spring emergence.

Since the last outbreak of this pest in 2008, the overall risk to Town’s municipal woodlands has been low. The 2012 and 2013 egg mass surveys conducted by the Town’s consultant reported a slight increase in the population levels from those seen in previous years. High infestation levels were localized and protective
injection treatments were recommended and implemented for select hot-spot locations from 2013 – 2017.

In 2015 and 2016 residents began reporting noticeable defoliation in June-July periods. Based on the surveys undertaken by Town’s consultant (2014-2015) it was reported that population levels were increasing from previous years. High infestations at that time were not widespread throughout the Town. Forestry has started targeted treatment, and has treated 300 street trees since 2013.

Current Monitoring Update

According to the egg mass surveys completed in the fall 2016, gypsy moth and canker worm populations continued to increase throughout 2016. It has caused moderate to severe defoliation in some properties. Based on the fall 2016 and spring 2017 surveys completed by the Town’s consultant and verified by Forestry staff, 14 municipal woodlands with the area of 102.54 hectares were forecasted to have a “high risk” and “moderate risk” of defoliation in 2018 (See Appendix B).

With the effects of defoliation from gypsy moth and cankerworm observed in 2017, and forecast for 2018, it is Forestry staff’s recommendation that the Town should act to reduce the population of GM and CW to reduce the risk and impact to the Town municipal woodlands in 2018.

Considering the population dynamics and dispersal mechanisms of both gypsy moth and cankerworm, to inhibit further growth of the population and the negative effects of successive defoliation, it is prudent to include properties that have been classified having “moderate risk” in spring 2017 into the 2018-year program. By treating them effectively in 2018, we hope to contain and reduce the population and the impact on the overall health of the Town’s urban forest so that there is no need to control the population in a larger scale in subsequent years.

COMMENT/OPTIONS:

Aerial Spraying Program & Other Control Methods

To counter a second potential serious defoliation from the GM larvae (caterpillar) and fall cankerworm, Forestry staff is recommending the current IPM approach be expanded to include aerial spraying of the pesticide Btk. This aerial spraying would be performed on Town owned properties identified as “moderate” to “high risk” levels of defoliation in 2018, or where moderate and high defoliation were observed in spring of 2017. The most economical and practical method to reduce and control the impacts of GM is with aerial application of Btk. In addition to aerial spraying,
reachable gypsy moth egg masses in light infestation areas will be manually scraped, before larval emergence from identified municipal trees. In addition, in the fall, staff will carry out burlap banding to trap mature caterpillars.

Aerial spray with Btk was used in Mississauga in 2006 and 2007 and Toronto in 2007 and Oakville in 2008. It was highly effective in reducing gypsy moth populations in Oakville and all other neighbouring municipalities. The post 2006 aerial spray monitoring in Mississauga indicated >90% reduction in the population of the insect with only 10% defoliation in some identified hot spot areas. Staff in Mississauga considered this program to be highly successful, effective and requiring no additional spraying in these hot spot areas.

Monitoring of affected municipal woodlands by staff demonstrate that current levels of gypsy moth and cankerworm, if left untreated, will result in increased number of areas with severe defoliation and increased tree mortality. Evaluations by Town staff and other municipalities show that an aerial spray program will be the most effective method of control.

Operational Considerations

The application of the pesticide Btk is permitted under the Schedule "A" of Town of Oakville’s Pesticide By-Law 2007-036, amended by by-law 2007-123. Schedule “A” 2d) states “biological pesticides, including Btk and nematodes are permitted to be used under this by-law. Btk is a rod-shaped bacterium that occurs naturally on dead or decaying matter in soil. It is grown from soil bacteria which occurs naturally worldwide. The pesticide must be ingested by the caterpillars to be effective. The optimal period for applying Btk is late April, early May when the caterpillars are small. The spraying can be completed within a couple of hours, however weather conditions can affect the spraying (i.e. wind, rain). There is no health concerns with the use of Btk (see Appendix C).

Spraying would be performed by a low flying helicopter and typically done early in the morning, prior to 7:30am, when wind conditions are light. Roads will be temporarily closed, where required, during the spraying, and approvals must be obtained from agencies such as Transport Canada and MTO. While no private property will be sprayed, there is the potential for some drift onto private properties adjacent to the aerial spraying of woodlands adjacent to homes. Residents adjacent to areas that will be aerial sprayed will be notified in advance prior to the spraying.

Btk can be applied from the ground using trucks with elevated platforms. This option is not to be nearly as effective as aerial applications due to access issues for vehicles, limited reach, and would only be able to treat trees along the top-of bank and not trees within the valley. This would reduce the effectiveness of the
application and increases costs due to difficult access and significantly more required mobilizations. Given the larger time consumption by a ground spray strategy, spraying is less likely to occur during the ideal application window.

In the surveys done by a forest health consultant, private properties were not reviewed; however, it was noted from preliminary town staff inspections of streets close to infested woodlands, some private properties might be infested. Reports and service calls of gypsy moth and cankerworm on private and other Town streets were received. However, it is recommended to engage private property owners in a discussion on the issue of gypsy moth and cankerworm, to share the Town’s action plan and encourage residents living in areas with low populations to perform manual removal of egg masses before spring.

Costs may be significantly reduced if multiple municipalities opt for an aerial spray application in 2018. There is the potential to reduce costs by approximately $46,000 based on reduced per hectare rate. (See appendix B.) Staff have already engaged in discussions with the City of Mississauga to develop a cooperative program.

Communications:

An implementation of the aerial spray of approximately 102.54 hectares of municipal woodlands will require a detailed communication plan. A public meeting is planned to advise Oakville residents about Gypsy Moth and Cankerworm and the plan to undertake an aerial application. It will also be an opportunity to educate them on how to manually remove egg masses from private trees and encourage volunteers (i.e. forest health ambassadors) to remove egg masses from street trees. Based on our previous experience in 2008, staff is anticipating full cooperation from the adjacent neighbours and general public.

CONSIDERATIONS:

(A) PUBLIC

The public will be made aware of gypsy moth, cankerworm, and the planned aerial program via a communications plan that shall include but not be limited to: a public meeting / open house, notices delivered to homes, advertisements in local newspapers and other print brochures, electronic communications (web, Facebook, twitter).
(B) FINANCIAL

The total cost gypsy moth aerial spray in 2018 is estimated at $205,000. This cost may be reduced if Oakville’s program is amalgamated with adjacent municipalities. Initial discussions have already occurred to partner with the City of Mississauga.

(C) IMPACT ON OTHER DEPARTMENTS & USERS

The 2018 aerial spray would require support from several departments to effectively communicate and implement this initiative. Departments include Strategy Policy and Communications, Finance, Roads and Works, Oakville Transit, Halton Regional Police, and MTO. If approved by Council, a multi-department corporate team will be assembled to deliver the aerial spraying program.

(D) CORPORATE AND/OR DEPARTMENT STRATEGIC GOALS

This report addresses the Corporate Strategic Goals to enhance our natural environment, to be accountable, to continually improve our programs and services, and to have programs that are environmentally sustainable.

APPENDICES:
Appendix A – Maps illustrating locations of recommended spray areas.

Appendix B – Cost Chart for Proposed 2018 Program

Appendix C – Halton Health Department Memorandum: A Review of Aerial Spraying of Bacillus thuringiensis subspecies kurstaki in City of Burlington.

Prepared by: Jalil Hashemi, RPF
Manager of Forestry Services

Submitted by: Chris Mark
Director, Parks and Open Space