



## STAFF REPORT INFORMATION ONLY

### Educating Homeowners about the Emerald Ash Borer and the U.S. Experience in the Protection of Ash Trees

<b>Date:</b>	August 22, 2013
<b>To:</b>	Parks and Environment Committee
<b>From:</b>	General Manager, Parks, Forestry and Recreation
<b>Wards:</b>	All
<b>Reference Number:</b>	P:\2013\Cluster A\PFR\PE22-091613-AFS#17846

#### SUMMARY

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The purpose of this report is to provide information as requested by the Parks and Environment Committee, on the experience of the United States in dealing with Emerald Ash Borer and what Urban Forestry is doing to educate residents of Toronto about this pest.

#### Financial Impact

There are no financial implications resulting from the receipt of this report.

The Deputy City Manager and Chief Financial Officer has reviewed this report and agrees with the financial impact information.

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#### DECISION HISTORY

At its meeting on March 23, 2012, during consideration of item PE11.1, "Update on the Strategy for the Management of Emerald Ash Borer", the Parks and Environment Committee, requested the General Manager, Parks, Forestry and Recreation, in conjunction with the Toronto Environment Office, to obtain as much information as possible from the United States about protecting ash trees.

<http://app.toronto.ca/tmmis/viewPublishedReport.do?function=getDecisionDocumentReport&meetingId=5635>

At its meeting on November 27, 2012, during consideration of item PE17.1, "Core Service Review - Revising the Timeframe to achieve the City's Tree Canopy Goals", City Council requested the General Manager, Parks, Forestry and Recreation to meet with the University of Toronto's Forestry Department and Facilities Division, as well as representatives from the Residents Associations on the University of Toronto Liaison Committee and report back to the Parks and Environment Committee on a pilot project to combat Emerald Ash Borer infestation of public, private and institutional lands.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2012.PE17.1>

At its meeting on January 29, 2013, during consideration of item PE18.4, "Toronto's Strategic Forest Management Plan", the Parks and Environment Committee requested that the General Manager, Parks, Forestry and Recreation report further on what the City is doing to educate residents about Emerald Ash Borer.

<http://app.toronto.ca/tmmis/viewPublishedReport.do?function=getDecisionDocumentReport&meetingId=6897>

## **ISSUE BACKGROUND**

The Emerald Ash Borer (EAB) (*Agrilus planipennis*) is an introduced insect native to Asia that spreads quickly, attacking and killing all species of ash trees (*Fraxinus* spp.) by feeding beneath the bark and disrupting the flow of water and nutrients in the tree. Since its discovery in North America in 2002, it has killed millions of ash trees in the United States (U.S.) and Canada.

In 2002, little was known about this invasive forest pest. During the early stages of the infestation, researchers in the U.S. and Canada collaborated in their efforts to learn more about EAB. Research was conducted in Asia, within the EAB's native habitat to learn about the pest host interaction and in both the U.S. and Canada to establish better detection techniques and measures for control. Information about EAB generated by U.S. and Canadian professionals was quickly transferred to City of Toronto staff through attendance at workshops, forums, conferences, on-the-ground training and tours of infested areas. Through the sharing of information, City staff was able to predict the impact EAB would have in Toronto and responded immediately by implementing a moratorium on the planting of ash trees on City property thereby limiting future tree loss.

## **COMMENTS**

### **EAB Management**

There are three main strategies available to manage an EAB infestation: do nothing and allow all ash trees in the jurisdiction to die resulting in extirpation of the genus; treat every ash tree with pesticide in an effort to preserve all ash; or institute a hybrid program of conservation of a number of valuable ash trees through pesticide treatment, combined with the removal of the remaining trees as they become infested and die.

Due to the number of ash trees in Toronto, a hybrid strategy of conservation of valuable ash trees through pesticide treatment in addition to the removal and replacement of dead and dying trees was the most practical method of management. This approach is the basis for the City's Strategy for the Management of the Emerald Ash Borer, approved by City Council at its meeting on April 12, 2011.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2011.PE2.1>.

## **EAB Management in Toronto**

Following the detection of EAB in Toronto in 2007, Urban Forestry began to deal with declining trees and tree mortality in the years 2008 through 2011. A small program was instituted to treat up to about 200 trees per year using TreeAzin<sup>®</sup>, a pesticide used to protect trees against EAB. This treatment program was designed to test the efficacy of the product, which at the time, had emergency registration from the Pest Management Regulatory Agency of Health Canada (PMRA). Results of this program indicated that TreeAzin<sup>®</sup> was effective in keeping ash trees alive and posed no long-term health threats to the tree by repeating injections every two years.

The rate of the spread and increase in population density of the beetle and resultant ash mortality experienced in some U.S. and Canadian municipalities aided Urban Forestry in modelling ash mortality in Toronto. Through an understanding of the course and development of an EAB infestation in other jurisdictions, Urban Forestry was able to produce forecasts on the effects of EAB in Toronto. Urban Forestry's forecast indicates that in the City of Toronto, complete ash mortality will occur within about 10-11 years from death of the first trees.

Recognizing the ecological and financial value of conserving as many trees as possible, the efficacy of TreeAzin<sup>®</sup> and a 20% reduction in the cost of pesticide injections, Urban Forestry enhanced the pesticide injection program. In total, 13,000 individual ash trees were treated in 2012 and 2013. These trees will be treated every two years, as required, to conserve them. The effect of this program will be the preservation of a number of healthy ash trees and a reduction in the overall number of dead trees requiring removal and replacement across the city.

The City's EAB management plan is intended to be dynamic, utilizing existing knowledge and current best practices gained through continuous review of other programs and research in the U.S. and Canada, and adjusting approaches as required.

## **The U.S. Experience**

The experience of U.S. municipalities facing an infestation of EAB has been the same as what is being faced in Toronto: limited treatment options, removal of significant numbers of dead and dying trees, loss of valuable urban forest canopy and substantial expense in managing the problem. Municipalities in the twenty U.S. states presently infested with

EAB face the death of all their ash if not treated by pesticides. Although the funding, research and regulatory regimes are considerably different between the U.S. and Canada, the overall approaches are similar.

The Society of Municipal Arborists in the U.S. released a position paper in 2012 outlining nine tools that could be utilized to gain knowledge and manage EAB. Five of the identified tools were already in use by the City of Toronto, including a tree inventory, an *i-Tree* (UFORE) analysis, a strategic EAB Management Plan, an Operating Plan and a Communications Plan.

The remaining four tools, which were considered new and innovative included:

1. the use of green-leaf volatile trapping (the use of chemical compounds found within ash leaves in a lure hung within the trap)
2. branch sampling (removal and dissection of two branches from individual trees in search of signs of EAB)
3. chemical treatment (identification and treatment of trees in priority zones) and
4. airborne hyperspectral imagery (analyzes the "spectral signature" of molecular and electromagnetic properties reflected by objects such as vegetation).

Three of these tools (items 1, 2 and 3 above) were already being utilized in Toronto. In fact, the City of Toronto partnered with the Canadian Forest Service (CFS) in the development of the branch sampling protocol for early detection. Airborne hyperspectral imagery is the only tool not utilized in Toronto. It was determined that this experimental approach was not necessary due to our existing tree inventory, sampling and survey protocols conducted since 2008.

The Coalition for Urban Ash Tree Conservation, a group of interested industry, municipal and research professionals released an EAB management statement in 2011, indicating that the integrity and value of urban forests can be retained through the treatment and conservation of some trees and the strategic removal and replacement of unhealthy ash. This is the same hybrid approach that Toronto is using to deal with EAB in the short and medium term.

## **Short- and Medium-Term Management Strategies for Ash Preservation**

The Health Canada Pest Management Regulatory Agency (PMRA) is responsible for pesticide regulation in Canada. Created in 1995, this branch of Health Canada consolidates the resources and responsibilities for pest management regulation. The Environmental Protection Agency (EPA) is primarily responsible for regulating pesticides in the U.S. The different regulatory bodies review and approve pesticide products within each country. Companies must submit extensive research to seek registration and the cost of this is a deterrent if there is limited market potential for future sales of product. As a result, products that become registered are different in the two countries.

In Canada, there are presently three products registered for use against EAB; TreeAzin<sup>®</sup>, Confidor<sup>®</sup> and ACECAP 97<sup>®</sup>. TreeAzin<sup>®</sup> which is being used by the City of Toronto, is the only product registered for use in Canada that has been proven, through published field trial results, to be effective in keeping ash trees alive. The other two registered products, Confidor<sup>®</sup> (imidacloprid) and ACECAP 97<sup>®</sup> (acephate), state on their labels that they may provide suppression only and may not be effective in controlling larval populations.

In the U.S., products containing imidacloprid and dinotefuron, are registered for use against EAB however, the results of their effectiveness have been dependent on formulation. One registered product, TreeAge<sup>®</sup> (emamectin benzoate), has proven to be effective for up to three years but is not approved for use in Canada.

Most U.S. municipalities have not implemented significant pesticide treatment initiatives. The City of Milwaukee has instituted an aggressive program of treatment with TreeAge<sup>®</sup> which targets about 28,000 trees overall for treatment. They have taken this approach because ash represents over 17% of their urban forest.

## **Long-Term Management Strategies for Ash Preservation**

The long term outlook for EAB control will depend on how populations of the beetle react once most of the ash trees have died after the first wave of tree mortality sweeps through the landscape. It is expected that the beetle population will be drastically reduced due to the loss of host trees. As the beetle population collapses, existing larger trees that have been on a two-year treatment cycle may not require injections as often.

In addition to continued pesticide treatment, natural or biological controls may be able to keep EAB populations to low levels and aid in allowing ash to re-establish. As an example, researchers at the University of Toronto, Faculty of Forestry have identified native wasps present in southern Ontario that will parasitize EAB larvae. Parasitism of up to 40% of larvae has been identified in some woodlots. Urban Forestry is presently working with the Faculty of Forestry to test the efficacy of this biological control. In late June of this year, wood samples containing this parasitoid wasp were introduced into three wooded areas in City parks. Establishment of local population of this parasitoid is the goal of this research and over the next three years, sampling will occur to determine whether this is actually the case. Currently the distribution of these wasps in Ontario is patchy and not widespread making them less effective for providing area-wide control.

Research using biological controls is still relatively young, therefore it should be noted that even if the parasitoid successfully establishes itself in these woodlots, it will be too late to control the present EAB infestation as it may take years for an adequate population of the wasps to become established. The hope is that once the initial wave of ash tree mortality has passed, the parasitoid will be able to provide control of the subsequent population of the beetle keeping it down to sub-lethal levels which may result in a balance being established between host, pest and parasitoid.

Similar research and field trials of this nature are presently occurring in the U.S. with a particular focus on non-native parasitoids that are present in the EAB's host range in Asia. The rearing and release of some non-native parasitoids in woodlots in Michigan has occurred since 2010 and results have shown some success in the establishment of populations. Recently, the Canadian Food Inspection Agency (CFIA) approved the release of some of two non-native parasitoids in Canada. The CFS has established an experimental research plot in Huron County in southwestern Ontario using one of these parasitoids. As with the research being done in Toronto in conjunction with the University of Toronto, Faculty of Forestry, this research is part of a long-term strategy to reduce the population of EAB and the subsequent destruction of ash trees.

## **Community Outreach and Communications**

Several staff reports about this pest have been prepared since 2003. By posting information on the City's website and conducting public meetings and workshops, staff have taken proactive steps to share information and educate residents about EAB and the implications of this pest for both City owned and private ash trees. This course of action has been taken since EAB was first detected within the City of Toronto in 2007 and has continued. In the last five years, Urban Forestry staff attended numerous meetings with residents, community groups and Councillors in various wards. Urban Forestry continues to make staff available to meet with interested parties as required.

Urban Forestry staff also conducted numerous interviews with print, radio and TV media which resulted in reports on EAB in the local media environment. Strategic Communications prepared and published numerous media releases regarding EAB in Toronto. Staff have provided supplements to newspapers and developed bus shelter advertisements that have been displayed on TTC shelters throughout the city.

A brochure for homeowners entitled "What you need to know about the Management of Emerald Ash Borer" was developed by Urban Forestry in partnership with the Ontario Ministry of Natural Resources and the Ontario Commercial Arborist Association. The brochure has been widely distributed within Toronto and throughout the province. The brochure includes information on how to identify ash trees and the beetle, the symptoms of EAB infestation, treatment options, tips for hiring a tree care professional and replacement planting. A copy of the brochure is available on the City's website at [http://city-dev.city.toronto.on.ca/trees/pdfs/eab\\_management.pdf](http://city-dev.city.toronto.on.ca/trees/pdfs/eab_management.pdf).

In 2013, as part of a pilot project aimed at bringing together interested members of the community and institutional landowners to discuss management measures, Urban Forestry staff met on a number of occasions with representatives of the University of Toronto, St. George Campus and neighbouring residents groups. The meetings presented the opportunity for participants to share information regarding the scope of the EAB problem in the area around the university campus and discuss management strategies. The results of this initiative included some additional City owned ash trees being added to Urban Forestry's pesticide treatment program, an inclusion of separate Price Schedules in the City's Request for Quotation (RFQ) for pesticide injections occurring on University

of Toronto property and an inclusion of language in the RFQ requesting that contracted service providers honour the City's unit rate for pesticide injection for trees on private property if contacted by residents. While contracted service providers are not obligated to honour the City's unit price when treating private trees, the hope is that service providers will be encouraged to pass along the same unit price to private owners and institutions who wish to have their trees treated. In 2015, when a new RFQ for pesticide injections is required, steps will be taken to include similar language and information in the RFQ.

Urban Forestry has continued to collaborate closely with the non-profit organization Local Enhancement & Appreciation of Forests (LEAF) on the EAB issue. With the assistance of the City of Toronto's Live Green Toronto Grant program, LEAF has implemented an "EAB Ambassador Program" that includes consultation with private property owners regarding the impacts of EAB, discussions about management options and the role private land owners play in sustaining the city's urban forest. This program uses volunteers (Ambassadors) to spread the message about EAB through a variety of networks, including: a door-to-door campaign, presentations at community schools or club meetings, distribution of information and materials at events and through individual social media networks (e.g., Facebook and Twitter). A key outcome of the program is to develop a community-level social marketing campaign that could be used in other Toronto wards. Urban Forestry's support to this program includes assisting in the training of LEAF staff and volunteers, providing information and feedback on proposed programming and providing communication materials for distribution. At the time of writing this report, LEAF staff and volunteers have spoken with over 1,600 residents, dropped information at over 8,800 households and have held canvassing events in Wards 13, 14, 21, 37, 38 and 43. There are well over 300 LEAF EAB Ambassadors involved in this program.

Urban Forestry will continue to proactively educate residents about EAB and through the implementation of "Sustaining and Expanding the Urban Forest: Toronto's Strategic Forest Management Plan" as approved by City Council at its meeting on February 20, 2013, we will enhance our existing communication and outreach capabilities.

The City of Toronto has instituted a progressive and leading edge approach to dealing with this devastating invasive forest pest. Urban Forestry's plan includes; preserving up to 13,000 trees, removing and replacing all dead ash street trees, removing dead and dying trees in parks that present a hazard and replacing a significant number of park trees. This plan utilizes the experience and best practices of municipalities and research from across North America to predict and plan for the impact that EAB will have in Toronto.

The Environment and Energy Office was consulted in the preparation of this report.

## **CONTACT**

Jason Doyle, Director, Urban Forestry, Tel: 416 392-1894, Fax: 416 338-2434,  
E-mail: [jcdoyle@toronto.ca](mailto:jcdoyle@toronto.ca)

## **SIGNATURE**

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Jim Hart,  
General Manager, Parks, Forestry and Recreation