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**File No.
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TO:	CHAIR AND MEMBERS PLANNING & ENVIRONMENT COMMITTEE
FROM:	JOHN M. FLEMING MANAGING DIRECTOR, PLANNING AND CITY PLANNER
SUBJECT:	ASIAN LONG-HORNED BEETLE – STATUS UPDATE MEETING ON APRIL 10, 2017
RECOMMENDATION	

That, on the recommendation of the Managing Director, Planning and City Planner, this report **BE RECEIVED** for information regarding the issues and status of Asian long-horned beetle in North America.

PREVIOUS REPORTS PERTINENT TO THIS MATTER

June 3, 2014 Urban Forest Strategy & Implementation Plan
Report to Planning & Environment Committee

PURPOSE

The purpose of this report is to advise Council of the potential future threat to London’s urban forest from the Asian long-horned beetle (ALB).

BACKGROUND

Council approved in its Urban Forest Strategy (2014) to plan for the effective management of invasive species of pests that will be harmful to trees. Severe harm to trees by invasive pests can result in costly and devastating effects to the community caused by large scale tree removal, as has been evident with the recent infestations by Emerald Ash Borer. ALB is a more serious threat to London’s urban forest and it is vital that the community remain vigilant for the early detection of this and other invasive tree pests.

The new Tree Protection By-law passed by Council on August 30, 2016 includes clauses to help protect Forest Health, empowering the City Planner to investigate concerns about tree health anywhere in the City, and to take appropriate urgent action. Any such action would involve consultation and support to or from federal and provincial agencies as necessary.

What is ALB?

ALB *Anoplophora glabripennis* and all other species of *Anoplophora* are regulated pests with the Canadian Food Inspection Agency (CFIA). The *Anoplophora* genus originates from Asia, all species are invasive and pose serious threats to Canada’s forests and trees.

ALB in its adult form is a visually stunning large beetle with a black body, blue-white bands on long antennae (the “horns”), blue leg bands, and a starry sky pattern of white spots of various sizes on its wing casings (Fig. 1). In its larval (instar) stages it exists as a large grub that, 2 weeks after been laid as an egg on the surface of the host hardwood tree, enters through the bark to consume the relatively nutrient-rich tissues underneath, slowly girdling the tree’s life support system beneath the bark. After a period of 1-2 years, the larva pupates and emerges from the tree as an adult beetle by chewing a relatively large (typically 10mm diameter) perfectly round exit hole (Fig.2). Usually a preferred species of host tree has multiple larvae in it at the same time, resulting in the appearance over summer months of a random pattern of exit holes on the trunk and branches of the tree. The adults are poor flyers and travel relatively short distances of up to a few hundred metres from the original tree, if they fly at all. Their other mode of dispersal is as hitch-hikers, in packing materials on ships, trains and aircraft, or in tree branches, sawlogs or firewood on vehicles.

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The disruption of the tree’s life support system results in a rapid decline with crown and branch death within three or four years, and mortality of the tree within 15 years of initial infestation. During this time some trees may become hazardous, and severe economic damage is done to the most valuable parts of a tree. Infested trees do not recover.

How Is It Controlled in Canada?

ALB is a regulated pest and therefore control is overseen by the CFIA. Control and eradication is achieved by destroying all infested and high risk species of trees within a defined control zone, usually 400m radius from a confirmed host tree. The CFIA and municipalities work together to remove all trees of the species that can be hosts to ALB, whether the trees are infested or not, on private and public lands. Monitoring continues for several years, until the CFIA is satisfied the pest has been eradicated. The Toronto-Vaughan infestation detected 2003 resulted in the removal of 665 infested trees together with 28,165 high risk trees, the last one being found in December 2007. The City of Toronto undertook tree removal by agreement with the CFIA, with costs for survey, tree removal and monitoring paid by the federal government. The City of Toronto paid for chipping of yard waste within the regulated area, so that it could be disposed of outside the regulated area. In total it cost \$35.5 million to eradicate that infestation. Infestations in the US have cost much more, with four infestations costing USD\$500 million (CAD\$654 million) to eradicate. Due to the many variables in each infestation, the costs are impossible to forecast except that it will likely run to millions of dollars.

Compensation is available from the CFIA until March 31, 2019 for eligible property owners whose trees are removed. Currently this is \$300 per private tree; \$150 per municipal tree; \$40 per tree in a woodlot. Replacement trees may be planted by the property owner if desired, but these replacement trees must be from a range of species that are deemed not to be at risk from ALB.

CURRENT STATUS

Since 1996, multiple infestations of ALB have been discovered in trees within the north east United States and Ontario (Fig. 3). London is connected by road, rail and air to the locations of past and current infestations, and through its trade with Asian markets many packages arrive every day potentially shipped with viable ALB.

Infestations continue to be eradicated in Toronto - Mississauga, Ontario (vicinity of Pearson International Airport, Fig. 4), Massachusetts, Ohio and New York, resulting in major loss of tree cover in those regulated zones. The study of North American infestations has broadened the knowledge of which hardwood species the beetle will attack on this Continent, its preferred host remains the maple *Acer* species (see Table 1).

When the City conducted its Urban Forest Effects study in 2008, it was believed that 40% of the City’s trees were suitable hosts for this pest. The control of just one infestation would be catastrophic to the neighbourhood affected by it. The loss of host species of trees would harm not only the aesthetics of a neighbourhood, but also harm tree-related benefits such as air pollution, moderating storm-water, shade, urban heat reduction and improved longevity of grey infrastructure, all to the detriment of human health and well-being.

WHAT THE CITY OF LONDON IS DOING

Public Education

Both the 2003 and 2013 infestations in Toronto and Toronto - Mississauga were first reported by vigilant members of the public. In partnership with the City of London, in 2014 the CFIA established a mock ALB infestation site in Springbank Park (Fig. 5). A number of maple trees here have been modified year to year to mimic the appearance of ALB egg-laying and emergence sites. An information sign was installed to help educate passers-by as to the threats posed by this pest and how to identify it.

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Staff Training

City staff involved in tree management attended a training event with CFIA staff at the mock ALB site in London, to learn to scan trees for signs of ALB infestation. In 2017 a second training event will be scheduled.

Woodland Acquisition and Management Reserve Fund

On March 21, 2017 Council approved a proactive revision to the Woodland Acquisition and Management Reserve Fund that identified invasive pests as a potential issue for the long-term health of the City's woodlands. With this revision, it would be possible to utilize the reserve fund to assist with the costs of addressing the impacts of ALB within woodlands. This fund is also used to acquire woodlands and manage other invasive species.

FINANCIAL IMPACT

There are limited funds currently budgeted for dealing with an ALB infestation should it occur in the City of London. As noted above, the costs of managing the previous infestation in the City of Toronto were shared between the municipality and the federal government. It is expected that the City of London would be responsible for a portion of the costs should an infestation occur in the future, although the magnitude of those costs would be dependent on the extent of the infestation and the funding contributed by other partners.

For illustrative purposes, the City has budgeted \$400,000 per year in the capital budget since 2012 to deal with the Emerald Ash Borer, with this annual funding anticipated to continue until approximately 2032. In the event that ALB becomes problematic in the City of London, a future budget request would be required to provide the necessary resources to address a potential infestation.

CONCLUSION

ALB is and will continue to be a threat to London's urban forest. Public awareness is an important component of early detection, as both of the Ontario ALB outbreaks were reported by members of the public. Staff training should continue to be supported so that personnel involved in tree care are able to assess private or City trees for signs of infestation. Rapid response will be facilitated by the Forest Health section of the Tree Protection By-law, alongside the Invasive Species Strategy. If ALB is discovered in the City, control and cost recovery will be managed through agreement with, and regulations enforced by, the CFIA.

PREPARED BY:	SUBMITTED BY:
SARA ROWLAND URBAN FORESTRY PLANNER	ANDREW MACPHERSON MANAGER, ENVIRONMENTAL & PARKS PLANNING
RECOMMENDED BY:	
JOHN M. FLEMING, MCIP, RPP MANAGING DIRECTOR, PLANNING AND CITY PLANNER	

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Figure 1: Asian Long-horned Beetle



Credit: *Bruce Gill, CFIA*

Figure 2: Exit hole



Credit: *City of Toronto*

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Asian Longhorned Beetle Infestations in North America

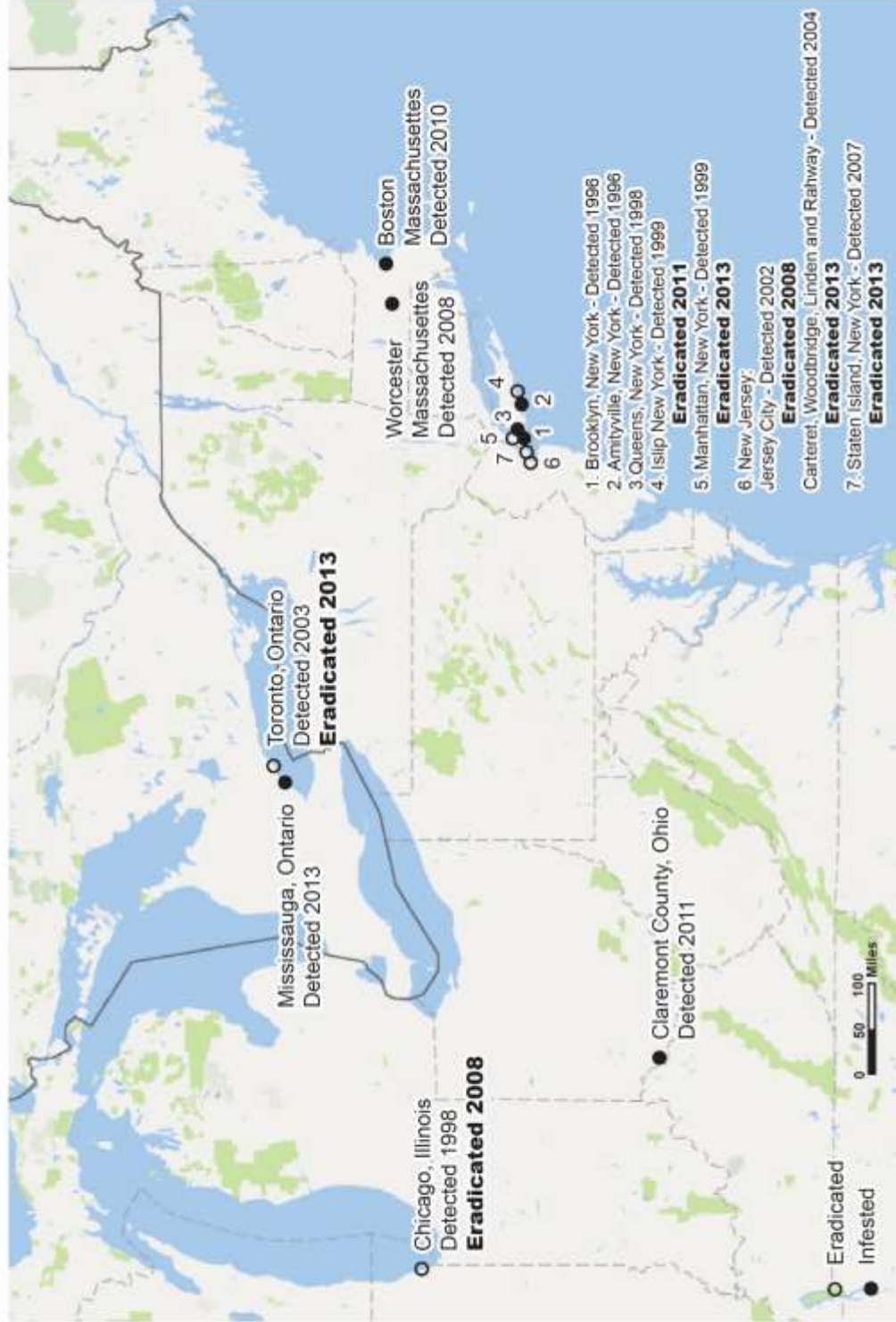


Figure 3: Eradicated and current ALB infestations

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Figure 4: Current ALB Regulated Area in Ontario (2013 outbreak)

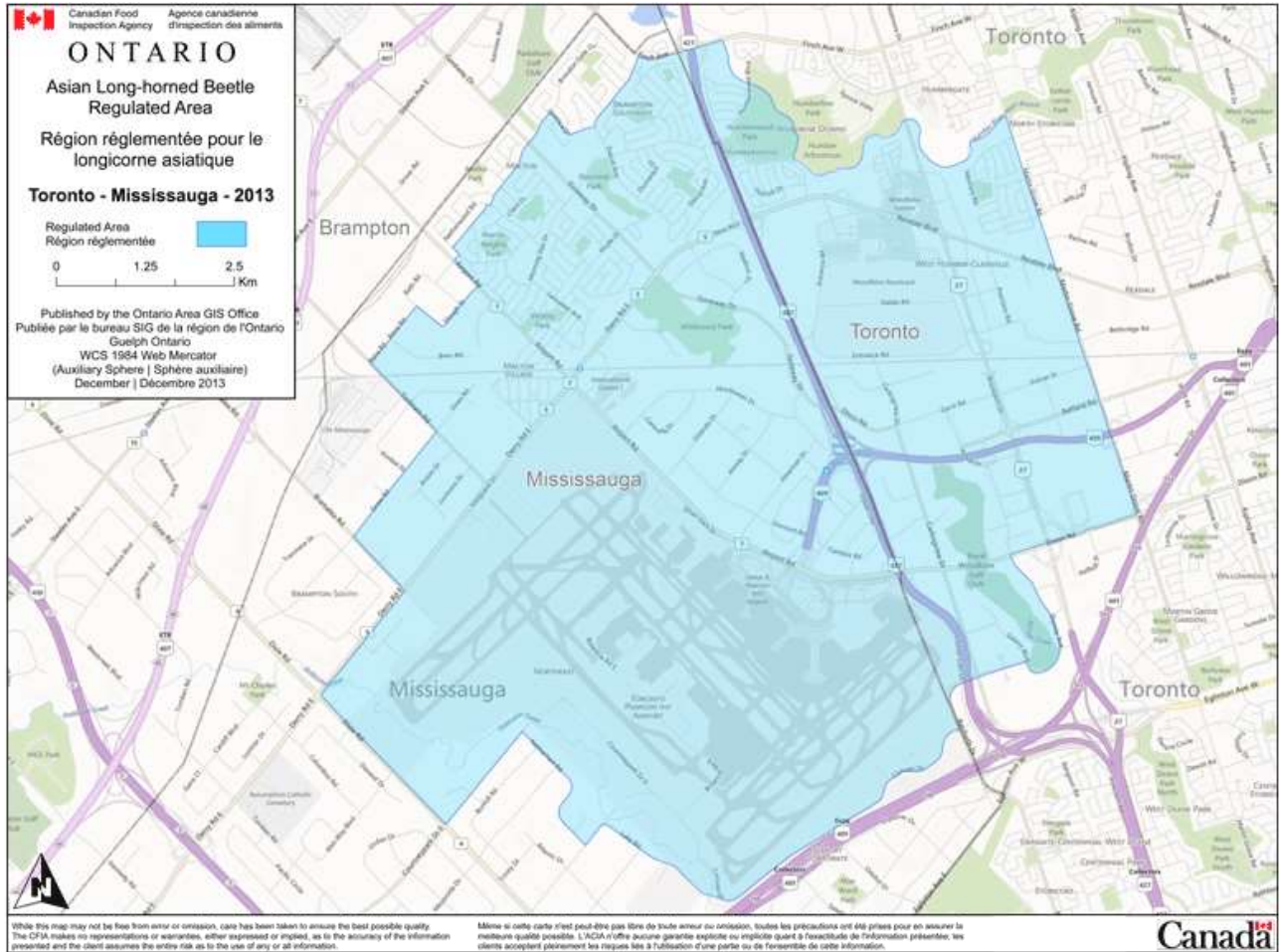


Figure 5: Location of CFIA/City of London ALB Demonstration Site



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Table 1: Tree species in Canada susceptible to ALB

High risk, preferred host species	
Maple	<i>Acer</i> spp.
Willow	<i>Salix</i> spp.
Elm	<i>Ulmus</i> spp.
Buckeye, horse chestnut	<i>Aesculus</i> spp.
Sycamore, London plane	<i>Platanus</i> spp.
Birch	<i>Betula</i> spp.
Ash	<i>Fraxinus</i> spp.
Mountain ash	<i>Sorbus</i> spp.
Poplar, cottonwood	<i>Populus</i> spp.
Katsura	<i>Cercidiphyllum</i> spp.
Golden rain tree	<i>Koelreuteria</i> sp.
Rare records of infestation in US/Canada	
Hackberry	<i>Celtis occidentalis</i>
Apple	<i>Malus</i> sp.
Rose of Sharon	<i>Hibiscus</i> sp.
Little-leaf linden	<i>Tilia cordata</i>
Black locust	<i>Robinia pseudoacacia</i>
Pin oak	<i>Quercus palustris</i>
Cherry, plum	<i>Prunus</i> sp.
Pear	<i>Pyrus</i> sp.
Mulberry	<i>Morus</i> sp.
Known hosts in China, not yet recorded in North America	
Grey alder	<i>Alnus incana</i>
Russian olive	<i>Elaeagnus angustifolia</i>