



COMMUNICATION UPDATE

TO:	Mayor and Members City Council
DATE:	February 27, 2023
SUBJECT:	Invasive Spread of Urban Forest Pests: Hemlock Woolly Adelgid and Spotted Lanternfly (City Wide) (ES23001)
WARD(S) AFFECTED:	City Wide
SUBMITTED BY:	Cynthia Graham Acting Director, Environmental Services Public Works Department
SIGNATURE:	

The health and composition of the City of Hamilton's tree assets are anticipated to be influenced by two incoming urban forest pests, hemlock woolly adelgid (HWA) and spotted lanternfly. In order to prepare, it is crucial to understand the history, movement, and consequences for these pests being introduced into Hamilton. This information update is intended to provide council with information on HWA and spotted lanternfly that may be found in Hamilton in the near future.

Hemlock Woolly Adelgid [uh-del-jid]

Hemlock Woolly Adelgid (HWA) is an invasive insect that threatens the survival of hemlock trees in eastern Canada. HWA was first introduced into Virginia, United States from Asia in the 1950s and has invaded half of the North American range of eastern hemlock, one of the only native tree hosts for HWA in Ontario. In British Columbia, there is a genetically different HWA, and western hemlock has adapted resistance to the pest. HWA was first detected in Nova Scotia, Canada and is now being closely monitored. In Ontario, it was detected and eradicated in Etobicoke in 2012 and Niagara Falls in 2013. Between 2019 and 2022, HWA has been found around Fort Erie, Pelham and Niagara Falls. On August 10, 2022, the presence of HWA was confirmed by the Canadian Food Inspection Agency (CFIA) in Grafton, about 200 km from the City of Hamilton. Restrictions on the movement of hemlock materials has been placed on the contaminated property. This regulated area may expand as survey work is conducted by the CFIA.

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Eastern hemlock is an important tree species to eastern Canada. It is one of the older, slower growing trees that appears in old growth forests and provides significant habitat for wildlife. In some forests across Ontario, this tree can exceed 400 years of age. Eastern hemlock has a strong influence on biodiversity, stream temperature, volume of flow and cold-water fish populations, such as brook trout. Loss of Eastern hemlock trees could result in a decline of bird species that rely on hemlock, including blackburnian warbler, black-throated green warbler, and northern goshawk.

HWA attacks and kills hemlock trees by attaching to branches and feeding on nutrients extracted at the base of the needles. In some hemlock stands, HWA infestation has caused 100% mortality. HWA is spread by wind, birds, deer, and movement of plant nursery stock, firewood and other wood products.

To mitigate the damage caused by HWA, several management plans have been put in place for eastern Canada because of the high mortality rate caused by this insect and the ecological importance of eastern hemlock. An integrated management approach is needed because singular management tactics have not been effective at controlling the widespread mortality resulting from HWA. Natural Resources Canada has published tactics suggested for the integrated management of HWA. These recommendations include a detailed monitoring program, eradication of contaminated material, and community and stakeholder awareness.

For the month of August 2022, the CFIA encouraged the public to participate in #TreeCheckMonth to take an active role in protecting against invasive pests (e.g., HWA, *Lymantria dispar dispar*, emerald ash borer). Tree inspections on private and public property were encouraged to monitor these pests and the public was encouraged to share photos of invasive species on social media using the #TreeCheckMonth.

Other surrounding municipalities, such as Town of Oakville and the City of Toronto, are monitoring their public tree assets and are recommending residents monitor private properties.

Conservation lands and other large woodlots within and adjacent to the City of Hamilton have mature eastern hemlocks that would be crucial to protect. Outside of Hamilton's urban boundary, the loss of hemlock trees has implications for critical habitats, aesthetics and property values. Because hemlock is a slow growing, large canopy tree that greatly influences the surrounding habitat, terrestrial and aquatic ecosystems may experience a functional shift if hemlock trees are killed by HWA. This shift may include, a change in forest species and composition, invasion of non-native plants, and changes in nutrient cycling and carbon storage.

Currently, only about 1% of the City of Hamilton's urban street, park, and cemetery tree assets are eastern and carolina hemlock. This makes the threat of HWA low within the urban boundary, comparative to publicly and privately-owned woodlots and other parts

of Ontario. The impact of HWA to hemlocks in Hamilton's publicly owned woodlots is harder to quantify. Hamilton's tree inventory data for city owned woodlots is incomplete, therefore the impact of HWA is harder to predict, and monitoring is more challenging. Staff recognize this gap in data and plan to explore opportunities to expand the current inventory to public woodlots to aide in forest health management through actions outlined within the Urban Forest Strategy.

Forestry staff are aware of HWA, the potential threats and the protocol for this pest being found within the City of Hamilton. The [City of Hamilton website](#) has been updated to reflect the updated protocol for residents, so residents will know what to do if they find HWA on their property. The protocol is to report potentially HWA contaminated material to the CFIA and notify forestry staff.

Spotted Lanternfly

Spotted lanternfly (*Lycorma delicatula*) is an extremely destructive invasive insect, native to Asia, that threatens the survival of over 103 plant and tree species. There are major implications for ornamental and forest trees, and they have preference for maple trees, black walnut, birch, willow and many others. Spotted lanternfly was first established in Pennsylvania, United States in 2014, where there are now severe quarantine zones in 14 counties in that state. It is estimated that that this invasive insect could cost the Pennsylvania economy as much as \$324 million per year from loss of forestry and agricultural stock. Spotted lanternfly was identified in Staten Island, New York in August 2020 and has quickly moved across the state. In early September of 2022, hundreds of adult spotted lanternflies were seen near the Buffalo border in Monroe and Erie counties of New York. The spread of spotted lanternfly has been rapid as these areas were surveyed in April of 2022 and no egg masses were found.

Significant damage is caused to trees via its piercing-sucking mouthpart that it uses to feed on sap, which causes stress, decreased health and potential death. Spotted lanternfly excretes a sugary substance as it feeds that attracts bees, wasps, and other insects. This substance promotes growth for mould and can cover the tree, as well as anything beneath it, such as parked cars, sidewalks, and signage.

While these insects can move and fly short distances, they are primarily spread through human activity. Spotted lanternflies can stick to many different surfaces and their egg masses can be laid on any material, such as metal, vegetation, cut logs, stone, and plastic.

Adult individuals prefer to feed and lay eggs on tree-of-heaven (*Ailanthus altissima*), which is an invasive tree in Ontario. Currently, Hamilton's public urban tree inventory shows 1059 tree-of-heaven trees, which represents < 1% of the existing inventory. Scientists do not fully understand the relationship between these two species, however

lanternflies will cluster and engage in unusual feeding frenzies on a tree-of-heaven and the tree potentially facilitates part of the insect's life cycle.

Areas with active infestations are implementing multi-faceted management tactics, including removal of tree-of-heaven and quarantines for movement of agricultural and wood material. Since there are no active investigations in Canada, the CFIA has recommended to keep monitoring for signs of spotted lanternfly and to not move firewood.

The City of Hamilton has 134,347 trees currently on the list of plants that spotted lanternfly feeds on, which represents 43% of Hamilton's public tree assets. Although difficult to accurately assess the structural (replacement) value of these trees, it is estimated at \$398.35 million.

Forestry staff are aware of spotted lanternfly, the potential threats, and the protocol for this pest being found within the City of Hamilton. The [City of Hamilton website](#) has been updated to reflect the updated protocol for residents, so residents will know what to do if they find spotted lanternfly on their property. The protocol is to report spotted lanternfly and potentially contaminated material to the CFIA and notify forestry staff.

Summary and Next Steps

Neither of these pests have been established in Hamilton yet, but staff are closely monitoring CFIA news and following guidelines. As the situation develops with these urban pests, forestry staff will keep Council informed of any changes.

APPENDICES AND SCHEDULES ATTACHED

None