

## The Emerald Ash Borer: Hard to Keep Track of this Insect!

Only a few years are required for a healthy ash tree to succumb to attacks by the emerald ash borer. Are we powerless against this Asian pest? No! Everyone has a role to play in helping detect the presence of the ash borer and limit its spread, particularly by gaining awareness of the risks related to transporting firewood. Moreover, Canadian Forest Service (CFS) researchers are currently studying control methods to limit the damage caused by this insect.

First detected in 2002 in Michigan and Ontario, the emerald ash borer arrived from Asia, most likely hidden in wood packaging material or dunnage used during the carriage of goods by sea. The emerald ash borer then spread and was detected in Quebec in 2008. Taking refuge in urban forests and wooded areas, it continues to spread, notably through firewood and plant material exchange between nurseries. Although the adult insect can fly over several kilometres, human activity remains the main factor contributing to its spread. Having few natural predators in Canada, this exotic pest represents a serious threat to our economy and environment in both urban and forest areas.



Photos: NRCan

### Ash only, please!

As its name indicates, the emerald ash borer feeds on every ash species found in Canada, the most common ones being white, green and black ash. Larvae feed on the wood underneath the bark, whereas adults feed on leaves. Therefore, no aerial part of the tree is spared: trunk, branches and leaves!

It all begins between June and August, when adults lay their eggs on the bark and in bark crevices of ash trees. Approximately ten days later, the eggs hatch. From June to October, larvae dig distinctive serpentine galleries as they

feed underneath the bark. Once they are satiated, insects that are well advanced in their development will spend the winter there in the prepupal stage and transform into pupae between April and June. The other insects that are less developed will remain in the larval stage, continue feeding, and transform into pupae at the beginning of the following summer. Adults, which are of a bright metallic green, emerge from June to August, and the cycle goes on. This insect's life cycle spreads over 1 or 2 years, depending on climate and tree health status.



Photo: INRS-Institut  
Armand-Frappier

# Branching Out

from the Canadian Forest Service - Laurentian Forestry Centre



Photo: NRCan

## Things are not looking good...

Although adults chew on leaves, the larvae cause the most important damage. The galleries they dig in the cambium disrupt sap flow, which leads to a reduction in foliage density. The tree can also react to these attacks by producing adventitious shoots at the base of its trunk. Other observable symptoms of the presence of the ash borer include S-shaped galleries filled



Photos: NRCan

with sawdust underneath the bark, small D-shaped exit holes on the bark, vertical slits on the trunk, and bark deformities. Another indicator is that the presence of larvae attracts woodpeckers in winter.

## Regulating to slow down the spread

This invasive exotic insect is regulated by the Canadian Food Inspection Agency (CFIA). The CFIA defines regulated areas from which transporting ash products without consent from the Agency is forbidden. Regulated ash tree products include: entire trees, ash nursery material, ash logs and branches, ash lumber, wood packaging products that contain ash, ash wood and bark, ash wood chips or bark chips as well as firewood from any tree species.

To learn more about regulated areas, visit:

<http://www.inspection.gc.ca/plants/plant-pests-invasive-species/insects/emerald-ash-borer/areas-regulated/eng/1347625322705/1367860339942>

Current control methods (tree cutting and insecticide injection) mostly aim to slow the insect's spread rather than eradicating it. Other long-term control strategies are being developed, namely

biological control using a fungus that is pathogenic to the ash borer and classic biological control using ash borer parasitoids from Asia. All these tools are to be used as part of an integrated pest management program.

## Useful links

CFIA:

<http://www.inspection.gc.ca/eng/1297964599443/1297965645317>

Emerald ash borer poster:

<http://cfs.nrcan.gc.ca/entrepotpubl/pdfs/36422.pdf>

Trees, insects and diseases of Canada's forests:

[tidcf.nrcan.gc.ca](http://tidcf.nrcan.gc.ca)

Forest invasive alien species:

[exoticpests.gc.ca](http://exoticpests.gc.ca)

Wasps as biological control agents (in French only):

<http://ici.radio-canada.ca/tele/la-semaine-verte/2016-2017/episodes/365799/agrile-frene>

Other popularized publications:

<http://cfs.nrcan.gc.ca/pubwarehouse/pdfs/34082.pdf> and <http://cfs.nrcan.gc.ca/pubwarehouse/pdfs/35845.pdf>

## Using the female pheromone to better detect the ash borer!

Using the female pheromone increases trap capture and detection rates. Researchers at the CFS are currently testing a synthetic version of this pheromone, which should be a cheaper alternative. They are also studying the possibility of using the pheromone in the traps to confuse and disorient males, thereby reducing mating probabilities.

Photo: INRS-Institut Armand-Frappier



**Warning!** If you think you have seen an ash tree damaged by the emerald ash borer, please contact the CFIA at **1-800-442-2342**.