EMERALD ASH BORER (EAB)

An Invasive Species Threatening Ash Trees in Canada

Invasive Species Centre

Photo: Debbie Miller, USDA Forest Service, Bugwood.org

What is it?

The emerald ash borer (EAB; *Agrilus planipennis*) is a small invasive wood-boring beetle that attacks all native species of ash tree in North America. Larvae create galleries underneath the bark in the sapwood, blocking the transportation of nutrients, leading to healthy tree death within 4 to 10 years. EAB is responsible for the loss of tens of millions of ash trees across Canada.

Where is it?

Native to Asia, EAB was introduced to North America through wooden packaging and pallets. First discovered in Ontario in 2002, this insect is now considered established across much of Ontario. EAB has been detected in six provinces—British Columbia, Manitoba, Ontario, Quebec, New Brunswick, and Nova Scotia—and continues to spread.

Trees at risk - Black Ash

Classified as an endangered species in Ontario, black ash (*Fraxinus nigra*) is a hardwood tree species found in wetlands and riparian forests. Exclusive to North America, roughly 25% of its global range occurs in Ontario. Notably vulnerable to EAB, these trees have experienced considerable decline, with more than 70% of existing populations predicted to be lost over the next century. Recovery efforts focus on habitat protection, preserving remaining genetic diversity, and mitigating EAB impacts.

Signs and Symptoms

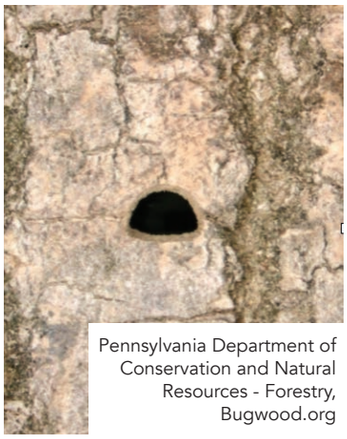
- Crown dieback.
- Epicormic shoots (shoots growing from the lower trunk).
- Vertical cracks in the trunk.
- "S" shaped larval galleries located just under the bark.
- "D" shaped exit holes in the bark of the trunk or larger branches.
- Active woodpecker feeding holes in trees (best seen in spring).

Impacts

- Forests struggle to recover as seedlings fail to mature, leading to decades of ash tree loss.
- Reduced ash canopy decreases forest resiliency to invasive plant species by increasing competition.
- Loss of wetland ash alters vegetation, hydrology, and greenhouse gas emissions, impacting wildlife and biodiversity.
- Reduced property and aesthetic value.
- Loss of culturally important species.
- High cost to remove, treat, and replace ash trees.

How they spread:

- Adult beetles may fly several kilometers per year but prefer local hosts and neighbouring trees.
- EAB are introduced to new areas through the human-assisted movement of firewood and other infested materials. **Not moving firewood can limit the spread of EAB.**



Pennsylvania Department of Conservation and Natural Resources - Forestry, Bugwood.org

Black ash is considered a culturally and economically significant species for Indigenous people, with trees being used as lumber, fuelwood, and for traditional woven baskets.

What to Look For

- Adult beetles are 8.5-14mm long and 3-3.5mm wide with an elongated bright metallic green body and flat head.The top of the abdomen under the wings is usually copper red. A blunt carina "spine" noticeably projects from the last segment of the abdomen.

David Cappaert, Bugwood.org

Life Cycle

- Adults feed on host tree leaves or new tree and mate.
- Adult females lay eggs in bark crevices or under bark scales.
- Eggs hatch into cream-coloured larvae, 25-32mm long, in about two weeks.
- Larvae chew through their egg and bore into the sapwood of the tree, forming "S" shaped galleries that block nutrient flow.
- Larvae overwinter under the bark and pupate the following spring.
- Adults chew their way out and emerge leaving "D" shaped exit holes.
- Cycle usually takes one year to complete but in colder climates it may take up to two years.

What can you do?

- Don't move firewood; EAB larvae may be inside.

If you see signs and symptoms of emerald ash borer, report the sightings to:

- EDDMapS: www.eddmaps.org

Help map occurrences of vulnerable black ash by reporting stands to:

- iNaturalist: https://www.inaturalist.org/projects/ontario-black-ash-inventory

For more information on emerald ash borer, visit:

- Invasive Species Centre: www.invasivespeciescentre.ca
- Canadian Food Inspection agency (CFIA): https://www.inspection.gc.ca/en/plant-health/invasive-species/insects/emerald-ash-borer

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