

Pest profile – Emerald Ash Borer

Scientific name: *Agrilus planipennis* Fairmaire

Taxonomic position: *Coleoptera, Buprestidae*

Common name: *Emerald Ash Borer*



Adult beetle

Hosts: The Emerald Ash Borer (EAB) has been found only in North American species of *Fraxinus* and there are no data available on the common European species *F. excelsior* and *F. angustifolia*, although they are included as ornamental species at risk in North America. In China, the beetle colonises the Asian ash species *F. mandshurica* (Manchurian ash) and *F. chinensis* (Chinese ash). *Sorbus aucuparia* (mountain ash) is not attacked.

Threats: Ash is an important broadleaf tree in the UK, the second most commonly planted genus, and makes up nearly 15% of all broad-leaved woodlands. Its wood is strong with many uses including the manufacture of ladders, flooring, handles, sports goods and furniture. Although there is no evidence to date that the emerald ash borer is present in the UK, the increase in global movement of imported wood, wood packaging and dunnage poses a significant risk of its accidental introduction. In the UK, ash trees can suffer from a variety of root and butt rots that can cause late flushing, thinning foliage and decline leading to eventual death, symptoms similar to those caused by the emerald ash borer. *F. excelsior* can also suffer from a condition called Ash dieback involving the death of scattered twigs, branches or imbs, especially in the eastern drier parts of the country. Although not fully understood, this may be partially due to root disturbance.

Distribution and spread: An exotic beetle pest that causes significant damage to ash trees (*Fraxinus spp.*) has recently been introduced into North America. A native of Asia, it is thought that the beetle has been introduced into the country in imported wooden packing material. Ash trees have been widely planted in urban situations in North America and are also economically important as a commercial timber crop. The death of many ash trees, within 2 to 3 years of first showing signs of ill health, is a cause for great concern.

Control: No effective control methods are currently available. However, research is under way to evaluate systemic insecticides, natural enemies, survival rates in cut trees, etc. Infested trees containing larvae and pupae can be cut and chipped.

Monitoring: Emerald Ash Borer infestations are usually difficult to detect until the symptoms become severe. Trees exhibit a general yellowing and thinning

of foliage, dying branches and crown dieback, typically from the top down. Small trees can be killed in one year, but larger trees can take up to 4 years to die. Sprouting epicormic shoots (from seed germinating under the bark) small longitudinal splits in the bark or woodpecker activity may indicate beetle presence. Characteristic serpentine insect galleries can be exposed when pieces of bark fall from damaged trees that have been infested for 1 to 2 years.

What to look for:

- Initial thinning or yellowing of the foliage (general or limited to certain branches).
- Bark fissures, 5-10 cms in length, caused by the growth of callus tissue produced by the tree in response to larval feeding.
- Woodpecker activity. Woodpeckers strip away small patches of bark, so that they can extract the borers.
- Larval galleries. Typical galleries meander, bending sharply and are packed with frass.
- D-shaped holes, about 3 mm in diameter, produced by emerging adults.

Trees with symptoms like these that also show any signs of infestation by the emerald ash borer should be reported immediately to the address in the box below.

Life Cycle of the Emerald Ash Borer

In China the beetle develops through its full life cycle in one year over most of its range and this appears to also be the case in North America. In colder northern areas of China the cycle can take two years.

The Adult appears from mid May to late July and must feed on ash foliage. They are slender elongate beetles measuring between 7.5 and 13.5mm long and are metallic emerald green in colour.

Adult females live for about 22 days and males slightly less. The females each produce between 60 and 90 eggs.



The eggs are laid singly or in small clusters in crevices and hatch in 7-10 days

The Larvae burrow through the bark after hatching and begin feeding in the living water and nutrient conducting tissues of the tree. They produce sinuous tunnels as they feed through four larval stages (instars) and reach a final size of 26-32mm long. Feeding tunnels may extend to 20-30 cm long. As the larvae increase in size the galleries enlarge and fill with brown frass and can eventually girdle and kill branches and entire trees. Larvae feed aggressively until temperatures fall in the autumn, after which they spend the winter in the inner bark in thick barked trees or in the outer wood where the bark is thinner.



Fully grown larva



Contact:

Forestry Commission Plant Health
Service
231 Corstorphine Road
Edinburgh
EH12 7AT

The IMPACT project, with partners Forest Research in Wales, Swansea University and the National University of Ireland, Maynooth is looking at improved pest control measures. Top of the agenda for the *Integrated Management of forest Pests Addressing Climate Trends (IMPACT)* team is assessing how changing climate will influence the damage caused by pests and pathogens. The project is part funded by the European Regional Development Fund through the Ireland – Wales Programme (INTERREG IVA) and Forestry Commission Wales. For more information log on to:

www.impactproject.eu

