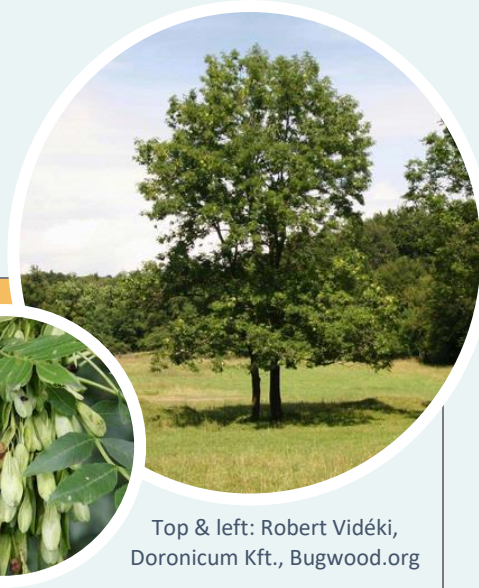




European Ash (*Fraxinus excelsior*) pests and diseases



Top & left: Robert Vidéki, Doronicum Kft., Bugwood.org

Emerald Ash Borer (*Agrilus planipennis*)

The emerald ash borer is a specialist wood-boring beetle pest of ash trees. Native to East Asia, it was introduced to North America where it has killed tens of millions of ash trees. It has also been introduced to Russia and is spreading west and south from Moscow. It poses a serious threat to ash trees in Europe which have already been affected by ash dieback and is regulated in the UK and EU.

Main symptoms:

- Adults are 7.5-13.5mm long and bright metallic green (Fig. 1).
- D-shaped exit holes (3mm wide) are created in the bark by emerging adult beetles (Fig. 2).
- Larval feeding on the heartwood can result in tree death (Fig. 3).



Figure 1. Emerald ash borer adult (Leah Bauer, USDA Forest Service Research Station, Bugwood.org)



Figure 2. Emergence hole (orientation varies) (Kelly Often, North Carolina Forest Service, Bugwood.org)



Figure 3. Frass-filled larval gallery (Kenneth R. Law USDA, APHIS, Bugwood.org)

Ash Dieback (*Hymenoscyphus fraxineus*)

Ash dieback is responsible for causing severe dieback on ash species across Europe (including *Fraxinus excelsior* and *F. angustifolia*). It is caused by the invasive fungal pathogen *Hymenoscyphus fraxineus* which blocks the water transport system in trees, causing crown dieback, lesions, and eventual tree death. The disease was first detected in Poland but has spread to most European countries. Recently, *H. fraxineus* has been detected in the non-*Fraxinus* hosts *Phillyrea latifolia*, *P. angustifolia* and *Chionanthus virginicus*. The fungus can spread by aerial dispersal and through infected plant material (including seeds).

Main symptoms:

- Causes necrosis, leaf loss and crown dieback (Fig. 1).
- Lesions appear in stems (Fig. 2 and 3).



Figure 1. Branches left looking bare with dieback (Andrej Kunca, National Forest Centre - Slovakia, Bugwood.org)



Figure 2. Lesions in ash stems (Andrej Kunca, National Forest Centre, Slovakia, Bugwood.org)



Figure 3. Lesion in an ash trunk (Andrej Kunca, National Forest Centre, Slovakia, Bugwood.org)

Black timber bark beetle (*Xylosandrus germanus*)

The black timber bark beetle is a boring beetle pest of ash trees, among other hosts. Adult beetles, active from April to September, are predominantly female, very small (2-3mm long) and black or brown in colour. Larvae burrow within the heartwood, occasionally leading to tree death. The beetle attacks a range of deciduous and coniferous species. An EPPO survey has shown the species to be widespread in the EU.

Main symptoms:

- Adults are minute and black or brown (Fig 1)
- Adults leave small, round emergence holes upon exiting the wood; infestations result in a speckling of holes (Fig 2).
- Larvae burrow through the heartwood (Fig 3).



Figure 1. Adult black timber bark beetle (Pennsylvania Department of Conservation and Natural Resources – Forestry, Bugwood.org)



Figure 2. Emergence holes (Jerry A. Payne, USDA Agricultural Research Service, Bugwood.org)



Figure 3. Larvae in a gallery (Daniel Adam, Office National des Forêts, Bugwood.org)