Agrilus Beetles

Please note, for more information/ details on the described organisms, please scan the QR code to access the accompanying factsheet.

***Agrilus* is a genus of wood-boring jewel beetles (Family Buprestidae), containing about 3000 species, several of which present a threat to tree health in the UK. There are 87 species of *Agrilus* recorded in Europe, hence adult specimens should be identified by a specialist. Below we focus on five species of concern and further details can be found in the accompanying**

Birch bark borer *(Agrilus anxius)*

Bronze birch borer is a specialist wood-boring beetle pest of birch trees, native to North America. It mainly attacks trees weakened by drought, old age, defoliation or soil compaction although it can also attack healthy trees. It poses a threat to birch trees in Europe and is regulated in the UK and EU.

Adult beetles are small, slender, elongate, metallic copper-coloured and 7-12mm long (Figs 1 and 2).

Figure 1. Lateral, dorsal and ventral views of Birch bark borer beetle, *Agrilus anxius* (Hanna Royals, Screening Aids, USDA APHIS PPQ, Bugwood.org)

Figure 2. Adult specimen of *Agrilus anxius* (Whitney Cranshaw, Colorado State University, Bugwood.org)

Two-lined chestnut borer *(Agrilus bilineatus)*

Two-lined chestnut borer is a specialist wood-boring beetle pest of sweet chestnut and oak trees, native to North America. It causes high mortality in already weakened and stressed trees in eastern North America. It has been found in Turkey since 2002.

Adult beetles are small, slender, elongate, black with a light, yellowish stripe on each wing cover and 6-12mm long (Figs 3 and 4).

Figure 3. Lateral, dorsal and ventral views of Two-lined chestnut borer beetle, *Agrilus bilineatus* (Hanna Royals, Screening Aids, USDA APHIS PPQ, Bugwood.org)

Figure 4. Adult specimen of Agrilus bilineatus (Deborah L. Miller, USDA Forest Service, Bugwood.org)

Two-spotted oak buprestid *(Agrilus biguttatus)*

Two-spotted oak buprestid is a specialist wood-boring beetle native to the UK and Europe, that feeds mostly on oak (*Quercus* spp.). In sufficient numbers, feeding activity by its larvae can weaken trees, and there is also concern about its possible role in acute oak decline, a serious and often fatal condition of oak trees. It appears to be becoming more abundant in the UK.

Adult beetles are small, slender, elongate, iridescent green/blue or bronzy/green, with two distinctive white spots on the wing cases and 10-13 mm long (Figs 5 and 6).

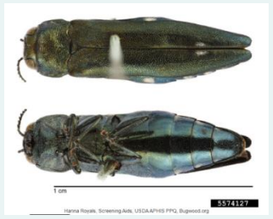

Figure 5. Dorsal and ventral views of Two-spotted oak buprestid, *Agrilus biguttatus* (Hanna Royals, Screening Aids, USDA APHIS PPQ, Bugwood.org)

Figure 6. Adult specimen of *Agrilus biguttatus* (Milan Zubrik, Forest Research Institute – Slovakia, Bugwood.org)

Jewel beetle *(Agrilus convexicollis)*

Agrilus convexicollis has no common name but belongs to the large family of beetles called Jewel beetles. It is native to Europe and widespread on the continent but not present in the UK. It feeds on dead and dying ash trees.

Adult beetles are very small, slender, elongate, iridescent brown and 3.5-5mm long (Figs 7 and 8).

Figure 7. Ventral and dorsal views of Jewel beetle, *Agrilus convexicollis* (Gilles San Martin, Jardin Massart, Belgium)

Figure 8. Adult specimen of *Agrilus convexicollis* (Christoph Benisch, kerbtier.de)

Emerald ash borer *(Agrilus planipennis)*

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 Chalara ash dieback and is regulated in the UK and EU.

Adult beetles are small, slender, elongate, metallic emerald green and 7.5-13mm long (Figs 1 and 2).

Figure 9. Lateral and dorsal views of Emerald ash borer, *Agrilus planipennis* (Hanna Royals, Screening Aids, USDA APHIS PPQ, Bugwood.org)

Figure 10. Adult specimen of *Agrilus planipennis* (David Cappaert, Bugwood.org)

Symptoms of jewel beetle infestation

The main symptoms are very similar for all species and are described below:

- The beetles initially attack the upper crown, causing leaf yellowing in summer, and branch dieback (Fig. 11).
- Winding ‘mines’ or galleries excavated by the larvae in the inner bark and outer sapwood of the main trunk and in large branches are visible after peeling off the bark (Fig. 12a/b/c).
- Small ‘D’-shaped adult emergence holes may be observed in the bark (Fig. 13a/b/c).
- Epicormic shoots (foliage sprouting from the trunk and base) may develop (Fig. 14).

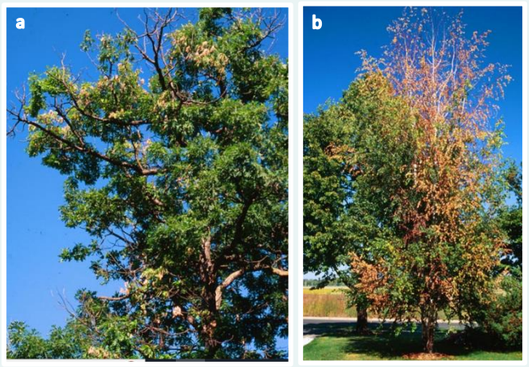

Figure 11. Leaf yellowing and branch dieback in *a) Quercus alba* by two-lined chestnut borer and *b) Betula spp.* by birch bark borer (Steven Katovich, bugwood.org)

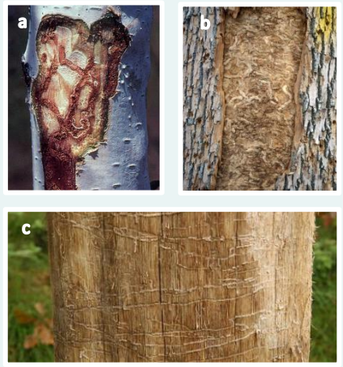

Figure 12. Larvae ‘mines’/galleries excavated in the inner bark by a) birch bark borer, b)emerald ash borer c) two spotted oak buprestid (David G. Nielsen, The Ohio State University, Daniel Herms, The Ohio State Univeristy, Gyorgy Csoka, Hungary Forest Research Institute, Bugwood.org)

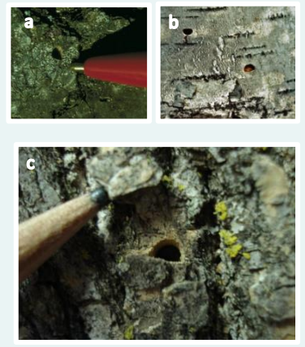

Figure 13. ‘D-shaped’ emergence holes of, a) two-lined chestnut borer, b) birch bark borer c) emerald ash borer (Minnesota Dept. Natural Resources -FIA, Steven Katovich, Kenneth R. Law, USDA APHIS PPQ, bugwood.org)

Figure 14. Epicormic branches on *Fraxinus spp* after EAB attack (Joseph Obrien, USDA Forest Service, bugwood.org)

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