

Emerald Ash Borer (EAB - *Agrilus planipennis*) & Bronze Birch Borer (BBB - *Agrilus anxius*)

Status

- Neither beetle is present in the UK, but both are regarded as high risk (UK Pest Risk Register)
- BBB is currently confined to its native range in North America. However, European birch species seem vulnerable to attack and high mortality has been observed (e.g. of downy birch).
- EAB has been introduced from its native range in the Far East (China, Taiwan, Japan, N+S Korea, and eastern fringes of Russia and Mongolia) into eastern USA in the 1990s (although not 'discovered' until 2002).
- EAB has spread rapidly through the eastern states of USA and Canada (and recently in a jump to Colorado), thought to be facilitated by campers carrying firewood. In the USA it has caused widespread mortality to ash, especially street trees. European ash is known to be susceptible with mortality occurring at high EAB densities.
- EAB has also been introduced into the Moscow region of Russia and is spreading south-westwards at approximately 40km per annum down major transport networks and may have reached Ukraine and Belarus.
- The threat, surveillance and management methods for EAB and BBB have recently been considered by the EUPHRESKO project PREPSYS, coordinated by Forest Research (FR). An international conference was held in Vienna in October 2018, and a special issue of the OUP journal 'Forestry: An international journal of Forest Research' is shortly to be published containing key papers from the project and meeting. FR are co-supervising a PhD (Toronto Univ) exploring performance of EAB in UK climates.



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Scottish-specific issues

- Ash and birch are important components of Scotland's broadleaved woodlands and as individual trees in Scottish landscapes – with high aesthetic and biodiversity associated value. Both species produce high quality timber suitable for a range of uses (including furniture and wood fuel. Attention has been paid to genetic selection of birch because of pioneering qualities and rapid early growth, making it favoured by woodland managers in native woodland reforestation. It copes with exposure and poor site conditions, and so provides shelter for domestic animals in many upland farming regions.
- Ash is already suffering decline in condition and increasing mortality due to ash dieback (*Hymenoscyphus fraxineus*) and EAB may reduce the chance of survival of tolerant trees.
- The relative importance of birch to Scottish growers and landscapes suggests a stronger emphasis on the threat of BBB than across the UK; characterization of the BBB threat is poor compared to EAB.

Knowledge Gaps

- An understanding of likely pathways of entry (esp. EAB from Europe; BBB from North America)
- Response of beetle to the Scottish climate, generation times (likely 2 rather than a 1 year cycle given the cool climate?), natural spread potential; local movements of wood which would exacerbate spread within Scotland (and from elsewhere in the UK once the border is breached)
- Likely interplay with existing ash dieback outbreak not well understood.
- Development of natural parasite populations; prospects for long-term breeding for resistance.
- Presence of other *Agrilus* species in Scotland and implications for surveillance.
- Social acceptability of likely eradication and control measures.

PHC Perspective

Both these tree borers represent a serious threat to Scotland's broadleaved trees, woods and forests. Concern over the threat of EAB is shared with much of the UK (and wider afield in Europe) and emerging understanding (e.g. of projects funded by EU and Defra) will help profile the threat and clarify actions. Some experts are gloomy over the prospects of keeping EAB at bay.

Scotland's sensitivity to BBB may be greater than other UK nations, and so may merit particular action to support research and reinforce developing collaboration with scientists in eastern USA and Canada.

Key Priorities and Recommendations

- Maintain awareness – early detection is vital (but has not been achieved elsewhere) as eradication unlikely to be successful once established; if established, action would likely focus on containment of outbreak and retention of iconic trees).
- Risk-based surveillance and detection – pre-border, port inspection, use of lures/traps and sentinel trees (including girdled ones). Refine methodologies in collaboration with others.
- Support ongoing collaborative research (Defra are funding on EAB) – but BBB neglected at present.
- Gain better information on distribution of tree hosts across Scotland.

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