Forest Research

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Preliminary investigation into the threat of Bronze Birch Borer (BBB, *Agrilus anxius*) to Scotland

Background

Bronze birch borer (BBB, *Agrilus anxius*) is native to North America, where it breeds in birch (*Betula* spp.) and periodically causes severe damage and mortality. Eurasian birches, including silver birch (*Betula pendula*) and downy birch (*B. pubescens*), are highly susceptible even when healthy, which has restricted their planting in North America.





Figure 1 Adult bronze birch borer beetle (*Agrilus anxius*).

Image credit: Whitney Cranshaw, Colorado State University, Bugwood.org.

Figure 2 Thinning crowns of silver birch (*Betula pendula*) trees caused by a bronze birch borer infestation.

Image credit: Forest Research. Crown copyright.

Project aim

To assess the threat posed by bronze birch borer (BBB) to Scotland and the wider UK, and to inform risk assessment, surveillance, and contingency planning by identifying key risks and knowledge gaps.

Project components:

1. Reviewed the UK distribution of native and established *Agrilus* species
2. Modelled the potential distribution and establishment likelihood of BBB
3. Investigated potential pathways for BBB entry into the UK
4. Evaluated the feasibility and effectiveness of available BBB surveillance methods for use in Scotland.

Figure 4 Predicted areas of birch dominance across 14 National Forest Inventory regions, based on birch presence per sample square and filtered by estimated birch area (light grey), elevation ranges (dark grey), and their overlap, indicating likelihood of dominance (red: 1–30%; orange: 31–60%; yellow: >60%).

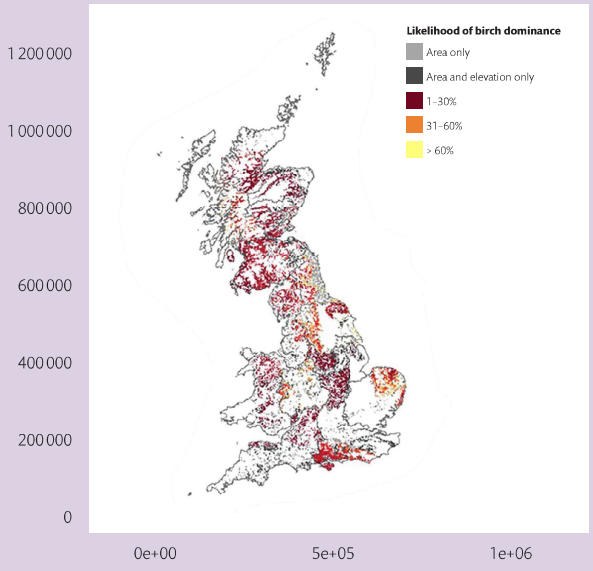
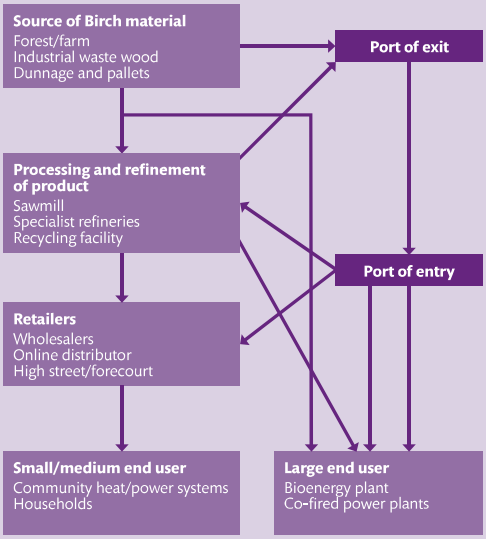


Figure 3 Pathway of imported birch material from source through processing to final end users.



Key findings

1. Monitoring and detection

Ten *Agrilus* species are currently recorded in the UK (five native, five established since the early 1990s). Under-recording – especially outside southern England – may hinder early detection of invasive species such as BBB. Trials of three interception trap types showed no single best method; each offered different logistical strengths and limitations.

2. Pathways of introduction

The current risk of BBB entering the UK via birch pellets or chips for biomass is low, but could rise if trade patterns shift. Smaller pathways involving unprocessed birch (e.g. craft materials) remain poorly characterised and carry substantial uncertainty. Initial infestations are most likely near major trading ports in southern England. Movement of birch within the UK is also poorly documented, representing a key knowledge gap.

3. Host-pest interactions

UK birch species (*Betula pendula* and *B. pubescens*) are highly susceptible to BBB, even when healthy. Species distribution modelling indicates that birch is widespread across Great Britain up to around 675 m elevation. In North America, BBB is widespread and not strongly limited by temperature, suggesting few climatic barriers to establishment in the UK.

Conclusions

- The widespread distribution of birch across the UK, combined with the lack of clear climatic barriers, indicates a very high likelihood that BBB would establish if introduced.
- BBB therefore poses a significant threat to Eurasian birch, including UK populations. Preventing introduction is critical, supported by continued research, strengthened surveillance, and preparedness measures to enable early detection and rapid response.

Acknowledgements

The authors would like to thank the Technical Services Unit (TSU) at Forest Research for their help setting up and assessing the field trials, Elibank Estate for permission to use their woodland for the trials, Claire Rutledge from Connecticut Agricultural Experiment Station and Amanda Roe and Véronique Martel from Natural Resources Canada for sharing their knowledge and experience of BBB in North America.

We would also like to thank Pete Hollingsworth and Sonia Humphris from the Scottish Plant Health Centre for their advice and support throughout the project.

This work was commissioned by Scotland's Centre of Expertise for Plant Health. Funded by Scottish Government through the Rural & Environment Science and Analytical Services (RESAS) Division under grant agreement No PHC2020/06.

Katrina Dainton's attendance at the EPPO FAO-REUFIS BFW Conference Safeguarding Forests in Europe: Emerging Risks of Agrilus Wood Borers (Buprestidae) was part-funded by the Scottish Forestry Trust.

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