**RRES Press Release 4th March 2025 Early detection of deadly emerald ash borer needed to protect UK trees**

***New strategies for surveillance critical for effective control***

A new study has outlined how improved surveillance strategies could work in the UK to protect native ash trees from a voracious new killer: the emerald ash borer. The researchers developed a novel modelling framework that combines the distribution of ash trees in Great Britain with potential invasion pathways of the beetle, its population dynamics and spread to determine the best approaches for early detection.The team also surveyed landowners and firewood importers to understand their views and likely participation in early-detection surveillance strategies.

The emerald ash borer (*Agrilus planipennis*) is a native beetle of East Asia that has spread to North America, Russia, and Eastern Europe where it is responsible for the deaths of millions of ash trees. Its early detection in countries where it is not yet present is essential for effective control.

It is often human activity that helps the beetle spread. In the USA, the widespread practice of taking firewood on camping trips contributed to its proliferation across the country. Likewise, one of the most likely introduction pathways for the borer into Great Britain will be through firewood imports from Eastern Europe, with potential spread from ports, firewood depots, and households using wood-burning fires.

“Early detection of any incursions is crucial to protect our trees – but resources are limited,” said Vasthi Alonso Chávez who co-led the study. “So, improving our sampling strategies and knowledge of potential invasion routes help us better prepare for catching new invaders. Involving stakeholders (in this case firewood businesses) at an early stage is very important.”

The team worked out the most likely entry points for the borers and considered three surveillance methods: traps, tree girdling and under-bark assessments, at varying sampling intensities. The greatest risk is likely to be imported firewood that has not been effectively treated, so monitoring around ports and firewood storage depots is critical. However, it is also crucial to account for any other potential entry routes; that is why we accounted for firewood burning households. Tree girdling (putting a sticky band around any tree trunks to attract the insects) is a very effective detection method, but it is also labour intensive, so may have limited application. Traps may offer a more viable option. *"Early detection of any incursions is crucial to protect our trees – but resources are limited"*

The study also looked at optimising for the beetle detection within different timeframes with an optimal 8-year timeframe increasing detection probability, but potentially giving the the beetle time to get established. Optimising for detection within shorter timeframes resulted in smaller detection probabilities but prioritising early detection increased the chances of eradication.

All stakeholders interviewed were aware of current and increasing biosecurity practices, reporting that they conducted appropriate and stringent moisture checks. However, they reported that they lacked control over biosecurity practices overseas, resulting in potential invasion risks. Few were keen to introduce more rigorous checks with some feeling that ash populations had now been so decimated by dieback disease, that there was little point in taking further precautions.

The study team provides through this work the first surveillance map for emerald ash borer incursions into Great Britain. This could be used by government biosecurity agencies to help plan optimal surveillance locations. This methodological framework is also applicable to other invasive threats.

“We need to take the threat of emerald ash borer increasingly seriously,” said Alonso Chávez. “Tree loss in Russia, the USA and Canada has been catastrophic. Modelling possible surveillance strategies now and securing the cooperation of wood importers can better prepare us for the potential invasion of this devastating pest.”

Publication

Alonso Chávez, V., Brown, N., van den Bosch, F., Parnell, S., Dyke, A., Hall, C., Karlsdottir, B., Marzano, M., Morris, J., O’Brien, L., Williams, D., & Milne, A. E. (2025). Early detection strategies for invading tree pests: Targeted surveillance and stakeholder perspectives. *Journal of Applied Ecology*, 00, 1–15. <https://doi.org/10.1111/1365-2664.70009>