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# Ash dieback in the UK: how will it affect the rest of the woodland ecosystem?

**Ash dieback** in the UK is likely to lead to the extinction or decline of over 50 species which are reliant on or highly associated with this tree, including mosses, lichens and beetles, a new study suggests. The researchers recommend that the ash trees are not felled but left to die naturally and in time replaced with mixtures of species such as beech and sycamore which support similar woodland species.

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**The fungus *Hymenoscyphus pseudoalbidus*,** which causes ash dieback, originates in Asia but has been spreading across Europe in the last 20 years. Such widespread loss of a common tree has the potential to affect the entire ecosystem – from fungi that live in the soil to the birds that nest in the canopy.

In the UK the presence of ash dieback was confirmed in February 2012 and research suggests that it is likely to lead to the loss of almost all ash trees. For this study, researchers assessed the impact of ash dieback in terms of: (i) which other species use ash and how reliant they are on it; (ii) whether there are any alternative tree species which might replace ash to fill its role in the ecosystem; (iii) which management options are best to reduce the wider impacts of the disease on the ecosystem.

To assess the use of ash trees by other species the researchers conducted an extensive review including published research, reports and government literature. In total, they identified 953 species as being associated with ash trees, including 12 birds, 28 mammals and 239 invertebrates (such as beetles). Of the total, 44 species were completely reliant on ash trees, and a further 62 were highly associated. Species reliant on ash trees included 11 fungi, 29 invertebrates and 4 lichens. The researchers identified 25 of the species reliant on ash as being of high priority because they are already of conservation concern, and suggest that a further 38 species of unknown conservation status should be added to this list.

To investigate whether the role of ash could be filled, at least in part, by another tree species, the researchers conducted another literature review to assess the potential of 22 alternatives to support species associated with ash. The sessile or pedunculate oak (*Quercus robur/petraea*) was the best alternative, supporting 69% of ash-associated species.

However, the researchers stress that planting a mixture of trees in place of the lost ash is probably the best way to reduce biodiversity loss. Eleven species, including sessile or pedunculate oak, European beech (*Fagus sylvatica*) and sycamore (*Acer pseudoplatanus*), would together support 84% of ash-associated species. Using mixtures of species would also allow conservation managers to adapt measures to different regions and conditions.

Finally, the researchers explored possible management options, assuming that around 95% of ash trees were killed. They considered either felling ash trees, or leaving them to die and decline naturally. Using data on species that were reliant or highly associated with ash and expert knowledge on their likely population changes, the researchers showed that in the short term (1-10 years) only one species was expected to go extinct under the non-felling management but between 14 and 38 species might go extinct if felling was carried out. However, after 50-100 years the effects of different management options were the same: 50% of species reliant or highly associated with ash were expected to go extinct.



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