

Science for Environment Policy

Ash dieback: an overview of this conservation challenge

The common ash tree (*Fraxinus excelsior*) is threatened by an invasive fungal disease, which is spreading throughout Europe. Scientists have recently reviewed and presented previous research into the disease which could help us understand how to prevent the spread of the fungus and develop forest conservation strategies.

As a keystone species throughout temperate Europe, the common ash is vital for the functioning and conservation of forest [ecosystems](#); many organisms, such as wood decaying fungi, insects and lichens, use *F. excelsior* as their only habitat. The [tree](#) species has also played important socio-cultural and economic roles throughout its history. However, a newly identified fungus, *Hymenoscyphus pseudoalbidus* (also commonly referred to as *Chalara fraxinea* - the name of the asexual stage of its life-cycle), now threatens the future of the common ash in Europe. It was introduced from Asia to Poland at the beginning of the 1990s and was further propagated by trade in nursery stock.

Ash dieback, where the branches or shoots die from the tip inwards, is caused by an initial leaf infection, followed by 'necrotic lesions' (tissue death) on twigs and shoots. In some countries, the level of ash tree infection is very high: in southern Sweden, for example, it has been reported that one quarter of ash trees have been killed or severely damaged by *H. pseudoalbidus* infection.

National surveys show that ash dieback is occurring over whole countries, such as Poland, Denmark, Austria, Slovakia, the UK and Germany. More research is needed into the routes of fungal invasion and strategies need to be put into place to slow down the further spread of the pathogen, according to researchers. The latter is difficult given the long-distance dispersal of fungal spores, however, avoiding planting ash saplings in woodlands and not using saplings from infected tree nurseries may help.

Evidence that some ash trees are more resistant to *H. pseudoalbidus* could provide a solution and the review's authors call for a major collection of seeds throughout Europe to create breeding programmes to select for tolerant individuals, whilst maintaining a certain amount of genetic diversity. Experiences from successful breeding programmes for other species, such as American chestnut (threatened by chestnut canker) and elms (Dutch elm disease), should be used to help guide researchers. The replacement of the common ash with other ash species, which are resistant to the pathogen, is a potential - but controversial - option. Cross breeding these species with *F. excelsior* may also be a feasible, although time consuming, way to achieve tolerance to the fungal pathogen.

In order to prevent the loss of a high proportion of ash trees and the effect this would have on biodiversity and value of forest holdings, urgent action is needed. The researchers recommend that dead and dying ash trees should be left in the forest, given that the pathogen does not disperse from wood and given the importance of deadwood for biodiversity conservation. According to the study, a slow recovery of *F. excelsior* is still possible, but only if all stakeholders involved can be brought together to find solutions for this pressing conservation biology challenge.



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