



# Managing ash dieback; the Woodland Trust's approach on its woodland estate

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**Ash (*Fraxinus excelsior*) was once one of the most widespread tree species in Europe. Now it is on the International Union for Conservation of Nature (IUCN) Red List<sup>1</sup>. This technical advice note sets out the Woodland Trust's approach to ash dieback management on our estate. As the UK's largest woodland conservation charity, we should explain how we are managing one of the biggest threats to trees that we currently face.**



The fruiting bodies of the ash dieback fungus growing on an old leaf stalk within the leaf litter.

(Photo: IFFF-BOKU/Thomas Kirisits)

## Background

Ash dieback, caused by the fungus *Hymenoscyphus fraxineus*, has now become widespread across the UK. It was first identified in the UK in 2012 but it is now thought to have been here much longer, perhaps around 30 years. The impact was initially noticed in the south-east and east of England but soon the signs of ash dieback were observed across the country. We are still at the beginning of the epidemic so the true impact will take many years to become apparent. As with Dutch elm disease, the loss of a species happens slowly and it is not until you look for a mature open grown elm tree that you realise how few remain.

This fungus originates from north-east Asia (northern China, Korea, Japan and south-east Russia) where it lives in balance with its natural host *Fraxinus mandshurica* (the Manchurian ash) without causing any significant issues. It was not until it was introduced into Europe that it was realised it could cause the rapid death of European ash. It is often the case that innocuous fungi, bacteria and insects go on to cause major problems once they get to new locations and find hosts that have not evolved defences against them.

*H. fraxineus* overwinters in the leaf litter, particularly on ash rachises (the central mid-rib of the ash leaf). Very small, white fruiting bodies are produced on the rachises between July and October, which then release their spores into the surrounding atmosphere. In ideal conditions spores can blow many kilometres.

When spores land on the ash leaves they adhere and penetrate the leaf and beyond. The fungus then grows

inside the tree, eventually blocking its water-transport systems and leading to its death. Though the tree can block the infection and fight back to some extent; repeated infections will eventually kill the vast majority of trees. Saplings and young trees die quickly but older trees can take a number of years to succumb<sup>2</sup>.

There may be some innate tolerance to ash dieback disease in the UK's ash population. Tolerance to disease is complicated and relies on many factors. Studies have shown that some ash trees possess a genetic tolerance to the disease but it also seems that environmental factors are just as important<sup>3</sup>.

For example, if an individual tree is genetically tolerant but facing:

- poor growing conditions,
- high browsing pressure from herbivores,
- a high spore level in the area, it may still succumb to the disease.

Conversely, some trees that are fit and healthy and are not subjected to high levels of spores and herbivores may survive and pass on their fitness to the next generation. Given these intricacies, it is very difficult to estimate the proportion of ash that will be lost to the disease. The European disease progression indicates that at least 80% of the population will be lost.

Research on ash dieback continues apace and, as a result, new evidence frequently comes to light. We therefore keep our management principles under constant review and may change them if further evidence is provided.

## Managing ash dieback on the Woodland Trust's Estate

### Finding the balance between retaining diseased ash trees for as long as possible (which is our aim) and Health and Safety considerations is the starting point for our woodland management decisions.

We consider the potential for tolerant trees to exist and for the ability of trees to recover from disease to varying extents.

They may lose a considerable proportion of their crown one year then bounce back the next year with healthy and vigorous epicormic growth. Or they may continue to deteriorate over the ensuing years before dying but during that time produce seed which could form the next generation of ash with more tolerance to the disease.

**Therefore, pre-emptive, wide-scale felling of ash could be detrimental to the species long-term recovery and should be avoided wherever possible.**

#### Site assessment

Assessing the incidence of ash dieback at the outset is extremely important because this will inform what actions need to be taken at a given site. Surveys should be undertaken in the summer when ash trees are in full leaf.

#### Health and Safety

Health and Safety is a major consideration for the Woodland Trust and its site managers. This is reflected in our ash dieback assessment process, which closely mirrors how we deal with tree health issues in general. Our woods are open to the public, and in common with many other woodland owning organisations we zone our woods in terms of the level of potential risk to the visiting public and to people and property on adjacent land.

Within high and medium risk zones, we assess the frequency of ash and the stage of infection, then start to plan various scenarios to deal with the risk posed to the public and property, depending on how rapidly the disease progresses. In the areas of the country most severely affected, we have been carrying out remedial works for several years now.

We assess which trees to fell against this guidance:

- Trees showing up to 25% of canopy decline and/or the presence of epicormic growth or stem/basal lesions in high risk zones should be considered for felling.
- Trees showing 25–50%+ of canopy decline and/or the presence of extensive areas of epicormic growth or large stem/basal lesions in high and medium risk zones should be felled
- In zones where trees meeting the criteria above are being felled, consideration should be given to selectively felling associated trees which with the removal of the disease ash trees are likely to become unstable/exposed and pose a risk in their own right.

- Only in zones which could be difficult to work such as trees on steep slopes adjoining roads or overhanging houses and/or requiring a long lead-in period for felling (major road/rail closure/work with utility providers) – a proactive, silvicultural approach can be considered, with felling carried out in advance of the most significant disease impacts being observed.

#### Environmental Objectives

The Woodland Trust also considers the potential environmental impact of the disease on the ecological functioning of the wood, the wider environment and any landscape considerations. As stated, our other major objective is to consider how to retain trees if safe to do so. This is increasingly possible when levels of assessed risk to the public reduce in the less-visited areas of our woods, away from footpaths.

In our larger woods, diverting or temporarily closing permissive footpaths is an option. In those situations, we can give nature time and space to respond rather than intervening. Ash woods, with their light canopies, often have an understorey which can replace the dying trees. Such areas can also provide the opportunity for any retained, and potentially tolerant ash, to naturally regenerate. It is thought such regeneration may exhibit tolerance<sup>4</sup> to the disease, hopefully providing a future generation of ash. Of course controlling grazing by herbivores is necessary if regeneration is to succeed.

Spotting any potentially tolerant trees wherever they may occur can usefully be done during the summer assessment.

#### Operational Planning

Sometimes the only action to come out of the site assessment is to resurvey in a year or so. Or to allow ash to fend for itself, particularly where it is a minor component of a stand/wood and it does not pose a risk to the public.

However, in many cases active intervention is needed and this can vary considerably in its complexity in terms of planning. Long lead-in times may be required to ensure all the necessary consents have been obtained and stakeholders and the public have been consulted. Considerations can include:

- felling-licence applications
- amending management plans
- tree preservation orders (TPOs)
- Sites of Special Scientific Interest (SSSI) consents
- liaising with utility companies and highways departments to organise road closures
- European Protected Species, (particularly bats) and protected species' surveys

Please note that this list is not exhaustive.

Site access and the logistics of the proposed work are common to organising any woodland/forestry operations but particular attention needs to be paid to selecting the appropriate contractors with suitable machinery for the job.

Contractor safety is an important factor when dealing with diseased ash. Early experience has shown that trees can have hidden rot in their bases and fragile crowns, making manual felling hazardous and extra care necessary. Where trees are in advanced stages of decline, mechanical methods of felling are recommended. This may mean that in ash-dominated stands with public access, where it is not practical for harvesting machinery to be used (because of topography, soft ground or access issues) the public will need to be excluded until the risk from deteriorating ash trees has passed.

Where trees need to be sectionally felled by tree surgeons, these should be dealt with at an early stage of decline.

Realising income from any resulting timber makes good sense, but it is important to consider the value of deadwood (both standing and fallen) and to set the potential damage to soils and the cost of extracting produce against a perceived financial gain, with the right balance needing to be struck.

## Specific woodlands and habitats

### Significant trees

Significant trees like ancients, veterans and notables on the Woodland Trust estate may need special attention. When it is necessary to carry out work for health and safety reasons on significant ash trees, crown reduction rather than felling is preferred to retain these features for as long as possible.

### Ash pollard and coppice

Established ash pollards (trees that were already pollards before ash dieback was introduced) have been shown to be particularly tolerant to the disease. This is most likely due to the intricate water transport systems and thick bark at the boles which have developed over years of continuous pollarding<sup>5</sup>. Ash pollards in a regular pollarding cycle should continue to be cut provided they are healthy. Restorative pollarding should however be treated with caution.

Young ash coppice is especially prone to infection. Therefore, if ash is a significant component of managed coppice areas (>25%), a review of the suitability for coppicing should be undertaken including an assessment of the biodiversity impacts of stopping.

### Woodland creation

Many of the tree pests and diseases now established in the UK have been inadvertently imported. Therefore the Woodland Trust has helped with the development of accredited tree nurseries that can supply UK-sourced-and-grown stock<sup>6</sup> (UKSG) to avoid importing the next pest or disease. When we create new woods or are restocking existing ones (where natural regeneration is not feasible) we are committed to using UKSG trees.

In order to build up a genetic tolerance to ash dieback, it is important that the opportunity is taken to consider giving space for natural regeneration of ash. Therefore,



Creating more woodland and replacing trees that have been lost to ash dieback is very important to maintain ecological integrity.

(Photo: WTML/Jill Jennings)

maintaining and protecting areas of naturally regenerated ash on woodland creation sites is important for ash as it recovers into the future.

When creating new woods, we aim to ensure that no one species makes up more than 35% of the planting mix and that as wide a range of native species appropriate to the site are used. It may be necessary to increase this proportion where the woodland type to be created requires it, but even then no more than 65% of any planting should be made up of a single species. We also aim to limit individual species groups to less than 500 individuals or 0.25 ha.

### Trees outside woods

Field trees, urban trees, hedgerow trees and small clusters of trees will be particularly hard hit by ash dieback because the opportunity for natural regeneration is lower. Recent research<sup>7</sup> underlines the importance of trees outside woods for their biodiversity value, their contribution to resilient landscapes and the range of ecosystem services that they provide.

For example, ash is a significant component of hedgerows across the UK so the reduction of ash will lead to a reduction in connectivity across the landscape. It is therefore critical that the integrity of hedgerows is maintained by replacing ash trees that die or are removed through safety concerns. A range of native species suitable for the site should be used, with the opportunity taken to diversify that range where appropriate and to bolster populations of existing minor species.





A diversity of native tree and shrub species is important to maintain resilience.

(Photo: WTML/Ben Lee)

## Maintaining resilience

It is very important that the resilience of our woods is improved over time so they can resist and recover from pest and disease outbreaks.

Opportunities are taken in our site management to promote and introduce a wide diversity of alternative native tree and shrub species to the canopy and understorey, primarily through thinning to favour specific species and encourage natural regeneration.

Where feasible and appropriate to the conservation interest of the site, it is important to ensure in the long term that woods do not have a canopy or understorey dominated by more than 50% of one species. Also, where appropriate there should be at least three different species within a canopy and similar species diversity in the understorey. There may be exceptions, particularly where a single species forms a significant part of the canopy of the woodland type. In these cases, the focus will be on maintaining local genetic diversity and adaptation through natural regeneration.

Genetic turnover and the resulting diversity through natural regeneration is a very important management response to improving the resilience of woods through local adaptation. It is therefore crucial to provide the woodland structure and conditions that allow a greater range of species to regenerate naturally. This will involve tackling issues such as browsing pressure and light levels within our woodlands.

## Recommended citation:

Matt Elliot, 2019, Managing ash dieback; the Woodland Trust's approach on its woodland estate, Woodland Trust Technical Advice Note 2

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## Further Reading

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