

Living with Ash dieback

Background

Ash dieback is a disease caused by the *Chalara fraxinea* fungus which often leads to the death of the ash trees it infects. Experience from other countries has shown that once established it is impossible to eradicate *Chalara* ash dieback as there is no known cure.

Because ash dieback is now present across the UK and has been found at numerous locations in Scotland, management options include limiting the spread of the disease, identifying resistant mature trees and creating conditions that encourage genetic diversity in ash populations so that some resistant strains will survive and repopulate woodlands and forests.

The Scottish Wildlife Trust has published this briefing guide for land managers to give advice on what alternative native trees are suitable to fill the niche left by ash in the woodland canopy and Scotland's landscapes.

Use a full palate of native species

To increase woodland biodiversity, ecosystem health and function we believe land managers should move away from planting monocultures which can be totally wiped-out by novel pathogens. Instead, woodlands should be designed using a 'full palate' of appropriate native species which are more likely to bounce back from disturbance such as attacks from novel pathogens and the effects of climate change. We would also recommend creating conditions which allow natural woodland processes to occur such as variability in species' age structure, genetic exchange with a variety of genotypes, seed dispersal, natural regeneration, and establishment of pockets of wind throw and deadwood.

Ash ecology

Ash trees have high conservation value and are a common native broadleaved tree in Scotland. They are a key component of native woodlands and an important feature of our landscape, being present as field trees and in hedgerows. As their leaf structure lets light penetrate to the ground in woods, they support a rich understory which can contain rare woodland flowers such as dark red helleborine and whorled Solomon's seal. The alkaline bark of old ash trees support important lichens and mosses. Upland mixed ashwoods are protected under the European Habitats Directive.

Choosing a substitute for ash requires consideration of how the woodland ecosystem will change (if at all) with the replacement species. For instance, the ash canopy allows some light to penetrate to the understory- a substitute such as beech, which casts a dense shade during summer, would not be a suitable replacement where light penetration is required to be maintained.

The right tree in the right place

The choice of alternative species should be guided by management objectives, local conditions (e.g. soil type, topography, climate) and designation status of the site.

Forestry Commission have produced a guide to help forest managers and planners to select appropriate speciesⁱ which are adapted to site conditions, instead of selecting a species and trying to modify the site to suit the species. (See - <http://www.forestry.gov.uk/esc>).

Native ash woodlands in Scotland

Two types of native woodland with ash as a major component are found in Scotland – 'upland mixed ash woods' and more rarely, 'lowland mixed deciduous woodland'.ⁱⁱ

Upland mixed ash woods

In Scotland, 'upland mixed ash woods' are identified under the National Vegetation Community (NVC)ⁱⁱ as W9 *Fraxinus excelsior-Sorbus aucuparia- Mercurialis perennis* woodland. This woodland is found, predominantly, but not exclusively in the west of Scotland. Although typical of upland fringes, in the far north-west it is also found down to sea level. The cool, wet, windy overcast climate affects the soil characteristics (moist brown soils) and vegetation community present. Suitable substitute trees to replace ash would include:

Major components:

- oak spp. (*Quercus* spp.)
- hazel (*Corylus avellana*)
- aspen (*Populus tremula*)
- rowan (*Sorbus aucuparia*)
- downy birch (*Betula pubescens*)

Minor components:

- bird cherry (*Prunus padus*)
- hawthorn (*Crataegus monogyna*)
- goat and grey willow (*Salix cinerea* and *S. caprea*)
- alder (*Alnus glutinosa*)

Lowland mixed deciduous woodland

In Scotland, 'lowland mixed deciduous woodlands' which have ash as a major component are identified under the National Vegetation Community (NVC)ⁱⁱ as W8 *Fraxinus excelsior-Acer campestre- Mercurialis perennis* woodland. This woodland is rare in Scotland and is predominantly found on base rich to neutral soils in the east where the climate is relatively warmer and drier. In Scotland, ash is the dominant species in this type of woodland.

Suitable substitute trees to replace ash would include:

Major components:

- oak spp, (*Quercus* spp- depends on location)
- downy birch (*Betula pendula*)
- goat and grey willow

Minor components:

- blackthorn (*Prunus spinosa*)
- elder (*Sambucus nigra*)
- rowan
- silver birch (*Betula pendula*)

Replacing ash in the landscape

Ash is found across the landscape, be it in hedgerows, riparian borders, urban woodlands or as stands of trees in farmland. The choice of alternative species should be guided by management objectives and local conditions (e.g. soil type, climate). As above, see also Forestry Commission's guidance on selecting the right tree to match local conditions (<http://www.forestry.gov.uk/esc>). To simplify matters, the Forestry Commission has recommended substitute trees based on soil conditions which we have adapted to be aligned to native trees found in Scotland.

Brown earth soils:

- aspen
- birch spp
- bird cherry
- oak spp
- rowan
- wych elm (*Ulmus glabra*)
- willow spp
- hazel

soils prone to waterlogging:

- alder
- aspen
- willow spp.
- downy birch

Nationally and internationally protected sites

If a site is designated for nature conservation (e.g. SSSI, SAC or SPA) or is an ancient woodland, advice should be sought from Scottish Natural Heritage or Forestry Commission Scotland regarding suitable ash 'substitutes'.

Dr Maggie Keegan, Head of Policy, Scottish Wildlife Trust
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ⁱ Ecological Site Classification Decision Support System (ESC-DSS)

ⁱⁱ See: British Plant Communities, Volume 1: Woodlands and Scrub: NHBS - JS Rodwell, Cambridge University Press