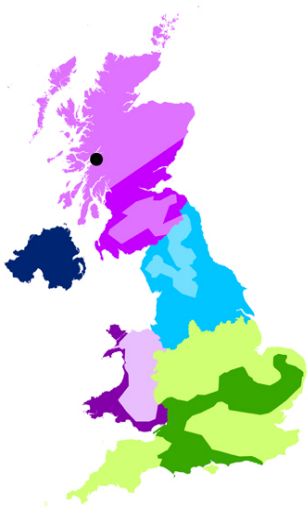
Assessing and addressing the impacts of ash dieback on UK woodlands and species of conservation importance

Case study 2 : Glasdrum Wood



Case study key facts

Total area of woodland: **169 ha**

Proportion of ash in canopy overall**: 40%**

Woodland structure: **high forest**

NVC: **W9 and W7**

Vulnerable ash-associated species: **150**

Alternative trees and shrubs: **several present but at low abundance, blackthorn and elder could be introduced to increase diversity**

Management: **establish new plants by natural regeneration or planting; prevent browsing by herbivores**

Site and Location

Name	Glasdrum Wood
Country	Scotland
Local Authority	Argyll and Bute
Landscape context	The site is in a mountainous area on moderately steep to very steep south-east facing lower slopes of a glen with similar woodland types on both east and western boundaries of the site.

Open glade area showing large, old ash trees and some birch with hazel understorey (photo SNH).

Site Characteristics

Woodland area
169 ha

Woodland type
A mixture of woodland types in which ash and downy birch are co-dominant overall. Communities in which ash is the major species include NVC W9 and W7, other NVC communities are W4 and W17.

Soil type
Calcareous on lower and middle slopes grading into acidic on the upper slopes.

Lithology
A mosaic of types: mostly black slates and phyllites with outcrops of calcareous rocks on lower slopes and igneous rocks on higher slopes.

Stand structure
The stand is high forest with a diverse overall structure with areas of tightly spaced pole stage regeneration mainly on the lower slopes; mature trees with a fuller canopy with veteran ash and open glades areas occur on the mid-slope; and more widely spaced ash and birch of restricted growth on the upper slopes. There are fewer pole stage ash than birch, especially on an area cleared of conifers which is more or less a birch monoculture. Ash and downy birch are co-dominant within the canopy providing about 80% cover. Oak accounts for around 15% and the remaining 5% is hazel and common alder. Other rare species present include rowan, holly, grey/eared willow, bird cherry and hawthorn. The understorey is dominated by hazel with around 15-20% cover across the site. Small juvenile (<1.3 m) natural regeneration is prolific on the lower slopes, less so on the mid-slope and almost absent from the upper slopes. The species regenerating are birch, hazel, holly and rowan. The effects of deer browsing are apparent and it is significant factor limiting natural regeneration and with the exception of some downy birch few seedlings are recruited to the sapling stage (>1.3 m). The ground flora is dominated by grasses with patches of bracken.

Biodiversity interest

Designations
The woodland is an NNR and forms part of the Glen Creran Woods SSSI (708 ha) which is also designated as a SAC. The notified features in the SSSI citation are Upland Oak Woodland, the assemblages of bryophytes and lichens, and two butterflies. The SAC designation also includes Tilio – *Acerion forests of slopes and ravines* (*i.e.* mixed woodland on base rich soils associated with rocky slopes) and otter.

Vulnerable species likely to be affected
More than 150 ash associated species were identified within the database for this site; 120 were lichens the remainder being bryophytes (17), invertebrates (12) and birds (4). However, only eight species were obligately or highly associated with ash - three invertebrates and five lichens.

Other species of conservation interest
Otter (a European Protected Species), and chequered skipper and pearl-bordered fritillary butterflies.

Management

Historical
After more than 200 years, coppicing of oak ceased towards the end of the 19th century. The site has a long history of use for sheep grazing and wintering of cattle, with sheep grazing predominant between 1830's and 1960's. About 6 ha of conifers were planted in the 1960's, these were removed in 1992.

Current
Predominantly by natural processes with some active interventions to remove non-native species (*R. ponticum*, Sitka spruce); to protect occasional groups of saplings from browsing using tree shelters; to control bracken in woodland clearings for the benefit of butterflies; and to cull deer to improve establishment of tree regeneration, particularly ash.

Long-term vision for site
A self-sustaining woodland with small glades for lichens and larger glades for butterflies.

Factors limiting delivery of management currently planned
Excessive browsing damage by deer.

Future methods of management

Potential response of ash associated species to ash dieback
Loss of the obligate invertebrate is inevitable but alternative species for the other vulnerable species are present on site and all can use 1 or more of the most common species present (hazel, oak, birch) except the moth *Eupithecia innotata* that can only use hawthorn which is rare. There are five other rare or uncommon tree species at the site but most are unsuitable as alternatives for most of the vulnerable species.

Continuation of existing management with loss of ash occurring
Although loss of ash will reduce canopy cover, other trees and shrubs which provide a substantial amount of the overstorey and understorey cover will remain as alternatives for the vulnerable species. Restocking is reliant on unpredictable natural regeneration supplemented by some management to protect individual regenerating trees and cull deer which are having an adverse impact. At present conditions do not appear suitable for this to succeed. Consequently the long-term survival of vulnerable ash associated species may be threatened if the abundance and diversity of alternative tree species are not increased.

Management allowing for loss of ash but maximising persistence of ash related biodiversity
As all of the vulnerable species have alternative trees present on site then it may be possible to use natural regeneration to increase the abundance of the tree species present, but this will be more difficult for some species than others (*e.g.* alder). The range of available alternatives for most of the vulnerable species is low and it would be beneficial to increase the tree species diversity at the site to include more alternatives. Tree species such as sycamore and wych elm, each of which can provide an alternative for 4 of the vulnerable species, or blackthorn and elder which can be used by *Eupithecia innotata*, are not present and will need to be planted as they are unlikely to regenerate. If trees are planted then the location for each species must be carefully chosen to ensure that it will thrive (*e.g.* suitable soil conditions for species). Whichever method of establishment is used it will be necessary to protect the plants from browsing by deer until they are well-established and beyond browsing height. In addition, vegetation management may be needed depending on the nature of the ground flora which develops (*e.g.* bracken is present and may become more abundant if tree canopy is reduced or light scarification is used to disturb thick patches vegetation).

Factors likely to constrain delivery of future management to maximise persistence of ash associated species
Browsing damage caused by deer or other herbivores. Failure to control competitive vegetative vegetation.

Potential for use of generic methods to establish alternative species

Options 1, 3 and 4 are unlikely to succeed as there are no interventions to prevent browsing by deer. Both options that promote natural regeneration may allow increase in the abundance of existing alternative species, but option 6 is likely to be the better as the stands are managed after felling to develop the overstorey. An increase in the diversity of alternative species is only likely if option 4 is used.