

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

Case study 13 : Bredon Hill



Case study key facts

Total area of site: **63 ha including c. 16 ha of woodland**

Proportion of ash in canopy overall: **c. 45%**

Woodland structure: **wood pasture and scrubby woodland**

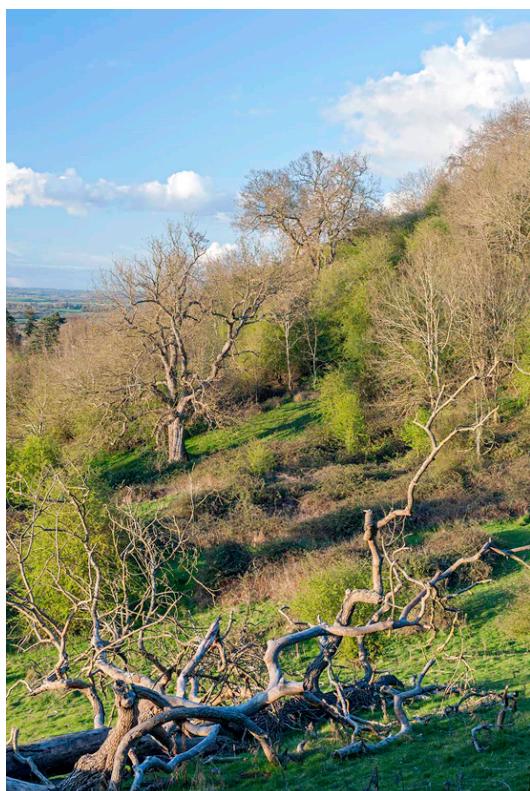
Vulnerable ash-associated species: **80**

Alternative trees and shrubs: **present but at low abundance and could be introduced**

Management: **establish trees by planting; prevent browsing damage**

Site and Location

Name	Bredon Hill
Country	England
Local Authority	Hereford and Worcester
National Character Area	Severn and Avon Vales
Landscape context	The site is on a hillside facing west. The eastern boundary adjoins a much larger area of wood pasture of generally similar character. Other boundaries are adjacent to pasture and other farmed land.



Fallen deadwood, veteran trees, scrubby woodland and patches of bramble thicket amongst grass are all clearly visible (photo R Wolstenholme).

Site Characteristics

Woodland area

Total area is 47 ha, predominantly wood pasture, but c. 30 – 40% is scrubby woodland (i.e. c. 13 – 18 ha).

Woodland type

The lowland wood pasture component is dominated by veteran ash or oak trees. The scrubby woodland is secondary with few additional species and appears similar to NVC W21 hawthorn scrub but with veteran trees and younger trees included.

Soil type

Calcareous soils which are deeper on lower slopes.

Lithology

Limestone.

Stand structure

There are two stand structures present, wood pasture and scrubby woodland, which are both dominated by the same limited range of species. Ash (c.80% of cover) and oak (c.20% of cover) dominate the overstorey across the site overall; other species are rare but include field maple, beech and willow. The scrub and understorey are almost totally dominated by hawthorn, but small amounts of elder and some other species including sloe and willow occur. The area of wood pasture has a sparse overstorey cover provided almost entirely by widely spaced veteran trees. Within this area there are frequent patches of developing scrub understorey and also many clumps of tall bramble. The overstorey of the scrubby secondary woodland comprises an upper canopy of large veteran trees and a lower canopy dominated by ash about 50 - 60 years-old. Overstorey cover in the woodland is variable but about 30 – 40% overall: understorey cover is often dense and continuous. Although there are some clumps of naturally regenerated ash (c. 20-years-old) and heavily browsed saplings of hawthorn are frequent, recent naturally regenerating seedlings of any species are absent. Substantial numbers of trees (c. 15-years old) of a variety of species have been established in stock-proof cages in the area of wood pasture. There is a herd of fallow deer at the site.

Biodiversity interest

Designations

The site comprises wood pasture designated as an NNR which is noted for its assemblage of saproxylic invertebrates. It is within a much larger SSSI (c. 380 ha) and it also forms part of the Bredon Hill SAC (c. 360 ha) which has been designated for the presence of the violet click beetle (*Limoniscus violaceus*).

Vulnerable species likely to be affected

80 species were identified as being at least partially dependent on ash, but there are only 3 obligate species (all invertebrates) and 9 highly associated species (4 fungi and 5 invertebrates).

Other species of conservation interest

In addition to the violet click beetle there are numerous species associated with the veteran trees including many other beetles such as *Ischnomera sanguinicollis*, *Ampedus rufipennis* (a UK BAP priority species), and the nationally endangered stiletto fly (*Pandivirilia melaleuca*).

Management

Historical

Wood pasture grazed by sheep and cattle. A significant proportion of the oaks originally present were felled during the 2nd world war. Trees of several different species have been planted in stock proof cages.

Current

Wood pasture grazed by sheep and cattle with little active management of trees or woodland. Restocking is anticipated using natural regeneration by practical application of Vera's hypothesis.

Long-term vision for site

Within 50-100 years there will be more trees with veteran characteristics, a greater range of tree species and a more diverse age-class structure is beginning to develop. Trees are well-managed and there is plenty of deadwood and good populations of saproxylic invertebrates.

Factors limiting delivery of management currently planned

Grazing and browsing by livestock and deer. The mixture of tree and shrub species present on the site.

Future methods of management

Potential response of ash associated species to ash dieback

In addition to the three obligate species there are two highly associated species: one is a moth (*Euzophera pinguis*) with no known alternative trees with the possible exception of other ash species; and the other is a fungus (*Crocicreas dolosellum*) which can live on the dead stems of *Chamerion* and *Epilobium* species, some of which are common herbs often found in woodlands. Although a majority of the species identified in the database are only partially associated with ash the alternative trees of some of the species are absent or rare at the site. More than 20 different tree species can act as alternatives, many of these are native species which would grow at the site including field maple, birch, hazel, hawthorn and small-leaved lime. However only alder is known definitely to be used by more than 3 associated species.

Continuation of existing management with loss of ash occurring

The probability of restocking with suitable alternative species by natural regeneration is low, not only due to the detrimental effects of large herbivores but also the absence of sufficient or any parent trees at the site. Tree cover will decline as ash dies but this will be partly balanced by the growth of the planted trees. Loss of ash will have adverse effects on most of the species that are highly associated with ash, but two of the fungi are known live on hawthorn and one of the invertebrates on oak.

Management allowing for loss of ash but maximising persistence of ash related biodiversity

As natural regeneration is unlikely, planting is the best method to establish desirable tree and shrub species on which the threatened highly associated species occur. A wide range of species could be planted but a mixture of mostly native broadleaves would provide at least one alternative for 7 of the threatened species. These tree and shrub species are field maple, alder, birch, hazel, aspen, oak, horse chestnut, privet and wych elm. Each of these species should be planted at a position where it is likely to thrive. Although single trees could be planted it would probably be most appropriate to plant small groups of closely spaced trees (to allow for mortality during early establishment). In order to maintain the character of the site the groups (or single trees) should be at appropriately wide spacing. Each group could comprise a single species, but trees could be planted in mixture with shrubs, however this may complicate management. Planting need not take place only in the open grassy areas but the existing hawthorn scrub could be enriched by establishing other species in gaps of suitable size. All planted trees and shrubs must be protected from browsing damage, and vegetation management should be carried out to ensure rapid growth and establishment. If enrichment of scrub is carried out then the gaps will need to be maintained to allow planted trees to establish.

Factors likely to constrain delivery of future management to maximise persistence of ash associated species

Browsing damage caused by livestock and deer.

Potential for use of generic methods to establish alternative species

None of these are suitable at this site. Natural regeneration of desirable alternative species is unlikely to occur and thinning or felling of ash trees is unrealistic they comprise the largest component of the veteran trees in the wood pasture which support the invertebrate species for which this site is noted.