

Lichen Rich Deadwood

(Section 41 species covered: *Bacidia subturgidula*, *Buellia hyperbolica* & *Catillaria alba* (= *Biatora veteranorum*), RDB species include *Chaenotheca chlorella*, *Chaenothecopsis savonica*, *Chaenothecopsis viridireagens*, *Hertelidea botryosa*, *Micarea hedlundii*, *Ptychographa xylographoides* & Notable species include *Calicium lenticulare*, *Chaenotheca brachypoda*, *Chaenotheca hispidula*, *Chaenothecopsis nigra*, *Chaenothecopsis pusilla* & *Microcalicium ahlneri* & *Mycocalicium subtile*. Also more than 20 other ancient woodland lichens.

Areas and status: Limited by land use history and pollution pressures, requires old growth or developing old growth woodland with a long continuity. Deadwood in high rainfall hyper-oceanic woods is mainly too wet to be of lichen interest, but less wet oceanic woods with large deadwood is often of high interest and diversity increases into drier areas, where these were not badly polluted by acidifying pollution.

Woodland type: Upland Broadleaved Woodland, Lowland Broadleaved High Woodland, Wet Woodland, Pasture Woodland, Wood-pasture and Parkland

Preferred habitat niches: Unevenly stocked woodland, with frequent glades, including both areas with well lit and more shaded trees, with veteran trees forming a high proportion of the canopy with frequent large diameter deadwood both standing and fallen. The very best habitat is typically grazed old growth stands that are failing to regenerate adequately by forestry standards. Lichens of conservation interest are most diverse on standing deadwood in sheltered but well lit situations. Deadwood exposed on living veteran trees is often also of great interest. Specialist species can extend on to damper wood, but rare species are much less frequent on wetter wood. Natural fallen trees can be of high interest where large trees end up propped of the ground, typically, on broken branches. This produces both dry vertical and sloping damp wood habitats. Moved sawn up logs are rarely of interest as they are too damp. Producing standing deadwood artificially is unlikely to be of much benefit, unless the trees are large diameter trees, which is likely to conflict with other veteran tree interests. The maintenance of suitably open woodlands is not easily achieved without high levels of grazing that contains regeneration to long spaced intervals, or as a very patch occurrence. The structural features can develop in nearly all major types of British woodlands; the assemblages vary between woodland types but the basic factors driving lichen richness on deadwood are similar.



A white coat, Mallard Wood, New Forest
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Potential habitat management issues associated with decline:

- Decline of grazing as a major use of woodland is leading to dense, dark and shaded condition which are unsuitable for rich lichen deadwood assemblages
- Long term high levels of grazing that allowed no regeneration were a widespread threat in grazed woods due to intensification of grazing from lower more sustainable past levels. Still an issue locally, but the withdrawal of grazing as an inappropriate response to long term high grazing pressures is now a more widespread threat than hard grazing.
- Declines linked to past extensive acidifying air pollution, with local acidification and ammonia pollution still issues.
- Declines linked to past destruction of old growth woodland, including 18th and 19th century industrial Oak coppicing displacing traditional old growth pasture woodlands in the uplands. The resulting even aged 19th century upland Oak plantations are a negative legacy from this past destruction.
- Removal of standing and fallen deadwood.
- Impact of fragmentation of old growth stands within the last few hundred years.

Potential habitat management solutions:	
Prescription	Comment
Grazing	Maintain or restore grazing at levels that vary over time but have significant long term impacts on the structure of the woodlands. Lichens would usually set the lower limits of grazing, i.e. levels that prevents excessive tree density and unfavourable levels of shade. The upper limits of grazing need to be set by the sensitivity of other groups, but sufficient regeneration must occur in relation to the life span of the tree species involved to maintain the woods. Long term maintenance grazing should ideally allow suppressed browsed regeneration to build up, not prevent all regeneration, with short periods of lower grazing levels allowing this suppressed regeneration to escape.

Minimal intervention pasture woodland	The ideal management for the richest sites is likely to be minimal intervention pasture woodland, where grazing levels have a significant impact on the long term woodland structure, but otherwise the intervention is only carried out to maintain the conservation status. This can be applied to the most favourable areas of large meta-sites, with more intensive management in other areas that are not of lichen interest.
Deadwood: Standing	Well lit to partly shaded large diameter standing dead trees are most valuable for lichens. Small diameter wood of little value.
Deadwood: Fallen	Large fallen trees propped off the ground on branches are a more valued habitat for rich lichen assemblages than trunks in full contact with the ground. Cutting up and moving large fallen trees should be avoided if at all possible.
Veteran trees	Exposed deadwood on live trees usually as important as standing dead trees. Lichen rich woodlands mainly require management at the stand not tree level, ensuring openness and tree succession. Individual tree management is rarely practical.
Thinning/selective felling: Heavy	Over stocked woods, especially former pasture woodlands, including former upland pasture woodlands converted to Oak plantations in the 19 th century can be actively restructured by thinning and cropping. This would involve glade creation and very uneven thinning to introduce structural variation. Straighter trees with timber value can be removed preferentially. The aim in most large upland Oak plantations should be to convert a significant proportion back to minimal intervention pasture woodland; potentially about a third of the resource.
Small group felling	Can be used to 'rescue' veteran trees or standing deadwood in dense re-growth or conifer plantations. Threatened lichen rich veteran trees or standing deadwood should only be treated in this way, if re-shading from additional vigorous re-growth and Ivy can be restrained.
Maintain shelter	Do not coppice or clear-fell close to lichen rich stands with abundant deadwood.
Deer management	Where increasing deer populations are being controlled and reduced, the need to replace the positive browsing impact with restored stock grazing in abandoned pasture woodlands should be evaluated.
Glades	Glades should ideally form around 30% of the lichen rich areas and have a lifespan of at least 30 years; glades should be an integral part of the woodland structure and vary greatly in size. Grazing is the only practical way of maintaining the complex glade mosaics required for the time span required.
Connectivity	Woods fragmented in the last few hundred years should be reconnected. Where they exist, this is most simply achieved by converting existing 19 th century Oak woods to low intervention pasture woodlands.
Pollution	Air pollution needs to be reduced to as low a level as possible. This includes both acidifying pollution, which is still a serious legacy issue, and eutrophication by ammonia. Total nitrogen deposition does not appear to clearly correlate to impacts on epiphytic lichens. Ammonia pollution has a short range and can be reduced by local reduction in intensive agriculture and buffer zones. Acidification is a regional to international issue.
Control of invasive vegetation	Eliminate shade casting evergreen exotic species, especially Rhododendron. The approach to locally non-native European native trees such as Beech and Sycamore or recovering natives such as Holly will need wood by wood evaluation. The dense shade of Beech is potentially very problematic, even where Beech is native, and Beech pasture woodland requires intensive grazing to remain open, but can be very rich in lichens when stand ages reach over 250 – 300 years. The native Holly was probably a major component of acid western Oak woods until it was nearly eliminated by intensive Oak cultivation followed by heavy sheep grazing. Like Beech the shade of uncontrolled Holly can be very damaging and it will require management as it returns to its native habitats. Regeneration and re-growth can be controlled by winter and spring grazing and cutting, including for winter fodder.
PAWS	In restoring pasture woodlands planted with conifers but retaining lichen interest, it is important both to restore grazing early in the process and, especially in oceanic areas, to open up much more than is generally recommended. In oceanic woods there is a premium on light not humidity for most lichens and the shade of the conifers is usually causing most of the damage. The shade of conifers needs to be totally removed from surviving trees so that winter light can get in fully. Grazing helps prevent rapid overgrowth by native shade casting species.