



European Site Conservation Objectives: supplementary advice on conserving and restoring site features

**Ullswater Oakwoods Special Area of Conservation (SAC)
Site code: UK0030295**



Photo: Low Wood from Kirkstone Pass (Simon Webb/Natural England)

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About this document

This document provides Natural England's supplementary advice about the European Site Conservation Objectives relating to Ullswater Oakwoods SAC. This advice should therefore be read together with the SAC Conservation Objectives available [here](#).

You should use the Conservation Objectives, this Supplementary Advice and any case-specific advice given by Natural England, when developing, proposing or assessing an activity, plan or project that may affect this site.

This Supplementary Advice to the Conservation Objectives presents attributes which are ecological characteristics of the designated species and habitats within a site. The listed attributes are considered to be those that best describe the site's ecological integrity and which, if safeguarded, will enable achievement of the Conservation Objectives. Each attribute has a target which is either quantified or qualitative depending on the available evidence. The target identifies as far as possible the desired state to be achieved for the attribute.

The tables provided below bring together the findings of the best available scientific evidence relating to the site's qualifying features, which may be updated or supplemented in further publications from Natural England and other sources. The local evidence used in preparing this supplementary advice has been cited. The references to the national evidence used are available on request. Where evidence and references have not been indicated, Natural England has applied ecological knowledge and expert judgement. You may decide to use other additional sources of information.

In many cases, the attribute targets shown in the tables indicate whether the current objective is to 'maintain' or 'restore' the attribute. This is based on the best available information, including that gathered during monitoring of the feature's current condition. As new information on feature condition becomes available, this will be added so that the advice remains up to date.

The targets given for each attribute do not represent thresholds to assess the significance of any given impact in Habitats Regulations Assessments. You will need to assess this on a case-by-case basis using the most current information available.

Some, but not all, of these attributes can also be used for regular monitoring of the actual condition of the designated features. The attributes selected for monitoring the features, and the standards used to assess their condition, are listed in separate monitoring documents, which will be available from Natural England.

These tables do not give advice about SSSI features or other legally protected species which may also be present within the European Site.

If you have any comments or queries about this Supplementary Advice document please contact your local Natural England adviser or email

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About this site

European Site information

Name of European Site	Ullswater Oakwoods Special Area of Conservation (SAC)
Location	Cumbria
Site Maps	The designated boundary of this site can be viewed here on the MAGiC website
Designation Date	1 April 2005
Qualifying Features	H91A0. Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles; Western acidic oak woodland
Designation Area	122.31 hectares
Designation Changes	None
Feature Condition Status	Details of the feature condition assessments made at this site can be found using Natural England's Designated Sites System
Names of component Sites of Special Scientific Interest (SSSIs)	Glencoyne Wood SSSI Hallinhag Wood SSSI Low Wood SSSI
Relationship with other European or International Site designations	None
Other information	Natura 2000 Standard Data Form for Ullswater Oakwoods

Site background and geography

Ullswater lake lies in the Eastern Lake District some 5 miles south west of Penrith. Three separate sessile oak woods within the catchment form the Ullswater Oakwoods SAC. The woodlands occur between 140m and 450m above sea level and occur in a variety of aspects. The Ullswater Oakwoods form a link in the chain of upland woodlands spanning the Lake District from west to east. It combines elements of the wetter woodlands to the west including Scales, Borrowdale and Thirlmere woods and also of the drier Naddle Forest to the east (Averis 2008)

These woodlands; Low Wood, Glencoyne Wood and Hallinhag Wood, occur as isolated blocks, separated from other woodland by open sheep-grazed fells. All three blocks are characterised by steep and rocky slopes and low cliffs, cloaked by broadleaved woodland rich in bryophytes and tall fern beds. The oak and birch dominated woodlands reflect the underlying acidic volcanic geology but more base-rich bands of rock give rise to more mixed woodland characterised by ash and hazel. There are also transitions to local areas of wet woodland where drainage is impeded. Above the main woodlands, the habitats are dominated by open heathland and grassland communities.

References

AVERIS, A.G.B. 2008. Bryophyte dossier for Glencoyne Wood. Unpublished report to English Nature.

About the qualifying features of the SAC

The following section gives you additional, site-specific information about this SAC's qualifying features. These are the natural habitats and/or species for which this SAC has been designated.

Qualifying habitats:

- **H91A0. Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles; Western acidic oak woodland**

This habitat type generally comprises a range of woodland types dominated by mixtures of oak (*Quercus robur* and/or *Q. petraea*) and birch (*Betula pendula* and/or *B. pubescens*). It is typically characteristic of base-poor soils in areas of at least moderately high rainfall in northern and western parts of the UK. A key feature of this habitat type is the rich Atlantic communities of bryophytes (mosses, hornworts and liverworts) associated with it.

The Atlantic oak woods of Ullswater Oakwoods are the Annex I habitats that are the primary reason for selection of this site. The woodlands lie in three distinct blocks at Low Wood, Glencoyne Wood and Hallinhag Wood. All three sites are of similar altitude with Hallinhag and Glencoyne running up from the Ullswater shoreline, and Low Wood being on the shoreline of the smaller Brotherswater some 3km south of Ullswater.

The geology here is the Borrowdale Volcanic series, which is highly variable and the soils vary from acidic to basic brown earths. The woodland reflects this with oak and birch dominated stands developed in the poor soils and stands of mixed woodland with ash and hazel on the richer soils. Locally impeded drainage and springs produce wet woodland dominated by alder.

The lightly grazed woodland ground flora is well developed with a profusion of bryophytes, rich fern stands and corticolous or bark-growing lichens.

The woodlands correspond to the following National Vegetation Classification types: W11 *Quercus petraea* - *Betula pubescens* - *Oxalis acetosella* woodland, W17 *Quercus petraea* - *Betula pubescens* - *Dicranum majus* woodland. Transitions to richer mixed woodland occur which includes elements of the W9 *Fraxinus excelsior* – *Sorbus aucuparia* – *Mercurialis perennis* woodland community. Small stands of wet woodland: W4 *Betula pubescens*- *Molinia caerulea* woodland and W7 *Alnus glutinosa* - *Fraxinus excelsior* - *Lysimachia nemorum* woodland occur where drainage is impeded.

Qualifying Species:

- Not applicable

Table 1: Supplementary Advice for Qualifying Features: H91A0. Old sessile oak woods with Ilex and Blechnum in the British Isles; Western acidic oak woodland

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Extent and distribution of the feature	Extent of the feature within the site	Restore the total extent of the H91A0 feature to 122.31 hectares.	<p>There should be no measurable reduction (excluding any trivial loss) in the extent and area of this feature, and in some cases, the full extent of the feature may need to be restored.</p> <p>The baseline-value of extent given has been generated using data gathered from the listed site-based surveys. Area measurements given may be approximate depending on the methods, age and accuracy of data collection, and as a result this value may be updated in future to reflect more accurate information.</p> <p>The extent of an Annex I habitat feature covers the sum extent of all of the component vegetation communities present and may include transitions and mosaics with other closely-associated habitat features. Where a feature is susceptible to natural dynamic processes, there may be acceptable variations in its extent through natural fluctuations. Where a reduction in the extent of a feature is considered necessary to meet the Conservation Objective for another Annex I feature, Natural England will advise on this on a case-by-case basis.</p> <p>For this feature tree roots (particularly of veteran trees) can extend a considerable distance beyond the boundary of the site - they can be impacted by soil compaction (such as caused by vehicles or construction works); agricultural operations or other soil disturbance (like trenches); and agro chemicals or other chemicals which get into the soil.</p> <p>Any loss of woodland area - whether at the edge or in the middle of a site will reduce the core woodland area where woodland conditions are found - these support significant assemblages of species dependent on woodland conditions (e.g. lichens and bryophytes). Loss of any woodland area which fragments a site into different parts will clearly disturb the movement of species between the remaining parts of the woodland.</p> <p>A restoration target is proposed as the extent of woodland within the SAC is currently impacted by high livestock and deer grazing levels. The target is to restore a more natural distribution of the habitat reflecting the soils and ecology of the site rather than its management. This type of woodland will not regenerate under its own canopy so regeneration will by definition be onto open habitats or open space within the woodland.</p>	<p>NATURAL ENGLAND measurement of aerial photography in 2017.</p> <p>NATURE CONSERVANCY COUNCIL. Phase II habitat surveys 1981-1985 for Glencoyne Wood, Hallinag Wood and Low Wood SSSIs</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Extent and distribution of the feature	Spatial distribution of the feature within the site	Restore the distribution and configuration of the H91A0 feature, including where applicable its component vegetation types, across the site	<p>A contraction in the range, or geographic spread, of the feature (and its component vegetation and typical species, plus transitional communities) across the site will reduce its overall area, the local diversity and variations in its structure and composition, and may undermine its resilience to adapt to future environmental changes.</p> <p>This may also reduce and break up the continuity of a habitat within a site and how well its typical species are able to move around the site to occupy and use habitat. Such fragmentation can impact on their viability and the wider ecological composition of the Annex I habitat. Smaller fragments of habitat can typically support smaller and more isolated populations which are more vulnerable to extinction.</p> <p>These fragments also have a greater amount of open edge habitat which will differ in the amount of light, temperature, wind, and even noise that it receives compared to its interior. These conditions may not be suitable for some of the typical and more specialist species associated with the Annex I habitat feature. In particular the bryophyte assemblage characteristic of these Atlantic Oakwoods is vulnerable to edge-effect impacts such as loss of humidity and shade.</p> <p>The spatial distribution of this habitat within the Ullswater woodlands reflects both past and current management rather than ecology. The objective is to restore a more natural distribution of woodland. This means linking fragmented blocks and restoring a more natural transition at the top edge of the existing woodlands. The whole of this site is below the tree-line and less fragmented woodland is the objective.</p>	<p>As detailed in the extent section above.</p> <p>NATURAL ENGLAND 2014. Site Improvement Plan for Ullswater Oakwoods SAC (SIP253). Available at http://publications.naturalengland.org.uk/publication/4604707481845760?category=35016</p>
Structure and function (including its typical species)	Vegetation community composition	Ensure the component vegetation communities of the H91A0 feature are referable to and characterised by the following National Vegetation Classification types: W11 <i>Quercus petraea</i> - <i>Betula pubescens</i> - <i>Oxalis acetosella</i> woodland, W17 <i>Quercus petraea</i> - <i>Betula pubescens</i> - <i>Dicranum majus</i>	<p>This habitat feature will comprise a number of associated semi-natural vegetation types and their transitional zones, reflecting the geographical location of the site, altitude, aspect, soil conditions (especially base-status and drainage) and vegetation management.</p> <p>In the UK these have been categorised by the National Vegetation Classification (NVC). Maintaining or restoring these characteristic and distinctive vegetation types, and the range of types as appropriate, will be important to sustaining the overall habitat feature. This will also help to conserve their typical plant species (i.e. the constant and preferential species of a community), and therefore that of the SAC feature, at appropriate levels (recognising natural fluctuations).</p> <p>Transitions between these broad community types are well represented within the SAC. Of particular importance are the transitions to more ash-dominated stands where a mixed canopy and understory with ash and hazel are characteristic of more base-rich</p>	<p>NATURE CONSERVANCY COUNCIL, 1981-1985. Phase II habitat surveys for Glencoyne Wood, Hallinag Wood and Low Wood SSSIs</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		<p>woodland,</p> <p>Maintain transitions between these NVC types and other woodland types reflecting different soil types, especially transitions to;</p> <p>W9 <i>Fraxinus excelsior</i> – <i>Sorbus aucuparia</i> – <i>Mercurialis perennis</i> woodland,</p> <p>and</p> <p>W7 <i>Alnus glutinosa</i> - <i>Fraxinus excelsior</i> - <i>Lysimachia nemorum</i> woodland</p>	soils.	
	Vegetation structure - canopy cover	<p>Maintain an appropriate tree canopy cover across the H91A0 feature, which will typically be at least 80% canopy cover within the woodland stands</p>	<p>Canopy cover is the overall proportion of vegetative cover consisting of any woody layer ranging from established regeneration to mature and veteran stages.</p> <p>Woodland canopy density and structure is important because it affects ecosystem function and in particular microclimate, litter fall, soil moisture, nutrient turnover and shading; this in turn influences the composition of plants and animals in lower vegetation layers and soil.</p> <p>Open canopies with just scattered trees will have less of a woodland character and reduced diversity of woodland-dependent species (although they may be still be important as a form of woodland-pasture). Completely closed canopies across the whole woodland are not ideal either however, as they cast heavier shade and support fewer species associated with edges, glades and open grown trees, and have little space where tree regeneration could occur.</p> <p>In general, the woodland canopy of this feature should provide a core of woodland interior conditions with some open and edge habitat as well.</p>	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Structure and function (including its typical species)	Vegetation structure - open space	Maintain areas of permanent and temporary open space within the woodland typically to cover approximately 20% of area	<p>Woodland structure includes variations in age, tree form, layering, the distribution and abundance of open space and dead wood. It plays a critical role in woodland ecosystem functioning.</p> <p>Having some open, sunlit and largely tree-less areas as part of the woodland community is often important to facilitate natural tree and shrub regeneration and also to provide supporting habitat for specialist woodland invertebrates, birds, vascular and lower plants.</p> <p>Such open space can be permanent or temporary and may consist of managed grazed areas, linear rides and glades, or naturally-produced gaps caused by disturbance events such as windthrow/fire/tree falling over/snow damage. The target should be met by natural processes where this is possible.</p>	
	Vegetation structure - old growth	Maintain the extent and continuity of undisturbed, mature/old growth stands (typically comprising at least 20% of the H91A0 feature at any one time) and the assemblages of veteran and ancient trees (typically >10 trees per hectare).	<p>Good woodland structure includes variations in age, tree form, layering, the distribution and abundance of open space and dead wood. It plays a critical role in woodland ecosystem functioning.</p> <p>For this habitat type, old or over-mature elements of the woodland are particularly characteristic and important features, and their continuity should be a priority.</p> <p>Old trees and old growth stands are of particular value for corticolous lichens and bryophytes (Averis 2008). These are particularly characteristic of the Ullswater Oakwoods.</p>	AVERIS, A.G.B. 2008. Bryophyte survey dossier for Glencoyne Wood Unpublished report to Natural England.
Structure and function (including its typical species)	Vegetation structure - dead wood	Maintain the continuity and abundance of standing or fallen dead and decaying wood, typically 6 fallen trees >30cm per hectare, and >6 standing dead trees per hectare	<p>Woodland structure includes variations in age, tree form, layering, the distribution and abundance of open space and dead wood. It plays a critical role in woodland ecosystem functioning.</p> <p>Dead and actively decaying wood, either as part of a standing tree or as a fallen tree on the woodland floor, is an important component of woodland ecosystems, and supports a range of specialist invertebrates, fungi, lichens and bryophytes, and associated hole-nesting birds and roosting bats, all of which may be very typical of the feature.</p>	The SSSI condition assessments 2001-2016 show that the existing structure and the volume of dead wood is good, other than in young growth stands (recently restored woodland areas)

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
	Vegetation structure - age class distribution	Restore at least 3 age classes (pole stage/ medium/ mature) spread across the average life expectancy of the commonest trees.	<p>A distribution of size and age classes of the major site-native tree and shrub species that indicate the woodland will continue in perpetuity, and will provide a variety of the woodland habitats and niches expected for this type of woodland at the site in question.</p> <p>Securing regenerating trees in open glades and on the edges of existing stands would restore the age class structure. Where mature trees are missing (in young growth stands) it will take many decades to improve structure.</p>	The SSSI condition assessments 2001-2016 show that the existing age class structure is poor, with sapling or pole stage trees missing for many of the mature stands.
Structure and function (including its typical species)	Vegetation structure - shrub layer	Maintain an understorey (shrub layer of 2-5metres) covering at least 10% of total stand area within the oak woodlands and at least 30% within the mixed stands with ash-hazel on deeper soils.	Woodland structure includes variations in age, tree form, layering, the distribution and abundance of open space and dead wood. It plays a critical role in woodland ecosystem functioning.	
	Vegetation structure - woodland edge	Restore a graduated woodland edge into adjacent semi-natural open habitats, other woodland/wood-pasture types or scrub.	<p>Woodland edge is defined as being the transitional zone between the forest feature and adjacent but different habitat types - the best woodland edges will have a varied structure in terms of height and cover. Many typical forest species make regular use of these edge habitats for feeding due to higher herb layer productivity and larger invertebrate populations.</p> <p>In some instances the tightly drawn SSSI boundaries do not give sufficient space to restore a graduated woodland edge within the protected site. In particular the potential for expansion on the upper edges of the woodland within the site boundary is extremely limited.</p>	See section on extent above
	Adaptation and resilience	Maintain the resilience of the H91A0 feature by ensuring a diversity (at least 10 species) of site-	<p>This recognises the increasing likelihood of natural habitat features needing to absorb or adapt to wider environmental changes.</p> <p>Resilience may be described as the ability of an ecological system to cope with, and</p>	NATURAL ENGLAND, 2015. Climate Change Theme Plan and

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		native trees (eg oak, birch, holly, ash, sycamore, alder rowan, wych elm, cherry, willow) and a diversity (at least 5 species) of site-native shrubs (eg hazel, hawthorn, blackthorn, juniper, willow) across the site.	<p>adapt to environmental stress and change whilst retaining the same basic structure and ways of functioning.</p> <p>Such environmental changes may include changes in sea levels, precipitation and temperature for example, which are likely to affect the extent, distribution, composition and functioning of a feature within a site. The vulnerability and response of features to such changes will vary. Using best available information, any necessary or likely adaptation or adjustment by the feature and its management in response to actual or expected climatic change should be allowed for, as far as practicable, in order to ensure the feature's long-term viability.</p> <p>The overall vulnerability of this particular SAC to climate change has been assessed by Natural England as being <i>moderate</i>, taking into account the sensitivity, fragmentation, topography and management of its habitats. This means that some adaptation action for specific issues may be required, such as reducing habitat fragmentation, creating more habitat to buffer the site or expand the habitat into more varied landscapes and addressing particular management and condition issues. Individual species may be more or less vulnerable than their habitat itself. In many cases, change will be inevitable so appropriate monitoring would be required.</p>	<p>supporting National Biodiversity Climate Change Vulnerability Assessments (NBCCVAs) for SACs and SPAs in England. Available at: http://publications.naturalengland.org.uk/publication/4954594591375360.</p>
Structure and function (including its typical species)	Browsing and grazing by herbivores	Maintain browsing at a low level that allows well developed understorey	<p>Herbivores can be an integral part of woodland ecosystems. They are important in influencing woodland regeneration, composition and structure and therefore in shaping woodland communities.</p> <p>In general, both light grazing and browsing are desirable to promote both a diverse woodland structure and continuous seedling establishment. Short periods with no grazing at all can allow fresh natural regeneration of trees, but a long-term absence of herbivores can result in excessively dense thickets of young trees which shade out ground flora and lower plant species.</p> <p>However, heavy grazing by deer or sheep prevents woodland regeneration, and can cause excessive trampling and/or poaching damage, canopy fragmentation, heavy browsing, bark-stripping and a heavily grazed sward.</p> <p>Some grazing can benefit the bryophyte assemblage by reducing competition with woodland ground flora. However the bryophytes also need continuity of cover and maintenance of humidity thus requiring tree regeneration in the medium term. Indicators of suitable grazing and browsing include no obvious browse line, locally lush ground</p>	<p>NATURAL ENGLAND 2014. Site Improvement Plan for Ullswater Oakwoods SAC (SIP253). Available at http://publications.naturalengland.org.uk/publication/4604707481845760?category=35016</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>vegetation with some grazing-sensitive species evident, and tree seedlings and saplings common in canopy gaps.</p> <p>The Site Improvement Plan for the Ullswater Oakwoods SAC identified high grazing pressure (deer and sheep numbers) as the most pressing issues and the top priority action to address for the site. A deer impact assessment should be undertaken to ascertain the impact of both roe and red deer. Red deer numbers are locally high and are a potential threat to the structure and function of the woodland.</p>	
Structure and function (including its typical species)	Regeneration potential	Restore the potential for sufficient natural regeneration of desirable trees and shrubs	<p>The regeneration potential of the woodland feature must be maintained if the wood is to be sustained and survive, both in terms of quantity of regeneration and in terms of appropriate species. This will include regeneration of the trees and shrubs from saplings or suckers, regrowth from coppice stools or pollards, and where appropriate planting.</p> <p>Typically, tree seedlings of desirable species (measured by seedlings and <1.3m saplings above grazing and browsing height) should be visible in sufficient numbers in gaps, at the wood edge and/or as regrowth as appropriate.</p> <p>Browsing and grazing levels must permit regeneration at least in intervals of 5 years every 20. The density of regeneration considered sufficient is less in parkland sites than in high forest. Regeneration from pollarding of veteran trees should be included where this is happening.</p> <p>Securing regeneration on the woodland edges as detailed above is a key objective.</p>	The SSSI condition assessments 2001-2016 show that the regeneration within The Ullswater Oakwoods is patchy and suppressed by deer and livestock.
	Tree and shrub species composition	Maintain a canopy and under-storey of which 95% is composed of site-native trees and shrubs	<p>Native trees and shrubs in general support a greater diversity of associated species than non-native species, especially amongst groups of invertebrates which depend directly on trees for food and shelter.</p> <p>There are many plants and animals which use or co-exist with non-native trees, but many rare and threatened woodland species are specialists adapted to one or a few native trees or shrub species (birches, willows and oaks, are examples of trees that host many specialist insect species).</p> <p>Sycamore density is currently low on this site. In view of the likelihood of ash-dieback impacting on the site in the medium term sycamore should be retained as a canopy tree (but not planted). This decision and the quantity of sycamore regeneration should be reviewed on a regular basis</p>	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Structure and function (including its typical species)	Key structural, influential and site-distinctive species	<p>Maintain the diversity and abundance of the species and species groups listed below to enable them to be a viable component of the H91A0 habitat;</p> <p>Tree and shrub species (as listed in adaptation and resilience section above)</p> <p>Ground flora representative of relevant NVC community types (including transitional types) as listed in vegetation community composition section above.</p> <p>Assemblages of lichens, bryophytes, ferns and breeding birds associated with western oak woods</p>	<p>Some plant or animal species (or related groups of such species) make a particularly important contribution to the necessary structure, function and/or quality of an Annex I habitat feature at a particular site. These species will include;</p> <ul style="list-style-type: none"> – <i>Structural</i> species which form a key part of the habitat's structure or help to define an Annex I habitat on a site (see also the attribute for 'vegetation community composition'). – <i>Influential</i> species which are likely to have a key role affecting the structure and function of the habitat (such as bioturbators (mixers of soil/sediment), grazers, surface borers, predators or other species with a significant functional role linked to the habitat). – <i>Site-distinctive</i> species which are considered to be a particularly special and distinguishing component of an Annex I habitat on a particular site. – <p>There may be natural fluctuations in the frequency and cover of each of these species. The relative contribution made by them to the overall ecological integrity of a site may vary, and Natural England will provide bespoke advice on this as necessary.</p> <p>The list of species given here for this Annex I habitat feature at this SAC is not necessarily exhaustive. The list may evolve, and species may be added or deleted, as new information about this site becomes available.</p>	<p>AVERIS, A.G.B. 2008 Bryophyte Site Dossier for Glencoyne Wood</p> <p>SSSI citation and NE survey data.</p>
	Invasive, non-native and/or introduced species	<p>Ensure invasive and introduced non-native species are either rare or absent, but if present are causing minimal damage to the H91A0 feature</p>	<p>Invasive or introduced non-native species are a serious potential threat to the biodiversity of native and ancient woods, because they are able to exclude, damage or suppress the growth of native tree, shrub and ground species (and their associated typical species), reduce structural diversity and prevent the natural regeneration of characteristic site-native species.</p> <p>Once established, the measures to control such species may also impact negatively on the features of interest (eg use of broad spectrum pesticides). Such species can include</p>	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			Rhododendrons, snowberry, Japanese knotweed, giant hogweed and Himalayan balsam, for example. Similarly, this would include pheasants, rabbits and non-native invertebrate 'pest' species.	
Structure and function (including its typical species)	Soils, substrate and nutrient cycling	Maintain the properties of the underlying soil types, including structure, bulk density, total carbon, pH, soil nutrient status and fungal:bacterial ratio, to within typical values for the H91A0 habitat.	<p>Soil is the foundation of basic ecosystem function and a vital part of the natural environment. Its properties strongly influence the colonisation, growth and distribution of those plant species which together form vegetation types, and therefore provides a habitat used by a wide range of organisms.</p> <p>Soil biodiversity has a vital role to recycle organic matter. Changes to natural soil properties may therefore affect the ecological structure, function and processes associated with this Annex I feature.</p>	
	Root zones of ancient trees	Maintain the soil structure within and around the root zones of the mature and ancient tree cohort in an un-compacted condition	<p>The management of land within and around forest habitats which are characterised by ancient trees can be crucial to their individual welfare and long-term continuity, and the landscape they are part of can be just as or even more important.</p> <p>The condition of the soil surrounding such trees will affect their roots, associated mycorrhizal fungi and growth. Plants have difficulty in compacted soil because the mineral grains are pressed together, leaving little space for air and water which are essential for root growth. Unless carefully managed, activities such as construction, forestry management and trampling by grazing livestock and human feet during recreational activity may all contribute to excessive soil compaction around ancient trees.</p>	
Supporting processes (on which the feature relies)	Air quality	Restore as necessary the concentrations and deposition of air pollutants to within the site-relevant Critical Load or Level values given for this H91A0 feature of the site on the Air Pollution Information System (www.apis.ac.uk).	<p>This habitat type is considered sensitive to changes in air quality.</p> <p>Exceedance of these critical values for air pollutants may modify the chemical status of its substrate, accelerating or damaging plant growth, altering its vegetation structure and composition and causing the loss of sensitive typical species associated with it. Critical Loads and Levels are recognised thresholds below which such harmful effects on sensitive UK habitats will not occur to a significant level, according to current levels of scientific understanding.</p> <p>There are critical levels for ammonia (NH₃), oxides of nitrogen (NO_x) and sulphur dioxide (SO₂), and critical loads for nutrient nitrogen deposition and acid deposition. There are currently no critical loads or levels for other pollutants such as Halogens, Heavy Metals, POPs, VOCs or Dusts. These should be considered as appropriate on a case-by-case basis. Ground level ozone is regionally important as a toxic air pollutant</p>	<p>More information about site-relevant Critical Loads and Levels for this SAC is available by using the 'search by site' tool on the Air Pollution Information System (www.apis.ac.uk).</p> <p>NATURAL</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>but flux-based critical levels for the protection of semi-natural habitats are still under development.</p> <p>The Site Improvement Plan for Ullswater Oakwoods (Natural England 2014) identified that N deposition currently exceeded the relevant critical loads/levels associated with the SAC interest feature.</p> <p>It is recognised that achieving this target may be subject to the development, availability and effectiveness of abatement technology and measures to tackle diffuse air pollution, within realistic timescales.</p>	<p>ENGLAND 2014. Site Improvement Plan for Ullswater Oakwoods SAC (SIP253). Available at http://publications.naturalengland.org.uk/publication/4604707481845760?category=35016</p>
Supporting processes (on which the feature relies)	Hydrology	At a site, unit and/or catchment level, maintain natural hydrological processes to provide the conditions necessary to sustain the H91A0 feature within the site	<p>Defining and maintaining the appropriate hydrological regime is a key step in moving towards achieving the conservation objectives for this site and sustaining this feature.</p> <p>Changes in source, depth, duration, frequency, magnitude and timing of water supply can have significant implications for the assemblage of characteristic plants and animals present.</p> <p>This target is generic and further site-specific investigations may be required to fully inform conservation measures and/or the likelihood of impacts. This is included as disruption/ damage to hydrological processes could be caused by activities taking place at some distance from the site boundary.</p>	
	Illumination	Ensure artificial light is maintained at a level which is unlikely to affect natural phenological cycles and processes to the detriment of the H91A0 feature and its typical species at this site.	Woodland biodiversity has naturally evolved with natural patterns of light and darkness, so disturbance or modification of those patterns can influence numerous aspects of plant and animal behaviour. For example, light pollution (from direct glare, chronically increased illumination and/or temporary, unexpected fluctuations in lighting) can affect animal navigation, competitive interactions, predator-prey relations, and animal physiology. Flowering and development of trees and plants can also be modified by unnatural illumination which can disrupt natural seasonal responses.	
	Conservation measures	Maintain the management measures (either within and/or outside the site boundary as	Active and ongoing conservation management is needed to protect, maintain or restore this feature at this site. Further details about the necessary conservation measures for this site can be provided by contacting Natural England. This information will typically be found within supporting documents such as Natura 2000 Site Improvement Plan, Site Management Strategies or Plans, the Views about Management Statement for the	NATURAL ENGLAND 2014. Site Improvement Plan for Ullswater Oakwoods SAC

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		appropriate) which are necessary to maintain or restore the structure, functions and supporting processes associated with the H91A0 feature	underpinning SSSI and/or management agreements.	<p>(SIP253). Available at http://publications.naturalengland.org.uk/publication/4604707481845760?category=35016</p> <p>ENGLISH NATURE, 2005. Views about the Management of Low Wood, Hallinghag Wood and Low Wood SSSI. Available from Natural England's Designated Sites View.</p>
Version Control Advice last updated: N/A				
Variations from national feature-framework of integrity-guidance: The standing and fallen wood targets were adjusted to make them consistent with the 2017 monitoring objectives for the site 6 fallen and 6 standing dead per hectare. Resilience targets changed by separating species into trees and shrubs.				

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