



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

South Dartmoor Woods Special Area of Conservation (SAC) Site Code: UK0012749



Yarner Wood (credit - A. Knott, NE)

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### About this document

This document provides Natural England's supplementary advice about the European Site Conservation Objectives relating to South Dartmoor Woods SAC.

This advice should therefore be read together with the SAC Conservation Objectives available here.

Where this site overlaps with other European Sites, you should also refer to the separate European Site Conservation Objectives and Supplementary Advice (where available) provided for those sites.

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 HDIRConservationObjectivesNE@naturalengland.org.uk

## About this site

#### European Site information

Name of European Site	South Dartmoor Woods Special Area of Conservation (SAC)
Location	Devon; Dartmoor National Park Authority
Site Map	The designated boundary of this site can be viewed <u>here</u> on the MAGIC website
Designation Date	1 April 2005
Qualifying Features	See section below
Designation Area	2157.15ha
Designation Changes	N/A
Feature Condition Status	Details of the feature condition assessments made at this site can be found using Natural England's <u>Designated Sites System</u>
Names of component Sites of Special Scientific Interest (SSSIs)	Bovey Valley Woodlands SSSI, Hembury Woods SSSI, Holne Woodlands SSSI, Sampford Spiney SSSI, Shaugh Prior Woods SSSI Teign Valley Woods SSSI, Yarner Wood and Trendlebere Down SSSI
Relationship with other European or International Site designations	The western boundary of South Dartmoor Woods SAC coincides with the eastern boundary of <u>Dartmoor SAC</u> (UK0012929)

#### Site background and geography

South Dartmoor Woods SAC lies within Dartmoor National Park and consists of seven individual sites within two clusters, one near Lustleigh and one near Buckfastleigh. The site falls within the <u>Dartmoor</u> <u>National Character Area</u>

This complex of old sessile oak woods in south-west England supports nationally important assemblages of lower plants and dry *Lobarion* communities that are unique in Western Europe. This complex of old sessile oak *Quercus petraea* supports important assemblages of lower plants and dry *Lobarion* communities that are unique in Western Europe. The woods are notable for the variations in stand type that reflect past management (old coppice and high forest) and also include grazed and ungrazed areas. The woodland is part of a complex mosaic that includes heathland and species associated with open ground, such as the high brown fritillary *Argynnis adippe* and pearl-bordered fritillary butterfly *Boloria euphrosyne*. Variations also arise due to geology, resulting in the presence of small-leaved lime *Tilia cordata*, ash *Fraxinus excelsior*, wild service tree *Sorbus torminalis*, and small areas of wet woodland dominated by alder *Alnus glutinosa* and willow *Salix* spp.

Heathland on Trendlebere Down to the north of Yarner Wood is dominated by heather *Calluna vulgaris* and also contains abundant bell heather *Erica cinerea*, cross-leaved heath *Erica tetralix*, western gorse *Ulex gallii*, purple moor-grass *Molinia caerulea* and scrub birch *Betula* sp. Secondary birch has also developed with bracken *Pteridium aquilinum* on the sites of old field systems, where there is active regeneration of oak.

## 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:**

#### • H4030 European dry heaths

This habitat has a wide European distribution, but it is only extensive in the western oceanic fringes of Europe, including the UK. Dry heaths occur through the UK and they are particularly abundant in the uplands, where they may form extensive stands, which dominate the landscape. They are more localised in lowland areas, especially in southern and central England, where they have declined in extent due to afforestation, agricultural improvement and other land uses.

European dry heaths typically occur on freely-draining, acidic to circumneutral soils with generally low nutrient content. Ericaceous dwarf-shrubs dominate the vegetation. The most common of these is heather *Calluna vulgaris*, which often occurs in combination with gorse *Ulex* spp., bilberry *Vaccinium* spp. or bell heather *Erica cinerea*, though other dwarf-shrubs are important locally. Nearly all dry heath is semi-natural, being derived from woodland through a long history of grazing and burning.

South Dartmoor Woods SAC contains a mosaic of NVC types including H4 *Ulex gallii – Agrostis curtisii* heath; H7 *Calluna vulgaris–Scilla verna* heath; H8 *Calluna vulgaris – Ulex galli* heath and H12 *Calluna vulgaris – Vaccinium myrtillus* heath. These are predominantly found within Holne Woodlands SSSI; Teign Valley Woods SSSI; and Yarner Wood & Trendlebere Down SSSI.

The heathlands within the South Dartmoor Woods SAC support an important assemblage of animal species, including numerous rare invertebrate species including High-brown Fritillary *Argynnis adippe*, Pearl-bordered Fritillary *Boloria euphrosyne* and Small Pearl-bordered Fritillary *Boloria selene* 

#### • H91A0 Old sessile oak woods with *llex* and *Blechnum* in the British Isles

In the UK, this Annex 1 habitat type 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 characteristic of base-poor soils in areas of at least moderately high rainfall in northern and western parts of the UK. The woodlands of South Dartmoor Woods SAC are found on the steep slopes over the valleys of the rivers Dart, Walkham, Bovey, Teign, Meavy and Plym. Across the site the altitude of the woodlands range from 60m - 800m; the soils are generally well drained, acidic types which are influenced by the underlying granite and Carboniferous rock types.

The woodlands support a number of characteristic NVC types including W10e *Quercus robur – Pteridum aquilinum – Rubus fruticosus* woodland (*Acer pseudoplatanus – Oxalis acetosella* sub community); W11 *Quercus petraea-Betula pubescens-Oxalis acetosella* woodland; W16 *Quercus spp.-Betula spp.- Deschampsia flexuosa* woodland and W17 *Quercus petraea-Betula pubescens-Dicranum majus* woodland

Sessile and pedunculate oak are dominant trees over much of the area, with other tree species including birch, ash *Fraxinus excelsior* and beech *Fagus sylvatica* present according to local soil conditions. Much of the woods are of a high forest structure derived from former coppice stands; at Bovey Valley the woods have developed as a result of the cessation in management of the old field systems and common ground. Due to their long history, wide variety of aspects and pollution free atmosphere, the woodlands support a rich and diverse lichen flora; in the sheltered valleys the *Lobarion* community predominates, whilst higher up this grades into the *Parmelietum* community.

#### **Qualifying Species:**

Not applicable

#### Table 1: Supplementary Advice for Qualifying Features: H4030. European dry heaths

Attril	butes	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	Maintain the total extent of the H4030 feature to 560.55 hectares	<ul> <li>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.</li> <li>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.</li> <li>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.</li> <li>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.</li> <li>Taken from SSSI Favourable Condition Tables (FCTs) and also analysis of most recent aerial photography (WebMap 2017) where information not available from FCT for the SSSI. E.g. Teign Valley Woods SSSI.</li> </ul>	This attribute will be periodically monitored as part of Natural England's <u>SSSI Condition</u> <u>Assessments</u>
Extent and distribution of the feature	Spatial distribution of the feature within the site	Maintain the distribution and configuration of the feature, including where applicable its component vegetation types, across the site	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. 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	This attribute will be periodically monitored as part of Natural England's <u>SSSI Condition</u> <u>Assessments</u>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			composition of the Annex I habitat. Smaller fragments of habitat can typically support smaller and more isolated populations which are more vulnerable to extinction. 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.	
Structure and function (including its typical species)	Vegetation community composition	<ul> <li>Ensure the component vegetation communities of the feature are referable to and characterised by the following National Vegetation Classification type</li> <li>H4 Ulex gallii – Agrostis curtisii heath</li> <li>H7 Calluna vulgaris–Scilla verna heath</li> <li>H8 Calluna vulgaris – Ulex galli heath</li> <li>H12 Calluna vulgaris – Vaccinium myrtillus heath.</li> </ul>	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. 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).	This attribute will be periodically monitored as part of Natural England's <u>SSSI Condition</u> <u>Assessments</u>
Structure and function (including its typical species)	Vegetation community transitions	Maintain any areas of transition between this and communities which form other heathland- associated habitats, such as dry and humid heaths, mires, acid grasslands, scrub and woodland.	Transitions/zonations between adjacent but different vegetation communities are usually related to naturally-occurring changes in soil, aspect or slope. Such 'ecotones' retain characteristics of each bordering community and can add value in often containing species not found in the adjacent communities. Retaining such transitions can provide further diversity to the habitat feature, and support additional flora and fauna. This is an important attribute as many characteristic heathland species utilise the transitions between vegetation types or use different vegetation types during different stages of their life cycle.	

Attril	butes	Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Structure and function (including its typical species)	Vegetation structure: cover of dwarf shrubs	Restore an overall cover of dwarf shrub species which is typically between 25-90% Dwarf-shrubs include:	Variations in the structure of the heathland vegetation (vegetation height, amount of canopy closure, and patch structure) is needed to maintain high niche diversity and hence high species richness of characteristic heathland plants and animals.	This attribute will be periodically monitored as part of Natural England's <u>SSSI Condition</u> <u>Assessments</u>
		Bearberry Arctostaphylos uva- ursi Heather Calluna vulgaris Crowberry Empetrum nigrum Dorset Heath Erica ciliaris Bell Heather E. cinerea Cross leaved-heath E. tetralix, Cornish heath E. vagans Petty whin Genista anglica Creeping broom G. pilosa Western gorse Ulex gallii Dwarf gorse U. minor Bilberry Vaccinium myrtillus Cowberry V. vitis-idaea	Many species also utilise the transitions between vegetation types or use different vegetation types during different stages of their life cycle. The structural character of the heathland feature is strongly influenced by the growing habits of its dominant species which in most cases will be ericoids (i.e. plants that look like heathers, including members of the <i>Ericaceae</i> and <i>Empetraceae</i> families). The ericaceous species heather or ling <i>Calluna vulgaris</i> , bell heather <i>Erica cinerea</i> , cross-leaved heath <i>Erica tetralix</i> , Dorset heath <i>Erica ciliaris</i> , Cornish heath <i>Erica vagans</i> , bilberry or blaeberry Vaccinium myrtillus and cowberry <i>Vaccinium</i> <i>vitisidaea</i> are the commonest and most characteristic dwarf- shrubs. Hybrids of Dorset and crossleaved heath and of bilberry and cowberry can be locally abundant. <i>Calluna</i> is usually the most abundant. Crowberry <i>Empetrum nigrum</i> , another common species in some coastal and transitional heaths, is not strictly ericaceous but is often treated as an ericoid species.	
Structure and function (including its typical species)	Vegetation composition: bracken cover	Maintain a cover of dense bracken which is low, typically at <10%	The spread of bracken <i>Pteridium aquilinum</i> is a problem on many lowland heathlands. The unpalatable nature and density of bracken as a tall-herb fern, and its decomposing litter, can smother and shade out smaller and more characteristic heathland vegetation. Usually active management of bracken is required to reduce or contain its cover across this habitat feature. South Dartmoor Woods SAC supports populations of pearl- bordered fritillary, small pearl-bordered fritillary and high brown fritillary; these species utilise bracken litter as part of their lifecycle. In key areas for fritillaries a maximum of 20% bracken is acceptable but its spread must be regularly monitored.	This attribute will be periodically monitored as part of Natural England's <u>SSSI Condition</u> <u>Assessments</u> Butterfly Conservation 2005. <u>Bracken for Butterflies</u>

Attril	butes	Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Structure and function (including its typical species)	Vegetation structure: cover of gorse	Maintain cover of common gorse <i>Ulex europaeus</i> at <25% and the combined cover of <i>U.europaeus</i> and <i>U.gallii</i> at <50%	Gorse as a component of heathland is a very valuable wildlife habitat, and often a marker of relict heath and common. Both dense and spiny, it provides good, protected cover for many wildlife species: birds, mammals and reptiles; breeding habitat for rare or declining bird species, and excellent winter roosting. The flowers, borne at a time of year when other sources of pollen or nectar are in short supply, are particularly good for insects and other invertebrate pollinators. However gorse may cause problems if unchecked by dominating an area, eliminating other typical heathland species. Mature stands en masse may also be serious fire hazards.	This attribute will be periodically monitored as part of Natural England's <u>SSSI Condition</u> <u>Assessments</u>
Structure and function (including its typical species)	Vegetation structure: tree cover	Maintain the open character of the feature, with a typically scattered and low cover of trees and scrub <15% cover) Dwarf birch <i>Betula nana</i> and bog myrtle <i>Myrica</i> gale should be excluded from estimates of dwarf shrub cover.	Scrub (mainly trees or tree saplings above 1 m in height) and isolated trees are usually very important in providing warmth, shelter, cover, foodplants, perches, territorial markers and sources of prey for typical heathland invertebrates and vertebrates. But overall cover of scrub and trees across this habitat feature should be maintained or restored to a fairly sparse level, with a structurally complex edge and with characteristic heathland vegetation as ground cover. If scrub is locally important for any associated species with their own specific conservation objectives, then a higher level of cover will be acceptable. The area of scrub/tree cover should be stable or not increasing as a whole Up to 20% scrub cover can be accepted at this site if indicated in conservation objectives or management plan.	This attribute will be periodically monitored as part of Natural England's <u>SSSI Condition</u> <u>Assessments</u>
Structure and function (including its typical species)	Vegetation structure: heather age structure	Restore a diverse age structure amongst the ericacerous shrubs typically found on the site	Each phase of growth associated with the characteristic heathers which dominate this feature also represents different microclimatic conditions and microhabitats which may provide shelter or food to other organisms. Therefore, it is important to maintain a mosaic of heather in different phases of growth. Typically this age structure will consist of between 10-40% cover of (pseudo) pioneer heathers; 20-80% cover of building/mature heathers; <30% cover of degenerate heathers and less than <10% cover of dead heathers.	This attribute will be periodically monitored as part of Natural England's <u>SSSI Condition</u> <u>Assessments</u>

Attri	butes	Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Structure and function (including its typical species)	Vegetation: undesirable species	Maintain the frequency/cover of the following undesirable species to within acceptable levels (<1%) and prevent changes in surface condition, soils, nutrient levels or hydrology which may encourage their spread.	Undesirable non-woody and woody vascular plants species may require active management to avert an unwanted succession to a different and less desirable state. Often they may be indicative of a negative trend relating to another aspect of a site's structure and function. These species will vary depending on the nature of the particular feature, and in some cases these species may be natural/acceptable components or even dominants. Negative indicators may include: Rhododendron <i>Rhododendron ponticum</i> , Salal <i>Gaultheria shallon</i> , Japanese knotweed <i>Fallopia japonica</i> , Creeping thistle <i>Cirsium arvense</i> , Spear thistle <i>Cirsium vulgare</i> , Common foxglove <i>Digitalis purpurea</i> , Willowherb <i>Epilobium spp</i> . ( <i>excluding</i> . <i>E. palustre</i> ) Rosebay Willowherb <i>Chamerion</i> <i>angustifolium</i> , Soft rush <i>Juncus effusus</i> , Heath rush <i>J.</i> <i>squarrosus</i> , Buttercup <i>Ranunculus spp.</i> , Ragwort <i>Senecio spp.</i> , Broad leaved dock <i>Rumex obtusifolius</i> , Common nettle <i>Urtica</i> <i>dioica</i> Species in this list may be beneficial for a range of invertebrates and only become indicators of negative quality if they are over the established limit	This attribute will be periodically monitored as part of Natural England's <u>SSSI Condition</u> <u>Assessments</u>
Structure and function (including its typical species)	Key structural, influential and/or distinctive species	<ul> <li>Maintain the abundance of the species listed to enable each of them to be a viable component of the Annex I habitat feature</li> <li>Constant and preferential plant species of the H4, H7, H8 and H12 NVC vegetation types at this SAC</li> <li>High brown fritillary butterfly <i>Argynnis adippe</i></li> <li>Pearl-bordered fritillary butterfly <i>Boloria euphrosyne</i></li> <li>Small pearl-bordered fritillary</li> </ul>	<ul> <li>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;</li> <li>Structural species which form a key part of the Annex I habitat's structure or help to define that habitat on a particular SAC (see also the attribute for 'vegetation community composition').</li> <li>Influential 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).</li> <li>Site-distinctive species which are considered to be a</li> </ul>	This attribute will be periodically monitored as part of Natural England's <u>SSSI Condition</u> <u>Assessments</u>

Attri	butes	Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		<ul> <li>butterfly <i>Boloria selene</i></li> <li>Dartford Warbler <i>Sylvia</i> <i>undata</i></li> <li>Nightjar <i>Caprimulgus</i> <i>europaeus</i></li> </ul>	particularly special and distinguishing component of an Annex I habitat on a particular SAC. 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. 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.	
Structure and function (including its typical species)	Functional connectivity with wider landscape	Maintain the overall extent, quality and function of any supporting features within the local landscape which provide a critical functional connection with the site	This recognises the potential need at this site to maintain or restore the connectivity of the site to its wider landscape in order to meet the conservation objectives. These connections may take the form of landscape features, such as habitat patches, hedges, watercourses and verges, outside of the designated site boundary which are either important for the migration, dispersal and genetic exchange of those typical species closely associated with qualifying Annex I habitat features of the site. These features may also be important to the operation of the supporting ecological processes on which the designated site and its features may rely South Dartmoor Heaths SSSI, part of the Exmoor Heaths SAC adjoins the western boundary of this SAC (and Holne Woodlands) and includes similar qualifying features.	
Structure and function (including its typical species)	Adaptation and resilience	Maintain the H4030 feature's ability, and that of its supporting processes, to adapt or evolve to wider environmental change, either within or external to the site	This recognises the increasing likelihood of natural habitat features to absorb or adapt to wider environmental changes. Resilience may be described as the ability of an ecological system to cope with, and adapt to environmental stress and change whilst retaining the same basic structure and ways of functioning. 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	NATURAL ENGLAND, 2015. Climate Change Theme Plan and supporting National Biodiversity Climate Change Vulnerability assessments ('NBCCVAs') for SACs and SPAs in England [Available at http://publications.naturalengland. org.uk/publication/495459459137 5360].

Attri	butes	Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
	1			(where available)
			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. The overall vulnerability of this SAC to climate change has been assessed by Natural England (2015) as being low, taking into account the sensitivity, fragmentation, topography and management of its habitats. This means that this site is considered to be vulnerable overall but are a lower priority for further assessment and action. Individual species may be more or less vulnerable than their supporting habitat itself. In many cases, change will be inevitable so appropriate monitoring would be advisable.	
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 habitat.	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. 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.	
Supporting processes (on which the feature relies)	Conservation measures	Maintain the management measures (either within and/or outside the site boundary as appropriate) which are necessary to Maintain the structure, functions and supporting processes associated with the H4030 feature	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, where applicable, supporting documents such as Natura 2000 Site Improvement Plan, Site Management Strategies or Plans, the Views about Management Statement for the underpinning SSSI and/or management agreements.	
Supporting processes	Air quality	Restore as necessary, the concentrations and deposition of	This habitat type is considered sensitive to changes in air quality. Exceedance of these critical values for air pollutants	More information about site- relevant Critical Loads and Levels

Attributes	Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
(on which the feature relies)	air pollutants to at or below the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System (www.apis.ac.uk).	<ul> <li>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.</li> <li>There are critical levels for ammonia (NH3), oxides of nitrogen (NOx) 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.</li> <li>Ground level ozone is regionally important as a toxic air pollutant but flux-based critical levels for the protection of seminatural habitats are still under development. 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.</li> <li>Although the sensitive features are currently considered to be favourable on the site, a 'restore' target has been included as nitrogen deposition exceeds the site-relevant critical load for ecosystem protection. Further investigation of this is required. Exceeding the site-relevant critical load may impact on the old sessile woods habitat through a decrease in mycorrhiza, a loss of epiphytic lichens and bryophytes and changes to ground vegetation.</li> </ul>	for this SAC is available by using the 'search by site' tool on the Air Pollution Information System (www.apis.ac.uk). NATURAL ENGLAND, 2014. Site Improvement Plan: <u>South</u> <u>Dartmoor Woods SAC</u> (SIP222)
Variations from national feature	e-framework of integrity-guidance:	N/A	

# Table 2: Supplementary Advice for Qualifying Features: H91A0. Old sessile oak woods with *llex* and *Blechnum* in the British Isles; Western acidic oak woodland

Attri	butes	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	Maintain the total extent of the feature at 1446.93 hectares	See explanatory notes for this attribute in Table 1. 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. 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 - being one example). 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.	This attribute will be periodically monitored as part of Natural England's <u>SSSI Condition</u> <u>Assessments</u>
Extent and distribution of the feature	Spatial distribution of the feature within the site	Maintain the distribution and configuration of the feature, including where applicable its component vegetation types, across the site	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. 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. 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.	

Attri	butes	Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Structure and function (including its typical species)	Vegetation community composition	<ul> <li>Ensure the component vegetation communities of the feature are referable to and characterised by the following National Vegetation Classification types</li> <li>W10e Quercus robur – Pteridum aquilinum – Rubus fruticosus woodland (Acer pseudoplatanus – Oxalis acetosella sub community);</li> <li>W11 Quercus petraea- Betula pubescens-Oxalis acetosella woodland;</li> <li>W16 Quercus sppBetula sppDeschampsia flexuosa woodland</li> <li>W17 Quercus petraea- Betula pubescens-Dicranum majus woodland</li> </ul>	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. 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).	This attribute will be periodically monitored as part of Natural England's <u>SSSI Condition</u> <u>Assessments</u>
Structure and function (including its typical species)	Vegetation structure - canopy cover	Maintain an appropriate tree canopy cover across the feature, which will typically be between 30-90% of the site	Canopy cover is the overall proportion of vegetative cover consisting of any woody layer ranging from established regeneration to mature and veteran stages. Woodland canopy density and structure is important because it affects ecosystem function and in particular microclimate, litterfall, soil moisture, nutrient turnover and shading; this in turn influences the composition of plants and animals in lower vegetation layers and soil. 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. In general, the woodland canopy of this feature should provide a core of woodland interior conditions with some open and edge habitat as well.	This attribute will be periodically monitored as part of Natural England's <u>SSSI Condition</u> <u>Assessments</u>

Attril	butes	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/temporary open space within the woodland feature, typically to cover approximately 10% of area	<ul> <li>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.</li> <li>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. 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.</li> </ul>	This attribute will be periodically monitored as part of Natural England's <u>SSSI Condition</u> <u>Assessments</u>
Structure and function (including its typical species)	Vegetation structure - old growth	Maintain the extent and continuity of undisturbed, mature/old growth stands (typically comprising at least 20% of the feature at any one time) and the assemblages of veteran and ancient trees (typically >10 trees per hectare).	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. 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.	This attribute will be periodically monitored as part of Natural England's <u>SSSI Condition</u> <u>Assessments</u>
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 between 30 - 50 m3 per hectare of standing or fallen timber or 3-5 fallen trees >30cm per hectare, and >10 standing dead trees per hectare	<ul> <li>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.</li> <li>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.</li> </ul>	This attribute will be periodically monitored as part of Natural England's <u>SSSI Condition</u> <u>Assessments</u>
Structure and function (including its typical species)	Vegetation structure - age class distribution	Maintain at least 3 age classes (pole stage/ medium/ mature) spread across the average life expectancy of the commonest trees.	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.	This attribute will be periodically monitored as part of Natural England's <u>SSSI Condition</u> <u>Assessments</u>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Structure and function (including its typical species)	Vegetation structure - shrub layer	Maintain an Understorey shrubs covering at least 10% of the stand area (this will vary with light levels and site objectives)	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.	This attribute will be periodically monitored as part of Natural England's <u>SSSI Condition</u> <u>Assessments</u>
Structure and function (including its typical species)	Vegetation structure - woodland edge	Maintain a graduated woodland edge into adjacent semi-natural open habitats, other woodland/wood-pasture types or scrub.	<ul> <li>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.</li> <li>Many typical forest species make regular use of the edge habitats for feeding due to higher herb layer productivity and larger invertebrate populations. Grasslands / arable fields managed with high doses of agro-chemicals could potentially not allow this gradation of woodland edge and could have other impacts on the integrity of the site (pollution/ nutrient enrichment etc.).</li> </ul>	
Structure and function (including its typical species)	Adaptation and resilience	Maintain the resilience of the feature by ensuring a diversity (at least 2 species) of site-native trees (e.g sessile oak, birch, holly) across the site.	See the explanatory text for this attribute in Table 1	NATURAL ENGLAND, 2015. Climate Change Theme Plan and supporting National Biodiversity Climate Change Vulnerability assessments ('NBCCVAs') for SACs and SPAs in England [Available at http://publications.naturalengland. org.uk/publication/495459459137 5360].
Structure and function (including its typical species)	Browsing and grazing by herbivores	Maintain and in places restore browsing at a (low) level that allows well developed understorey with no obvious browse line, & lush ground vegetation with some grazing sensitive species evident (bramble, ivy etc.), and tree seedlings and sapling common in gaps.	Herbivores, especially deer, are an integral part of woodland ecosystems. They are important in influencing woodland regeneration, composition and structure and therefore in shaping woodland wildlife communities. In general, both light grazing and browsing is 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. However, heavy grazing by deer or sheep prevents woodland regeneration, and can cause excessive trampling	This attribute will be periodically monitored as part of Natural England's <u>SSSI Condition</u> <u>Assessments</u>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			and/or poaching damage, canopy fragmentation, heavy browsing, barkstripping and a heavily grazed sward.	
Structure and function (including its typical species)	Regeneration potential	Maintain the potential for sufficient natural regeneration of desirable trees and shrubs; 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 ;	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. 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.	This attribute will be periodically monitored as part of Natural England's <u>SSSI Condition</u> <u>Assessments</u>
Structure and function (including its typical species)	Tree and shrub species composition	Maintain a canopy and under- storey of which 95% is composed of site native trees and shrubs <b>Site native:</b> Sessile oak <i>Quercus</i> <i>petraea</i> , pedunculate oak <i>Q</i> . <i>robur</i> , ash Fraxinus excelsior, birch <i>Betula sp.</i> , holly <i>Ilex</i> <i>aquifolium</i> , hazel <i>Corylus</i> <i>avellana</i> , field maple <i>Acer</i> <i>campestre</i> , wild service <i>Sorbus</i> <i>torminalis</i> , rowan <i>Sorbus</i> <i>aucuparia</i> . Beech <i>Fagus</i> <i>sylvatica</i> (see supporting notes) <b>Acceptable naturalised</b> <b>species:</b> sycamore <i>Acer</i> <i>pseudoplatanus</i> sweet chestnut <i>Castanea sativa</i> <b>Not site native:</b> scots pine <i>Pinus</i> <i>sylvestris</i> (see supporting notes)	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. 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). The target for composition differs from draft SSSI and SAC conservation objectives whereby beech, sycamore and sweet chestnut were considered not be native to the site or indeed to south-west England. Beech was extensively planted throughout some of the SSSIs in the 1900C, mostly on former boundary banks; beech has been selectively controlled over time but many mature trees are still present. Sycamore is also present across the SSSIs. Sweet chestnut is present in one part of Yarner Wood and Trendlebere Down SSSI as a result of planting in the 1950s. The long history of these species on or adjacent to the SAC, now requires that they be considered climatically or de facto native to the SW England, whereby the abiding management philosophy is that "changes of species is accepted alongside conservation of the main features of interest" i.e. Beech, Sycamore, Scots pine and Sweet chestnut are accepted to	This attribute will be periodically monitored as part of Natural England's <u>SSSI Condition</u> <u>Assessments</u>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<ul> <li>specified limits within the principal feature of upland oakwood. Climate change models for the future distributions of previously non-native species have led to the following re-categorisations:</li> <li>Beech is to be treated as site-native</li> <li>Sycamore and Sweet Chestnut are to be treated as acceptable naturalised species.</li> <li>Scots Pine is native to the UK but is not considered site-native and will be treated as an acceptable naturalised species. However, management aims to reduce the presence of Scots pine over time and to limit its distribution to Unit 2 (Black Wood) only.</li> </ul>	
Structure and function (including its typical species)	Key structural, influential and/or distinctive species	Maintain the abundance of the species listed to enable each of them to be a viable component of the Annex I habitat featureSessile oak Quercus petraea, holly llex aquifolium, ferns Blechnum sp.Assemblage of epiphytic lichensAssemblage of Atlantic bryophytesAssemblage of breeding woodland birds including pied flycatcher Ficedula hypoleuca, wood warbler Phylloscopus sibilatrix, redstart Phoenicurus phoenicurusToadflax-leaved st John's wort Hypericum linarifoliumHigh brown fritillary butterfly	<ul> <li>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;</li> <li>Structural species which form a key part of the Annex I habitat's structure or help to define that habitat on a particular SAC (see also the attribute for 'vegetation community composition').</li> <li>Influential 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)</li> <li>Site-distinctive species which are considered to be a particularly special and distinguishing component of an Annex I habitat on a particular SAC. 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. The list of species given here for this Annex I habitat feature at this SAC is not necessarily exhaustive. The list may evolve, and experies may be added or deleted as partice and an and stature at this SAC is not necessarily exhaustive.</li> </ul>	This attribute will be periodically monitored as part of Natural England's <u>SSSI Condition</u> <u>Assessments</u>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		Pearl-bordered fritillary butterfly Small pearl-bordered fritillary butterfly	about this site becomes available.	
Structure and function (including its typical species)	Invasive, non- native and/or introduced species	Ensure invasive and introduced non-native species are either rare or absent, but if present are causing minimal damage to the feature	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. Once established, the measures to control such species may also impact negatively on the features of interest (e.g. use of broad spectrum pesticides). Such species can include Rhododendrons, snowberry, Japanese knotweed, giant hogweed and Himalayan balsam, for example. Similarly, this would include pheasants, rabbits and non-native invertebrate 'pest' species.	This attribute will be periodically monitored as part of Natural England's <u>SSSI Condition</u> <u>Assessments</u>
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 habitat.	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. 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.	
Structure and function (including its typical species)	Root zones of ancient trees	Maintain the soil structure within and around the root zones of the mature and ancient tree cohort [in or to] an un-compacted condition	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. 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	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			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.	
Supporting processes (on which the feature relies)	Air quality	Restore as necessary, the concentrations and deposition of air pollutants to at or below the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System (www.apis.ac.uk).	See explanatory notes for this attribute in Table 1 Although the sensitive features are currently considered to be favourable on the site, a 'restore' target has been included as nitrogen deposition exceeds the site-relevant critical load for ecosystem protection. Further investigation of this is required. Exceeding the site-relevant critical load may impact on the old sessile woods habitat through a decrease in mycorrhiza, a loss of epiphytic lichens and bryophytes and changes to ground vegetation.	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). NATURAL ENGLAND, 2014. Site Improvement Plan: <u>South</u> <u>Dartmoor Woods SAC</u> (SIP222)
Supporting processes (on which the feature relies)	Hydrology	At a site, unit and/or catchment level (as necessary, maintain natural hydrological processes to provide the conditions necessary to sustain the feature within the site	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. 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.	
Supporting processes (on which the feature relies)	Illumination	Ensure artificial light is maintained at a level which is unlikely to affect natural phenological cycles and processes to the detriment of the 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 un-natural illumination which can disrupt natural seasonal responses.	
Version Contro	I N/A	-		
Variations from national feature-framework of integrity-guidance: The targets for some attributes listed above include both 'maintain' and 'restore' objectives. This is because this SAC is a complex of geographically-separate component				

sites which are currently in different states of condition. Overall, both objectives will be applicable to the SAC but these will differ between each component site depending on its particular circumstances. Natural England will able to provide further specific advice on request