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

Subberthwaite, Blawith and Torver Low Commons Special Area of Conservation (SAC) Site code: UK0030285

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About this document

This document provides Natural England's supplementary advice about the European Site Conservation Objectives relating to Subberthwaite, Blawith and Torver Low Commons SAC. This advice should therefore be read together with the SAC Conservation Objectives.

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	Subberthwaite, Blawith and Torver Low Commons 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	April 2005
Qualifying Features	See section below
Designation Area	1860.19 ha
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)	Subberthwaite, Blawith and Torver Low Commons
Relationship with other European or International Site designations	N/A

Site background and geography

Subberthwaite, Blawith and Torver Low Commons SAC is situated within the Lake District National Park on the plateau 4 km south of the village of Coniston and east of Broughton in Furness. The climate is mild, with high rainfall and the geology is Silurian slates and shales. The landform of the underlying rocks has given rise to a complex landscape of rocky hills interspersed with broad, shallow valleys.

Most of the site is mapped as open Access land and a number of public rights of way also cross the site. The predominant management type is sheep grazing by holders of rights of common.

Bracken, acidic grassland, heather, scrub and woodland occur on drier ground whilst over 200 mires of various sizes occur on the valley bottoms, in rocky basins and on slopes. There is a variety of wetland types, including valley mires, basin mires, flushes and swamps, supporting at least 26 different plant communities, often in complex mosaics. There are also transitions to drier habitats, open water and emergent plant communities. A different range of plant species can be found locally around spring-fed flushes and watercourses due to a calcareous influence or availability of other minerals or nutrients.

The site is also important for dragonflies and supports the only known upland colony of natterjack toad *Bufo calamita* in England.

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:

H7140 Transition mires and quaking bogs
The term 'transition mire' relates to vegetation that in floristic composition and general ecological characteristics is transitional between acid bog and alkaline fens, in which the surface conditions range from markedly acidic to slightly base-rich. As a result, the vegetation normally has intimate mixtures of species considered to be acidophile and others thought of as calciphile or basophile.

In some cases the mire occupies a physically transitional location between bog and fen vegetation or may reflect the actual process of succession, as peat accumulates in groundwater-fed fen or open water to produce rainwater-fed bog isolated from groundwater influence. Many of these systems are very unstable underfoot and can therefore also be described as 'quaking bogs'.

This SAC contains some of the best examples of 'Transition mires and quaking bogs' in the UK. The site topography and water chemistry supports a variety of wetland vegetation communities. These often occur as mosaics and include transitions between mire communities, to open water and to drier habitats.

H7150 Depressions on peat substrates of the Rhynchosporion
This habitat types typically occurs in complex mosaics with lowland wet heath and valley mire vegetation, in transition mires, and on the margins of bog pools and hollows in both raised and blanket bogs.

The vegetation is typically very open, usually characterised by an abundance of white beak-sedge *Rhynchospora alba*, often with well-developed algal mats, the bog moss *Sphagnum denticulatum*, round-leaved sundew *Drosera rotundifolia* and, in relatively base-rich sites, brown mosses such as *Drepanocladus revolvens* and *Scorpidium scorpioides*.

At this SAC, this feature is characterised by an abundance of white beak-sedge *Rhynchospora alba*. It occurs in mosaics with transition mire vegetation and is often associated with National Vegetation Classification (NVC) type M21 *Narthecium ossifragum – Sphagnum papillosum* mire. The vegetation is typically open, such as occurs around pools and disturbed areas of peat, for example along animal tracks.

Qualifying Species:

There are no qualifying species.

Table 1: Supplementary Advice for Qualifying Features: H7140. Transition mires and quaking bogs and H7150. Depressions on peat substrates of the Rhynchosporion

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 combined total extent of the H7140 and H7150 features to 308 ha.	There should be no measurable net 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. 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. 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.	ENGLISH NATURE, 1994. National vegetation classification (NVC) survey.
Extent and distribution of the feature	**Spatial distribution of the feature within the site**	Maintain the distribution and configuration of the H7140 and H7150 features, including where applicable their component vegetation types, across the site	Distribution includes the spatial pattern or arrangement of this habitat feature, and its component vegetation types, across the site. Changes in distribution may affect the nature and range of the vegetation communities present, the operation of the physical, chemical, and biological processes in the system and the resiliency of the site and its features to changes or impacts.	ENGLISH NATURE, 1994. National vegetation classification (NVC) survey.

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Structure and function (including its typical species)	**Vegetation community composition**	Ensure the component vegetation communities of the H7140 and H7150 features include and are characterised by the following National Vegetation Classification types; M1 *Sphagnum auriculatum* bog pools M2 *Sphagnum cuspidatum/ recurvum* bog pools M4 *Carex rostrata – Sphagnum recurvum* mire M5 *Carex rostrata – Sphagnum squarrosum* mire M6 *Carex echinata – Sphagnum recurvum/auriculatum* mire M8 *Carex rostrata – Sphagnum warnstorfii* mire M9 *Carex rostrata – Calliergon cuspidatum/giganteum* mire M10 *Carex dioica – Pinguicula vulgaris* mire M17 *Scirpus cespitosus – Eriophorum vaginatum* blanket mire M21 *Narthecium ossifragum – Sphagnum papillosum* valley mire M29 *Hypericum elodes – Potamogeton polygonifolius* soakway M30 Related vegetation of seasonally inundated habitats S27 *Carex rostrata – Potentilla palustris* tall herb fen	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.	ENGLISH NATURE, 1994. National vegetation classification (NVC) survey.

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: flora and fauna**	Restore the abundance of the species listed below to enable each of them to be a viable component of the Annex 1 habitats; *Andromeda polifolia, Angelica sylvestris, Calluna vulgaris, Caltha palustris, Cardamine pratensis, Carex diandra, Carex nigra, Carex rostrata, Carex spp: small to medium sized spp, Drosera spp, Epilobium palustre, Equisetum fluviatile, Equisetum fluviatile, Erica spp, Eriophorum angustifolium, Eriophorum vaginatum, Galium palustre, Hydrocotyle vulgaris, Hypericum elodes, Lysimachia vulgaris, Lythrum salicaria, Mentha aquatica, Menyanthes trifoliata, Myrica gale, Narthecium ossifragum, Non-crustose lichens, Phragmites australis, Pleurocarpous mosses, Potamogeton polygonifolius, Potentilla palustris, Racomitrium lanuginosum, Rhynchospora alba, Selaginella selaginoides, Sphagnum spp, Succisa pratensis, Trichophorum cespitosum, Vaccinium spp, Valeriana dioica, Viola palustris*	Some plant or animal species (or related groups of such species) make a particularly important contribution to the structure, function and/or quality of an Annex I habitat feature at a particular site. These species will include; – *Structural* 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'). – *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). – *Site-distinctive* species which are considered to be a particularly special and distinguishing component of an Annex I habitat on a particular site. 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. For this feature, appropriate (i.e. those indicating adequate supply of low nutrient water and appropriate management regime) bryophytes and vascular species are taken from core community constants and preferential species. This Annex 1 habitat is not well-defined in the JNCC guidance and includes a wide range of 'transitional' wetland vegetation.	NATURAL ENGLAND, 2015. Definitions of Favourable Condition for Subberthwaite, Blawith and Torver Low Commons SSSI, Final version June 2015
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 features	Invasive or introduced non-native species can be a serious potential threat to the structure and function of these habitats, because they are able to exclude, damage or suppress the growth of their associated typical species, reduce structural diversity of the habitat and prevent the natural regeneration of characteristic site-native species. Once established, the measures to control such species may also impact negatively on the	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			features of interest (e.g. use of broad spectrum pesticides).	
Structure and function (including its typical species)	**Presence/ cover of woody species**	Maintain a low cover (<10% of the area) of scrub or trees within stands of H7140 and H7150	Native trees and shrubs occur naturally on bog and fen surfaces but an abundance of scrub and trees on bogs and fens is sometimes regarded as detrimental because they are indicators and perpetrators of drying out and may cause damage to vegetation structure through shading effects. Birch, pine, willow and rhododendron (an invasive non-native species) are the main species of concern. The seeds of most invasive woody species are wind dispersed, so trees are able to establish on raised bog and fen surfaces.	
Structure and function (including its typical species)	**Exposed substrate**	Maintain a low cover of exposed substrate of between 5-10% across the H7140 and H7150 features.	For this wetland habitat type, maintaining some continuous extent of exposed, open ground surface is required to support the establishment and supply of those component species which often rely on wet and sparsely-vegetated conditions e.g. white-beak sedge Rhynchospora alba. Open ground is ideally maintained through the hydrology of the mire. Physical disturbance, such as through vehicle movements or animal poaching, is undesirable.	
Structure and function (including its typical species)	**Hydrology**	At a site, unit and/or catchment level, restore natural hydrological processes to provide the conditions necessary to sustain the features 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. Some mires have been affected by past drainage attempts, peat cutting and disturbance by people and vehicles crossing them. Restoration of a more natural hydrology is likely to be beneficial to the site features. Activities in the catchment may affect mires e.g. by altering water quantity, quality or chemistry.	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Structure and function (including its typical species)	**Water chemistry**	Maintain the surface water and groundwater supporting the hydrology of the two features at a low nutrient status.	These features depend on clean, nutrient-poor water. Changing nutrient conditions, and in particular enrichment, can change the relative competitive ability of individual plant species and can result in: • Degradation or complete loss of high value species and communities; • A change of plant communities within the wetland; • Increasing dominance of particular plant species that are responsive to elevated levels of nutrients (e.g. common reed, nettle); • Changes in the structure of particular plant communities (such as reedbeds) that affect their function as a habitat for birds or insects. As a result of these changes, nutrient enrichment can affect the conservation interest and condition of the wetland. Detailed guidance for each wetland type is given in the reference.	UK Technical Advisory Group on the Water Framework Directive Technical report on groundwater dependent terrestrial ecosystem (GWDTE) threshold values. V8; 23 March 2012 https://www.wfduk.org/sites/default/files/Media/Environmental%20standards/GWDTE%20chemical%20values_Final_230312.pdf
Structure and function (including its typical species)	**Hydrology**	Maintain a high piezometric head and permanently high water table (allowing for natural seasonal fluctuations) on groundwater dependent mires.	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. This target is generic and further site-specific investigations may be required to fully inform conservation measures and/or the likelihood of impacts. Some examples of H7140 may be wholly or partly groundwater dependent. Others have a greater dependence on surface water or rain water inputs. It is critically important to understand the ecohydrological context of all sites.	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Structure and function (including its typical species)	**Adaptation and resilience**	Maintain the 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 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 particular SAC to climate change has been assessed by Natural England as being *moderate* (Natural England, 2015) taking into account the sensitivity, fragmentation, topography and management of its habitats/supporting 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.	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/4954594591375360

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Supporting processes (on which the feature relies)	**Air quality**	Restore the concentrations and deposition of air pollutants to within the site-relevant Critical Load or Level values given for these features of the site on the Air Pollution Information System (www.apis.ac.uk).	This habitat type is considered sensitive to changes in air quality. 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. 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. Ground level ozone is regionally important as a toxic air pollutant but flux-based critical levels for the protection of semi-natural 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.	Both features are modelled as exceeding the critical load for nitrogen deposition and acidity. APIS accessed 02/02/2018
Supporting processes (on which the feature relies)	**Conservation measures**	Restore those management measures (either within and/or outside the site boundary as appropriate) which are necessary to restore the structure, functions and supporting processes associated with the two features	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. This habitat in most cases requires ongoing cutting or grazing maintain its open character.	NATURAL ENGLAND, 2014. Site Improvement Plan: Subberthwaite, Blawith & Torver Low Commons (SIP234). ENGLISH NATURE, 2004. Views about the management of Subberthwaite, Blawith & Torver Low Commons SSSI. Available at https://designatedsites.naturalengland.org.uk/PDFsForWeb/VAM/2000050.pdf

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
				Refer to SSSI condition assessments for details of any restoration management required. Designated Sites System
Version Control Advice last updated: n/a				
Variations from national feature-framework of integrity-guidance: 'Structure and function (including its typical species) - Supporting off-site habitat' deleted as the site does not have a significant dependence off-site.				