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

Rodborough Common Special Area of Conservation (SAC)
Site code: UK0012826

Longhorn cattle grazing at Rodborough Common, Stacie Melia, 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 Rodborough Common 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	Rodborough Common Special Area of Conservation (SAC)
Location	Gloucestershire
Site Map	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	109.27 ha
Designation Changes	n/a
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)	Rodborough Common SSSI
Relationship with other European or International Site designations	n/a

Site background and geography

Rodborough Common SAC sits on the Jurassic Limestone of the Cotswolds just south of Stroud within the Cotswolds National Character Area (NCA 107). Its close proximity to Stroud, open access, attractive views and position within the Area of Outstanding Natural Beauty means it is exposed to a high degree of recreational pressure. It is the most extensive area of semi-natural dry grassland surviving in the Cotswolds and forms part of a much larger network of unimproved grassland, good quality semi-improved grassland and woodland that stretches much of the length of the scarp (the western ridge and steep western slope of the hills).

The site lies on a hill bounded either side by the Nailsworth and Frome valleys, with a number of dry valleys cutting into its margins. It thus consists of a central plateau area which drops away steeply on all sides. The wide variation of soil depth, slope and aspect defines the varied species composition and character of the vegetation which is primarily that of unimproved, herb-rich, calcareous grassland.

The sward on the central plateau is maintained by free-roaming cattle and heavy public use, while the slopes are more varied with areas of thin skeletal soils grading to thicker soils with scrub. The slopes are particularly species-rich both for plants and insects. There are a high number of orchid species (including frog, fragrant, bee, common spotted, early purple and pyramidal orchid) and the rare pasque flower. Scrub has developed over scattered parts of the Common, particularly near the margins. Of particular interest are areas containing juniper. Broadleaved woodland occurs on some of the site margins. The site supports a varied invertebrate fauna including a range of bugs, beetles and moths and rare butterflies such as the Duke of Burgundy, Adonis blue and small blue.

The fact that the site is registered Common Land brings a number of complexities to the management of the site including having multiple graziers with commoners rights, the difficulties in grazing unfenced

areas where there is significant recreational use due to the proximity to urban areas and particularly the difficulties with grazing animals in areas which are used by dog walkers.

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:

- **H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*), (includes the priority feature 'grassland with important orchid rich sites').**

  These grasslands are usually found on thin, well-drained, lime-rich soils associated with chalk and limestone. They occur predominantly at low to moderate altitudes in both England and Wales, extending locally into upland areas in northern England, Scotland and Northern Ireland.

  Most of these calcareous grasslands are maintained by grazing animals. A large number of rare plants are associated with this type of grassland as well as various bryophytes and lichens. The invertebrate fauna can also be noteworthy.

  ***Orchid-rich examples of this habitat type**
  Those calcareous grasslands which contain important orchid assemblages and/or rare orchids are a priority SAC feature. These grasslands host a rich suite of orchid species, and/or an important population of at least one orchid species considered uncommon, or one or several orchid species considered to be rare, very rare or exceptional.

  Rodborough Common is the most extensive area of semi-natural dry grasslands surviving in the Cotswolds of central southern England. The SAC habitat type comprises CG3 *Bromus erectus* grassland and CG5 *Bromus erectus – Brachypodium pinnatum* grassland vegetation types (Rodwell, 1992). The site contains a wide range of structural types, ranging from short turf through to scrub margins, although short-turf vegetation is mainly confined to areas of shallower soils.

References

RODWELL, J.S. (ed.) 1992. *British Plant Communities. Volume 3. Grasslands.* Cambridge University Press.

Table 1: Supplementary Advice for Qualifying Features: H6210. Semi-natural dry grasslands and scrubland facies: on calcareous substrates (Festuco-Brometalia); Dry grasslands and scrublands on chalk or limestone

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**	Maintain the total extent of the H6210 feature at 76.49 hectares.	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. 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. This extent objective includes those areas where grassland and scrub form a close mosaic. Scrub is an integral part of the habitat and its location can vary, but it should be managed so that it does not smother the grassland and progress into secondary woodland. 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.	NATURAL ENGLAND, 2013. Rodborough Common SSSI Definitions of Favourable Condition. Available from Natural England on request. JNCC. Natura 2000 Standard Data Form for Rodborough Common SAC, available from http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUCode=UK0012826 NATURAL ENGLAND, 2015. Rodborough Common SSSI and SAC, Gloucestershire Grassland National Vegetation Classification Survey (2015), Ref: NEFU46. Available from Natural England on request.
Extent and distribution of the feature	**Spatial distribution of the feature within the site**	Maintain the distribution and configuration of the H6210 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.	NATURAL ENGLAND, 2013. Rodborough Common SSSI Definitions of Favourable Condition. Available from Natural England on request. : NATURAL ENGLAND,

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			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. The Annex 1 calcareous grassland feature is the major component habitat of this site, there are additionally small areas of semi-improved neutral grassland where the soil is deeper and swards taller, sometime with scrub, which makes them suitable for the rare Duke of Burgundy butterfly. Scrub is an integral part of the grassland feature and its location can vary, but it should be managed so that it does not smother the grassland and progress into secondary woodland. Bare ground is also a key component, should be up to 10% distributed through the sward.	2015. Rodborough Common SSSI and SAC, Gloucestershire Grassland National Vegetation Classification Survey (2015), Ref: NEFU46. Available from Natural England on request.
Structure and function (including its typical species)	**Vegetation community composition**	Ensure the component vegetation communities of the H6210 feature are referable to and characterised by the following National Vegetation Classification types: CG3 *Bromus erectus* grassland CG5 *Bromus erectus - Brachypodium pinnatum* grassland With W19 *Juniperus communis – Oxalis acetosella* woodland *W21 Crataegus monogyna – Hedera helix* scrub *W24 Rubus fruticosus agg. – Holcus lanatus* underscrub	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 (such as the constant and preferential species of a community), and therefore that of the SAC feature, at appropriate levels (recognising natural fluctuations).	NATURAL ENGLAND, 2013. Rodborough Common SSSI Definitions of Favourable Condition. Available from Natural England on request. NATURAL ENGLAND, 2015. Rodborough Common SSSI and SAC, Gloucestershire Grassland National Vegetation Classification Survey (2015), Ref: NEFU46. Available from Natural England on request.

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Structure and function (including its typical species)	**Abundance of herbs (including Carex spp)**	Maintain the abundance of herbaceous species within the range 40%-90%	A high cover of characteristic herbs, including sedges (*Carex* species) is typical of the structure of this habitat type. Low proportion outside target indicates eutrophication, usually from fertilisers, or insufficient removal of biomass, leading to dominance by grasses.	NATURAL ENGLAND Rodborough Common SSSI Favourable Condition Table (2013), Available from Natural England on request. NATURAL ENGLAND Rodborough Common SSSI Favourable Condition Assessment Summary (2015), available from: https://designatedsites.naturalengland.org.uk/
Structure and function (including its typical species)	**Key structural, influential and/or distinctive species**	Maintain the abundance of the species listed below to enable each of them to be a viable component of the Annex 1 habitat; • Community constant and preferential species of the component NVC types including tor-grass *Brachypodium pinnatum* and upright brome *Bromopsis erecta,* • Populations of notable plant species*;* Pasque Flower *Pulsatilla vulgaris*, Fingered Sedge *Carex digitata*, Juniper *Juniperus communis.* • Populations of important	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; • **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'). • **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 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	NATURAL ENGLAND Rodborough Common SSSI Favourable Condition Table (2013), Available from Natural England on request. NATURAL ENGLAND Rodborough Common SSSI Favourable Condition Assessment Summary (2015), available from: https://designatedsites.naturalengland.org.uk/

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		orchid species; Musk Orchid *Herminium monorchis,* Frog Orchid *Coeloglossum viride* • Populations of grassland invertebrates*:* Duke of Burgundy butterfly *Hamearis Lucina, Abida secale* (rare snail).	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)	**Undesirable species**	Maintain the frequency/cover of the following undesirable species to within acceptable levels and prevent changes in surface condition, soils, nutrient levels or hydrology which may encourage their spread; *Cirsium arvense, Cirsium vulgare, Rumex crispus, Rumex obtusifolius, Senecio jacobaea, Urtica dioica*, all tree and scrub species excluding *Juniperus communis*,	There will be a range of undesirable or uncharacteristic species which, if allowed to colonise and spread, are likely to have an adverse effect on the feature's structure and function, including its more desirable typical species. These may include invasive non-natives such as Cotoneaster spp, or coarse and aggressive native species which may uncharacteristically dominate the composition of the feature. Their presence may indicate problems of eutrophication and ground disturbance from various sources. *Brachypodium pinnatum* though an important component of the CG5 grassland can dominate under conditions of insufficient removal of biomass, e.g. under-grazing. Scrub is another important component of the habitats on the site, particularly for the butterflies, however it needs to be well managed to prevent it from dominating the grassland. If scrub/tree species are more than occasional throughout the sward but less than 5% cover, they are soon likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out. Larger blocks of scrub have become established over recent decades, some are being removed and restored back to grassland whilst others provide a valuable additional habitat, shelter and transition to secondary woodland which often fringes the lower slopes of the site.	NATURAL ENGLAND Rodborough Common SSSI Favourable Condition Table (2013). Available from Natural England on request. NATURAL ENGLAND Rodborough Common SSSI Favourable Condition Assessment Summary (2015), available from: https://designatedsites.naturalengland.org.uk/
Structure and function (including its typical species)	**Vegetation community transitions**	Maintain the natural pattern of zonations/transitions between calcareous grassland and scrub communities	Transitions and 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 typical flora	NATURAL ENGLAND Rodborough Common SSSI Favourable Condition Table (2013). Available from Natural England on request.

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			and fauna. The site consists mostly of CG3 and CG5 calcareous grassland and there is known to be a small area of semi-improved MG6 neutral grassland, which is treated as 'site fabric'. There is some transition on the peripheral slopes to coarser grassland, scrub and woodland. It is thought that Fingered Sedge is most likely to occur in the scrub/grassland margins, as is some of the invertebrate interest. Variations in grassland sward structure and height provides a range of niches suitable to the typical invertebrate interest of the site, including up to 10% bare ground distributed through the sward.	NATURAL ENGLAND Rodborough Common SSSI Favourable Condition Assessment Summary (2015), available from: https://designatedsites.naturalengland.org.uk/
Structure and function (including its typical species)	**Soils, substrate and nutrient cycling**	Restore 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 H6120 habitat.	Soil is the foundation of basic ecosystem function and 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. Recreational pressure is affecting the soils through compaction and erosion.	NATURAL ENGLAND, Rodborough Common SAC Site Improvement Plan (2015), Available from https://designatedsites.naturalengland.org.uk
Structure and function (including its typical species)	**Functional connectivity with wider landscape**	Maintain and Restore the overall extent, quality and function of any supporting features (e.g. good quality semi-improved grassland, unimproved neutral and calcareous grassland, and woodland glades and rides), 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 SAC to its wider landscape in order to meet the conservation objectives. These connections may take the form of semi-natural habitat and landscape features, such as habitat patches, hedges, watercourses and verges, outside of the designated site boundary which are 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. In most cases increasing actual and functional landscape-scale connectivity would be beneficial. Additional examples of calcareous grassland form part of the Cotswold Commons and Beechwoods SSSI (Painswick Beacon, Cranham Common, Sheepscombe Common) approx. 10km away. Additional	NATURAL ENGLAND. Priority habitat inventory and designated sites (SSSI) maps (available on interactive mapping system MAGIC: http://www.natureonthemap.naturalengland.org.uk/) NATURAL ENGLAND, 2014. Cotswold grassland network. Maps available from Natural England on request

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			grassland occurs as part of the wider landscape of the Cotswolds scarp mosaic of woodland and grassland, including a number of other calcareous grassland SSSIs (e.g. Edge Common, Swift's Hill, Selsley Common, Minchinhampton Common, Box Farm Meadows, Strawberry Banks and Daneway Banks SSSIs). In some locations the connectivity is good, however, other stretches of the scarp would benefit from appropriate management of grassland and woodland rides and glades to improve the linkages of the network.	
Structure and function (including its typical species)	**Adaptation and resilience**	Maintain and Restore the H6210 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 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. It is currently considered that the sensitivity of unimproved calcareous grassland to climate change is low. Older established grasslands being more resilient to those in the earlier stages of succession (Natural England 2014). However, if grazing/cutting management is allowed to lapse, *Brachypodium pinnatum* which is currently at the northern edge of its range and benefits from low nutrient undisturbed soils, may increasingly dominate and crowd out other species (Buckland et al 2001). 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.	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]. BUCKLAND SM *et al,* 2001, Grassland invasions: effects of manipulations of climate and management. *Journal of Applied Ecology*, 38, 301-309.
Supporting processes (on which the feature relies)	**Air quality**	Restore as necessary the concentrations and deposition of air pollutants to 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).	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	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).

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			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. While the critical loads for Nitrogen and acidity are currently within the acceptable range and nitrogen oxides and sulphur dioxide are below the maximum acceptable limits for this habitat, ammonia levels are currently above the acceptable level for sensitive lichen containing habitat (Ave 1.83 µg NH^3/m^3 per year, limit set at 1 µg NH^3/m^3 per year)	
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 H6210 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. The management of livestock grazing and public recreation are the main issue for achieving favourable condition of the site. The site has previously been managed under the Environmental Stewardship Scheme and has now passed into the Countryside Stewardship Scheme, this is key to achieving the management objectives.	NATURAL ENGLAND, 2015. Rodborough Common SAC Natura 2000 Site Improvement Plan, Available from https://designatedsites.naturalengland.org.uk ENGLISH NATURE, 2005. Views about the management of Rodborough Common SSSI. Available at https://designatedsites.naturalengland.org.uk/PDFsForWeb/VAM/1002627.pdf
Version Control Advice last updated: N/A				
Variations from national feature-framework of integrity-guidance: N/A				