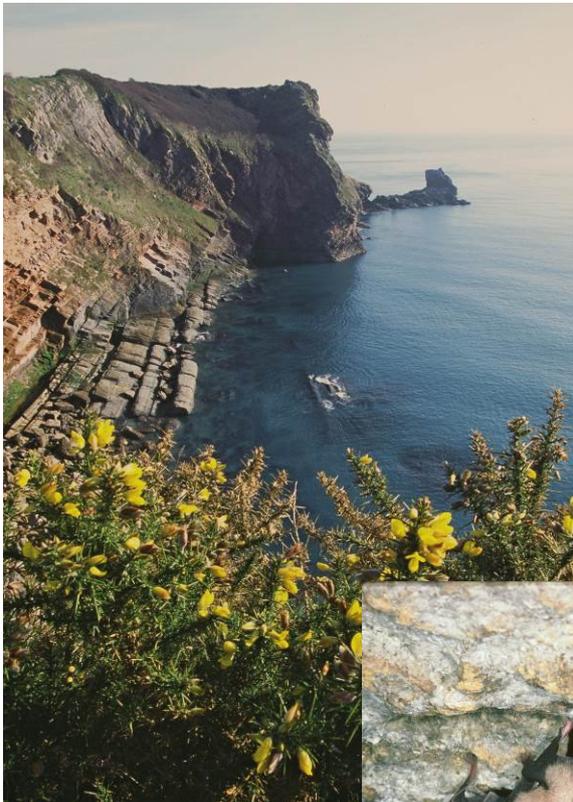




European Site Conservation Objectives: supplementary advice on conserving and restoring site features

South Hams Special Area of Conservation (SAC)
Site Code: UK0012650



Berry Head to Sharkham
Point, Devon © Natural
England/Paul Glendell 2001



Greater horseshoe bats © Natural England/Michael Hammett 1998

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About this document

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

This advice replaces a draft version dated January 2019 following the receipt of comments from the site's stakeholders.

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 Hams Special Area of Conservation (SAC) |
| Location | Devon |
| Site Map | The designated boundary of this site can be viewed here on the MAGiC website |
| Designation Date | 1 April 2005 |
| Qualifying Features | See section below |
| Designation Area | 129.53 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) | Berry Head to Sharkham Point Buckfastleigh Caves Bulkamore Iron Mine Chudleigh Caves and Woods Haytor and Smallacombe Iron Mines The SSSI boundaries are extremely similar to the SAC boundary, but there are some very small differences. |
| Relationship with other European or International Site designations | South Hams SAC abuts Lyme Bay and Torbay SAC around Berry Head to Sharkham Point. |

Site background and geography

South Hams SAC is a complex of five sites dispersed across 300 km² of South Devon between Brixham, Buckfastleigh, Haytor, Bulkamore, and Chudleigh. This suite of sites falls within three National Character Areas: Dartmoor ([NCA 150](#)); South Devon ([NCA 151](#)) and Devon Redlands ([NCA 148](#)). They are a diverse group and between them include two disused mine systems, old buildings (managed as roosts), three cave networks, one large block of ancient woodland and a stretch of rugged coastline backed by extensive areas of heathland and calcareous grassland. Together they all support an internationally important population of the greater horseshoe bat. At Chudleigh and Brixham, the SAC is dominated by Devonian-age limestone, which is responsible for much of the areas interest and character. The limestone has weathered to give rise to cave systems and the towering cliffs and complex coastline of Berry Head to Sharkham Point as well as providing a base-rich substrate that supports species-rich woodland and calcareous grassland. Berry Head and Sharkham Point are within Berry Head National Nature Reserve.

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:

- **H1230 Vegetated sea cliffs of the Atlantic and Baltic Coasts**

Vegetated sea cliffs are steep slopes fringing hard or soft coasts, created by past or present marine erosion, and supporting a wide diversity of vegetation types with variable maritime influence.

The vegetation of sea cliffs in the UK includes 12 maritime cliff NVC types, although the range of vegetation types present is much broader. There is considerable geographical variation. Southern types are rich in Atlantic-Mediterranean species. Cliff-top heath vegetation is included in the Annex I definition, and comprises maritime heath communities referable to NVC types H7 *Calluna vulgaris* – *Scilla verna* heath and H8d *Calluna vulgaris* – *Ulex gallii* heath *S. verna* sub-community. Cliff-top heath vegetation may extend landward into non-maritime zones, where it is considered as part of Annex I type 4030 European dry heaths.

Cliff structure and geomorphological processes are major influences on cliff vegetation. 'Hard' cliffs with vertical or very steep faces are characteristic of hard igneous, metamorphic and sedimentary rocks and also of chalk, which, although a soft rock, nevertheless forms vertical cliffs. 'Soft' cliffs have a sloping or slumped profile, often with a distinct 'undercliff'; they occur on a range of soft rocks, or on hard rocks interspersed with softer deposits. The more mobile soft cliffs occur where there are unstable soft deposits such as mudstones or glacial drift deposits. They may be subject to mudslides or landslips, which create complexes of pioneer and more mature vegetation.

The profile and stability of the cliff face is one of the major determinants of cliff vegetation. Even near-vertical cliffs support specialist crevice communities, with rock samphire *Crithmum maritimum*, while ledges occupied by breeding seabirds may develop specialist nitrophilous communities comprising plant species which are able to cope with heavy guano deposition. On less extreme slopes, species tolerant of exposure to wind and salt spray and of thin soils can find a foothold. The most characteristic maritime cliff communities occur in such situations. On relatively stable soft cliffs a wide range of progressively less-specialised communities can occur, including grassland, heath, scrub and even woodland. More mobile soft cliffs show a complex sequence of successional communities related to degrees of instability and the age of the slope. The vegetation of these sites forms a mosaic of pioneer, ruderal, grassland, scrub and woodland communities. Streams and flushes provide a freshwater wetland element, and seepage lines may be rich in orchids. The vegetation of mobile soft cliffs is inadequately described by the NVC at present.

The second major influence on maritime cliff vegetation is the nature of the underlying rock or drift deposit, notably whether it is basic or acidic. In the most exposed situations this effect is masked by the saline influence of sea spray, but more sheltered cliffs support communities closely related to those found on similar substrates inland, with only a minor maritime element in the flora. Thus, chalk and limestone cliffs support calcareous grassland communities, while acidic hard rocks support heath communities. The base-rich hard rocks of Berry Head support particularly rich assemblages of rare plants and plant communities.

The maritime influence on cliff communities is shown in both vertical and lateral zonation. The effects of salt spray are greatest close to the sea and least at the cliff top, especially where a sloping profile sets this back from the shoreline. Superimposed on this pattern is the effect of local topography. The most maritime sites are those facing the prevailing winds or the longest 'fetch' of open sea, notably headlands projecting from the coastline and gullies or blowholes which funnel salt water up the cliff. On the sheltered side of headlands and in bays the maritime influence is progressively diminished and is replaced by a mild, humid climate in which plant species normally restricted to woodland are found in open situations, often associated with bracken *Pteridium aquilinum*.

Berry Head is a large headland of Devonian-age limestone. Reaching a height of 195 m, it is generally flat-topped, with a series of cliffs, steep slopes and ledges reaching down to the sea. The soils are shallow, well drained and rock exposures are common. The marine caves under Berry Head display a variety of calcite and mud formations and the lower levels are variably flooded with seawater. The site is exceptional in that it supports a number of rare and scarce vascular plants typical of the oceanic southern temperate and Mediterranean-Atlantic elements of the British flora. These include Portland spurge *Euphorbia portlandica*, rock stonecrop *Sedum forsterianum*, autumn squill *Scilla autumnalis* and small hare's-ear *Bupleurum baldense*. On flatter slopes above the cliffs the grassland gives way to dry heaths characteristic of acid soils.

- **H4030 European dry heaths**

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 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. Most dry heaths are managed as extensive grazing for livestock.

Dry heaths vary in their flora and fauna according to climate, and are also influenced by altitude, aspect, soil conditions (especially base-status and drainage), maritime influence, and grazing and burning intensity. Lowland heaths in southern Britain often support an important fauna, including invertebrates.

At low to moderate altitudes in warm oceanic parts of southern Britain, the typical form of the habitat is H8 *Calluna* – *Ulex* heath, characterised by abundant *Calluna*, *U. gallii* and *E. cinerea*. Species-rich forms of dry heath (so-called chalk heath and limestone heath) occur where acid surface deposits overlie calcareous materials. Such heaths contain unusual combinations of heath and calcareous grassland species, such as common rock-rose *Helianthemum nummularium* and salad burnet *Sanguisorba minor* ssp. *minor*, and are very rare in the UK. On coastal cliffs and slopes there are maritime H7 *Calluna* – *Scilla* heaths with spring squill *Scilla verna*.

Only Berry Head to Sharkham Point SSSI has European Dry Heaths as a feature. NVC H7 *Calluna vulgaris* – *Scilla verna* heath forms a minor component of the cliff slope vegetation while H8 *Calluna vulgaris* – *Ulex gallii* occurs on the flatter areas above the cliff top. However the most recent available (partial) habitat survey (Wheeler *et. al.*, 2009) does not map any significant areas of either community. The H8 community is particularly susceptible to succession to scrub in the absence of active management.

- **H6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia)**

Festuco-Brometalia grasslands are found on thin, well-drained, lime-rich soils associated with chalk and limestone. They occur predominantly at low to moderate altitudes in England and Wales, extending locally into upland areas in northern England, Scotland and Northern Ireland. Most of these calcareous grasslands are maintained by grazing. A large number of rare plants, bryophytes and lichens are associated with this habitat and the invertebrate fauna also tends to be noteworthy.

This Annex I category includes various forms of calcareous grassland referable in European terms to the *Mesobromion* and *Xerobromion* alliances. All forms of *Festuco-Brometalia* grassland comprise mixtures of grasses and herbs, in which there is at least a moderate representation of calcicolous species. The structural and floristic characteristics of the habitat are strongly influenced by climatic factors and management practices, in particular the intensity of grazing.

CG2 *Festuca* – *Avenula* grassland is widely distributed in grazed calcareous pastures throughout the lowlands of England and Wales. Typical *Mesobromion* calcicoles, such as meadow oat-grass *Avenula pratensis*, quaking-grass *Briza media*, common rock-rose *Helianthemum nummularium*, salad burnet *Sanguisorba minor* ssp. *minor* and small scabious *Scabiosa columbaria*, are well-represented, and are

usually accompanied by species with a more Continental distribution, including dwarf thistle *Cirsium acaule* and squinancywort *Asperula cynanchica*. Many of the best-known 'chalk grassland' rarities occur in this type of *Festuco-Brometalia*, and some examples are strikingly species-rich.

CG1 *Festuca – Carlina* and CG7 *Festuca – Hieracium – Thymus* grasslands both occur on shallow, sharply-draining soils, and comprise open swards in which the representation of *Mesobromion* species is significantly reduced. Both communities are characterised by the frequency of mouse-ear hawkweed *Hieracium pilosella*, wild thyme *Thymus praecox* and annual/biennial species such as yellow-wort *Blackstonia perfoliata* and thyme-leaved sandwort *Arenaria serpyllifolia*. The *Festuca – Hieracium – Thymus* community is centred on areas of low rainfall in eastern England, and shows affinities with arid calcareous grasslands of continental Europe. Conversely, the *Festuca – Carlina* community occurs only around the coasts of Wales and southern and western England where the climate is warm and mild, and has affinities to the *Xerobromion* alliance of southern and central Europe.

Various sub-types of *Festuco-Brometalia* grassland frequently occur in close association, their distribution being determined by slope, aspect, grazing intensity and recreational pressure. Transitions between calcareous grasslands and heath, acid grassland, scrub and woodland communities are also widespread.

The Devonian limestone headland and cliffs of the Torbay area of south Devon support a large area of the rare CG1 *Festuca ovina – Carlina vulgaris* grassland, including the *Scilla autumnalis – Euphorbia portlandica* sub-community, known from no other site in the UK. The site is exceptional in that it supports a number of rare and scarce vascular plants typical of the oceanic southern temperate and Mediterranean-Atlantic elements of the British flora. These include Portland spurge *Euphorbia portlandica*, rock stonecrop *Sedum forsterianum*, autumn squill *Scilla autumnalis* and small hare's-ear *Bupleurum baldense*. Semi-natural grassland gives way to 4030 European dry heaths on flatter slopes above the cliffs in some areas.

- **H8310 Caves not open to the public**

Caves are formed by the erosion of soluble rocks, such as limestones. They typically form the subterranean components of a distinctive 'karst' landscape, and are associated with various topographic features, including gorges, dry valleys, 8240 Limestone pavements, and dolines (surface depressions and hollows). Caves not open to the public is interpreted as referring to natural caves which are not routinely exploited for tourism, and which host specialist or endemic cave species or support important populations of Annex II species.

Caves lack natural illumination, and therefore support species which are adapted to living in the dark. Microclimatic conditions vary widely within and between caves, and this determines the composition of the fauna and flora. Many species feed on detritus derived from the surface; others are carnivorous.

Cave-dwelling species (cavernicoles) can be divided into three categories:

- Troglobites – obligate cave-dwellers which typically display morphological adaptations, such as reduced pigmentation and regressed eyes.
- Troglaphiles – facultative cave-dwellers which may have permanent populations in caves but which are also found in other suitable habitats.
- Troglaxenes – species which are found in caves but only for part of their life cycle.

South Hams SAC includes three cave systems not open to the public: Buckfastleigh Caves, Chudleigh Caves and the coastal cave system at Berry Head. All of the caves support important bat hibernation sites which are used by a number of species, including the greater horseshoe bat. The waters in Buckfastleigh caves support an abundant population of the crustacean *Niphargellus glenniei*, an animal thought to be a pre-glacial relict. This species is believed to be endemic to Devon and Cornwall. Two nationally rare crustaceans, *Niphargus glenniei* and *Microniphargus leruthi* both occur within the caves of Berry Head.

- **H9180 Tilio-Acerion forests of slopes, screes and ravines* Priority feature**

Tilio-Acerion ravine forests are woods of ash *Fraxinus excelsior*, wych elm *Ulmus glabra* and lime (mainly small-leaved lime *Tilia cordata* but more rarely large-leaved lime *T. platyphyllos*). Introduced sycamore *Acer pseudoplatanus* is often present and is a common part of the community in mainland Europe, where it is native. The habitat type typically occurs on nutrient-rich soils that often accumulate in the shady micro-climates towards the bases of slopes and ravines. Therefore it is found on calcareous substrates associated with coarse scree, cliffs, steep rocky slopes and ravines, where inaccessibility has reduced human impact. It often occurs as a series of scattered patches grading into other types of woodland on level valley floors and on slopes above, or as narrow strips along stream-sides. More extensive stands occur on limestone and other base-rich rocks.

This habitat type is ecologically variable, particularly with respect to the dominant tree species. To the north and west, ash and wych elm assume increasing importance in the canopy, and lime may be completely absent. Floristic differences due to variations in slope, aspect and nature of the substrate add to the diversity of the habitat. The ground flora can be very varied, but the following elements are usually present: fern banks (particularly hart's-tongue *Phyllitis scolopendrium*, soft shield-fern *Polystichum setiferum* and buckler-ferns *Dryopteris* spp.); stands of ramsons *Allium ursinum* in the moister zones; dog's mercury *Mercurialis perennis* and enchanter's-nightshade *Circaea* spp. on drier but still base-rich soils; wood avens *Geum urbanum*, and natural 'disturbance communities' comprising common nettle *Urtica dioica*, herb-Robert *Geranium robertianum* and cleavers *Galium aparine* associated with scree and cliff-bases. A wide range of other basiphilous herbs and grasses may occur within these stands.

The main NVC types conforming to *Tilio-Acerion* forests are the 'western' forms (sub-communities d-g) of W8 *Fraxinus excelsior* – *Acer campestre*-*Mercurialis perennis* woodland, and the equivalent north-western community W9 *Fraxinus excelsior* – *Sorbus aucuparia* – *Mercurialis perennis* woodland.

Tilio-Acerion forests provide a habitat for a number of uncommon vascular plants, including, dark-red helleborine *Epipactis atrorubens*, violet helleborine *Epipactis purpurata*, wood fescue *Festuca altissima*, purple gromwell *Lithospermum purpureocaeruleum* and herb-Paris *Paris quadrifolia*. Many sites support notable bryophytes, in particular calcicoles associated with base-rich rock outcrops and (in western stands) Atlantic species. Some localities have important assemblages of epiphytic lichens.

The woodlands within the SAC at Chudleigh include some of the best examples of semi-natural woodland developed on limestone in Devon. The main block of woodland occupies a steep-sided valley on less steep hillsides to the south-west and north-east, all between 30 and 100 metres altitude. Most of the site is underlain by Devonian limestone, but the woodland at the extreme south-west has developed on base-rich shales. The woodland on the steepest slopes may have originated from a coppice with pollard system, with a high canopy and extensive shrub layer and ground flora.

Trees on the more exposed rock outcrops are stunted. Some mixed woodland has been planted but nevertheless contains a significant proportion of native species and rich ground flora, while other woods have a semi-natural structure. The trees forming the canopy are a mixture of pedunculate oak *Quercus robur*, ash *Fraxinus excelsior*, field maple *Acer campestre*, small-leaved lime *Tilia cordata*, wych elm *Ulmus glabra* and wild cherry *Prunus avium*, with some wild service-tree *Sorbus torminalis*. A wide variety of native shrub species form the understorey.

Qualifying Species:

- **S1304 Greater horseshoe bat *Rhinolophus ferrumequinum***

The greater horseshoe bat *Rhinolophus ferrumequinum* is one of the largest bats in the UK. During the summer, they form maternity colonies in large old buildings or caves, and forage in pasture, edges of mixed deciduous woodland and hedgerows. Such mixed land-use, especially on south-facing slopes, favours the beetles, moths and other insects on which the bats feed. In winter they depend on caves, abandoned mines and other underground sites for undisturbed hibernation. A system or series of sites is required, offering a range of temperatures and air-flow patterns. Summer and winter roosts are usually

less than 20-30 km apart. The bats are vulnerable to the loss of insect food supplies due to insecticide use, changing farming practices and the loss of broad-leaved tree-cover, and to the loss or disturbance of underground roost sites.

South Hams SAC is thought to hold the largest population of greater horseshoe bat *Rhinolophus ferrumequinum* in the UK, and is the only one containing more than 1,000 adult bats (31% of the UK species population at designation). It contains the largest known maternity roost in the UK and possibly in Europe. As the site contains both maternity and hibernation sites it demonstrates good conservation of the features required for survival. The landscape around the SAC sites is essential for the bats for foraging and other behaviours. The bats are also form a meta-population that extends beyond the SAC-designated sites and which includes the High Marks Barn SSSI.

Annex 1 National Bat Monitoring Programme Data

| Greater horseshoe bat | | | | |
|---|------------------------|----------------------|-------------------------|-----------------------------|
| Adult summer counts (based upon average of two counts on two separate evenings in July) Year | | | | |
| Year | Chudleigh Caves | Buckfastleigh | Berry Head Caves | High Marks Barn SSSI |
| 2001 | 69 | 1132 | 75 | 164 |
| 2002 | 54 | 1097 | 70 | 187 |
| 2003 | 44 | 1304 | 72 | 204 |
| 2004 | 69 | 1100 | 100 | 198 |
| 2005 | 76 | 1350 | 79 | 288 |
| 2006 | 67 | 1613 | 77 | 381 |
| 2007 | 82 | 1227 | 64 | 444 |
| 2008 | 66 | 1316 | 56 | 491 |
| 2009 | 70 | 2210 | 65 | 514 |
| 2010 | 57 | 1430 | 68 | 521 |
| 2011 | 72 | 1631 | 75 | 615 |
| 2012 | 92 | 1408 | 58 | 731 |
| 2013 | 83 | 1485 | 57 | 712 |
| 2014 | 107 | 1767 | 66 | 728 |
| 2015 | 114 | 1630 | 79 | 772 |

Table A: Site-specific seasonality of SAC feature

The table below highlights in grey those months in which significant numbers of each mobile qualifying feature are most likely to be present at the SAC during a typical calendar year. This table is provided as a general guide only.

Unless otherwise indicated, the months shown below are primarily based on information relating to the general months of occurrence of the feature in the UK. Where site-based evidence is available and has been used to indicate below that significant numbers of the feature are typically present at this SAC outside of the general period, the site-specific references have been added to indicate this.

Applicants considering projects and plans scheduled in the periods highlighted in grey would benefit from early consultation with Natural England given the greater scope for there to be likely significant effects that require consideration of mitigation to minimise impacts to qualifying bat features during the principal periods of site usage by those features. The months which are *not* highlighted in grey are not ones in which the features are necessarily absent, rather that features may be present in less significant numbers in typical years. Furthermore, in any given year, features may occur in significant numbers in months in which typically they do not. Thus, applicants should not conclude that projects or plans scheduled in months not highlighted in grey cannot have a significant effect on the features. There may be a lower likelihood of significant effects in those months which nonetheless will also require prior consideration.

Any assessment of potential impacts on the features must be based on up-to-date count data and take account of population trends evident from these data and any other available information. Additional site-based surveys may be required.

| Feature | Season | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Site-specific references where available |
|-----------------------|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| Greater horseshoe bat | Breeding | | | | | | | | | | | | | |
| Greater horseshoe bat | Hibernation | | | | | | | | | | | | | |

Table B: Presence of qualifying SAC features within component SSSIs

| Component SSSI | SAC feature | | | | | |
|-----------------------------------|--|---------------------------|--|------------------------------------|---|--|
| | H1230 Vegetated sea cliffs of the Atlantic and Baltic coasts | H4030 European dry heaths | H6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) | H8310 Caves not open to the public | H9180 Tilio-Acerion forests of slopes, screes and ravines | S1304 Greater horseshoe bat <i>Rhinolophus ferrumequinum</i> |
| Berry Head to Sharkham Point | Y | Y | Y | Y | | Y |
| Buckfastleigh Caves | | | | Y | | Y |
| Bulkamore Iron Mine | | | | | | Y |
| Chudleigh Caves and Woods | | | | Y | Y | Y |
| Haytor and Smallacombe Iron Mines | | | | | | Y |

Table 1: Supplementary Advice for Qualifying Features: H1230. Vegetated sea cliffs of the Atlantic and Baltic coasts

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|--------------------------------|--|--|--|--|
| Extent and distribution | Extent of hard or soft cliff capable of supporting sea cliff vegetation | Maintain the total extent of the cliff system which is capable of supporting H1230 sea cliff vegetation to about 4.1 Km. | <p>There should be no measurable reduction (excluding any trivial loss) in the extent and area of this feature, and in some cases, the full extent of the feature may need to be restored. 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.</p> <p>Where a reduction in the extent of a feature is considered necessary to meet the Conservation Objective for another Annex I feature, Natural England will advise on this on a case-by-case basis.</p> <p>The whole system acts to provide the range and variation of vegetation types and mosaics with bare ground. Extent may be measured in different ways but there are issues with measuring area of vertical cliffs. Reduction in extent can include smothering cliff slope, cliff foot or cliff top surfaces by artificial or dumped materials.</p> <p>Only Berry Head to Sharkham Point SSSI includes H1230 vegetated sea cliffs. However, the extent of the H1230 feature is not known exactly. The 'coastal slope', as defined by the Ordnance Survey, covers about 15ha of the SSSI but only about 5ha is actively managed at Berry Head. The coastal slopes towards and around Sharkham Point tend to be more scrub and bracken-covered. The potential to manage larger areas of coastal slope needs further study.</p> | <p>This attribute will be periodically monitored as part of Natural England's site condition assessments.</p> <p>WHEELER, B., WILSON, P., & REED, M. 2009 <i>Vegetation Survey of Berry Head. Loving Our Limestones Project</i>. Torbay Coast and Countryside Trust / Plantlife. (Available from Natural England on request)</p> |
| Extent and distribution | Spatial distribution of | Restore the distribution and continuity of the habitat and any | A contraction in the range, or geographic spread, of the feature (and its component vegetation and typical species, plus | This attribute will be periodically monitored as part of Natural |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|--------------------------------|---|--|---|---|
| | the feature within the site | associated transitions which reflects the natural functioning of the cliff system | <p>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. Transitions include cliff top and cliff foot transitions to terrestrial or marine habitats.</p> <p>Only Berry Head to Sharkham Point SSSI includes H1230 vegetated sea cliffs. There is a phase 1 vegetation map for part of Berry Head SSSI and more detailed NVC mapping from 2009, which also does not include the whole SSSI. The whole SSSI is 65.75 ha, but this includes areas of other SAC features and site fabric.</p> <p>An up-to-date map of H41230 cliff vegetation is required.</p> <p>Restore target selected because non-native invasives are encroaching on some stands of cliff vegetation. Also, scrub and coarse vegetation are expanding in some areas. Scrub/coarse vegetation are components of H1230 sea cliff vegetation, but it is important that they do not encroach significantly onto less widespread communities or rare plant populations.</p> | <p>England's site condition assessments.</p> <p>WHEELER, B., WILSON, P., & REED, M. 2009 <i>Vegetation Survey of Berry Head. Loving Our Limestones Project</i>. Torbay Coast and Countryside Trust / Plantlife. (Available from Natural England on request)</p> |
| Extent and distribution | Future extent of habitat within the site and ability to respond to | Restore active processes such that the system can adjust to longer-term natural change, including landward recession, and that fluctuations in the | This recognises the need to allow for natural fluctuations in the extent and the distribution of this habitat feature, often during particular seasons and usually as a result of natural coastal processes. | |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|---|--|---|--|---|
| | seasonal changes | extent of vegetated areas to bare rock occur over time and space within the site. | Restore target selected because landward recession is limited in some locations, particularly by holiday park development adjacent to St Mary's Bay. | |
| Structure and function (including its typical species) | Geo-morphological naturalness | Maintain the geomorphological naturalness of the sea cliff system (from cliff top to foreshore connection with the intertidal zone) | The physical landforms associated with this habitat feature, and the processes that shape them, will be a primary influence on sea-cliff habitat. A key criteria for selecting SACs for this habitat feature was that they had no or minimal artificial modification and so demonstrates good geomorphological naturalness. Having a well-developed sea-cliff structure, shaped by natural geomorphological processes, will ensure the full range of natural variation can occur. | |
| Structure and function (including its typical species) | Presence of mosaic of microhabitats | Maintain the diversity and range of microhabitats and bare areas resulting from active coastal processes/landslips | Each site will have a different configuration of geology and hydrology and maritime exposure, which will also change over time and space. The key aim is to maintain the full, naturally expected range of these in as natural a state as possible. | |
| Structure and function (including its typical species) | Vegetation community composition | <p>Ensure the component vegetation communities of the feature are referable to and characterised by the following National Vegetation Classification types:</p> <p>MC11c - <i>Festuca rubra-Daucus carota</i> ssp. <i>gummifer</i> maritime grassland – <i>Sanguisorba minor</i> sub-community</p> <p>H7 <i>Calluna vulgaris-Scilla verna</i> heath</p> <p>H8 <i>Calluna vulgaris-Ulex gallii</i> heath</p> | <p>This habitat feature will comprise a number of associated semi-natural vegetation types and their transitional zones, reflecting the geographical location of the site, altitude, aspect, soil conditions (especially base-status and drainage) and vegetation management. In the UK these have been categorised by the National Vegetation Classification (NVC).</p> <p>Maintaining or restoring these characteristic and distinctive vegetation types, and the range of types as appropriate, will be important to sustaining the overall habitat feature. This will also help to conserve their typical plant species (i.e. the constant and preferential species of a community), and therefore that of the SAC feature, at appropriate levels (recognising natural fluctuations).</p> <p>The presence, composition, location and extent of maritime scrub, heath and/or grassland plus mosaics of the three, on cliff slopes or cliff tops will be determined by the interaction of natural geomorphological processes with exposure and soil characteristics and management where relevant.</p> <p>The main NVC community present on the coastal slopes and</p> | <p>This attribute will be periodically monitored as part of Natural England's site condition assessments.</p> <p>WHEELER, B., WILSON, P., & REED, M. 2009 <i>Vegetation Survey of Berry Head. Loving Our Limestones Project</i>. Torbay Coast and Countryside Trust / Plantlife. Available from Natural England on request.</p> |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|---|--|--|--|--|
| | | | referable to H1230 is the NVC community MC11c. The heathland NVC communities H7 and H8 exist only as fragments on the coastal slopes. No NVC survey is available for Sharkham Point so the extent of H1230 there is unknown but believed to be limited in extent. | |
| Structure and function (including its typical species) | Vegetation: undesirable species | Restore 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: | <p>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.</p> <p>There are a range of non-native plants affecting coastal cliffs, and due to difficulties of access, these often pose problems with management. The key objective is to prevent any introductions or planting. This includes the dumping of spoil or organic waste on cliff tops or slopes within or beyond the site boundary which may contain plant seeds or propagules or enrich the site.</p> <p>The distribution of invasive non-natives is not fully understood.</p> <p>The other species listed are natural components of a range of vegetation types within the SAC. However, in certain circumstances (such as when they encroach on stands of rare plants) they can be undesirable and/or indicate negative pressures on the site. The main issues that are likely to result in increases in these species are reduction in grazing, eutrophication, and disturbance (e.g. from fire).</p> <p>Restore target selected because a number of communities and rare plant populations have suffered from invasive non-native and scrub encroachment.</p> <p>Undesirable species may include: <i>Brachypodium pinnatum</i> Tor grass; <i>Bromopsis erecta</i> Upright brome; <i>Carduus nutans</i> Musk thistle; <i>Chamerion angustifolium</i> Rosebay willowherb; <i>Cirsium arvense</i> Creeping thistle; <i>Cirsium vulgare</i> Spear thistle</p> | <p>This attribute will be periodically monitored as part of Natural England's site condition assessments</p> <p>WHEELER, B., WILSON, P., & REED, M. 2009 <i>Vegetation Survey of Berry Head. Loving Our Limestones Project</i>. Torbay Coast and Countryside Trust / Plantlife. Available from Natural England on request.</p> |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|---|---|---|--|---|
| | | | <p>Coarse grasses e.g. <i>Holcus lanatus</i> Yorkshire fog, <i>Dactylis glomerata</i> Cock's-foot. <i>Deschampsia flexuosa</i> Wavy hair-grass; <i>Plantago major</i> Greater plantain; <i>Pteridium aquilinum</i> Bracken; <i>Rumex crispus</i> Curled dock; <i>Rumex obtusifolius</i> Broad-leaved dock; <i>Senecio jacobaea</i> Ragwort; <i>Urtica dioica</i> Common nettle; <i>Juncus effusus</i> Soft rush; <i>Juncus squarrosus</i> Heath rush; <i>Ranunculus</i> spp. Buttercups; <i>Rumex obtusifolius</i> Broad-leaved dock</p> <p>All invasive non-native species, including <i>Buddleja</i> spp. Butterfly-bushes, <i>Cotoneaster</i> spp. Cotoneasters, <i>Fallopia japonica</i> Japanese knotweed and <i>Crocsmia</i> spp. Montbretias</p> <p>Trees and shrubs including <i>Betula</i> spp; <i>Crataegus monogyna</i>; <i>Cytisus scoparius</i>; <i>Ulex europaeus</i>; <i>Prunus spinosa</i>; <i>Rubus fruticosus</i> agg.</p> | |
| Structure and function (including its typical species) | Key structural, influential and/or distinctive species | <p>Restore the abundance of the species listed to enable each of them to be a viable component of the Annex I habitat feature.</p> <p>There are a number of rare species that are strongly dependent on the sea cliff feature:</p> <p><i>Aster linosyris</i> Goldilocks Aster; <i>Bupleurum baldense</i> Small Hare's-ear; <i>Gastridium ventricosum</i> Nit-grass; <i>Helianthemum apenninum</i> White Rock-rose; <i>Ononis reclinata</i> Small Restharrow; <i>Scilla autumnalis</i>; Autumn Squill; <i>Sedum forsterianum</i> Rock Stonecrop; <i>Trifolium suffocatum</i> Suffocated Clover; <i>Trinia glauca</i> Honewort; <i>Brassica oleracea</i> Wild</p> | <p>Some plant or animal species (or related groups of such species) make a particularly important contribution to the necessary structure, function and/or quality of an Annex I habitat feature at a particular site. These species will include;</p> <ul style="list-style-type: none"> • 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. <p>There may be natural fluctuations in the frequency and cover of each of these species. The relative contribution made by them to the overall ecological integrity of a site may vary, and Natural</p> | <p>This attribute will be periodically monitored as part of Natural England's site condition assessments</p> <p>WHEELER, B., WILSON, P., & REED, M. 2009 <i>Vegetation Survey of Berry Head. Loving Our Limestones Project</i>. Torbay Coast and Countryside Trust / Plantlife. Available from Natural England on request.</p> <p>R. J. HECKFORD AND S. D. BEAVAN. 2013. <i>Coleophora linosyridella</i> Fuchs (Lep. Coleophoridae) discovered new to Devon on <i>Aster linosyris</i>, a newly recorded British foodplant. <i>Entomologist's Rec. J. Var.</i> 125, 244-248.</p> |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|---|--|--|--|--|
| | | Cabbage | <p>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.</p> <p>Restore target selected because some populations of rare plants have been reduced/lost due to encroachment from scrub and other coarse vegetation.</p> <p>The rare micro-moth <i>Coleophora linosyridella</i> uses <i>Aster linosyris</i> Goldilocks Aster on the coastal slopes of Berry Head.</p> | |
| Structure and function (including its typical species) | Regeneration potential | Restore semi-natural vegetation on the cliff-top (either within or beyond the site boundary as appropriate), and its connectivity with the lower cliff slopes. | <p>This is important to ensure that there is a continuous supply of seed-rich semi-natural vegetation material from the clifftops to feed the sea-cliff system below. As the top of the cliff slumps and recedes as a result of natural processes, the vegetation dropping onto the lower slopes should provide suitable material for their re-colonisation with native plant species from adjacent semi-natural habitats above.</p> <p>See Extent and Distribution in this table.</p> | <p>This attribute will be periodically monitored as part of Natural England's site condition assessments</p> <p>WHEELER, B., WILSON, P., & REED, M. 2009 <i>Vegetation Survey of Berry Head. Loving Our Limestones Project</i>. Torbay Coast and Countryside Trust / Plantlife. Available from Natural England on request.</p> |
| Supporting processes (on which the feature relies) | Physical features supporting vegetation: crevices, ledges, isolated stacks etc. | Maintain the associated physical components of the vegetated cliff feature (crevices, ledges, isolated stacks) with changes to them determined by natural processes only | <p>Cliff structure and geomorphological processes are major influences on sea-cliff vegetation. 'Hard' cliffs with vertical or very steep faces are characteristic of hard igneous, metamorphic and sedimentary rocks and also of chalk, which, although a soft rock, nevertheless forms vertical cliffs. More mobile 'Soft' cliffs have a sloping or slumped profile, often with a distinct 'undercliff'; these occur on a range of soft rocks, or on hard rocks interspersed with softer deposits and may be subject to mudslides or landslips. These processes all create smaller structural elements such as ledges, crevices and stacks which create complexes of pioneer and more mature vegetation which are typical of this habitat feature.</p> <p>Whole coast of SAC is exposed to natural process of coastal erosion unimpeded.</p> | |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|--|--|---|---|---|
| Supporting processes (on which the feature relies) | Hydrology /drainage | 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. This target is generic and further site-specific investigations may be required to fully inform conservation measures and/or the likelihood of impacts. | |
| Supporting processes (on which the feature relies) | Maritime exposure including salt spray effects | Maintain an appropriate degree of exposure to maritime effects, such as salt spray, both from regular inputs and storm events | Excessive exposure to salt spray can cause episodic die-back of sea cliff vegetation in some circumstances, although this may not be applicable to all sites. | |
| Supporting processes (on which the feature relies) | Water quality | Where the feature is dependent on surface water and/or groundwater, maintain water quality and quantity to a standard which provides the necessary conditions to support the feature. | For many SAC features which are dependent on wetland habitats supported by surface and/or ground water, maintaining the quality and quantity of water supply will be critical, especially at certain times of year. Poor water quality and inadequate quantities of water can adversely affect the structure and function of this habitat type. Typically, meeting the surface water and groundwater environmental standards set out by the Water Framework Directive (WFD 2000/60/EC) will also be sufficient to support the achievement of SAC Conservation Objectives but in some cases more stringent standards may be needed. Further site-specific investigations may be required to establish appropriate water quality standards for the SAC. There are no known water quality issues and no threats to water quality have been identified | |
| 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). | 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 | 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) |
|--|--|---|--|--|
| | | | <p>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 (NO_x) and sulphur dioxide (SO₂), and critical loads for nutrient nitrogen deposition and acid deposition. There are currently no critical loads or levels for other pollutants such as Halogens, Heavy Metals, POPs, VOCs or Dusts. These should be considered as appropriate on a case-by-case basis.</p> <p>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.</p> <p>Critical loads are not defined on APIS for the H1230 sea cliff vegetation SAC feature. However, they are defined for H4030 European dry heaths and H6210 calcareous grassland SAC features, which are important components of the sea cliff community. Restore target selected because nitrogen and acid deposition critical loads are exceeded for these communities.</p> | |
| Supporting processes (on which the feature relies) | Cliff morphology, slope and elevation | Maintain the natural processes that determine cliff morphology, slope and elevation | <p>These physical components greatly influence the structure of this habitat type. Allowing natural dynamic processes to operate is important to providing optimal conditions which will allow the long-term conservation of this habitat feature. Interruption of these processes, through partial stabilisation or slowing of cliff erosion and recession rates, with artificial management of cliff slope vegetation, does not produce naturally-occurring conditions which could lead to undesirable changes in characteristic sea cliff vegetation.</p> | |
| Version Control | | | | |
| N/A | | | | |
| Variations from national feature-framework of integrity-guidance: N/A | | | | |

Table 2: Supplementary Advice for Qualifying Features: H4030. European dry heaths

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|---|--|---|---|--|
| Extent and distribution of the feature | Extent of the feature within the site | Restore the total extent of the feature to 1.76 hectares. | <p>There should be no measurable reduction (excluding any trivial loss) in the extent and area of this feature, and in some cases, the full extent of the feature may need to be restored. 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.</p> <p>Only Berry Head SSSI includes H4030 European dry heaths (Unit 1). The detailed NVC mapping from 2009 defines a small area described as Limestone heath H7/H8c. <i>Erica cinerea</i>, <i>Serratula tinctoria</i>, <i>Agrostis vinealis</i>, <i>Sanguisorba minor</i>, <i>Filipendula vulgaris</i> and <i>Ulex</i>. Other occurrences of H7/H8 are not defined in their extent and described only as possible relict or occasional and localised.</p> <p>Target set to Restore because the area is suffering from scrub encroachment.</p> | <p>This attribute will be periodically monitored as part of Natural England's site condition assessments.</p> <p>NATURAL ENGLAND. 2014. <i>South Hams Site Improvement Plan v1.0</i>. Natural England. Available from: http://publications.naturalengland.org.uk/publication/5900395054366720</p> <p>WHEELER, B., WILSON, P., & REED, M. 2009 <i>Vegetation Survey of Berry Head. Loving Our Limestones Project</i>. Torbay Coast and Countryside Trust / Plantlife. Available from Natural England on request.</p> |
| Extent and distribution of the feature | Spatial distribution of the feature within the site | Restore the distribution and configuration of the feature, including where applicable its component vegetation types, across the site | <p>A contraction in the range, or geographic spread, of the feature (and its component vegetation and typical species, plus transitional communities) across the site will reduce its overall area, the local diversity and variations in its structure and composition, and may undermine its resilience to adapt to future environmental changes. This may also reduce and break up the continuity of a habitat within a site and how well its</p> | <p>This attribute will be periodically monitored as part of Natural England's site condition assessments.</p> <p>WHEELER, B., WILSON, P., & REED, M. 2009 <i>Vegetation</i></p> |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|---|---|--|--|---|
| | | | <p>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.</p> <p>See: Extent of the feature within the site.</p> | <p><i>Survey of Berry Head. Loving Our Limestones Project.</i> Torbay Coast and Countryside Trust / Plantlife. Available from Natural England on request.</p> |
| Structure and function (including its typical species) | Vegetation community composition | <p>Ensure the component vegetation communities of the feature are referable to and characterised by the following National Vegetation Classification types:</p> <p>H7 <i>Calluna vulgaris-Scilla verna</i> heath</p> <p>H8 <i>Calluna vulgaris-Ulex gallii</i> heath</p> | <p>This habitat feature will comprise a number of associated semi-natural vegetation types and their transitional zones, reflecting the geographical location of the site, altitude, aspect, soil conditions (especially base-status and drainage) and vegetation management. In the UK these have been categorised by the National Vegetation Classification (NVC).</p> <p>Maintaining or restoring these characteristic and distinctive vegetation types, and the range of types as appropriate, will be important to sustaining the overall habitat feature. This will also help to conserve their typical plant species (i.e. the constant and preferential species of a community), and therefore that of the SAC feature, at appropriate levels (recognising natural fluctuations).</p> <p>Wheeler et al., (2009) does not map any significant areas of heathland communities, but indicates H7 as a minor component of the cliff slope vegetation and strips of H8 fringing scrub on the flat land above.</p> | <p>This attribute will be periodically monitored as part of Natural England's site condition assessments.</p> <p>WHEELER, B., WILSON, P., & REED, M. 2009 <i>Vegetation Survey of Berry Head. Loving Our Limestones Project.</i> Torbay Coast and Countryside Trust / Plantlife. Available from Natural England on request.</p> |
| Structure and function (including its typical species) | Vegetation community transitions | <p>Maintain any areas of transition between this and communities which form other heathland-associated habitats, such as dry and humid heaths, mires, acid</p> | <p>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.</p> | |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|---|--|---|--|---|
| | | grasslands, scrub and woodland. | <p>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.</p> <p>Main block of heath transitions to scrub and woodland. Other fragments exist in transitions to grassland or scrub.</p> | |
| 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% | <p>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. 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 Ericaceae and Empetraceae families).</p> <p>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 <i>Vaccinium myrtillus</i> and cowberry <i>Vaccinium vitis-idaea</i> are the commonest and most characteristic dwarf-shrubs. Hybrids of Dorset and cross-leaved heath and of bilberry and cowberry can be locally abundant. <i>Calluna</i> is usually the most abundant. Cowberry <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.</p> <p>Target set to Restore because dwarf shrub cover has been reduced in some areas by succession to scrub.</p> | This attribute will be periodically monitored as part of Natural England's site condition assessments . |
| Structure and function (including its typical) | 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 | This attribute will be periodically monitored as part of Natural England's site condition assessments . |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|---|--|--|--|---|
| species) | | | heathland vegetation. Usually active management of bracken is required to reduce or contain its cover across this habitat feature. But this fern has also some nature conservation value, for example on sites where fritillary butterflies occur and utilise bracken litter habitat. | |
| Structure and function (including its typical species) | Vegetation structure: cover of gorse | Restore 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 site condition assessments . |
| Structure and function (including its typical species) | Vegetation structure: tree cover | Restore the open character of the feature, with a typically scattered and low cover of trees and scrub (<15% 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. | This attribute will be periodically monitored as part of Natural England's site condition assessments . |
| Structure and function (including its typical species) | Vegetation structure: heather age structure | Restore a diverse age structure amongst the ericaceous 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 | This attribute will be periodically monitored as part of Natural England's site condition assessments . |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|---|---|---|---|---|
| | | | <p>and less than <10% cover of dead heathers.</p> <p>In 2013 the Farm Environment Plan (prepared to inform a Higher Level Stewardship application) recorded young age classes of heathers only.</p> | |
| 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: | <p>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.</p> <p>All invasive non-native species, including <i>Buddleja</i> spp. Butterfly-bushes, <i>Cotoneaster</i> spp. Cotoneasters, <i>Fallopia japonica</i> Japanese knotweed and <i>Crocsmia</i> spp. Montbretias</p> <p>Undesirable species include <i>Chamerion angustifolium</i> Rosebay willowherb; <i>Cirsium arvense</i> Creeping thistle; <i>Digitalis purpurea</i> Foxglove; <i>Epilobium</i> spp. Willowherbs (excluding <i>E. palustre</i> Marsh willowherb); <i>Juncus effusus</i> Soft rush; <i>Juncus squarrosus</i> Heath rush; <i>Ranunculus</i> spp. Buttercups; <i>Rumex obtusifolius</i> Broad-leaved dock; <i>Senecio</i> spp. Ragworts; <i>Urtica dioica</i> Common nettle; coarse grasses'</p> | This attribute will be periodically monitored as part of Natural England's site condition assessments . |
| Structure and function (including its typical species) | Key structural, influential and/or distinctive species | <p>Maintain the abundance of the species listed to enable each of them to be a viable component of the Annex I habitat feature:</p> <p><i>Calluna vulgaris</i> Heather and <i>Erica cinerea</i> Bell heather are dominant structural components of H4030 dry heath.</p> | <p>Some plant or animal species (or related groups of such species) make a particularly important contribution to the necessary structure, function and/or quality of an Annex I habitat feature at a particular site. These species will include;</p> <ul style="list-style-type: none"> • 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 | This attribute will be periodically monitored as part of Natural England's site condition assessments . |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|---|---|---|--|---|
| | | | <p>bioturbators (mixers of soil/sediment), grazers, surface borers, predators or other species with a significant functional role linked to the habitat)</p> <ul style="list-style-type: none"> • Site-distinctive species which are considered to be a particularly special and distinguishing component of an Annex I habitat on a particular SAC. <p>There may be natural fluctuations in the frequency and cover of each of these species. The relative contribution made by them to the overall ecological integrity of a site may vary, and Natural England will provide bespoke advice on this as necessary. The list of species given here for this Annex I habitat feature at this SAC is not necessarily exhaustive. The list may evolve, and species may be added or deleted, as new information about this site becomes available.</p> | |
| Structure and function (including its typical species) | Functional connectivity with wider landscape | Restore the overall extent, quality and function of any supporting features within the local landscape which provide a critical functional connection with the site | <p>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.</p> <p>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. Where there is a lack of detailed knowledge of the connectivity requirements of the qualifying feature, Natural England will advise as to whether these are applicable on a case by case basis.</p> | |
| Structure and function (including its typical) | Adaptation and resilience | Maintain the feature's ability, and that of its supporting processes, to adapt or evolve to wider environmental change, | 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 | NATURAL ENGLAND, 2015. <i>Climate Change Theme Plan and supporting National Biodiversity Climate Change Vulnerability</i> |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|---|--|--|--|---|
| species) | | either within or external to the site | <p>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.</p> <p>Using best available information, any necessary or likely adaptation or adjustment by the feature and its management in response to actual or expected climatic change should be allowed for, as far as practicable, in order to ensure the feature's long-term viability.</p> <p>The overall vulnerability of this SAC to climate change has been assessed by Natural England (2015) as being moderate, taking into account the sensitivity, fragmentation, topography and management of its habitats. This means that this site is considered to be vulnerable overall but moderately so.</p> <p>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 advisable.</p> | <p>assessments ('NBCCVAs') for SACs and SPAs in England. Natural England. Available at: http://publications.naturalengland.org.uk/publication/4954594591375360</p> |
| 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 | 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. | Torbay Coast and Countryside Trust 2007 Berry Head |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|---|--------------------|---|--|---|
| | | to maintain the structure, functions and supporting processes associated with the feature | <p>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.</p> <p>Appropriate management for the feature may include:</p> <ul style="list-style-type: none"> • Maintenance of low nutrient levels to maintain high numbers of species through the management activities of grazing, burning, mowing, sod-cutting and scrub/tree cutting. • Management of succession is a critical aspect of management for this habitat, by a combination of active processes and grazing/cutting. • A range of invertebrates and plants require bare ground/peat where it is not too frequently disturbed by vehicles or feet. <p>The Torbay Coast and Countryside Trust actively manage the heathland through scrub control and grazing.</p> | Conservation Management Plan 2007 – 2017 |
| 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). | <p>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.</p> <p>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 (NO_x) and sulphur dioxide (SO₂), and critical loads for nutrient nitrogen deposition and acid deposition. There are currently no critical loads or levels for</p> | More information about site-relevant Critical Loads and Levels for this SAC is available by using the 'search by site' tool on the Air Pollution Information System (www.apis.ac.uk). |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|---|----------------------|--|---|--|
| | | | <p>other pollutants such as Halogens, Heavy Metals, POPs, VOCs or Dusts. These should be considered as appropriate on a case-by-case basis.</p> <p>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.</p> <p>Target set to Restore because nitrogen and acid deposition exceed the critical loads.</p> | |
| Supporting processes (on which the feature relies) | Water quality | Where the feature is dependent on surface water and/or groundwater, maintain water quality and quantity to a standard which provides the necessary conditions to support the feature | <p>For many SAC features which are dependent on wetland habitats supported by surface and/or ground water, maintaining the quality and quantity of water supply will be critical, especially at certain times of year. Poor water quality and inadequate quantities of water can adversely affect the structure and function of this habitat type.</p> <p>Typically, meeting the surface water and groundwater environmental standards set out by the Water Framework Directive (WFD 2000/60/EC) will also be sufficient to support the achievement of SAC Conservation Objectives but in some cases more stringent standards may be needed. Further site-specific investigations may be required to establish appropriate water quality standards for the SAC.</p> | |
| 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. This target is generic and further site-specific investigations may be required to fully inform conservation measures and/or the likelihood of impacts. | |

| Attributes | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|--|---------|----------------------------------|--|
| | | | |
| Version Control Advice last updated: N/A | | | |
| Variations from national feature-framework of integrity-guidance: N/A | | | |

Table 3: Supplementary Advice for Qualifying Features: H6210. Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*)

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|---|--|--|---|--|
| Extent and distribution of the feature | Extent of the feature within the site | Restore the total extent of the feature. | <p>There should be no measurable reduction (excluding any trivial loss) in the extent and area of this feature, and in some cases, the full extent of the feature may need to be restored. 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.</p> <p>Only the Berry Head to Sharkham Point SSSI includes H6210 calcareous grassland, where there is detailed NVC mapping from 2009, which covers all of the calcareous grassland areas (although it excludes Sharkham Point, which does not contain any calcareous grassland).</p> <p>At Berry Head, within the North Fort, species-rich calcareous grassland communities have mostly been lost to a species poor, trampled and heavily manured (by dog faeces and urine) MG6 <i>Lolium perenne</i> – <i>Cynosurus cristatus</i> grassland. Where grassland is un-grazed and un-trampled on the plateau, a species-poor MG1e <i>Arrhenatherum elatius</i> is also found. There are also large areas of scrub (W22 <i>Prunus spinosa</i> – <i>Rubus fruticosus</i> scrub). CG1/2 communities exist at the top of the coastal slopes, where they merge into MG11c. A</p> | <p>This attribute will be periodically monitored as part of Natural England's site condition assessments.</p> <p>WHEELER, B., WILSON, P., & REED, M. 2009 <i>Vegetation Survey of Berry Head. Loving Our Limestones Project</i>. Torbay Coast and Countryside Trust / Plantlife. Available from Natural England on request.</p> <p>FOOTPRINT ECOLOGY 2014 <i>Recreational Impacts on Berry Head: Additional HRA Work for the Torbay Local Plan</i></p> |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|---|--|---|---|---|
| | | | <p>significant area is found on the northern slope of Berry Head, which is threatened by W21 <i>Crataegus monogyna</i> – <i>Hedera helix</i> scrub. Although the South Fort too is threatened by trampling, most of the area could still be classified as calcareous grassland in 2009. There are also significant areas of calcareous grassland surrounding the South Fort which have mostly been lost to scrub.</p> <p>The current area of calcareous grassland (3.2ha) is based on the 2009 survey but the report did not draw lines between NVC communities and indicated that they merge with each other so the figure is approximated. Restoration of scrub and trampled and/or nutrient enriched grasslands will need further consideration before a target for restoration could be defined.</p> | |
| Extent and distribution of the feature | Spatial distribution of the feature within the site | Restore the distribution and configuration of the feature, including where applicable its component vegetation types, across the site | <p>A contraction in the range, or geographic spread, of the feature (and its component vegetation and typical species, plus transitional communities) across the site will reduce its overall area, the local diversity and variations in its structure and composition, and may undermine its resilience to adapt to future environmental changes. 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.</p> <p>See: Extent of the feature within the site</p> | <p>This attribute will be periodically monitored as part of Natural England's site condition assessments.</p> <p>WHEELER, B., WILSON, P., & REED, M. 2009 <i>Vegetation Survey of Berry Head. Loving Our Limestones Project</i>. Torbay Coast and Countryside Trust / Plantlife. Available from Natural England on request.</p> |
| Structure and function (including its | Vegetation community composition | Ensure the component vegetation communities of the feature are referable to and | 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 | This attribute will be periodically monitored as part of Natural England's site condition |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|---|--|---|--|--|
| typical species) | | <p>characterised by the following National Vegetation Classification types:</p> <p>CG1 - <i>Festuca ovina</i> - <i>Carlina vulgaris</i> lowland calcareous grassland</p> <p>CG2 - <i>Festuca ovina</i> - <i>Avenula pratensis</i> lowland calcareous grassland</p> <p>CG7 - <i>Festuca ovina</i> - <i>Hieracium pilosella</i> - <i>Thymus praecox</i> grassland</p> | <p>conditions (especially base-status and drainage) and vegetation management. In the UK these have been categorised by the National Vegetation Classification (NVC).</p> <p>Maintaining or restoring these characteristic and distinctive vegetation types, and the range of types as appropriate, will be important to sustaining the overall habitat feature. This will also help to conserve their typical plant species (i.e. the constant and preferential species of a community), and therefore that of the SAC feature, at appropriate levels (recognising natural fluctuations).</p> <p>The calcareous grassland is classified by the 2009 survey as NVC CG1 and CG2.</p> <p>The better stands of CG1 <i>Festuca ovina</i> – <i>Carlina vulgaris</i> grassland, have affinities with CG1b <i>Scilla autumnalis</i>-<i>Euphorbia portlandica</i> sub-community and CG1c <i>Trinia glauca</i> sub-community. Degraded CG1 grassland at Berry Head can be very difficult distinguish from MC11 and also forms mosaics with CG2 grassland and its more mesotrophic counterparts MG5b and MG6.</p> <p>The CG2 grassland has <i>Festuca ovina</i>, <i>Avenula pratensis</i>, <i>Carex flacca</i>, <i>Briza media</i>, <i>Linum catharticum</i>, <i>Lotus corniculatus</i>, <i>Plantago lanceolata</i>, <i>Sanguisorba minor</i> as constants. The CG2 community also supports numerous other herbs including <i>Scabiosa columbaria</i>, <i>Filipendula vulgaris</i>, <i>Asperula cyanchica</i>, <i>Thymus polytrichus</i>, <i>Polygala vulgaris</i>, <i>Cirsium acaule</i>, <i>Hippocrepis comosa</i> and notably <i>Scilla autumnalis</i>, <i>Spiranthes spiralis</i>, <i>Gentianella amarella</i>, <i>Trinia glauca</i> and on the CG1/CG2 margins <i>Helianthemum appeninum</i> and <i>Bupleurum baldense</i>.</p> | <p>assessments. WHEELER, B., WILSON, P., & REED, M. 2009 <i>Vegetation Survey of Berry Head. Loving Our Limestones Project</i>. Torbay Coast and Countryside Trust / Plantlife. Available from Natural England on request.</p> |
| Structure and function (including its typical | Vegetation: proportion of herbs (including | Maintain the proportion of herbaceous species within the range 40%-90% | A high cover of characteristic herbs, including sedges (<i>Carex species</i>) is typical of the structure of this habitat type. | This attribute will be periodically monitored as part of Natural England's site condition assessments . |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|---|---|--|---|---|
| species) | <i>Carex</i> spp) | | | |
| Structure and function (including its typical species) | Key structural, influential and/or distinctive species | <p>Restore the abundance of the species listed to enable each of them to be a viable component of the Annex I habitat feature:</p> <ul style="list-style-type: none"> • Constant and preferential species of the CG1, C2 and CG7 grassland NVC communities which form the H6210 feature within this SAC • Vascular plant assemblage including: <i>Aster linosyris</i> Goldilocks Aster; <i>Bupleurum baldense</i> Small Hare's-ear; <i>Gastridium ventricosum</i> Nit-grass; <i>Helianthemum apenninum</i> White Rock-rose; <i>Ononis reclinata</i> Small Restharrow; <i>Scilla autumnalis</i> Autumn Squill; <i>Sedum forsterianum</i> Rock Stonecrop; <i>Trifolium suffocatum</i> Suffocated Clover; <i>Trinia glauca</i> Honewort; <i>Brassica oleracea</i> Wild Cabbage; <i>Gentianella anglica</i> Early Gentian; <i>Poa infirma</i> Early Meadow Grass | <p>Some plant or animal species (or related groups of such species) make a particularly important contribution to the necessary structure, function and/or quality of an Annex I habitat feature at a particular site. These species will include;</p> <ul style="list-style-type: none"> • 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. <p>There may be natural fluctuations in the frequency and cover of each of these species. The relative contribution made by them to the overall ecological integrity of a site may vary, and Natural England will provide bespoke advice on this as necessary. The list of species given here for this Annex I habitat feature at this SAC is not necessarily exhaustive. The list may evolve, and species may be added or deleted, as new information about this site becomes available.</p> <p>Restore target selected because some populations of rare plants have been reduced/lost due to encroachment from scrub and other coarse vegetation.</p> | <p>This attribute will be periodically monitored as part of Natural England's site condition assessments.</p> <p>WHEELER, B., WILSON, P., & REED, M. 2009 <i>Vegetation Survey of Berry Head. Loving Our Limestones Project</i>. Torbay Coast and Countryside Trust / Plantlife. Available from Natural England on request.</p> |
| Structure and function (including its typical species) | Vegetation: undesirable species | Restore the frequency/cover of the following undesirable species to within acceptable levels and prevent changes in surface | 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 | This attribute will be periodically monitored as part of Natural England's site condition assessments . |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|--|---------------------------------------|--|--|---|
| species) | | condition, soils, nutrient levels or hydrology which may encourage their spread: | <p>non-natives such as <i>Cotoneaster</i> spp, or coarse and aggressive native species which may uncharacteristically dominate the composition of the feature.</p> <p>Target set to restore because <i>Buddleja davidii</i>, <i>Cotoneaster horizontalis</i>, <i>Fallopia japonica</i> Japanese knotweed and <i>Montbretia</i> spp. are present on site.</p> <p>Undesirable species include: <i>Brachypodium pinnatum</i> Tor grass; <i>Bromopsis erecta</i> Upright brome; <i>Carduus nutans</i> Musk thistle; <i>Chamerion angustifolium</i> Rosebay willowherb; <i>Cirsium arvense</i> Creeping thistle; <i>Cirsium vulgare</i> Spear thistle; Coarse grasses e.g. <i>Holcus lanatus</i> Yorkshire fog, <i>Dactylis glomerata</i> Cock's-foot; <i>Deschampsia flexuosa</i> Wavy hair-grass; <i>Plantago major</i> Greater plantain; <i>Pteridium aquilinum</i> Bracken; <i>Rumex crispus</i> Curled dock; <i>Rumex obtusifolius</i> Broad-leaved dock; <i>Senecio jacobaea</i> Ragwort; <i>Urtica dioica</i> Common nettle</p> <p>All invasive non-native species, including <i>Buddleja</i> spp. Butterfly-bushes, <i>Cotoneaster</i> spp. Cotoneasters, <i>Fallopia japonica</i> Japanese knotweed and <i>Crocasmia</i> spp. Montbretias</p> | <p>WHEELER, B., WILSON, P., & REED, M. 2009 <i>Vegetation Survey of Berry Head. Loving Our Limestones Project</i>. Torbay Coast and Countryside Trust / Plantlife. Available from Natural England on request.</p> |
| Structure and function (including its typical species) | Vegetation community transitions | Maintain the pattern of natural vegetation zonations/transitions | <p>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.</p> <p>There are natural transitions on site between calcareous grassland and coastal slope vegetation and/or scrub, these are described within the 2009 survey.</p> | <p>This attribute will be periodically monitored as part of Natural England's site condition assessments.</p> <p>WHEELER, B., WILSON, P., & REED, M. 2009 <i>Vegetation Survey of Berry Head. Loving Our Limestones Project</i>. Torbay Coast and Countryside Trust / Plantlife. Available from Natural England on request.</p> |
| Structure and function (including its typical) | Soils, substrate and nutrient cycling | Restore the properties of the underlying soil types, including structure, bulk density, total carbon, pH, soil nutrient status | <p>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</p> | <p>Footprint Ecology 2014 <i>Recreational Impacts on Berry Head: Additional HRA Work for the Torbay Local Plan</i></p> |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|---|---|---|--|--|
| species) | | and fungal: bacterial ratio, to within typical values for the habitat. | <p>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.</p> <p>A restore target has been selected due to the heavy trampling and eutrophication by dog faeces and urine over large areas. However, soils are not routinely monitored and Natural England do not have any data about soils. There is however some discussion of soils within the 'Recreational Impacts' report</p> | |
| Structure and function (including its typical species) | Supporting off-site habitat | Maintain the extent, quality and spatial configuration of land or habitat surrounding or adjacent to the site which is known to support the feature [adviser to add any details of such off-site habitat where known. | <p>The structure and function of the qualifying habitat, including its typical species, may rely upon the continued presence of areas which surround and are outside of the designated site boundary. Changes in surrounding land-use may adversely (directly/indirectly) affect the functioning of the feature and its component species.</p> <p>This supporting habitat may be critical to the typical species of the feature to support their feeding, breeding, roosting, population dynamics ('metapopulations'), pollination or to prevent/reduce/absorb damaging impacts from adjacent land uses e.g. pesticide drift, nutrient enrichment.</p> <p>Berry Head is buffered from excessive air pollution by low-intensity agricultural land to the west and by open sea on other sides. The site is also buffered from the most intense trampling and dog fouling by the provision of a picnic field adjacent to the car park. These buffering features should be maintained.</p> | |
| Structure and function (including its typical species) | Functional connectivity with wider landscape | Restore 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. | |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|---|----------------------------------|---|--|--|
| | | | <p>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. Where there is a lack of detailed knowledge of the connectivity requirements of the qualifying feature, Natural England will advise as to whether these are applicable on a case by case basis.</p> <p>Target set to Restore because Berry Head is largely isolated from other semi-natural habitat by Brixham. Connectivity with the wider semi-natural landscape is confined to a narrow (10m – 110m wide) corridor of land between Sharkham Point and Berry Head between the urban fringe of Brixham and the sea.</p> | |
| 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 | <p>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.</p> <p>Using best available information, any necessary or likely adaptation or adjustment by the feature and its management in response to actual or expected climatic change should be allowed for, as far as practicable, in order to ensure the feature's long-term viability.</p> <p>The overall vulnerability of this SAC to climate change has been assessed by Natural England (2015) as being moderate, taking into account the sensitivity, fragmentation, topography and management of its habitats. This means that this site is considered to be vulnerable overall but moderately so. This</p> | 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) |
|---|------------------------------|---|--|---|
| | | | 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 advisable. | |
| 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). | <p>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.</p> <p>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 (NO_x) and sulphur dioxide (SO₂), and critical loads for nutrient nitrogen deposition and acid deposition. There are currently no critical loads or levels for other pollutants such as Halogens, Heavy Metals, POPs, VOCs or Dusts. These should be considered as appropriate on a case-by-case basis.</p> <p>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.</p> <p>Target set as Restore because nitrogen and acid deposition exceed the critical loads.</p> | More information about site-relevant Critical Loads and Levels for this SAC is available by using the 'search by site' tool on the Air Pollution Information System (www.apis.ac.uk). |
| Supporting processes | Conservation measures | Restore the management measures (either within and/or | Active and ongoing conservation management is needed to protect, maintain or restore this feature at this site. Further | ENGLISH NATURE. 2005. <i>Berry Head to Sharkham Point</i> |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|--|--|--|--|--|
| (on which the feature relies) | | outside the site boundary as appropriate) which are necessary to restore the structure, functions and supporting processes associated with the feature | <p>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.</p> <p>Torbay Coast and Countryside Trust manage the calcareous grasslands by grazing, cutting and scrub control. Target set as restore because additional grazing and cutting may be required to control scrub encroachment.</p> | <p><i>Views About Management.</i> English Nature. Available from: https://designatedsites.naturalengland.org.uk/PDFsForWeb/VAM/1001416.pdf</p> <p>NATURAL ENGLAND. 2014. <i>South Hams Site Improvement Plan v1.0.</i> Natural England. Available from: http://publications.naturalengland.org.uk/publication/5900395054366720</p> |
| Version Control | | | | |
| N/A | | | | |
| Variations from national feature-framework of integrity-guidance: N/A | | | | |

Table 4: Supplementary Advice for Qualifying Features: H8310. Caves not open to the public

| 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 feature. | <p>There should be no measurable reduction (excluding any trivial loss) in the extent and area of this feature, and in some cases, the full extent of the feature may need to be restored. The baseline-value of extent given has been generated using data gathered from the listed site-based surveys. Area measurements given may be approximate depending on the methods, age and accuracy of data collection, and as a result this value may be updated in future to reflect more accurate information.</p> <p>The extent of an Annex I habitat feature covers the sum extent of all of the component vegetation communities present and may include transitions and mosaics with other closely-associated habitat features. Where a feature is susceptible to natural dynamic processes, there may be acceptable variations in its extent through natural fluctuations.</p> <p>Where a reduction in the extent of a feature is considered necessary to meet the Conservation Objective for another Annex I feature, Natural England will advise on this on a case-by-case basis.</p> <p>Three SSSIs include H8310 Caves not open to the public: Berry Head to Sharkham Point; Buckfastleigh Caves; Chudleigh Caves and Woods.</p> <p>It is not possible to define a precise target for the extent of the feature due to the large number caves and their complexity. The greatest risk to loss would be through built development or tipping of waste materials, which Natural England would advise against in any part of a SSSI where caves might be damaged.</p> <p>Proctor's 1985 report documents 28 caves at Berry Head including information on their conservation interest. The report does not cover the adjacent area of Sharkham Point, which is also within the SSSI. The Site Management Brief for Chudleigh Caves mentions '20 in the area' but only the major caves are</p> | <p>This attribute will be periodically monitored as part of Natural England's site condition assessments.</p> <p>PROCTOR CJ 1985 The Berry Head Caves</p> <p>WILLIAM PENGELLY CAVES STUDIES TRUST LTD 1981 unpublished and untitled map of Chudleigh Rocks</p> <p>PAGE K N (undated) Geological Site Management Brief Buckfastleigh Caves</p> <p>COTTLE R 1994 Site Management Brief Chudleigh Caves and Woods</p> <p>COTTLE R 1992 Site Management Brief Berry Head to Sharkham Point</p> |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|---|---|--|---|---|
| | | | documented in any detail. The geological site management brief for Buckfastleigh identifies 4 major caves but also refers to 'several entrances' within 3 disused quarries. | |
| Structure and function (including its typical species) | Naturalness | Maintain the natural structure of the cave feature and ensure it can continue to evolve naturally | <p>This should be interpreted as referring to natural caves which are not routinely exploited for tourism, and which host specialist or endemic cave species.</p> <p>The natural entrance to one cave, Bakers Pit at Buckfastleigh, was been lost to tipped waste and has been replaced with a concrete tube. The tipped waste may be impacting on conditions within the cave (e.g. temperature and humidity) but the Site Improvement Plan for the SAC has assigned a low priority to restoration as this only affects one cave within a larger complex.</p> <p>Many other cave entrances are found within disused quarries and built development has been undertaken within the Buckfastleigh SSSI, however natural processes continue within the caves themselves.</p> | This attribute will be periodically monitored as part of Natural England's site condition assessments . |
| Structure and function (including its typical species) | Sedimentation | Cave sediments are undisturbed and in an unmodified form, and increased sediment loadings from alterations of inflowing watercourses are avoided. | Whilst some fine sediments exist and are actively used by cave faunas, excessive and muddy waters seem to deplete populations. | This attribute will be periodically monitored as part of Natural England's site condition assessments . |
| Structure and function (including its typical species) | Key structural, influential and/or distinctive species | <p>Maintain the abundance of the species listed to enable each of them to be a viable component of the Annex I habitat feature.</p> <p>The crustacean <i>Niphargellus glenniei</i></p> <p>Greater horseshoe bat <i>Rhinolophus ferrumequinum</i></p> <p>Lesser horseshoe bat</p> | <p>Some plant or animal species (or related groups of such species) make a particularly important contribution to the necessary structure, function and/or quality of an Annex I habitat feature at a particular site. These species will include;</p> <ul style="list-style-type: none"> • 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 | This attribute will be periodically monitored as part of Natural England's site condition assessments . |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|---|---------------------|--|--|---|
| | | <i>Rhinolophus hipposideros</i> | <p>bioturbators (mixers of soil/sediment), grazers, surface borers, predators or other species with a significant functional role linked to the habitat)</p> <ul style="list-style-type: none"> • Site-distinctive species which are considered to be a particularly special and distinguishing component of an Annex I habitat on a particular SAC. <p>There may be natural fluctuations in the frequency and cover of each of these species. The relative contribution made by them to the overall ecological integrity of a site may vary, and Natural England will provide bespoke advice on this as necessary. The list of species given here for this Annex I habitat feature at this SAC is not necessarily exhaustive. The list may evolve, and species may be added or deleted, as new information about this site becomes available.</p> <p>Cavernicoles or cave-dwelling species associated with this Annex I habitat can include bacteria, algae, (often as key biofilms) fungi and various groups of invertebrates (e.g. insects, spiders and crustaceans). The list of typical species given 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 or if our understanding of the term 'typical species' changes. The waters in Buckfastleigh caves support an abundant population of the endemic crustacean <i>Niphargellus glenniei</i>, an animal thought to be a pre-glacial relict. This species is believed to be endemic to Devon and Cornwall. Two nationally rare crustaceans, <i>Niphargus glenniei</i> and <i>Microniphargus leruthi</i> both occur within the caves of Berry Head</p> <p>Greater horseshoe bats occur in all three of the cave system SSSIs. Lesser horseshoe bats occur in Berry Head to Sharkham Point SSSI and Buckfastleigh Caves SSSI.</p> | |
| Supporting processes (on which the | illumination | Maintain naturally-occurring light levels within the cave body, whilst minimising any artificial | Caves lack natural illumination, and therefore support species which have evolved or are adapted to living in the dark. Microclimatic conditions vary widely within and between caves, | This attribute will be periodically monitored as part of Natural England's site condition |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|---|---------------------------|--|--|--|
| feature relies) | | light. | and this determines the composition of the fauna and flora at each site. 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. | assessments. |
| 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 | <p>Defining and maintaining the appropriate hydrological regime is a key step in moving towards achieving the conservation objectives for this site and sustaining this feature. 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. .Important to maintain natural geomorphological processes and to provide supporting habitat for cave flora and fauna; use of groundwater monitoring may be used as a partial proxy for cave water quality.</p> <p>Hydrological processes (direct erosion and dissolution of limestone by rainfall) has created all three cave systems and will be essential to their continuing evolution. The Berry Head to Sharkham Point SSSI also contains sea caves formed (at least in part) by wave action.</p> <p>The catchments of the cave systems are not well understood, but currently there are not known to be any problems in them that are disrupting hydrological processes in the cave systems.</p> | |
| Supporting processes (on which the feature relies) | Cave water quality | Avoid or reduce any metal-ion contamination into interstitial and cave waters | Though little data exists, there is some evidence which points to major impacts on the characteristic subterranean fauna from metal contamination. Impacts on the biofilms may be significant. | This attribute will be periodically monitored as part of Natural England's site condition assessments. |
| Supporting processes (on which the | Water quality | Where the feature is dependent on surface water and/or groundwater, maintain water | For many SAC features which are dependent on wetland habitats supported by surface and/or ground water, maintaining the quality and quantity of water supply will be critical, | |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|--|--|--|--|--|
| feature relies) | | quality and quantity to a standard which provides the necessary conditions to support the feature. | <p>especially at certain times of year. Poor water quality and inadequate quantities of water can adversely affect the structure and function of this habitat type.</p> <p>Typically, meeting the surface water and groundwater environmental standards set out by the Water Framework Directive (WFD 2000/60/EC) will also be sufficient to support the achievement of SAC Conservation Objectives but in some cases more stringent standards may be needed. Further site-specific investigations may be required to establish appropriate water quality standards for the SAC. Although nutrients are critical to the fauna associated with this feature as effectively the only decent N source, high initial inputs deplete the fauna, and whilst it subsequently recovers (and thrives) it raises the possibility of seriously damaging rare genotype populations in the first nutrient wave.</p> <p>The cave systems support species that are dependent on good water quality, such as the crustacean <i>Niphargus glennie</i>. The catchments of the cave systems are not well understood, but currently there are not known to be any problems with water quality or quantity.</p> | |
| Version Control N/A | | | | |
| Variations from national feature-framework of integrity-guidance: N/A | | | | |

Table 5: Supplementary Advice for Qualifying Features: H9180. *Tilio-Acerion* forests of slopes, screes and ravines; Mixed woodland on base-rich soils associated with rocky slopes

| 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 feature. | <p>There should be no measurable reduction (excluding any trivial loss) in the extent and area of this feature, and in some cases, the full extent of the feature may need to be restored. The baseline-value of extent given has been generated using data gathered from the listed site-based surveys. Area measurements given may be approximate depending on the methods, age and accuracy of data collection, and as a result this value may be updated in future to reflect more accurate information.</p> <p>The extent of an Annex I habitat feature covers the sum extent of all of the component vegetation communities present and may include transitions and mosaics with other closely-associated habitat features. Where a feature is susceptible to natural dynamic processes, there may be acceptable variations in its extent through natural fluctuations. Where a reduction in the extent of a feature is considered necessary to meet the Conservation Objective for another Annex I feature, Natural England will advise on this on a case-by-case basis.</p> <p>For this feature tree roots (particularly of veteran trees) can extend a considerable distance beyond the boundary of the site - they can be impacted by soil compaction (such as caused by vehicles or construction works); agricultural operations or other soil disturbance (like trenches); and agro chemicals or other chemicals which get into the soil. 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 part of the woodland.</p> <p>H9180 woodland only occurs in Chudleigh Caves and Woods</p> | <p>This attribute will be periodically monitored as part of Natural England's site condition assessments.</p> <p>NATURE CONSERVANCY COUNCIL. <i>Chudleigh Woods Phase 1 vegetation map</i>. Unpublished. Available from Natural England on request</p> |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|---|--|---|--|---|
| | | | <p>SSSI. The SSSI is 27.4916 ha, but this includes stands of other woodland types.</p> <p>An up-to-date map of H9180 woodland is required.</p> | |
| 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 | <p>A contraction in the range, or geographic spread, of the feature (and its component vegetation and typical species, plus transitional communities) across the site will reduce its overall area, the local diversity and variations in its structure and composition, and may undermine its resilience to adapt to future environmental changes. 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.</p> <p>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.</p> <p>An up-to-date map of H9180 woodland is required.</p> | This attribute will be periodically monitored as part of Natural England's site condition assessments . |
| Structure and function (including its typical species) | Vegetation community composition | <p>Ensure the component vegetation communities of the feature are referable to and characterised by the following National Vegetation Classification type:</p> <p><i>W8 Fraxinus excelsior-Acer campestre-Mercurialis perennis</i> woodland</p> | This habitat feature will comprise a number of associated semi-natural vegetation types and their transitional zones, reflecting the geographical location of the site, altitude, aspect, soil conditions (especially base-status and drainage) and vegetation management. 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 attribute will be periodically monitored as part of Natural England's site condition assessments . |
| Structure and | Vegetation | Maintain an appropriate tree | Canopy cover is the overall proportion of vegetative cover | This attribute will be periodically |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|---|--|---|--|---|
| function (including its typical species) | structure - canopy cover | canopy cover across the feature, which will typically be between 40-90% of the site | <p>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.</p> <p>Open canopies with just scattered trees will have less of a woodland character and reduced diversity of woodland-dependent species (although they may be still be important as a form of woodland-pasture).</p> <p>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.</p> | monitored as part of Natural England's site condition assessments . |
| 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 | 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. The targets set within this attribute should reflect the most appropriate structure for the woodland feature on a particular site, taking account of its known interest, history, past management and the landscape context. 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. | This attribute will be periodically monitored as part of Natural England's site condition assessments . |
| Structure and function | Vegetation structure - old | Maintain the extent and continuity of undisturbed, | Good woodland structure includes variations in age, tree form, layering, the distribution and abundance of open space and | This attribute will be periodically monitored as part of Natural |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|--|---|--|---|---|
| (including its typical species) | growth | 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). | dead wood. It plays a critical role in woodland ecosystem functioning. The targets set within this attribute should reflect the most appropriate structure for the woodland feature on a particular site, taking account of its known interest, history, past management and the landscape context. 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. | England's site condition assessments . |
| Structure and function (including its typical species) | Vegetation structure - dead wood | Restore as necessary the continuity and abundance of standing or fallen dead and decaying wood, typically between 30 - 50 m ³ per hectare of standing or fallen timber or 3-5 fallen trees >30cm per hectare, and >10 standing dead trees per hectare | 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. The targets set within this attribute should reflect the most appropriate structure for the woodland feature on a particular site, taking account of its known interest, history, past management and the landscape context. The most recent condition assessment by Natural England assessed the less demanding target that was set by the draft SSSI favourable condition table: 'A minimum of 3 fallen lying trees >20 cm diameter per ha and 4 trees per ha allowed to die standing' It is therefore unknown whether or not the more demanding target would be passed. | This attribute will be periodically monitored as part of Natural England's site condition assessments . |
| 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 site condition assessments . |
| Structure and function (including its typical species) | Vegetation structure - shrub layer | Maintain an understorey of shrubs cover 20 - 60% 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. The targets set within this attribute should reflect the most appropriate structure for the woodland feature on a particular site, taking account of its known interest, history, past management and the landscape context. | This attribute will be periodically monitored as part of Natural England's site condition assessments . |
| Structure and function (including its | Vegetation structure - woodland | Restore a graduated woodland edge into adjacent semi-natural open habitats, other | 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 | |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|--|------------------------------------|--|--|---|
| typical species) | edge | woodland/wood-pasture types or scrub. | <p>terms of height and cover. 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).</p> <p>Only the central plateau rock outcrop within the Chudleigh Caves and Woods SSSI has allowed the development of a significant woodland edge structure. Elsewhere the woodland mostly stops abruptly where it meets farmland, roads or urban areas with no transition.</p> | |
| Structure and function (including its typical species) | Adaptation and resilience | Maintain the resilience of the feature by ensuring a diversity of site-native trees (at least 4 site native tree species) e.g. ash/ small-leaved lime/ aspen/ alder/ sycamore/ rowan/ bird cherry/ birch) is present across the site. | <p>This recognises the increasing likelihood of natural habitat features needing 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.</p> <p>Using best available information, any necessary or likely adaptation or adjustment by the feature and its management in response to actual or expected climatic change should be allowed for, as far as practicable, in order to ensure the feature's long-term viability.</p> | This attribute will be periodically monitored as part of Natural England's site condition assessments . |
| Structure and function (including its typical species) | Browsing and grazing by herbivores | Maintain 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 | 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 | This attribute will be periodically monitored as part of Natural England's site condition assessments . |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|---|---|--|---|--|
| | | gaps. | 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 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 site condition assessments . |
| Structure and function (including its typical species) | Key structural, influential and/or distinctive species | <p>Restore the abundance of the species listed to enable each of them to be a viable component of the Annex I habitat feature:</p> <p>There are number of important lichen communities within the woodland:</p> <p>Pre-Lobarion on mature to veteran Ash and Oak Species: <i>Acrocordia gemmata</i>, <i>Collema furfuraceum</i>, <i>Gyalecta truncigena</i>, <i>Leptogium lichenoides</i>, <i>L. teretiussculum</i>, <i>Opegrapha corticola</i>.</p> <p><i>Lecanactidetum premneae</i></p> | <p>Some plant or animal species (or related groups of such species) make a particularly important contribution to the necessary structure, function and/or quality of an Annex I habitat feature at a particular site. These species will include;</p> <ul style="list-style-type: none"> • 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. <p>There may be natural fluctuations in the frequency and cover of each of these species. The relative contribution made by them</p> | <p>This attribute will be periodically monitored as part of Natural England's site condition assessments.</p> <p>EDWARDS, B. 2009. <i>Chudleigh Caves & Woods SSSI: Site Dossier for lichen interest features</i>.</p> |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|---|---|--|--|---|
| | | <p>community on veteran Oaks Species: <i>Lecanactis subabietina</i>, <i>Opegrapha prosodea</i>, <i>Schismatomma cretaceum</i></p> <p><i>Graphidetum scriptae</i> community on Hazel and young Ash Species: <i>Phlyctis agelaea</i></p> <p>The slug <i>Boetigerilla pallens</i></p> | <p>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.</p> <p>Restore target selected because some veteran trees have become covered with ivy which has reduced the lichen interest. Thinning and grazing may also be required to restore suitable conditions for the lichen interest.</p> <p>This is the only site for the slug <i>Boetigerilla pallens</i> in Devon.</p> <p>Important supporting habitat for greater horseshoe bats.</p> | |
| Structure and function (including its typical species) | Invasive, non-native and/or introduced species | <p>Ensure invasive and introduced non-native species are either rare or absent, but if present are causing minimal damage to the feature</p> | <p>Invasive or introduced non-native species are a serious potential threat to the biodiversity of native and ancient woods, because they are able to exclude, damage or suppress the growth of native tree, shrub and ground species (and their associated typical species), reduce structural diversity and prevent the natural regeneration of characteristic site-native species. 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.</p> <p>Sycamore is deemed to be an acceptable naturalised species.</p> | <p>This attribute will be periodically monitored as part of Natural England's site condition assessments.</p> |
| Structure and function (including its typical species) | Soils, substrate and nutrient cycling | <p>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.</p> | <p>Soil is the foundation of basic ecosystem function and a vital part of the natural environment. Its properties strongly influence the colonisation, growth and distribution of those plant species which together form vegetation types, and therefore provides a habitat used by a wide range of organisms. Soil biodiversity has a vital role to recycle organic matter. Changes to natural soil properties may therefore affect the ecological structure,</p> | |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|---|---|---|---|---|
| | | | function and processes associated with this Annex I feature. | |
| Supporting processes (on which the feature relies) | 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 | <p>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. In most cases increasing actual and functional landscape-scale connectivity would be beneficial. Where there is a lack of detailed knowledge of the connectivity requirements of the qualifying feature, Natural England will advise as to whether these are applicable on a case by case basis.</p> <p>The Chudleigh Caves and Woods SSSI is bordered by parkland, broadleaved woodland (some of which is ancient and semi-natural), semi-improved grassland and permanent pasture. Only the urban development of Chudleigh to the north and the A38 trunk road to the west limits connectivity with supporting habitats. These adjacent habitats buffer the site against pollution and will support some of the same species found within the woodland. Ugbrooke Park SSSI is less than 500 m to the south-east of Chudleigh Caves and Woods SSSI and supports a nationally important assemblage of epiphytic lichens.</p> | |
| 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). | <p>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.</p> <p>Critical Loads and Levels are recognised thresholds below which such harmful effects on sensitive UK habitats will not</p> | More information about site-relevant Critical Loads and Levels for this SAC is available by using the 'search by site' tool on the Air Pollution Information System (www.apis.ac.uk). |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|---|------------------|--|--|--|
| | | | <p>occur to a significant level, according to current levels of scientific understanding. There are critical levels for ammonia (NH₃), oxides of nitrogen (NO_x) and sulphur dioxide (SO₂), and critical loads for nutrient nitrogen deposition and acid deposition. There are currently no critical loads or levels for other pollutants such as Halogens, Heavy Metals, POPs, VOCs or Dusts. These should be considered as appropriate on a case-by-case basis.</p> <p>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.</p> <p>Target set as Restore because both nitrogen and acid deposition critical loads are being exceeded.</p> | |
| 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 | <p>Defining and maintaining the appropriate hydrological regime is a key step in moving towards achieving the conservation objectives for this site and sustaining this feature. 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. This is included as disruption/ damage to hydrological processes could be caused by activities at some distance from the site boundary. E.g through extraction of ground or surface waters; diverting or damming river channels; pollution of water source; channel alignment that disrupts natural geomorphological processes; tunnelling etc.</p> <p>Variations in soil moisture add important diversity to the woodland communities. The hydrology of the woodland catchment is not well understood, but there are not currently known to be any issues affecting the woodland.</p> | |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|--|---------------------|--|--|--|
| Supporting processes (on which the feature relies) | Illumination | Ensure artificial light is maintained to 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. | <p>DOWNS, N.C., BEATON, V., GUEST, J., POLANSKI, J.R., ROBINSON, S. L. & RACEY, P.A. 2003. <i>The effects of illuminating the roost entrance on the emergence behaviour of Pipistrellus pygmaeus</i>. Biological Conservation 111, p247-252</p> <p>STONE, E.L., JONES, G. & HARRIS, S. 2009. <i>Street Lighting Disturbs Commuting Bats</i>. Current Biology 19, p1123-1127.</p> |
| Version Control | | | | |
| N/A | | | | |
| Variations from national feature-framework of integrity-guidance: N/A | | | | |

Table 6: Supplementary Advice for Qualifying Features: S1304. *Rhinolophus ferrumequinum*; Greater horseshoe bat

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|------------------------------------|--|--|---|---|
| Population (of the feature) | Population abundance - maternity colony | Maintain the abundance of the breeding Greater horseshoe bat population at a level which is above 2,456 adult bats, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent. | <p>This will ensure there is a viable population of the feature which is being maintained at or increased to a level that contributes as appropriate to its Favourable Conservation Status across its natural range in the UK. Due to the dynamic nature of population change, the target-value given for the population size or presence of this feature is considered to be the minimum standard for conservation/restoration measures to achieve.</p> <p>This minimum-value may be revised where there is evidence to show that a population's size or presence has significantly changed as a result of natural factors or management measures and has been stable at or above a new level over a considerable period. The values given here may also be updated in future to reflect any strategic objectives which may be set at a national level for this feature.</p> <p>Given the likely fluctuations in numbers over time, any impact-assessments should focus on the current size of the site's population, as derived from the latest known or estimated level established using the best available data. This advice accords with the obligation to avoid deterioration of the site or significant disturbance of the species for which the site is designated, and seeks to avoid plans or projects that may affect the site giving rise to the risk of deterioration. Similarly, where there is evidence to show that a feature has historically been more abundant than the stated minimum target and its current level, the ongoing capacity of the site to accommodate the feature at such higher levels in future should also be taken into account in any assessment.</p> <p>Unless otherwise stated, the population size or presence will be that measured using standard methods, such as peak mean counts or breeding surveys. This value is also provided recognising there will be inherent variability as a result of natural fluctuations and margins of error during data collection.</p> | <p>This attribute will be periodically monitored as part of Natural England's site condition assessments.</p> <p>National Bat Monitoring Programme, Bat Conservation Trust.</p> |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|------------------------------------|--|--|--|---|
| | | | <p>Whilst we will endeavour to keep these values as up to date as possible, local Natural England staff can advise that the figures stated are the best available.</p> <p>The Bat Conservation Trust count bats and collect data for the National Bat Monitoring Programme (NBMP). NBMP data is appended to these conservation objectives (see Annex 1). The population has shown a sustained increase since designation and the baseline uses the most recent five year mean (2011 – 2015) of counts from the four maternity roosts (Chudleigh, Buckfastleigh, Berry Head and High Marks Barn).</p> | |
| Population (of the feature) | Population abundance - hibernation site | Maintain the abundance of the hibernating Greater horseshoe bat population at a level which is approximately the same as the breeding population, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent. | <p>This will ensure there is a viable population of the feature which is being maintained at or increased to a level that contributes as appropriate to its Favourable Conservation Status across its natural range in the UK. Due to the dynamic nature of population change, the target-value given for the population size or presence of this feature is considered to be the minimum standard for conservation/restoration measures to achieve. This minimum-value may be revised where there is evidence to show that a population's size or presence has significantly changed as a result of natural factors or management measures and has been stable at or above a new level over a considerable period. The values given here may also be updated in future to reflect any strategic objectives which may be set at a national level for this feature.</p> <p>Given the likely fluctuations in numbers over time, any impact-assessments should focus on the current size of the site's population, as derived from the latest known or estimated level established using the best available data. This advice accords with the obligation to avoid deterioration of the site or significant disturbance of the species for which the site is designated, and seeks to avoid plans or projects that may affect the site giving rise to the risk of deterioration. Similarly, where there is evidence to show that a feature has historically been more abundant than the stated minimum target and its current level, the ongoing capacity of the site to accommodate the feature at such higher levels in future should also be taken into account in</p> | This attribute will be periodically monitored as part of Natural England's site condition assessments . |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|--|---|---|--|---|
| | | | <p>any assessment.</p> <p>Unless otherwise stated, the population size or presence will be that measured using standard methods, such as peak mean counts or breeding surveys. This value is also provided recognising there will be inherent variability as a result of natural fluctuations and margins of error during data collection. Whilst we will endeavour to keep these values as up to date as possible, local Natural England staff can advise that the figures stated are the best available.</p> <p>Obtaining data for hibernation roosts is more difficult than for maternity roosts. Hibernation counts require access to the inside of the roost, which carries a risk of disturbance to the bats. Hibernation counts may therefore only be undertaken by a licensed bat worker. Access inside a roost may also carry health and safety risks and might therefore (for example) be limited to people with appropriate caving skills. Hibernation counts are not therefore undertaken routinely and limited data is available. Even when a hibernation roost has been accessed, the bats may be difficult to find and counts can therefore vary wildly.</p> <p>It is assumed that more or less the same number of bats should be hibernating within the South Hams SAC as are breeding but this has yet to be proven by hibernation counts.</p> | |
| Supporting habitat: extent and distribution | Distribution of supporting habitat | Maintain the distribution and continuity of the feature and its supporting habitat, including where applicable its component vegetation types and associated transitional vegetation types, across the site | A contraction in the range, or geographic spread, of the feature (and its component vegetation) 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. Contraction may also reduce and break up the continuity of a habitat within a site and how well the species feature is able to occupy and use habitat within the site. Such fragmentation may 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 this feature | This attribute will be periodically monitored as part of Natural England's site condition assessments . |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|--|-------------------------------------|--|--|---|
| | | | <p>and this may affect its viability.</p> <p>Maternity or hibernation roost sites are present in all five of the component SSSIs. All of the SSSIs support hibernation roosts and all except Haytor and Smallacombe Iron Mines support maternity roosts. Roost sites are in natural caves (Berry Head to Sharkham Point; Buckfastleigh Caves; Chudleigh Caves and Woods), disused mines (Bulkamore Iron Mine; Haytor and Smallacombe Iron Mines) and in buildings (Buckfastleigh Caves). Greater horseshoe bats also use a range of transitional roosts in spring and autumn in addition to their summer and winter roosts. The use of transitional roosts by the South Hams metapopulation is not well understood.</p> <p>The SAC also contains a range of other habitats that are used by greater horseshoe bats for foraging and commuting, including hedgerows and some significant areas of grassland, heathland and woodland. The distribution of different habitat types is not fully known.</p> <p>Resilience measures should also be considered, including creation of new bespoke roosts within proximity to existing roost, and network of 'stepping stones' into the wider landscape.</p> <p>Landscape scale infrastructure and development has the ability to sever habitats, as does the introduction of new lighting.</p> <p>(Also see 'Extent of supporting habitat').</p> | |
| Supporting habitat: extent and distribution | Extent of supporting habitat | Maintain the total extent of the habitats which support the feature. | In order to contribute towards the objective of achieving an overall favourable conservation status of the feature at a UK level, it is important to maintain or if appropriate restore the extent of supporting habitats and their range within this SAC. The information available on the extent and distribution of supporting habitat used by the feature may be approximate depending on the nature, age and accuracy of data collection, and may be subject to periodic review in light of improvements in data. | <p>This attribute will be periodically monitored as part of Natural England's site condition assessments.</p> <p>WHEELER, B., WILSON, P., & REED, M. 2009 <i>Vegetation</i></p> |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|---|---|--|--|--|
| | | | <p>Roost sites are present in all five of the component SSSIs. All of the SSSIs support hibernation roosts and all except Haytor and Smallacombe Iron Mines support maternity roosts. Roost sites are in natural caves (Berry Head to Sharkham Point; Buckfastleigh Caves; Chudleigh Caves and Woods), disused mines (Bulkamore Iron Mine; Haytor and Smallacombe Iron Mines) and in buildings (Buckfastleigh Caves).</p> <p>The SAC also contains a range of other habitats that are used by greater horseshoe bats for foraging, swarming and commuting, including hedgerows and some significant areas of grassland, heathland and woodland. The extent of different habitat types is not fully known. The wider countryside that surrounds the roosts is crucial to the survival of the bats and extends well beyond the designated boundaries of the SAC (about a 4km radius). It is also essential to protect key flightpaths between roosts and between roosts and foraging areas.</p> <p>Resilience measures should also be considered, including creation of new bespoke roosts within proximity to existing roost, and network of 'stepping stones' into the wider landscape.</p> <p>Landscape scale infrastructure and development has the ability to sever habitats, as does the introduction of new lighting.</p> | <p><i>Survey of Berry Head. Loving Our Limestones Project.</i> Torbay Coast and Countryside Trust / Plantlife. Available from Natural England on request.</p> <p>Robinson, Webber, Stebbings. 2000. Dispersal and foraging behaviour of greater horseshoe bats, Brixham, Devon. English Nature Research Report Number 344.</p> |
| Supporting habitat: structure / function | External condition of building - maternity colony and hibernation site | Maintain the structural integrity and weatherproofing of roof, walls and rainwater goods, with no significant change in shading of the main roost area by trees/vegetation or man made structures. | <p>Damp, draught and increases in light levels are likely to have a negative effect on the temperature and humidity of the roost.</p> <p>There are both maternity and hibernation roosts in buildings at Buckfastleigh Caves SSSI. The supporting SSSI roost at High Marks Barn is also a building.</p> <p>No lighting disturbance should affect the roost, or adjoining habitats.</p> | This attribute will be periodically monitored as part of Natural England's site condition assessments . |
| Supporting | External | Maintain the structural integrity of | Damp, draught and increases in light levels are likely to have a | This attribute will be periodically |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|---|--|--|---|---|
| habitat: structure / function | condition of underground site - maternity and hibernation | the roost space, with no recent collapses/falls or signs of geological instability. | negative effect on the temperature and humidity of the roost. No lighting disturbance should affect the roost, or adjoining habitats. | monitored as part of Natural England's site condition assessments . |
| Supporting habitat: structure / function | Supporting off-site habitat (foraging areas) | Restore any core areas of feeding habitat outside of the SAC boundary that are critical to Greater Horseshoe bats during their breeding and hibernation period. | Roost choice, and the presence of bats within the SAC, is likely to be influenced by the site's ability to provide bats with food and shelter. Key feeding areas around a roost, and the commuting routes (or flight-lines) between them, will be an important element of sustaining the SAC population. Feeding areas used by SAC bats may be outside of the SAC boundary but be critical to successful hibernation (these undesignated areas are sometimes referred to as 'sustenance zones' or 'functionally-linked land'). Target set to Restore because the wider agricultural landscape beyond the SAC boundary, on which the bats rely for foraging, is, to some extent, degraded by agricultural intensification so that the habitat supports fewer invertebrate food sources and offers less shelter. | |
| Supporting habitat: structure / function | Supporting off-site habitat (flightlines) | Maintain and Restore the presence, structure and quality of any linear landscape features which function as flightlines. Flightlines should remain unlit, functioning as dark corridors. | Non-breeding greater horseshoe adults can forage at least 4km from roost sites. For breeding females and juveniles, the average distance tends to be roughly half this i.e. 2km (English Nature, 2003). Greater horseshoes commute and forage along linear features, over grazed pasture and in woodland. Permanent pasture and ancient woodland linked with an abundance of tall bushy hedgerows is ideal supporting habitat for this species. (English Nature, 2003). Flightlines will extend beyond the designated site boundary into the wider local landscape. In general, low intensity management (e.g. cutting hedgerows on long rotations) is required to maintain the structure and quality of linear landscape features. Target includes Restore because some flightlines have been fragmented and disrupted, for example by light pollution. | NATURAL ENGLAND. 2010. <i>South Hams SAC – Greater horseshoe bat consultation zone planning guidance</i> . Natural England. Available from Natural England on request |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|---|---|---|--|---|
| | | | <p>Local Planning Authorities are taking account of greater horseshoe bats in decision-making following principles outlined in Natural England (2010) (as amended).</p> <p>Occasional vegetation management is required to maintain suitable vegetation cover around roost entrances.</p> | |
| Supporting habitat: structure / function | Internal condition of building maternity and hibernation | Maintain appropriate light levels, humidity, temperature and ventilation. | <p>There is currently insufficient information available in the academic press to provide specific targets on humidity, temperature, light levels and ventilation preferred by the species during the hibernation and maternity period.</p> <p>No lighting disturbance should affect the roost, or adjoining habitats.</p> | This attribute will be periodically monitored as part of Natural England's site condition assessments . |
| Supporting habitat: structure / function | Roost access | Maintain the number of access points to the roost at an optimal size and in an unlit and unobstructed state, with surrounding vegetation providing sheltered flyways without obstructing access(es) | <p>This will prevent any negative internal climatic changes within the roost and maintain the ability of bats to freely enter and leave the roost as necessary. Horseshoe bats require fly-in access to roosts. The minimal dimensions for greater horseshoe bat maternity roosts are 50 x 300mm.</p> <p>Vegetation clearance may be required at regular intervals to maintain unobstructed access.</p> | This attribute will be periodically monitored as part of Natural England's site condition assessments . |
| Supporting habitat: structure / function | Roost sites | Maintain all known roosts associated with the SAC breeding/hibernating population, including main maternity/hibernating roosts, satellite roosts and night-time or feeding roosts. | <p>Roost sites are present in all five of the component SSSIs. All of the SSSIs support hibernation roosts and all except Bulkamore, Haytor and Smallacombe Iron Mines support maternity roosts. Roost sites are in natural caves (Berry Head to Sharkham Point; Buckfastleigh Caves; Chudleigh Caves and Woods), disused mines (Bulkamore Iron Mine; Haytor and Smallacombe Iron Mines) and in buildings (Buckfastleigh Caves).</p> <p>Resilience measures should also be considered, including creation of new bespoke roosts within proximity to existing roost, and network of 'stepping stones' into the wider landscape.</p> | This attribute will be periodically monitored as part of Natural England's site condition assessments . |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|---|--|--|--|---|
| Supporting habitat: structure / function | 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, within typical values for the supporting habitat | Soil supports basic ecosystem function and is 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 the supporting habitat of this Annex II feature. | |
| Supporting processes (on which the feature and/or its supporting habitat relies) | Adaptation and resilience | Restore the feature's ability, and that of its supporting habitat, to adapt or evolve to wider environmental change, either within or external to the site | <p>This recognises the increasing likelihood of supporting 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.</p> <p>Using best available information, any necessary or likely adaptation or adjustment by the feature and its management in response to actual or expected climatic change should be allowed for, as far as practicable, in order to ensure the feature's long-term viability.</p> <p>The overall vulnerability of this SAC to climate change has been assessed by Natural England (2015) as being moderate, taking into account the sensitivity, fragmentation, topography and management of its supporting habitats. This means that this site is considered to be vulnerable overall but moderately so.</p> <p>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</p> | <p>NATURAL ENGLAND. 2015 <i>Climate Change Theme Plan and supporting National Biodiversity Climate Change Vulnerability assessments ('NBCCVAs') for SACs and SPAs in England</i>. Natural England. Available at http://publications.naturalengland.org.uk/publication/4954594591375360</p> <p>SHERWIN, H.A., MONTGOMERY, W.I. & LUNDY, M.G. 2013. <i>The Impact and Implications of Climate Change for Bats</i>. Mammal Review 43, p171-182.</p> <p>VOIGT, C.C., SCHNEEBERGER, K., VOIGT-HEUCKE, S. & LEWANZIK, D. 2011. <i>Rain Increases the Energy Cost of Bat Flight</i>. Biology Letters 7, p793-795.</p> |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|---|------------------------------|--|--|---|
| | | | <p>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 advisable. Resilience measures should also be considered, including creation of new bespoke roosts within proximity to existing roost, and network of 'stepping stones' into the wider landscape.</p> <p>Landscape scale infrastructure and development has the ability to sever habitats, as does the introduction of new lighting.</p> | |
| Supporting processes (on which the feature and/or its supporting habitat relies) | Conservation measures | Restore the 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 feature and/or its supporting habitats. | <p>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.</p> <p>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.</p> <p>Radio-tracking and other surveys have demonstrated significant use of the wider countryside around South Hams SAC, for foraging, commuting, roosting and mating (the SAC includes most known major hibernation and summer roost sites, including nursery roosts, but not all). The current understanding of critical foraging areas and strategic flyways is shown in Annex 1 (taken from Natural England (2010). There is a significant maternity roost in the Avon valley (High Marks Barn), which is designated as a SSSI but not as SAC but which nevertheless forms an important part of the metapopulation.</p> <p>A range of management measures are required in the wider countryside, such as maintaining and restoring foraging areas and commuting routes through hedgerow planting and low intensity pasture and hedgerow management. Local Planning Authorities are taking account of greater horseshoe bats in decision-making following principles outlined in Natural</p> | <p>BILLINGTON, G. 2003. <i>Radio tracking study of greater horseshoe bats at Buckfastleigh Caves Site of Special Scientific Interest</i>. <i>English Nature Research Report Number 573</i>. English Nature. Available from: http://publications.naturalengland.org.uk/publication/135004</p> <p>NATURAL ENGLAND. 2010. <i>South Hams SAC – Greater horseshoe bat consultation zone planning guidance</i>. Natural England. Available from Natural England on request.</p> <p>ROBINSON, WEBBER, STEBBINGS. 2000. Dispersal and foraging behaviour of greater horseshoe bats, Brixham, Devon. <i>English Nature Research Report Number 344</i>.</p> <p>BILLINGTON. 2002. Radio tracking study of greater horseshoe bats at Chudleigh Caves and Woods Site of Special</p> |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|---|--|--|---|--|
| | | | <p>England (2010). The concentration of the population in very few roost sites leaves the bats vulnerable. There is therefore a need to create new bespoke roosts that add resilience and spread the risk across more sites.</p> <p>Since 2016 the Devon Greater Horseshoe Bat Project has been working to improve bat habitat around 11 maternity roosts in Devon.</p> <p>Target set to Restore because some supporting habitat within the wider countryside is fragmented and/or degraded.</p> | <p>Scientific Interest. <i>English Nature Research Report</i> Number 496.</p> <p>RANSOME, 1996. The management of feeding areas for greater horseshoe bats. <i>English Nature Research Report</i> Number 174.</p> <p>RANSOME, 1997. The management of greater horseshoe bats feeding areas to enhance population levels. <i>English Nature Research Report</i> Number 241.</p> |
| Supporting processes (on which the feature and/or its supporting habitat relies) | Disturbance from human activity | Control and minimise human access to roost sites | <p>At caves and mines with public access there is a risk of vandalism and unauthorised access which may lead to security measures such as steel bars being proposed? Any proposed changes to access points are likely to require a protected species licence.</p> <p>Site should be secured against unauthorised access, which can result in disturbance to bats at critical times of year and which can affect their population viability and use of the site. Grilles on site access points should be maintained where present.</p> <p>Different methods are employed across the various roost sites. These include grilles/gates on roost entrances; warning tape in cave systems; security fencing around sites.</p> <p>Prevent light disturbance, temperature changes and noise from human access to roost sites. Monitoring of bat populations should only be undertaken by appropriately licenced bat workers.</p> | |
| Supporting processes (on which the feature and/or | Water quantity/ quality | Where the feature or its supporting habitat is dependent on surface water and/or groundwater, maintain water | For many SAC features which are dependent on wetland habitats supported by surface and/or ground water, maintaining the quality and quantity of water supply will be critical, especially at certain times of year. Poor water quality and | BILLINGTON, G. 2003. <i>Radio tracking study of greater horseshoe bats at Buckfastleigh Caves Site of Special Scientific</i> |

| Attributes | | Targets | Supporting and Explanatory Notes | Sources of site-based evidence (where available) |
|--------------------------------|--|--|---|--|
| its supporting habitat relies) | | quality and quantity to a standard which provides the necessary conditions to support the feature. | <p>inadequate quantities of water can adversely affect the structure and function of this habitat type.</p> <p>Typically, meeting the surface water and groundwater environmental standards set out by the Water Framework Directive (WFD 2000/60/EC) will also be sufficient to support the achievement of SAC Conservation Objectives but in some cases more stringent standards may be needed to reflect the ecological needs of the species feature. Further site-specific investigations may be required to establish appropriate water quality standards for the SAC.</p> <p>Greater horseshoe bats regularly forage along tree-lined watercourses.</p> | <p><i>Interest. English Nature Research Report Number 573.</i> English Nature. Available from: http://publications.naturalengland.org.uk/publication/135004</p> |

Version Control

Advice last updated: **6 March 2019**: Following stakeholder feedback, population targets for both maternity and hibernation attributes updated with the most recent data due to a sustained increase in the greater horseshoe bat population.

Recognised the use of transitional roosts and removed the reference to swarming activity in the 'Distribution of supporting habitat' attribute.

'Supporting off-site (foraging areas)' attribute added.

Amended text to acknowledge the use of buildings for hibernation.

Variations from national feature-framework of integrity-guidance:

The targets for some attributes listed above include both 'maintain' or 'restore' objectives. This is because this SAC is an extensive 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 be able to provide further specific advice on request

The following changes to attributes have been made:

Air quality is not directly relevant to bats therefore deleted.

Disturbance from human activity – additional attribute included

