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

Mottisfont Bats Special Area of Conservation (SAC)
Site Code: UK0030334

Barbastelle bat © Chris Damant

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About this document

This document provides Natural England's supplementary advice about the European Site Conservation Objectives relating to Mottisfont Bats SAC.

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

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

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

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

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

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

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

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

If you have any comments or queries about this Supplementary Advice document please contact your local Natural England adviser or email HDIRConservationObjectivesNE@naturalengland.org.uk

About this site

European Site information

Name of European Site	Mottisfont Bats Special Area of Conservation (SAC)
Location	Hampshire
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	196.88 ha
Designation Changes	Not applicable
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)	Mottisfont Bats SSSI The SSSI and SAC boundaries are the same.
Relationship with other European or International Site designations	None

Site background and geography

Mottisfont Bats SAC is located in the south-west of the Hampshire Downs National Character Area (NCA 130). The majority of the NCA is an elevated, open, rolling landscape dominated by large arable fields with low hedgerows on thin chalk soils, scattered woodland blocks (mostly on clay-with-flint caps) and shelterbelts. Through it the River Test runs north to south in a straight-sided, relatively deeply incised valley.

The Mottisfont Estate is on the western flank of the River Test, approximately 5 miles north-west of Romsey. It sits in a landscape of mixed farmland, coniferous and deciduous woodland on the west side of the Test valley, close to the River Dun and around 1.5 miles from the channels and wetland habitats of the River Test. The Mottisfont woodlands contain a mix of woodland types including hazel *Corylus avellana* coppice with standards, broadleaved plantation and coniferous plantation which the bats use for breeding, roosting, commuting and feeding.

A colony of barbastelle bats, *Barbastella barbastellus*, is associated with this site and is the sole reason for the SAC designation on the Mottisfont woodlands. The evidence suggests that trees in the woodlands are used as a summer maternity roost, with the barbastelles showing a preference toward roosting in deciduous, hardwood trees, particularly Oak, Beech and Sweet Chestnut. The bats also use the site as a foraging area and have known navigation routes through the woodland to (predominantly) riverine areas and subsequent feeding areas in the surrounding landscape.

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:

Not applicable

Qualifying Species:

- **S1308 Barbastelle bat *Barbastella barbastellus;***

The barbastelle *Barbastella barbastellus* is a medium-sized species of bat by British standards, weighing between 6-13 grams. Its fur is almost black, usually with very pale or golden brown tips to the hairs giving it a frosted appearance. The under-fur is grey-brown, again often with pale tips to the hairs. The ears are black, short, broad and joined across the forehead and together with the rather squat face give this bat a very distinctive 'pug-like' appearance.

Barbastelle ecology is relatively poorly-known although more information has become available since this SAC was designated. It is a northern temperate species, occurring in upland sites in southern Europe. In the UK it is found in a variety of habitats where suitable roosting and foraging is found. The species forages in mixed habitats, including over water. Barbastelles appear to select cracks and crevices in wood for breeding, mostly in old or damaged trees, but cracks and crevices in the timbers of old buildings may also be used. Maternity colonies may move between suitable crevices within a small area, such as a piece of woodland or a complex of buildings. Caves and underground structures may be used for hibernation. The species is very sensitive to disturbance, together with the loss of roost-sites and food resources.

The barbastelle is one of the UK's rarest mammals. In recent years this species has been found to be more widespread across southern England and south Wales than previously recognised. The Mottisfont Bats SAC is one of the few sites to be protected by SAC designation for barbastelle bats and the only one in Hampshire. Surveys at Mottisfont suggest that trees in the woodlands, particularly Oak, Beech and Sweet Chestnut, are used as a summer maternity roost, where the female bats gather to give birth and rear their young. Baby bats are usually born in July, sometimes even in early August; females usually produce a single baby, but occasionally twins. Juvenile bats can fly at about 3 weeks, and by 6 weeks can forage for themselves. Research indicates that juveniles follow the adults into their established foraging areas.

All species of bat present in the UK, including the Barbastelle, are fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of the Conservation of Habitats and Species Regulations 2017, making it a 'European Protected Species'. A Licence may therefore be required for any activities likely to harm or disturb individual bats.

Site-specific seasonality of SAC features

The table below highlights in grey those months in which significant numbers of each 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. The presence of the features may vary depending on weather conditions.

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 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
Barbastelle bat	Breeding													

Table 1: Supplementary Advice for Qualifying Features: S1308. *Barbastella barbastellus*; Barbastelle bat

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Population (of the feature)	**Population abundance - maternity colony**	Restore the abundance of the breeding population to a level which is above 40-100 breeding females, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.	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. Several pieces of research have generated estimates of the population as being somewhere between 40 and 100 breeding females. This work was carried out over 10 years ago. Subsequently the National Trust have carried out habitat improvement work on their land, and more work is planned, both on their land and the privately owned land within and adjacent to the designated site. As a result it is not currently known what size breeding population this site could support, however there is every reason to expect that it will be higher than the estimates from the radio tracking studies. Radio tracking studies are unlikely to be carried out very often, not least because of the impact they can have on gestating and lactating females. The Mottisfont Estate National Trust staff are developing their in-house skills in surveying for barbastelles, and thereby hope to increase the knowledge of the population and their use of the site. Additionally, the yearly transect survey data generated by the National Bat Monitoring Programme (NBMP) will be used to confirm that bats are still using the site and the areas covered by the transect routes. 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 (generally at least 10 years). 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.	DAVIDSON-WATTS, I. & MCKENZIE, A., 2006. *Habitat use and Ranging of Barbastelle Bats of the Mottisfont Estate, Hampshire*. Prepared for The National Trust. Available on request from Natural England.

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			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. 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 whether the figures stated are the best available.	
Supporting habitat: extent and distribution	**Extent of supporting habitat**	Restore the total extent of the Broadleaved mixed and yew woodland habitat which supports barbastelle bats to 196.88 ha.	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. Target set to Restore because currently approximately half the site is conifer plantations which have been shown to have limited value to the barbastelle bats. Additionally a proportion of the broadleaved woodlands have only limited amounts of the habitat features which the barbastelle bats prefer.	NATIONAL TRUST, 2016. *Mottisfont Estate Barbastelle Habitat Zoning Plan*. Available on request from Natural England.

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Supporting habitat: extent and distribution	**Distribution of supporting habitat**	Restore the distribution and continuity of the feature and its supporting habitat 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 and this may affect its viability. Target set to Restore because currently approximately half the site is conifer plantations which have been shown to have limited value to the barbastelle bats. Additionally a proportion of the broadleaved woodlands have only limited amounts of the habitat features which the barbastelle bats prefer.	
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 habitat: structure/ function	**Supporting off-site habitat (flightlines)**	Restore the presence, structure and quality of any linear landscape features which function as flight-lines both within and outside the site to surrounding foraging areas used by barbastelles. Flightlines should remain unlit, functioning as dark corridors.	Barbastelles feed mainly on small moths, some flies and beetles. They may forage up to 5-7 km from their maternity roosts, though some individuals in less favourable habitat may forage further to reach suitable feeding grounds (Greenaway, 2001). It is thought that barbastelles prefer pastoral landscapes with deciduous woodland, wet meadows and water bodies, though they will feed in more open areas i.e. orchards, suburban parks. Barbastelles prefer to commute along linear landscape features, such as woodland edges and hedgerows, to cross extensive open areas (i.e. arable fields) to reach foraging	NATIONAL TRUST, 2016. *Mottisfont Estate Barbastelle Habitat Zoning Plan*. Available on request from Natural England.

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			grounds, and may feed to a certain extent within these more open areas. Typical flightlines used by this species include linear hedgerows, waterways, blocks of scrub, wooded rides and tracks, and sunken lanes. Flightlines will extend beyond the designated site boundary into the wider local landscape. The annual surveys of woodland transects through the NBMP have identified that Back Lane is an important flightline for barbastelles travelling towards the River Test. Target set to Restore because currently approximately half the site is conifer plantations which have been shown to have limited value to the barbastelle bats. Additionally a proportion of the broadleaved woodlands have only limited amounts of the habitat features which the barbastelle bats prefer. The site is surrounded by woodland, improved and unimproved grassland and arable land. A significant proportion of the neighbouring off-site woodland habitat is also conifer plantations, and improved grassland and arable land has been shown to have limited foraging value for barbastelles.	
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 Barbastelles during their breeding 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 flightlines) between them, will be an important element of sustaining the SAC population. The site has a number of small coppice and broadleaved woodlands around it. There are also the channels of the River Test and River Dun, along with the fens, marshy areas, wet grassland and flowing ditches found in the surrounding valley floors. Flightlines will extend beyond the designated site boundary into the wider local landscape. Target set to Restore because the site is surrounded by woodland, improved and unimproved grassland and arable land. A significant proportion of the neighbouring off-site woodland habitat is also conifer plantations, and improved	NATIONAL TRUST, 2016. *Mottisfont Estate Barbastelle Habitat Zoning Plan*. Available on request from Natural England.

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			grassland and arable land has been shown to have limited foraging value for barbastelles.	
Supporting habitat: structure/ function	**Woodland site - maternity colony**	Restore the extent and structural diversity of supporting woodland habitat used by breeding barbastelles for feeding and foraging.	Bats typically forage within woodlands close to their roosts before commuting to core foraging areas. The structural diversity of supporting habitat will be important to maintain optimal feeding and foraging conditions in close proximity to maternity roosts; key aspects of woodland structure will include good canopy cover (typically 50-90%), an abundance of standing and fallen dead wood, areas of open space and the retention of open water and/or wetland features. Target set to Restore because currently approximately half the site is conifer plantations which have been shown to have limited value to the barbastelle bats. Additionally a proportion of the broadleaved woodlands have only limited amounts of the habitat features which the barbastelle bats prefer.	NATIONAL TRUST, 2016. *Mottisfont Estate Barbastelle Habitat Zoning Plan*. Available on request from Natural England.
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.	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. Using best available information, any necessary or likely adaptation or adjustment by the feature and its management in response to actual or expected climatic change should be allowed for, as far as practicable, in order to ensure the feature's long-term viability. The overall vulnerability of this SAC to climate change has been assessed by Natural England (2015) as being low, taking into account the sensitivity, fragmentation, topography and management of its supporting habitats. This means that this site is considered to be vulnerable overall but are a lower priority for further assessment and action. Individual species	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)
			may be more or less vulnerable than their supporting habitat itself. In many cases, change will be inevitable so appropriate monitoring would be advisable. Target set to Restore because currently approximately half the site is conifer plantations which have been shown to have limited value to the barbastelle bats. Additionally a proportion of the broadleaved woodlands have only limited amounts of the habitat features which the barbastelle bats prefer. The site is surrounded by woodland, improved and unimproved grassland and arable land. A significant proportion of the neighbouring off-site woodland habitat is also conifer plantations, and improved grassland and arable land has been shown to have limited foraging value for barbastelles.	
Supporting processes (on which the feature and/or its supporting habitat relies)	**Air quality**	Restore 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).	The supporting habitat of this feature 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 (including food-plants) and reducing supporting habitat quality and population viability of this feature. 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 (NH_3), oxides of nitrogen (NOx) and sulphur dioxide (SO_2), and critical loads for nutrient nitrogen deposition and acid deposition. There are currently no critical loads or levels for other pollutants such as Halogens, Heavy Metals, POPs, VOCs or Dusts. These should be considered as appropriate on a case-by-case basis. Ground level ozone is regionally important as a toxic air pollutant but flux-based critical levels for the protection of semi-natural habitats are still under development. It is recognised that achieving this target may be subject to the development, availability and effectiveness of abatement technology and measures to tackle diffuse air pollution, within realistic timescales.	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)
			Target set to Restore because current levels of nitrogen deposition (APIS accessed on 19/12/2018) are exceeding the critical load for the woodland supporting habitat of Barbastelle.	
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 Maintain or Restore (depending on the area in question) the structure, functions and supporting processes associated with the barbastelle bat and/or its supporting habitats.	Active and ongoing conservation management is needed to protect, maintain or restore this feature at this site. Further details about the necessary conservation measures for this site can be provided by contacting Natural England. This information will typically be found within, where applicable, supporting documents such as Natura 2000 Site Improvement Plan, site management strategies or plans (such as the National Trust's Habitat Zoning Plan), the Views about Management Statement for the underpinning SSSI and/or management agreements.	NATIONAL TRUST, 2016. *Mottisfont Estate Barbastelle Habitat Zoning Plan*. Available on request from Natural England.
Supporting processes (on which the feature and/or its supporting habitat relies)	**Disturbance from human activity**	Control and minimise human access to all roost sites.	Maternity roosts of barbastelle bats are particularly sensitive to disturbance and should be secured against unauthorised access, which can result in disturbance to bats at critical times of year. This can disrupt their breeding cycle and can affect their population viability and use of the site.	
Supporting processes (on which the feature and/or its supporting habitat relies)	**Water quantity/ quality**	Maintain water quality and quantity of on surface water and/or groundwater to a standard which provides the necessary conditions to support barbastelle bats.	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 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. The following are important wet features in the landscape around Mottisfont Bats: the channels of the River Test and River Dun, along with the fens, marshy areas, wet grassland and flowing ditches found in the surrounding valley floors.	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			There are also a number of ponds and spring-fed channels running through the woodlands.	
Version Control Advice last updated: N/A				
Variations from national feature-framework of integrity-guidance: The four attributes concerned with the **external and internal condition of buildings used by maternity colonies or for hibernation and access** to these have been deleted as the maternity roosts on this site are in trees. The 'population abundance at a hibernation site' attribute has been deleted as the SAC is only known to support a breeding colony.				

References

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