

**European Community Directive
on the Conservation of Natural Habitats
and of Wild Fauna and Flora
(92/43/EEC)**

Supporting documentation for the
Third Report by the United Kingdom under
Article 17

on the implementation of the Directive
from January 2007 to December 2012
Conservation status assessment for

Species:

S1323 - Bechstein's bat (*Myotis bechsteinii*)

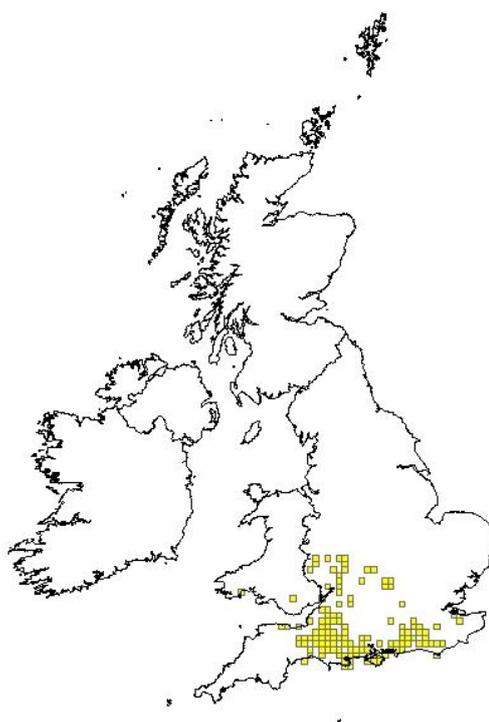
IMPORTANT NOTE – PLEASE READ

- The country-level reporting information contained in this document is a contribution to the Article 17 UK report for the habitat/species concerned.
- It has been provided by **Natural England** and refers only to the state of the habitat/species in **England** - it does not constitute an assessment for the whole of the UK.
- The Article 17 UK Approach document provides details on how this information has been used and, combined with information supplied by other Statutory Nature Conservation Bodies
- The format of the document is closely aligned to that set out by the European Commission for Member State reporting – as a result, some of the fields are not applicable at a country-level and have deliberately been left blank – in addition, the content of most fields is constrained by the EC reporting categories.

Reporting format on the 'main results of the surveillance under Article 11' for Annex II, IV & V species

<i>Field name</i>	<i>Brief explanations</i>	
0.2 Species	0.2.1 Species code	S1323
	0.2.2 Species scientific name	<i>Myotis bechsteinii</i>
	0.2.3 Alternative species scientific name Optional	
	0.2.4 Common name Optional	Bechstein's bat

1.1 Maps		
1.1.1 Distribution map		Sensitive False
<p>Quiet echolocation calls mean that this species cannot be monitored with bat detectors. Roosts are difficult to detect. Surveys with lures and netting have successfully located new populations but are resource intensive.</p> <p>Bechstein's bat is a rare species found only in central southern England with a few records in parts of south Wales. The known distribution has been significantly improved by a 4-year project (2007-2012) to locate colonies of this species using a lure/trap method in woodlands identified as suitable for the species (Miller, 2012). This project generated many additional high-quality records and the mapped distribution is probably now close to the actual current distribution of the species.</p> <p>MILLER, H. 2012. Bechstein's bat survey: final report September 2007-September 2011. Bat Conservation Trust, London.</p>		



1.1.2 Method used - map	Estimate based on partial data with some extrapolation and/or modelling
1.1.3 Year or period	2000-2012
1.1.4 Additional distribution map	False
1.1.5 Range map	

2.1 Biogeographical region & marine regions	ATL
2.2 Published sources	<p>"BOYE, P. & DIETZ, M. 2005. Research Report No 661: Development of good practice guidelines for woodland management for bats. English Nature, Peterborough.</p> <p>DURRANT, C.J., BEEBEE, T.J.C., GREENAWAY, F. & HILL, D.A. 2009. Evidence of recent population bottlenecks and inbreeding in British populations of Bechstein's bat <i>Myotis bechsteinii</i>. Conservation Genetics 10(2):589-496.</p> <p>GREENAWAY, F. & HILL, D.A. 2004. Woodland management advice for Bechstein's and barbastelle bat. English Nature Research Reports. 658.</p> <p>HARRIS, S., MORRIS, P., WRAY, S. and YALDEN, D. 1995. A review of British Mammals: population estimates and conservation status of British mammals other than cetaceans. JNCC, Peterborough.</p> <p>HARRIS, S., MORRIS, P., WRAY, S and YALDEN, D. 1995. A review of British Mammals: population estimates and conservation status of British mammals other than cetaceans.</p>

	<p>JNCC, Peterborough. HILL, D. A, & GREENAWAY, F. 2005. Effectiveness of an acoustic lure for surveying bats in British woodlands. Mammal Review 35(1): 116-122. MILLER, H. 2012. Bechstein's bat survey: final report September 2007-September 2011. Bat Conservation Trust, London. QUINE et al (2011). Chapter 8 - Woodlands. In: The UK National Ecosystem Assessment Technical Report. UK National Ecosystem Assessment, UNEP -WCMC, Cambridge. Http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx"</p>

2.3 Range	
2.3.1 Surface area Range	
2.3.2 Method used Surface area of Range	Estimate based on partial data with some extrapolation and/or modelling
2.3.3 Short-term trend Period	Bechstein's bat is a rare and poorly recorded species. A recent project greatly improved our knowledge of the range of the species (Miller, 2012) but does not allow an estimation of trend.
2.3.4 Short term trend Trend direction	unknown The known distribution and hence known range of this species has been significantly improved due to a four year project (2007-2012) conducted by the Bat Conservation Trust (BCT) to locate colonies (Miller, 2012). However, this project does not allow an estimation of trend.
2.3.5 Short-term trend Magnitude	a) Minimum
	b) Maximum
2.3.6 Long-term trend Period	
2.3.7 Long-term trend Trend direction	
2.3.8 Long-term trend Magnitude	a) Minimum
Optional	

	b) Maximum	
2.3.9 Favourable reference range	a) Value in km²	
	b) Operator for FRR	
	c) FRR is unknown (indicated by "true")	False
	d) Method used to set FRR	
2.3.10 Reason for change Is the difference between the reported value in 2.3.1 and the previous reporting round mainly due to...	a) Genuine change?	False
	b) Improved knowledge/more accurate data?	True
	c) Use of different method (e.g. "Range tool")?	True

2.4 Population		
2.4.1 Population size estimation (using individuals or agreed exceptions where possible)	a) Unit	number of individuals
	Bechstein's bat is a rare species, with few data on which to base a population estimate. The estimate given by Harris et al (1995) is based partly on the view that a population of less than 1000 would be unlikely to maintain itself in the long term. An improving understanding of habitat associations may allow for an improved estimate in the future.	
	b) Minimum	1500
	c) Maximum	1500

2.4.2 Population size estimation (using population unit other than individuals) Optional (<i>if 2.4.1 filled in</i>)	a) Unit	
	b) Minimum	
	c) Maximum	
2.4.3 Additional information on population estimates / conversion Optional	a) Definition of "locality"	
	b) Method to convert data	
	c) Problems encountered to provide population size estimation	The population size given relates to the UK. There is no information available currently on an estimation per country.
2.4.4 Year or period	1995-	
2.4.5 Method used Population size	Estimate based on expert opinion with no or minimal sampling	
2.4.6 Short-term trend Period	2001-2012	
2.4.7 Short-term trend Trend direction	unknown	
2.4.8 Short-term trend Magnitude	a) Minimum	
	b) Maximum	
	c) Confidence interval	
2.4.9 Short-term trend Method used	Absent data	
2.4.10 Long-term trend – Period		

2.4.11 Long-term trend Trend direction		
2.4.12 Long-term trend Magnitude Optional	a) Minimum	
	b) Maximum	
	c) Confidence interval	
2.4.13 Long term trend Method used		
2.4.14 Favourable reference population	a) Number of individuals/agreed exceptions/other units	2000
	<p>The favourable reference population value has been derived using 1994 as the baseline and making a judgement on whether the population in 1994 was viable in the long-term, using the decision tree in Note 1 (see 'Assessing Conservation Status: UK Approach') as a guide. Historic and current information on population size, distribution and trends have been used in order to assess viability and, if the 1994 level was not viable, then consideration has been given to what would constitute a viable population. At present, population trends for this species are unknown, but the species is at relatively low abundance and there is some risk from stochastic events. Expert opinion considers that abundance has undergone declines prior to 1994 and that the current estimated population size may be too small to be viable in the long-term. However, more data are required to assess population trends and absolute abundance, because it is possible the species is considerably under recorded. At present the favourable reference population is set as at least 2,000 individuals, recognising that the current population is probably at least 25% below a viable population level.</p>	
	b) Operator	
	c) FRP is unknown indicated by "true"	False
	d) Method used to set FRP	The favourable reference population value has been derived using 1994 as the baseline and making a judgement on whether the population in 1994 was viable in the long-term, using the decision

		<p>tree in Note 1 (see 'Assessing Conservation Status: UK Approach') as a guide. Historic and current information on population size, distribution and trends have been used in order to assess viability and, if the 1994 level was not viable, then consideration has been given to what would constitute a viable population. At present, population trends for this species are unknown, but the species is at relatively low abundance and there is some risk from stochastic events. Expert opinion considers that abundance has undergone declines prior to 1994 and that the current estimated population size may be too small to be viable in the long-term. However, more data are required to assess population trends and absolute abundance, because it is possible the species is considerably under recorded. At present the favourable reference population is set as at least 2,000 individuals, recognising that the current population is probably at least 25% below a viable population level.</p>
<p>2.4.15 Reason for change Is the difference between the value reported at 2.4.1 or 2.4.2 and the previous reporting round mainly due to:</p>	<p>a) Genuine change?</p>	False
	<p>b) Improved knowledge/more accurate data?</p>	False
	<p>c) Use of different method (e.g. "Range tool")?</p>	False

<p>2.5 Habitat for the species</p>	
<p>2.5.1 Area estimation</p>	<p>12100 M. bechsteinii requires a complex mosaic of habitats to support foraging, roosting and commuting behaviour. The favoured habitat for maternity colonies is unevenly aged, ancient or semi-natural deciduous woodland with a high number of oaks in the species mix and a dense mixed species understorey. A minimum of 40-50 hectares of woodland is required to maintain an average maternity colony and very large continuous areas of high forest are less favoured than slightly</p>

	<p>fragmented structurally diverse woodlands. Small streams that have at least some water in the summer are an important requirement for most woodlands with maternity colonies, as is connectivity of woodland patches by hedgerows (Greenaway & Hill, 2004).</p> <p>Orchards with old trees also provide good foraging habitat, where they exist (Boye & Dietz 2005). The size of individual home ranges differs in relation to habitat quality: In optimal areas a home range might be smaller than 3 hectares (old oak forests or oak and beech forests), at other places its size is 15-30 hectares. However, in coniferous forests home ranges of more than 100 hectares have been recorded. Females of a maternity colony seem to use individual foraging areas exclusively for several years. Home ranges of neighbouring colonies are separated. The species shows a comparatively small range of movement around the summer roost, sometimes less than 1 kilometre. Main foraging areas are usually at distances of 500-1,500 metres from the roost, but can be nearly 4km and tend to be smaller in continuous woodlands than fragmented forests (Boye & Dietz 2005).</p> <p>Most summer roosts are in woodpecker holes, sometimes behind loose bark or in tree crevices. Maternity colonies also use bat boxes and move roost sites frequently throughout the season. Roosts are found at a height of 0.5-18 metres. An excellent woodland would provide in excess of a dozen large available roosts within the forage woodland and many other smaller holes (Greenaway & Hill, 2004)</p> <p>In winter the species usually roosts singly in underground hibernation sites (caves, mines, cellars) Most of the population may hibernate in tree holes or behind loose bark, but this is not proven. Usually distances between summer and winter roosts are quite small but can be as much as 39 km.</p> <p>BOYE, P. & DIETZ, M. 2005. Research Report No 661: Development of good practice guidelines for woodland management for bats. English Nature, Peterborough.</p> <p>GREENAWAY, F. & HILL, D.A. 2004. Woodland management advice for Bechstein's and barbastelle bat. English Nature Research Reports. 658.</p> <p>MILLER, H. 2012. Bechstein's bat survey: final report September 2007-September 2011. Bat Conservation Trust, London.</p> <p>It is unknown whether the amount of habitat in the UK is sufficient to support a viable population of the species.</p>	
2.5.2 Year or period	2000-2012	
2.5.3 Method used	Estimate based on expert opinion with no or minimal sampling	
Habitat for the species		
2.5.4 Quality of the habitat	a) Habitat quality	Unknown
	b) Assessment method	Rare species with inadequate data. Uses a complex mosaic of habitats not amenable to mapping.
2.5.5 Short-term trend Period	2001-2012	
2.5.6 Short-term trend Trend direction	unknown	

2.5.7 Long-term trend Period	
2.5.8 Long-term trend Trend direction	
2.5.9 Area of suitable habitat for the species	a) Value in km² 7570
	Total ancient woodland 341,000ha, Total semi-natural woodland 416,000ha. Woodland area in the UK currently amounts to 2.84 million hectares and approximately 9% of England is wooded. Atlantic woodland dominated by oak and birch occurs in wetter and cooler north and west areas, with Scottish native Scots pine woodland on nutrient-poor acid soils. In the south and east of the UK, the dominant native woodland habitat is mixed lowland broadleaved woodland consisting of oak and ash with localised beech and hornbeam. Wet woodlands of alder, willows and birch occur in sites with regularly wet soils. The area of suitable habitat for the Bechstein's bat has been calculated from the extent of ancient and semi-natural woodland present in England, Forestry Commission (2009a) based on data from Pryor and Peterken (2001) and doesn't necessarily include other woodland types which may be available for the Bechstein's bat to use. The ecology of the species is not yet fully understood in England where the species exists at the northern limit of its range. So, the area of available habitat to the species may not be a correct reflection of the area of habitat which is suitable for the species. Also, the area of suitable habitat for the species appears to be lower than that which is estimated for where the species occurs. This is due to area estimation figure being derived from a count of 10km squares in which the species occurs, however, this does not mean that the species occupies the whole of that 10km square, it is purely found within it. So, this figure is likely to be an overestimation of the area that it occupies.
	b) Absence of data indicated as '0'
2.5.10 Reason for change Is the difference between the value reported at 2.5.1 and the previous reporting round mainly due to	a) Genuine change? False
	b) Improved knowledge/more accurate data? False
	c) Use of different method (e.g. "Range tool")? False

2.6 Main pressures		
a) Pressure	b) Ranking	c) Pollution qualifier
	H = high importance M = medium importance L = low importance	
A10: Restructuring agricultural land holding	H	
B02: Forest and Plantation management & use	H	
B07: Forestry activities not referred to above	H	
A07: use of biocides, hormones and chemicals	M	

M. bechsteinii is strongly associated with woodland both for roosting and foraging, though it also uses underground places for hibernation. Specialist habitat requirements, low population density and slow population growth are likely to have made this species particularly vulnerable to factors such as: loss and fragmentation of ancient deciduous woodland habitat; the loss, destruction and disturbance of roosts in trees and underground sites; and the reduction in numbers of insect prey, due to habitat simplification and factors such as fertiliser use and intensive grazing.

2.6.1 Method used – Pressures	mainly based on expert judgement and other data
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2.7 Threats		
a) Threat	b) Ranking	c) Pollution qualifier
	H = high importance M = medium importance L = low importance	
A10: Restructuring agricultural land holding	H	
B02: Forest and Plantation management & use	H	
B07: Forestry activities not referred to above	H	
A07: use of biocides, hormones and chemicals	M	

Specialist habitat requirements, low population density and slow population growth are likely to have made this species particularly vulnerable to factors such as: loss and fragmentation of ancient deciduous woodland habitat; the loss, destruction and disturbance of roosts in trees and underground sites; and the reduction in numbers of insect prey, due to habitat simplification and factors such as fertiliser use and intensive grazing.

2.7.1 Method used – Threats	expert opinion
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2.8 Complementary information**2.8.1 Justification of % thresholds for trends****2.8.2 Other relevant information****2.8.3 Trans-boundary assessment****2.9 Conclusions (*assessment of conservation status at end of reporting period*)**

Please refer to the United Kingdom assessment for this species.

**3 Natura 2000 coverage & conservation measures - Annex II species
(*only applies to species listed under Annex II of the Directive*)****3.1 Population****3.1.1 Population size**

Estimation of population size included in the SAC network

a) Unit**number of individuals**

At the last assessment, 98.5% of SAC area for *M. bechsteinii* was reported as in favourable or unfavourable recovering condition.

b) Minimum**c) Maximum****3.1.2 Method used**

Absent data

3.1.3 Trend of population size within the network (short-term trend)

unknown

3.2 Conservation measures

Conservation measures taken (i.e. already being implemented) within the reporting period and provided information about their importance, location and evaluation.

3.2.1 Measure	3.2.2 Type					3.2.3 Ranking H = high importance M = medium importance L = low importance	3.2.4 Location where the measure is PRIMARILY applied			3.2.5 Broad evaluation of the measure					
	a) Legal/statutory	b) Administrative	c) Contractual	d) Recurrent	e) One-off		a) Inside	b) Outside	c) Both inside & outside	a) Maintain	b) Enhance	c) Long term	d) No effect	e) Unknown	f) Not evaluated
3.0: Other forestry-related measures				Y		M			Y			Y			
3.1: Restoring/improving forest habitats		Y		Y		H			Y		Y				
6.1: Establish protected areas/sites	Y					M			Y	Y					
6.3: Legal protection of habitats and species	Y				Y	H			Y	Y					
6.4: Manage landscape features		Y		Y		M			Y		Y				

M. bechsteinii is a rare woodland species, strongly associated with old-growth deciduous woodland and roosting in rot and woodpecker holes. It hunts by gleaning insects and arachnids. Improvements to woodland management, assisted by land-management schemes, may increase the quality of this habitat. This species may also hunt around hedgerows close to woodland, so improving the state of these landscape features may contribute to its conservation.