

**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:

S1303 - Lesser horseshoe bat (*Rhinolophus hipposideros*)

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 Resources Wales** and refers only to the state of the habitat/species in **Wales** - 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.

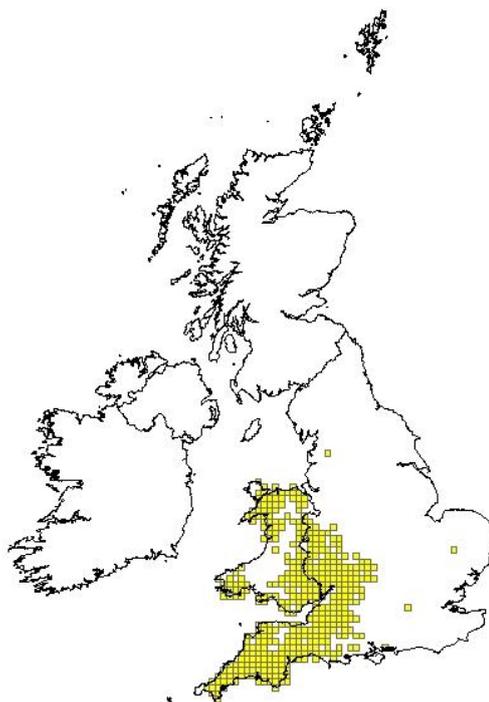
As of 1 April 2013, the Countryside Council for Wales, Environment Agency Wales and Forestry Commission Wales became Natural Resources Wales/Cyfoeth Naturiol Cymru

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	S1303
	0.2.2 Species scientific name	<i>Rhinolophus hipposideros</i>
	0.2.3 Alternative species scientific name Optional	
	0.2.4 Common name Optional	Lesser horseshoe bat

1.1 Maps

1.1.1 Distribution map	Sensitive	False
R. hipposideros has a restricted distribution in Great Britain, with populations found across south-west, southern and and western England and most of Wales, though rare in Ceredigion.		



1.1.2 Method used - map	Complete survey/Complete survey or a statistically robust estimate
	This species has been subject to a high level of recording; coordinated monitoring of summer roosts in Wales and England has taken place since 1993 and 1998 respectively. Structured monitoring of some hibernation sites started in 1997 though some sites have been monitored on an ad hoc basis for many years. The distribution map is considered to accurately reflect the current range of the species and data quality is considered to be good.

1.1.3 Year or period	2000-2012
	As this is a well-studied species, data collected from 2000 onwards are believed to represent its distribution very well.
1.1.4 Additional distribution map	False
1.1.5 Range map	

2.1 Biogeographical region & marine regions	ATL
2.2 Published sources	<p>"BAT CONSERVATION TRUST, 2012. The National Bat Monitoring Programme. Annual Report 2011. Bat Conservation Trust, London. (www.bats.org.uk)</p> <p>BATTERSBY, J (Ed.). 2005. UK Mammals: Species Status and Population Trends. JNCC/Tracking Mammals Partnership.</p> <p>BILLINGTON G. & RAWLINSON, M.D. 2006. A review of horseshoe bats flight lines and feeding areas. CCW Science Report No. 755. CCW, Bangor.</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>CATHERINE BICKMORE ASSOCIATES 2003 Review of work carried out on trunk road network in Wales for bats. Report prepared for the Welsh Assembly Government Transport Directorate and countryside Council for Wales.</p> <p>KNIGHT, T & JONES, G. (2009) Importance of night roosts for bat conservation: roosting behaviour of the lesser horseshoe bat <i>Rhinolophus hipposideros</i>. Endangered Species Research. Vol. 8:79-86. www.int-res.com</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>MATTHEWS, J.E. & HALLIWELL, E.C. (2008). Lesser Horseshoe Bat summer roost surveillance, 29 May to 17 June, 2002 - 2006. CCW Staff Science Report No.06/9/1, CCW, Bangor.</p> <p>RICHARDSON, P. 2000 Distribution atlas of bats in Britain and Ireland 1980-1999. Bat Conservation Trust, London.</p> <p>SCHOFIELD, H.W. 1996 The ecology and conservation biology of <i>Rhinolophus hipposideros</i>, the lesser horseshoe bat. Unpublished PhD thesis. University of Aberdeen.</p> <p>SCHOFIELD, H.W. (2008). The Lesser Horseshoe Bat Conservation Handbook (2008). The Vincent Wildlife Trust www.vwt.org.uk/</p> <p>SCHOFIELD, H.W. & MCANEY, K. 2008. Lesser horseshoe bat <i>Rhinolophus hipposideros</i>. Pp. 306-310 in HARRIS, S & YALDEN, D.W. Mammals of the British Isles: Handbook, 4th edition. The Mammal Society, Southampton.799pp.</p> <p>THEOBALD, C. & ELSTON, D. 2008. Numbers of lesser horseshoe bats in Wales: a statistical appraisal for the Countryside Council for Wales. Unpublished report to CCW. Biomathematics and Statistics Scotland."</p>

2.3 Range											
2.3.1 Surface area Range											
2.3.2 Method used Surface area of Range	<p>Complete survey/ Complete survey or a statistically robust estimate</p> <p>See Note 1.1.2</p>										
2.3.3 Short-term trend Period	<p>2000-2012</p> <p>See Note 1.1.3</p>										
2.3.4 Short term trend Trend direction	<p>unknown</p> <p>See Note 2.3.10b</p>										
2.3.5 Short-term trend Magnitude	<table border="1" style="width: 100%;"> <tr> <td style="background-color: #cccccc;">a) Minimum</td> <td></td> </tr> <tr> <td colspan="2" style="height: 20px;"></td> </tr> <tr> <td style="background-color: #cccccc;">b) Maximum</td> <td></td> </tr> <tr> <td colspan="2" style="height: 20px;"></td> </tr> </table>	a) Minimum				b) Maximum					
a) Minimum											
b) Maximum											
2.3.6 Long-term trend Period	<p>1989-2012</p> <p>See Note 1.1.3</p>										
2.3.7 Long-term trend Trend direction	<p>unknown</p> <p>See Notes 1.1.2 and 2.3.10b</p>										
2.3.8 Long-term trend Magnitude	<table border="1" style="width: 100%;"> <tr> <td style="background-color: #cccccc;">a) Minimum</td> <td></td> </tr> <tr> <td colspan="2" style="height: 20px;"></td> </tr> <tr> <td style="background-color: #cccccc;">b) Maximum</td> <td></td> </tr> <tr> <td colspan="2" style="height: 20px;"></td> </tr> </table> <p style="text-align: right;">Optional</p>	a) Minimum				b) Maximum					
a) Minimum											
b) Maximum											
2.3.9 Favourable reference range	<table border="1" style="width: 100%;"> <tr> <td style="background-color: #cccccc;">a) Value in km²</td> <td></td> </tr> <tr> <td colspan="2" style="height: 20px;"></td> </tr> <tr> <td style="background-color: #cccccc;">b) Operator for FRR</td> <td></td> </tr> <tr> <td colspan="2" style="height: 20px;"></td> </tr> <tr> <td style="background-color: #cccccc;">c) FRR is unknown (indicated by "true")</td> <td>False</td> </tr> </table>	a) Value in km ²				b) Operator for FRR				c) FRR is unknown (indicated by "true")	False
a) Value in km ²											
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
	There has been increased survey effort due to surveys for developments and more systematic survey methodology using time expansion / frequency division bat detectors and recording of bat calls. This is an easily identifiable species and because of its habit of roosting in the open, rather than in crevices, its presence is easily detectable. Roosts that have been present for many years continue to be discovered through additional surveys, so it appears that changes in population and in distribution reflect greater survey effort and more effective bat call recording technology.	
	c) Use of different method (e.g. "Range tool")?	False

2.4 Population		
2.4.1 Population size estimation (using individuals or agreed exceptions where possible)	a) Unit	number of individuals
	b) Minimum	26600
	In Wales, in 2006 (or the nearest year for which data were available) 19,000 individuals were counted in 159 maternity sites. Males are present at these sites, though the exact proportion may vary between 25-30% (H. Schofield, pers. comm.). Assuming that 30% of the counted individuals were males and that there is a 1:1 sex ratio in the population as a whole, this gives a total population of 26,600 for Wales (the minimum population total given). Assuming that 25% of the counted individuals were males and that there is a 1:1 sex ratio in the population as a whole, this gives a total population of 28,500 for Wales (the maximum total given). Count data for 2011 suggest similar totals although fewer sites have been included in the analysis: Wales: In 2011 (or the nearest year for which data were available) 18505 individuals were counted in 123 maternity sites. Assuming that 30% of the counted individuals were males and that there is a 1:1 sex ratio in the population as a whole, this gives a total population of 25907	

	for Wales. Assuming that 25% of the counted individuals were males and that there is a 1:1 sex ratio in the population as a whole, this gives a total population of 27758 for Wales. The count data have not been updated in the table as there are fewer counts included in the 2011 calculation. It would be possible to include more counts using data from recent years (as was done for the 2006 calculation), but this has not been done.
	c) Maximum 28500
	See Note 2.4.1b
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
2.4.4 Year or period	2006- See Note 2.4.1b
2.4.5 Method used Population size	Estimate based on partial data with some extrapolation and/or modelling See Note 2.4.1b
2.4.6 Short-term trend Period	2001-2012 Monitoring by the NBMP shows that the Lesser horseshoe bat is increasing in numbers at known sites, so there is a genuine increase in the population. In addition, new maternity sites are discovered from time to time, so there is an improvement in knowledge. The main uncertainties in a population estimate based on numbers counted (which gives a minimum estimate) are allowing for unknown sites and allowing for the proportion of the population which is not present in maternity sites (some males, juveniles and non-breeding females). See also Notes 2.4 1b and 2.3.10b
2.4.7 Short-term trend Trend direction	unknown See Note 2.4.6
2.4.8 Short-term trend Magnitude	

	a) Minimum	
	See note 2.4.6	
	b) Maximum	
	See note 2.4.6	
	c) Confidence interval	
2.4.9 Short-term trend Method used	Absent data	
	See Note 2.4.6	
2.4.10 Long-term trend – Period	1989-2012	
	Default period has been selected.	
2.4.11 Long-term trend Trend direction	unknown	
	See Note 2.4.6	
2.4.12 Long-term trend Magnitude	a) Minimum	
Optional		
	b) Maximum	
	c) Confidence interval	
2.4.13 Long term trend Method used	0	
2.4.14 Favourable reference population	a) Number of individuals/agreed exceptions/other units	
	b) Operator	
	c) FRP is unknown indicated by "true"	False

	d) Method used to set FRP	
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:	a) Genuine change?	False
	b) Improved knowledge/more accurate data?	True
	See Notes 2.3.10b and 2.4.6	
	c) Use of different method (e.g. "Range tool")?	False

2.5 Habitat for the species	
2.5.1 Area estimation	11630 <p>R. hipposideros requires a complex mosaic of habitats to support foraging, roosting and commuting behaviour. Boye & Dietz (2005) provide a good overview of this species' habitat requirements. Woodlands play a predominant role as foraging habitats for the species, especially in spring when R. hipposideros almost exclusively forages there. Foraging areas are close to summer roosts (distances up to 4.2 kilometres) and the animals spend about half of their activity time within a radius of 600 metres. The high importance of semi or unimproved wet pasture bounded by hedgerows has been found in the main foraging areas of one of the largest European colonies at Glynllifon in Gwynedd (Billington & Rawlinson 2006).</p> <p>Summer roosts are usually situated close to woodland or a park. If this is not the case a system of continuous linear landscape elements, such as hedges or walls, provide guidance to the bats when flying to their foraging areas. Undisturbed hibernation sites in underground caves, mines or cellars must be available at a maximum distance of 30 kilometres from the summer roosts. Night roosts are important in extending the foraging area available to a colony and occasionally it may be advantageous for bats to remain in these satellite roosts during the day to conserve energy levels rather than return to the maternity roost that same night (Billington and Rawlinson 2006, Knight & Jones 2009). As this is a generalist species, using a mosaic of habitats, the area of distribution is used as an estimate of habitat area and as a proxy for the area of suitable habitat in the absence of specific data. The area of habitat is calculated from the area of the filled 10km squares in the distribution map.</p> <p>There is thought to be a sufficient amount of habitat in the UK to</p>

	support a viable population of the species.	
2.5.2 Year or period	2012-	
	See note 2.5.1	
2.5.3 Method used Habitat for the species	Estimate based on partial data with some extrapolation and/or modelling	
	See note 2.5.1	
2.5.4 Quality of the habitat	a) Habitat quality	Unknown
	<p>There is some detailed information on the habitat requirements/limitations of this species, but the total area of suitable habitat is unknown as the species depends on a matrix of habitats in a landscape. To obtain a proper estimate of suitable habitat used by the species, it would be necessary to first identify all of the foraging and roosting habitat located within the current range boundary; determine whether or not each of these features were being used; and subsequently calculate the combined area of all currently used habitats. This process would require very detailed habitat information at a fine scale across the UK. We do not currently have this level of information.</p> <p>As this is a generalist species, using a mosaic of habitats, the area of distribution is used as an estimate of habitat area and as a proxy for the area of suitable habitat in the absence of specific data. The area of habitat is calculated from the area of the filled 10km squares in the distribution map.</p>	
	b) Assessment method	No or insufficient reliable information available. The area of occupied habitat has been used as a proxy for the area of suitable habitat in the absence of other information.
	See Note 2.5.4a.	
2.5.5 Short-term trend Period	2001-2012	
	Default period has been selected.	
2.5.6 Short-term trend Trend direction	unknown	
2.5.7 Long-term trend Period	1989-2012	
	Default period has been selected.	
2.5.8 Long-term trend Trend direction	unknown	
2.5.9 Area of suitable habitat for the species	a) Value in km²	11630
	See Note 2.5.4a See note 2.5.4a.	
	b) Absence of data indicated as '0'	
2.5.10 Reason for change	a) Genuine change?	False
Is the difference between the value reported at 2.5.1 and the previous reporting round mainly due to		
	b) Improved knowledge/more	True

	accurate data?	
	See Note 2.3.10b	
	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	
A04: grazing	H	
A10: Restructuring agricultural land holding	H	
E01: Urbanised areas, human habitation	H	
E06: Other urbanisation, industrial and similar activities	H	
B03: forest exploitation without replanting or natural regrowth	M	
D01: Roads, paths and railroads	M	
G01: Outdoor sports and leisure activities, recreational activities	L	

Pressures can generally be divided into those that affect roosts and those that affect commuting and foraging (including prey availability). Although roosts are strictly protected, *R. hipposideros* has quite specific summer roosting requirements that are not provided by most modern buildings. In addition, changes in building practices to improve energy efficiency mean that new buildings may offer fewer roosting opportunities (Mitchell-Jones, 2010). For hibernation, *R. hipposideros* is dependent on underground sites, that may be subject to disturbance or loss. Modern extraction methods are unlikely to create suitable mines and galleries for future occupation.

R. hipposideros commute and forage along linear features, over wet grassland and in woodland. Agricultural and forestry practices that remove or simplify these habitats, or affect the biomass of insect prey could negatively affect populations.

Roost sites are often in old agricultural buildings or large rural dwellings subject to deterioration or to conversion to alternative use. There is good understanding of the roosting conditions and habitat required for the species (Schofield 2008). However mitigation for developments affecting roosts and habitat is not always undertaken as proposed compromising its likelihood of success.

2.6.1 Method used – Pressures

mainly based on expert judgement and other data

Expert judgement has been used based on studies of the ecology of the species and current and predicted land use changes (Schofield & McAney, 2008).

2.7 Threats

a) Threat	b) Ranking	c) Pollution qualifier
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	H = high importance M = medium importance L = low importance	
A07: use of biocides, hormones and chemicals	H	
B02: Forest and Plantation management & use	H	
E01: Urbanised areas, human habitation	H	
C01: Mining and quarrying	M	
H07: Other forms of pollution	M	
J02: human induced changes in hydraulic conditions	M	
G01: Outdoor sports and leisure activities, recreational activities	L	

Threats can generally be divided into those that affect roosts and those that affect commuting and foraging (including prey availability). Although roosts are strictly protected, *R. hipposideros* has quite specific summer roosting requirements that are not provided by most modern buildings. In addition, changes in building practices to improve energy efficiency mean that new buildings may offer fewer roosting opportunities (Mitchell-Jones, 2010). For hibernation, *R. hipposideros* is dependent on underground sites, that may be subject to disturbance or loss. Modern extraction methods are unlikely to create suitable mines and galleries for future occupation.

R. hipposideros commute and forage along linear features, over wet grassland and in woodland. Agricultural and forestry practices that remove or simplify these habitats, or affect the biomass of insect prey could negatively affect populations.

The population has shown a strong medium-term increase in numbers. Legal protection has helped to reduce the threat of roost loss and many of the most important roosts are in Natura 2000 sites.

2.7.1 Method used – Threats	expert opinion
	Expert judgement has been used based on studies of the ecology of the species and current and predicted land use changes (Schofield & McAney, 2008).

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	a) Unit	number of individuals
Estimation of population size included in the SAC network		
	b) Minimum	9317
	Count data were received for 123 sites in 2011 giving a maximum total of 18,505 individuals. 30 of these sites are in SACs with a total of 6,655 individuals. Males are present at these sites, though the exact proportion may vary between 25-30% (H. Schofield, pers. comm.). Assuming that 25% of the counted individuals were males and that there is a 1:1 sex ratio in the population as a whole, this gives a total population of 9,983 lesser horseshoe bats in breeding roosts in SACs in Wales (the maximum total given). Assuming that 30% of the counted individuals were males and that there is a 1:1 sex ratio in the population as a whole, this gives a total of 9,317 lesser horseshoe bats in breeding roosts in SACs in Wales (the minimum population total given).	
	c) Maximum	9983
	See Note 3.1.1b	
3.1.2 Method used	Complete survey/Complete survey or a statistically robust estimate	
	See note 3.1.1b	
3.1.3 Trend of population size within the network (short-term trend)	increase	
	See notes 3.1.1b and 2.4.6	

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
3.1: Restoring/improving forest habitats				Y		H			Y			Y			
6.1: Establish protected areas/sites		Y				M			Y		Y				
6.3: Legal protection of habitats and species		Y				H			Y	Y					
6.4: Manage landscape features	Y		Y	Y		H			Y	Y	Y				

Legal and administrative measures continue to be required to ensure that the protection provided by the legislation is effective and that protected habitats for the species are managed appropriately. Road design, construction and operation need to take into account the likely impact on bats, e.g. in relation to the provision of safe crossing structures and the loss of, and severance of bat habitat. *R. hipposideros* hunts in woodland and grazed pasture. Environmental land management schemes in the agricultural and forestry sectors are now widely used to ensure these habitats in the vicinity of roosts are well-managed and provide appropriate insect food at the correct time of year. All roosts are protected, many as Natura 2000 sites. Roost sites are often in buildings that are subject to deterioration or to conversion to alternative use. There is good understanding of the roosting conditions and habitat required for the species (Schofield 2008). However mitigation for developments affecting roosts and habitat is not always undertaken as proposed compromising its likelihood of success.