

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

**Second Report by the United Kingdom under
Article 17
on the implementation of the Directive
from January 2001 to December 2006**

**Conservation status assessment for :
S1327: *Eptesicus serotinus* - Serotine**

Please note that this is a section of the report. For the complete report visit <http://www.jncc.gov.uk/article17>

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S1327 *Eptesicus serotinus* Serotine

Audit trail compiled and edited by JNCC and the UK Inter-Agency Mammal Working Group

This document is an audit of the data and judgements on conservation status in the UK's report on the implementation of the Habitats Directive (January 2001 to December 2006) for this species. Superscript numbers accompanying the headings below, cross-reference to headings in the corresponding Annex B reporting form. This supporting information should be read in conjunction with the UK approach for species (see 'Assessing Conservation Status: UK Approach').

1. Range Information^{2.3}

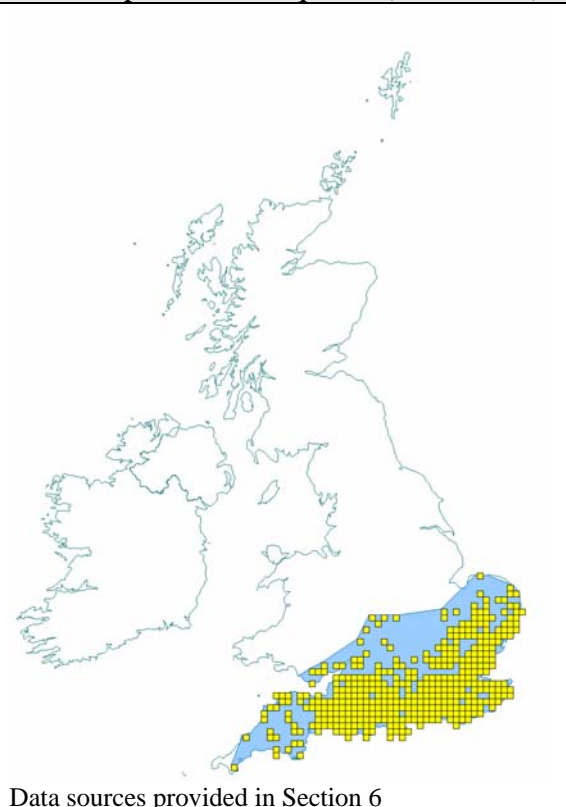
Widespread but scarce in southern England with occasional records in Wales. It is absent from northern England, Scotland and Northern Ireland.

1.1 Surface area of range^{2.3.1}

67,775km²

The above estimate was calculated within Alpha Hull software, using extent of occurrence as a proxy measure for range (see Map 1.1). The value of alpha was set at 45 km to reflect the mobility of this species. This range estimate is considered to represent the extent of breeding populations and some occasional records of individual bats north of this range have been excluded for the purposes of range calculation.

Map 1.1. Current extent of occurrence and occupied 10 km-squares (1980-2006)



1.2 Date of range determination^{2.3.2}

1980 – 2006

The date range indicated has been selected to reflect current range/surface area for the species for the following reasons:

- There are limitations in the quality of the data available. The largest dataset used, Distribution atlas of bats in Britain and Ireland (Richardson 2000), has data ranging from 1980-1999 but the year of recording for individual records within this dataset is not known, making it impossible to divide the data into different date ranges. Deviating from this time period would mean having to exclude these records, and since other datasets may not be fully comprehensive in isolation of these, such exclusion would be inappropriate.
- The greatest level of change affecting populations of this species probably occurred prior to 1980, and so 1980 to the present is likely to reflect current distribution and range.
- International treaties and national protective legislation affecting all European bat species came into force from 1980 onwards and is likely to have had an effect on their status.

1.3 Quality of range data^{2.3.3}

Moderate

Since the early 1980s there has been an increase in the level of survey effort afforded to UK bat species following the increased level of protection in Wildlife legislation, such as the Wildlife and Countryside Act 1981 (as amended) and the Conservation (Natural Habitats, &c) Regulations 1994, and a growing interest in wider conservation issues. There have been no structured distribution surveys for this species and records are based on ad-hoc recording in the field, bat roost visits following enquiries to the statutory nature conservation agencies (SNCOs) and data from surveillance schemes. However, this species is often found in buildings and its presence is recorded when advice is sought regarding building renovation or development, so level of recording is likely to be high.

1.4 Range trend^{2.3.4} & Range trend magnitude^{2.3.5}

Stable

No surveys have been carried out to assess change in distribution or range for this species since 1994. However, there is no evidence to suggest the range is declining. There are indications that the species may be shifting its range westwards, but this is not confirmed as yet.

1.5 Range trend period^{2.3.6}

1980 – 2006

The time period selected is considered to reflect the current situation regarding range change for this species and incorporates the time period since the Habitats Directive came into force.

1.6 Reasons for reported trend in range^{2.3.7}

Not applicable

There has been no change in range for this species according to available data.

1.7 Favourable reference range^{2.7.1}

67,775km² (Equal to current)

The favourable reference range value has been derived using 1994 as the baseline and making a judgement on whether the range in 1994 was sufficient to allow the long-term survival of the species, using the decision tree in Note 1 (see 'Assessing Conservation Status:

UK Approach') as a guide. Historic and current information on range size and trends have been used to assess this and, if the 1994 level was not sufficient, then consideration has been given to what would constitute a large enough range.

Range of this species is restricted to the south of England, but appears to be stable. The range is considered to be sufficient to support a viable population of the species in the long-term and is also large enough to allow for increase in distribution within the range. The current estimated range is, therefore, set as the favourable reference range.

1.8 Range Conclusion^{2.8}

Favourable

The range for this species appears to be stable and the current range is considered to be sufficient for long-term viability and has been set as the favourable reference range. The conclusion is, therefore, Favourable.

2. Population of the species^{2.4}

2.1 Population estimate^{2.4.1}

15,000 individuals

14,750 in England and 250 in Wales (Harris *et al.* 1995).

2.2 Date of population estimate^{2.4.2}

1995

2.3 Method of population estimate^{2.4.3}

1 = based on expert opinion

The estimates were based on expert judgement and extrapolation from limited field surveys. The 1995 population estimate was based on very limited information, extrapolating from known size of *Pipistrellus pipistrellus* colonies in relation to size of *Eptesicus serotinus* colonies following the methods described by Speakman (1991) and Harris *et al.* (1995).

2.4 Quality of population data^{2.4.4}

Poor

The Great Britain (GB) estimate was not supported by quantitative data and was an expert judgement based on field experience. Harris *et al.*'s (1995) reliability rating of the estimate was four, meaning that it is "based on a very limited amount of information on the species". It is believed that the estimate for Wales in particular was too low due to under-recording. Quality of data is therefore assessed here as poor.

2.5 Population trend^{2.4.5} & Population trend magnitude^{2.4.6}

Stable

The UK National Bat Monitoring Programme (NBMP) has been carrying out standardised annual Field Surveys and Colony Counts since 1998 (Bat Conservation Trust (BCT) 2006). Trend analysis of the Noctule, Serotine and Pipistrelle Survey (NSP) and Serotine Colony Counts indicated no significant trend across the UK. This would suggest that the population has been stable over this period. However, the time series dataset and the sample sizes for both surveys are quite small.

2.6 Population trend period^{2.4.7}

1998 – 2005

This time period has been selected because it allows consideration of the most recent trend data from surveillance schemes and is most relevant for assessing the effectiveness of the Habitats Directive.

2.7 Reasons for reported trend in population^{2.4.8}

Not applicable

2.8 Justification of % thresholds for trends^{2.4.9}

Not applicable

2.9 Main pressures^{2.4.10}

101 Modification of cultivation practices

110 Use of pesticides

141 Abandonment of pastoral systems

151 Removal of hedges and copses

160 General Forestry management

164 Forestry clearance

167 Exploitation without replanting

2.10 Threats^{2.4.11}

101 Modification of cultivation practices

110 Use of pesticides

141 Abandonment of pastoral systems

151 Removal of hedges and copses

160 General Forestry management

164 Forestry clearance

167 Exploitation without replanting

2.11 Favourable reference population^{2.7.2}

15,000 individuals (Equal to the 1995 estimate)

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.

Population trends for this species appear to have been stable since 1997, according to surveillance information. The population for this species in 1995 was estimated to be 15,000 individuals (see section 2.3) and, with stable trends and no intensive conservation action for this species the species is judged to be maintaining itself in the long-term and to have been viable in 1994. The 1995 population estimate has, therefore, been set as the favourable reference population. This figure has been set with limited information and could be revised in the future if better information becomes available.

2.12 Population conclusion^{2.8}

Favourable

Population trends are stable and the current population is equal to the favourable reference population. The assessment is, therefore, Favourable.

3. Habitat for the species in the Biogeographic region or sea^{2.5}

E. serotinus 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.

In most cases the foraging areas are open fields with woodland edge, but occasionally within woodland. In agricultural landscapes the bats prefer pasture with tree rows for protection from wind. In addition forest edges, river banks, parks, tree rows, gardens and amenity areas are appropriate foraging areas. The species also forages around streetlights. *E. serotinus* feeds mainly on beetles, especially ground chafer and dung beetles, moths and midges.

In maternity colonies the foraging areas are at an average distance of 1.25 km from the roost, to a maximum of 5.7 km. In towns the serotine rarely forages further than one km from the roost.”

Preferred summer roosts include crevices and other narrow holes in houses. Until now maternity colonies have only been recorded in buildings. The bats roost below the ridge of a roof, behind fascia boards, in ventilation holes of new housing blocks, or in the extension slits of bridges. Single animals, males in most cases, sometimes use tree holes or bat boxes. The serotine changes its roost site or hanging place if the microclimate in the roost becomes uncomfortable, e.g. if temperatures rise too much.

Winter roosts are in cellars, mines and caves, in old buildings and crevices in walls. Bats occasionally hibernate in their summer roosts. Summer and winter roosts are thought to be less than 50 km apart, but there is little evidence to support this.

3.1 Surface area of habitat^{2.5.2}

Unknown

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. Only approximately 8% of England and Wales is currently covered by broadleaved woodland (Haines-Young *et al.* 2000), and there has also been a decline in grazed pasture, both important habitats for *E. serotinus*. However, 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. Therefore, area estimate is Unknown.

3.2 Date of estimation^{2.5.3}

2006

3.3 Quality of data on habitat area^{2.5.4}

Poor

Although information is available on the habitat requirements of this species, attempts have not been made to calculate the combined area of habitat features that are currently in use.

3.4 Habitat trend^{2.5.5}

Unknown

There is very limited information on changes in amount and quality of foraging and roosting habitats suitable for this species. Indications are that broadleaved, mixed and yew woodland have increased by about 4% in England and Wales since 1990 and there has been a small increase in tree lines and hedgerows, and some loss of pasture (Haines-Young *et al.* 2000). This is very limited information on which to base an assessment of trend in habitat suitable for this particular species. The assessment is, therefore, Unknown.

3.5 Habitat trend period^{2.5.6}

1990 – 1998

The time period selected reflects the results of two Countryside Surveys carried out in 1990 and 1998 (Haines-Young *et al.* 2000).

3.6 Reasons for reported trend in habitat^{2.5.7}

Not applicable

3.7 Suitable habitat for the species (in km²)^{2.7.3}

Unknown

Since the current area of habitat is unknown, it would be inappropriate to try and estimate an area of 'suitable habitat'.

3.8 Habitat conclusion^{2.8}

Unknown

There is insufficient information to make a robust assessment on the habitat status for this species. The conclusion is, therefore, Unknown at the present time.

4. Future Prospects^{2.6}

Unknown

No or insufficient reliable information available.

Factors likely to affect the species over the next 12-15 years are considered below.

Legislation. *E. serotinus* is listed on Schedules 5 & 6 of the Wildlife and Countryside Act 1981 (as amended) and the Conservation (Natural Habitats, &c.) Regulations 1994 (and equivalent legislation in Northern Ireland) and is listed on Annex IVa of the Habitats Directive.

Conservation action. Range and population status appear to be favourable at present and there are habitat action plans in place to relieve many of the main pressures and threats to the species, such as loss of woodland and riparian habitat. This species may benefit from wider countryside agri-environment schemes.

Threats. One of the primary historic pressures for *E. serotinus* has been the disturbance and destruction of roost sites. This species roosts almost exclusively in buildings, and is therefore particularly vulnerable to anthropogenic factors, such as development, building renovation

and timber treatment. On the other hand, increases in human dwellings may have provided more suitable roost sites for this species over time.

Traditionally the south and particularly the south east of England have been strongholds of its distribution, and this region is under great development pressure, which is likely to result in greater loss of suitable foraging habitat over time. Increased intensity farming practices may also have led to reductions in insect prey abundance, because this species is thought to be reliant on different types of insect prey at certain stages of the reproductive cycle (Catto *et al.* 1994, 1996).

4.1 Future prospects conclusion^{2,8}

Unknown

There is very little information for this species to be able to assess future prospects. Range and population appear to be favourable at present, but there is very little information to make a robust assessment of future threats. The conclusion is, therefore, Unknown at present.

5. Overall Conclusion^{2,8}

Unknown

Range and population are favourable, but habitat and future prospects are Unknown. The overall assessment is, therefore, Unknown.

Table 5.1. Summary of conclusions

| Parameter | Judgement | Grounds for Judgement (in accordance with Annex C) | Reliability* |
|--------------------|------------|---|--------------|
| Range | Favourable | Range is stable and not smaller than the favourable reference range | 2 |
| Population | Favourable | Population(s) not lower than favourable reference population | 2 |
| Habitat | Unknown | No or insufficient reliable information available | N/A |
| Future Prospects | Unknown | No or insufficient reliable information available | N/A |
| Overall Assessment | Unknown | Two or more Unknown combined with Favourable or all Unknown | N/A |

*1=High, 2=Moderate, 3=Low

High – Expert opinion is that the concluding judgement accurately reflects the current situation based on a professional understanding of the species. For range, population, and habitat, quality of data used to establish the current estimate has been identified as “good”; data used to inform trends is comprehensive and up to date.

Moderate – A greater understanding of the feature, or the factors affecting it, is required before a confident concluding judgement can be made by experts. For range, population, and habitat, the current estimate and/or trend are based on recent, but incomplete or limited survey data; or alternately, a comprehensive, but outdated (pre-1994) review.

Low – Judgements, and comprising estimates, are based predominately on expert opinion.

N/A – Assessment conclusion is “unknown”, on the basis of insufficient reliable information

6. References

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Map data sources

Bat Conservation Trust - National Bat Monitoring Programme (NBMP) data to 2005 including: Colony survey (1995-2006), Field survey (1998-2006).

Bat Conservation Trust - Bats and Mammals Road Survey data (2005)

Bat Conservation Trust - Distribution atlas of bats in Britain and Ireland 1980-1999, GB data only.

Biological Records Centre - Mammals Database; Devon Biodiversity Records Centre - Devon incidental species records 1950-2002; Natural England - Batsites inventory for Britain (via the National Biodiversity Network (NBN) Gateway)