

**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 :
S5009: *Pipistrellus pygmaeus* - Soprano
pipistrelle**

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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S5009 *Pipistrellus pygmaeus* Soprano pipistrelle

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').

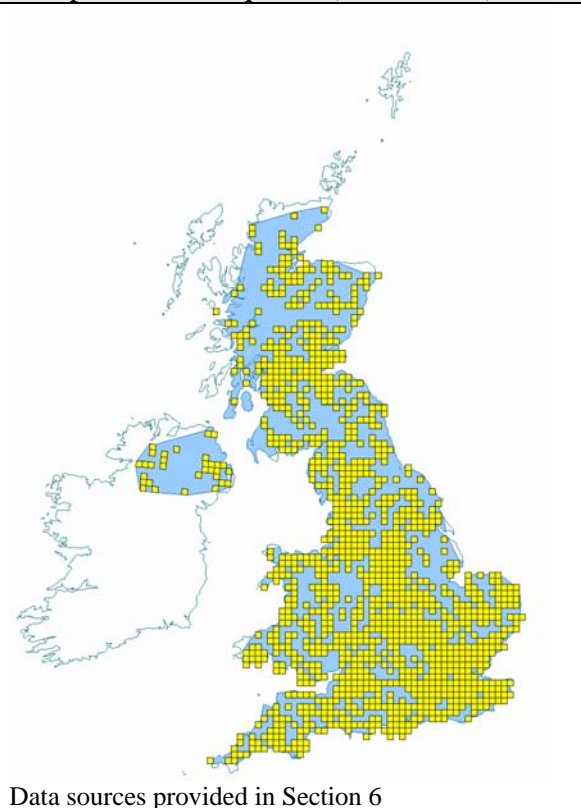
1. Range Information^{2,3}

Pipistrellus pygmaeus is common and widespread across the UK and is considered the second most common bat species after *Pipistrellus pipistrellus*.

1.1 Surface area of range^{2,3,1} 227,090km²

The above estimate was calculated within Alpha Hull software, using extent of occurrence (as a proxy measure for range (as shown in Map 1.1). The value of alpha was set at 45 km to reflect the mobility of this species.

Map 1.1 Current extent of occurrence and occupied 10-km squares (1990 -2006)



1.2 Date of range determination^{2.3.2}

1990 – 2006

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

- This species was not recognised as separate from *P. pipistrellus* until the mid 1990s (Jones & van Parijs 1993; Barratt *et al.* 1995) and so only records specifying this species have been used to construct the range map. This may, inevitably, underestimate the true range and distribution of the species because historic records incorporate it with records for *P. pipistrellus*.

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 equivalent legislation in Northern Ireland), 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 recording effort is likely to be quite high.

The representation of range and distribution is likely to be accurate but not comprehensive, because of the possibility of continued misidentification of this species with *P. pipistrellus*.

1.4 Range trend^{2.3.4} and range trend magnitude^{2.3.5}

Unknown

The recent discovery of this species means that there is no information on historic occurrence and no information on trends in range or distribution.

1.5 Range trend period^{2.3.6}

Not applicable

There are no historic records for this species before 1990 because the species was not described prior to this time. It is, therefore, not possible to assess trend in range or distribution

1.6 Reasons for reported trend in range^{2.3.7}

Not applicable

1.7 Favourable reference range^{2.7.1}

227,090km² (equal to current, excluding Scottish Highlands above 500m)

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.

There is no information on range size in 1994 for this species. However, evidence suggests this species is widespread and common throughout the UK, except on Scottish islands and the Scottish Highlands above 500 metres. It is therefore reasonable to set the favourable reference range at the current estimated range, which is almost the whole of the UK, except specified areas.

1.8 Range conclusion^{2.8}

Favourable

Current range for *P. pygmaeus* is not less than the favourable reference range and there is no evidence to suggest a recent decline in range equivalent to 1% per year or greater. It is therefore considered Favourable.

2. Population of the Species^{2.4}

2.1 Population estimate^{2.4.1}

1,300,000 individuals

720,000 in Great Britain (Battersby & TMP 2005) and 580,000 in Northern Ireland (Russ 1999).

2.2 Date of population estimate^{2.4.2}

2005

2.3 Method of population estimate^{2.4.3}

1 = based on expert opinion

The estimate was based on expert judgement and extrapolation from limited field surveys. The population estimate for GB was based on a 1995 estimate for *P. pipistrellus* of approximately 2,000,000 individuals, which included the undescribed *P. pygmaeus* (Harris *et al.* 1995). A GB estimate for *P. pygmaeus* was obtained in 2005, using ratios of common to *P. pygmaeus* encountered in the UK National Bat Monitoring Programme (NBMP) Field Survey (BCT 2006), which was approximately 2 *P. pipistrellus* to each *P. pygmaeus*. Population estimates for Northern Ireland were based on extrapolation of survey results and were added to the GB estimates to give UK totals.

2.4 Quality of population data^{2.4.4}

Poor

The population estimates were based on subjective estimates of relative abundance because there were few density estimates and little quantified data on bat numbers in relation to habitat associations and patterns of land use. The ratio of *P. pygmaeus* to *P. pipistrellus* should be taken with caution, because the two species display different foraging behaviour, with *P. pipistrellus* having smaller colonies and foraging at greater distances from roosts (Nicholls & Racey 2006a, 2006b). This would suggest that *P. pipistrellus* might have a more even and widespread distribution across the landscape and might be encountered more frequently in randomly designed survey schemes. *P. pygmaeus* forage preferentially near water and have larger colonies with smaller foraging distances. They might, therefore, be expected to have a patchier distribution than *P. pipistrellus* with less frequent foraging in the wider landscape and encountered less in random surveys.

The Northern Ireland estimate should also be treated with caution as it is likely to be an over estimate (Battersby & TMP 2005).

2.5 Population trend^{2.4.5} and population trend magnitude^{2.4.6}

Unknown

Population trends derived from the NBMP Noctule Serotine and Pipistrelle (NSP) Field Survey and the Colony Survey data, undertaken between 1998 and 2005, indicated conflicting results. There was no significant trend across the UK in the NSP Field Survey data, but a significant decline, equivalent to 7% annually, in the Colony Survey.

The field survey is considered the most robust survey for *P. pipistrellus* and the colony survey is not considered reliable because of the behaviour of the species. However, *P. pygmaeus* appears to have larger roosts and to have a less mobile roosting strategy than *P. pipistrellus* and results from the colony survey may be more reliable for this species. Furthermore, sample sizes for the NSP Field Survey are quite small and variable, with wide confidence limits (BCT 2006). It is, therefore, not possible to say which survey is most robust for this species at present and so overall trends are unknown.

2.6 Population trend period^{2.4.7}

1998 – 2005

This is the time period referred to in the NBMP report in its assessment of population trends (BCT 2006).

2.7 Reasons for reported trend in population^{2.4.8}

Not applicable

More data are required to confirm status and trends for this species.

2.8 Justification of % thresholds for trends^{2.4.9}

Not applicable

Trends are not described and so there is no requirement for a justification of percentage thresholds.

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

165 Removal of undergrowth

166 Removal of dead and dying trees

167 Exploitation without replanting

502 Routes, autoroutes

700 Pollution

803 Infilling of ditches, dykes, ponds, pools, marshes or pits

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**
- 165 Removal of undergrowth**
- 166 Removal of dead and dying trees**
- 167 Exploitation without replanting**
- 502 Routes, autoroutes**
- 700 Pollution**
- 803 Infilling of ditches, dykes, ponds, pools, marshes or pits**

2.11 Favourable reference population^{2.7.2}

720,000 individuals (equal to 1994 GB 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 (of '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.

Using the estimate derived in 2005 (see section 2.3) the GB population estimate for this species in 1994 (1995) was thought to be approximately 720,000 individuals. With widespread distribution and relatively high abundance, the species is judged to have been viable in 1994. The 1994 estimate has, therefore, been set as the favourable reference population. This figure does not include the more recent estimate for the Northern Ireland population and has been set with limited information. It could be revised in the future if better information becomes available.

2.12 Population conclusion^{2.8}

Unknown

This species has only been described officially since the mid-1990s and there are, therefore, few data on its distribution, abundance and ecological requirements. The current population is equal to the favourable reference population, but population trends are contradictory at this stage and it is not clear what is happening to populations of this species. The population conclusion is, therefore, Unknown present.

3. Habitat for the Species in the Biogeographic Region or Sea^{2.5}

P. pygmaeus requires a complex mosaic of habitats to support foraging, roosting and commuting behaviour. Summer roosts tend to be found in tree holes, behind loose bark, in bat boxes and within the cracks and crevices of new and old buildings. Winter roost sites tend to be within trees, and the wall crevices of buildings. The species prefers to forage over riparian habitat and around the canopy of broad-leaved trees. Thus, it does not occur in large, dense woodlands but forages along river banks, forest edges and in settlements. It requires hedgerows and treelines to provide habitat connectivity for foraging and commuting between foraging sites (Davidson-Watts & Jones 2006; Nicholls & Racey, 2006a, 2006b).

3.1 Surface area of habitat^{2.5.2}

Unknown

In order to obtain this estimate, 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}

Not applicable

3.3 Quality of data on habitat area^{2.5.4}

Poor

Information is available on habitat requirements for *P. pygmaeus* (Davidson-Watts & Jones 2006; Nicholls & Racey 2006a, 2006b), but no attempt has been made to calculate the combined area of habitat features that are currently in use.

3.4 Habitat trend^{2.5.5}

Unknown

Both *P. pipistrellus* and *P. pygmaeus* are more generalist in their foraging and roosting behaviour than many other bat species and are able to use many different habitats and exploit a wide range of insect prey. Indications are that broadleaved, mixed and yew woodland have increased by about 5% in the UK since 1990 and there has been a small increase in tree lines and hedgerows, and some loss of pasture (Haines-Young *et al.* 2000).

P. pygmaeus also forages preferentially over riparian habitat and may have been affected historically by drainage of wetlands and loss of ponds and ditches. Riparian habitats and water courses have been assessed in the two most recent Countryside Surveys, in 1990 and 1998 (Haines Young *et al.* 2000) and a comparison of results showed that the biological condition of 25% of streams and small rivers improved in Great Britain during this period. Fen, marsh and swamp expanded by 27% in England and Wales and by 19% in Scotland, but declined by 19% in Northern Ireland. The total area of inland water bodies has not changed, but there has been an increase in the number of small inland water bodies, by 6%, which reverses the losses observed in the 1980s.

Overall the loss of wetland areas in the 1980s appears to have stabilised with some return to pre 1980 figures. Water quality has improved during the trend period. However, this is still 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}

Unknown

The trend during the time period considered is unknown and it is not appropriate to consider reasons for an unknown trend.

3.7 Suitable habitat for the species (in km²)^{2.73}

Unknown

A favourable population size has not been set and it is, therefore, not possible to assess a suitable habitat area. The assessment is, therefore, 'unknown' at present.

3.8 Habitat conclusion^{2.8}

Unknown

The habitat requirements for this species have been studied, but there has been no attempt to correlate population density with suitable habitat availability. There is evidence of recent improvements in habitat extent, but the information available is very limited. The conclusion is, therefore, Unknown at present. This judgement will need to be reviewed in the future depending on availability of information on habitat use and extent.

4. Future Prospects^{2.6}

Good prospects

The species is expected to survive and prosper.

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

Legislation *P. pipistrellus* 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 The species has been the subject of a Species Action Plan under the UK Biodiversity Action Plan. Both range and population 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. The adaptability and generalist behaviour of this species suggests future prospects are good.

Threats Reported historic declines may have resulted from loss of winter roosting sites in buildings and old trees, and the disturbance and destruction of roosts. Many colonies are found in buildings, making this species particularly vulnerable to anthropogenic factors, such as disturbance, timber treatment and building renovation. The construction of major roads and motorways that can form barriers to the species mobility and cause mortality is still a problem, as are the use of pesticides and the loss of landscape connectivity. Similarly, losses of wetlands, hedgerows and other suitable prey habitat have resulted in losses of insect-rich feeding habitats and flyways, and woodland management has resulted in the loss of large old trees with roosting holes. Alternatively, recent increases in suitable woodland habitat may have helped to stabilise any population change.

An additional problem is the synanthropic nature of the species and the fact that large, noisy colonies form during the summer months, which could bring them into conflict with human inhabitants.

4.1 Future prospects conclusion^{2.8}

Favourable

Although there are undoubtedly continuing pressures and threats to this species, the main pressures and threats are not significant enough to affect the long-term viability. The conclusion is, therefore, Favourable.

5. Overall Assessment^{2.8}

Unknown

Range and future prospects are assessed as Favourable, but population and habitat status are assessed as 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	No evidence of loss or expansion and not smaller than the favourable reference range	2
Population	Unknown	No or insufficient reliable information available	N/A
Habitat	Unknown	No or insufficient reliable information available	N/A
Future Prospects	Favourable	Main pressures and threats to the species not significant; species will remain viable on the long-term	3
Overall Assessment	Unknown	No or insufficient reliable information available	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

BARRATT, E.M., BRUFORD, M.W., BURLAND, T.M., JONES, G., RACEY, P.A. & WAYNE, R.K. 1995. Characterization of mitochondrial DNA variability within the microchiropteran genus *Pipistrellus*: approaches and applications. *Symposia Zoological Society London*, **67**, 377-386.

BAT CONSERVATION TRUST. 2006. *The National Bat Monitoring Programme Annual Report 2005*. Available to download from Bat Conservation Trust website (www.bats.org.uk) and Tracking Mammals Partnership website (www.trackingmammals.org).

BATTERSBY, J (Ed.) & TRACKING MAMMALS PARTNERSHIP. 2005. *UK Mammals: Species Status and Population Trends*. JNCC/Tracking Mammals Partnership.

BOYE, P. & DIETZ, M. 2005. *Research Report No 661: Development of good practice guidelines for woodland management for bats*. English Nature, Peterborough.

DAVIDSON-WATTS, I. & JONES, G. 2006. Differences in foraging behaviour between *Pipistrellus pipistrellus* (Schreber, 1774) and *Pipistrellus pygmaeus* (Leach, 1825). *Journal of Zoology, London*, **268** (1), 55-62.

HAINES-YOUNG, R.H., BARR, C.J., BLACK, H.I.J., BRIGGS, D.J., BUNCE, R.G.H., CLARKE, R.T., COOPER, A., DAWSON, F.H., FIRBANK, L.G., FULLER, R.M., FURSE, M.T., GILLESPIE, M.K., HILL, R., HORNUNG, M., HOWARD, D.C., McCANN, T., MORECROFT, M.D., PETIT, S., SIER, A.R.J., SMART, S.M., SMITH, G.M., STOTT, A.P., STUART, R.C. & WATKINS, J.W. 2000. *Accounting for nature: assessing habitats in the UK countryside*. Countryside Survey 2000. DETR, HMSO, London.

HARRIS, S., MORRIS, P., WRAY, S. & YALDEN, D. 1995. *A review of British Mammals: population estimates and conservation status of British mammals other than cetaceans*. JNCC, Peterborough.

JONES, G. & VAN PARIJS, S.M. 1993. Bimodal echolocation in pipistrelle bats: are cryptic species present? *Proceedings Royal Society London*, **251**, 119-125.

NICHOLLS, B. & RACEY, P. 2006a. Habitat selection as a mechanism of resource partitioning in two cryptic bat species *Pipistrellus pipistrellus* and *Pipistrellus pygmaeus*. *Ecography*, **29**, 697-708.

NICHOLLS, B. & RACEY, P. 2006b. Contrasting home-range size and spatial partitioning in cryptic and sympatric pipistrelle bats. *Behavioural Ecology and Sociobiology*, **61**, 131-142.

RICHARDSON, P. 2000. *Distribution atlas of bats in Britain and Ireland 1980-1999*. Bat Conservation Trust, London.

Map Data Sources

BATS & The Millennium Link - Bat species distribution in Central Belt of Scotland 2000 to 2005; Scottish Natural Heritage bat records; Highland Biological Recording Group Mammals dataset (via the NBN Gateway).

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

Scottish Natural Heritage bat records: update, J. Haddow (*Pers. comm*).

Distribution atlas of bats in Britain and Ireland 1980-1999, The Bat Conservation Trust 2000, GB data only.