

Report under The Conservation of Habitats and  
Species Regulations 2017 (as amended),  
Regulation 9A

**2019-2024**

Conservation status assessment for the species:

**S5009 - Soprano pipistrelle**

***(Pipistrellus pygmaeus)***

**England**



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This report was produced by JNCC in collaboration with Natural England.

**This document should be cited as:**

Natural England and JNCC. (2026). Conservation status assessment for the species: S5009 Soprano pipistrelle (*Pipistrellus pygmaeus*).

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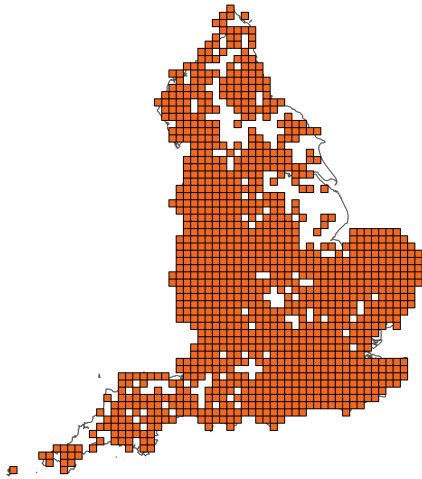
### **Important note - Please read**

- The information in this document represents the England Report under The Conservation of Habitats and Species Regulations 2017 (as amended), Regulation 9A, for the period 2019-2024.
- It is based on supporting information provided by Natural England, which is documented separately.
- The Habitats Regulations reporting 2019-2024 Approach Document provides details on how this supporting information contributed to the UK Report and the fields that were completed for each parameter.
- Maps showing the distribution and range of the species are included.
- Explanatory notes (where provided) are included at the end. These provide additional audit trail information to that included within the assessments. Further underpinning explanatory notes are available in the related country reports.
- Some of the reporting fields have been left blank because either: (i) there was insufficient information to complete the field; (ii) completion of the field was not obligatory; and/or (iii) the field was not relevant to this species (section 12 National Site Network coverage for Annex II species).

Further details on the approach to the Habitats Regulations Reporting 2019-2024 are available on the [JNCC website](#).

## Assessment Summary: Soprano pipistrelle

### Distribution Map



### Range Map



**Figure 1:** England distribution and range map for S5009 - Soprano pipistrelle (*Pipistrellus pygmaeus*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority. The 10km grid square distribution map is based on available species records within the current reporting period.

**Table 1:** Table summarising the conservation status for S5009 - Soprano pipistrelle (*Pipistrellus pygmaeus*). Overall conservation status for species is based on assessments of range, population, habitat for the species, and future prospects.

## Overall Conservation Status (see section 11)

**Favourable (FV)**

## Breakdown of Overall Conservation Status

<b>Range</b> (see section 5)	<b>Favourable (FV)</b>
<b>Population</b> (see section 6)	<b>Unknown (XX)</b>
<b>Habitat for the species</b> (see section 7)	<b>Favourable (FV)</b>
<b>Future prospects</b> (see section 10)	<b>Favourable (FV)</b>

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## National Level

### 1. General information

1.1 Country	England
1.2 Species code	S5009
1.3 Species scientific name	<i>Pipistrellus pygmaeus</i>
1.4 Alternative species scientific name	
1.5 Common name	Soprano pipistrelle
Annex(es)	IV

### 2. Maps

2.1 Sensitive species	No
2.2 Year or period	1995-2024
2.3 Distribution map	Yes
2.4 Distribution map; Method used	Complete survey or a statistically robust estimate

#### 2.5 Additional information

The range map has been produced following the same methodology that was used in 2007 and 2013 whereby a 45km alpha hull value has been used for all species with a starting range unit of individual 10km squares. In 2018 range was taken from Mathews et al, whereby an alpha hull value of 20km was drawn around the presence records, which represented the best balance between the inclusion of unoccupied sites (i.e. where records are sparse but close enough for inclusion) and the exclusion of occupied areas due to gaps in the data (i.e. where records exist but are too isolated for inclusion). An additional 10km buffer was added to the final hull polygon to provide smoothing to the hull and to ensure that the hull covered the areas recorded rather than intersecting them. That process led to the production of much finer detailed maps being produced.

Additionally, for the 2026 Regulation 9A reporting round the distribution datasets reported for all features have been created using existing Natural England source data and additional datasets made available to Natural England for Regulation 9a reporting under Open Government (OGL) or Creative Commons (CC-BY) licence. The

reinterpretation of source data is a methodological change which has resulted in changes to mapped distribution and hence range for some features. In a few cases the available data is known to not reflect the full distribution of a feature. In order to attempt to overcome this issue, the date range for the collection of presence data for this species has been set at 1995-2024. Where apparent change is an artefact of the mapping approach, rather than real change in distribution it will be highlighted, and associated changes in range explained, in the assessment text.

### 3. Information related to Annex V Species

#### 3.1 Is the species taken in the wild / exploited?

#### 3.2 What measures have been taken?

a) Regulations regarding access to property

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b) Temporary or local prohibition on the taking of specimens in the wild and exploitation

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c) Regulation of the periods and/or methods of taking specimens

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d) Application of hunting and fishing rules which take account of the conservation of such populations

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e) Establishment of a system of licences for taking specimens or of quotas

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f) Regulation of the purchase, sale, offering for sale, keeping for sale, or transport for sale of specimens

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g) Breeding in captivity of animal species as well as artificial propagation of plant species

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Other measures

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Other measures description

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#### 3.3: Hunting bag or quantity taken in the wild for Mammals and Acipenseridae (Fish)

a) Unit

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**Table 2:** Quantity taken from the wild during the reporting period (see 3.3a for units). For species with defined hunting seasons, Season 1 refers to 2018/2019 (autumn 2018 to spring 2019), and Season 6 to 2023/2024. For species without hunting seasons, data are reported by calendar year: Year 1 is 2019, and Year 6 is 2024.

	Season/ year 1	Season/ year 2	Season/ year 3	Season/ year 4	Season/ year 5	Season/ year 6
<b>b) Minimum</b>	-	-	-	-	-	-
<b>c) Maximum</b>	-	-	-	-	-	-
<b>d) Unknown</b>	-	-	-	-	-	-

### 3.4: Hunting bag or quantity taken in the wild; Method used

### 3.5: Additional information

No additional information

## Biogeographical Level

### 4. Biogeographical and marine regions

4.1 Biogeographical or marine region where the species occurs ATL

#### 4.2 Sources of information

See section 14 References

### 5. Range

5.1 Surface area (km<sup>2</sup>) 128,844

5.2 Short-term trend; Period 2013-2024

5.3 Short-term trend; Direction Stable

#### 5.4 Short-term trend; Magnitude

a) Estimated minimum

<b>b) Estimated maximum</b>	
<b>c) Pre-defined range</b>	
<b>d) Unknown</b>	
<b>e) Type of estimate</b>	
<b>f) Rate of decrease</b>	
<b>5.5 Short-term trend; Method used</b>	Complete survey or a statistically robust estimate used
<b>5.6 Long-term trend; Period</b>	
<b>5.7 Long-term trend; Direction</b>	
<b>5.8 Long-term trend; Magnitude</b>	
<b>a) Minimum</b>	
<b>b) Maximum</b>	
<b>c) Rate of decrease</b>	
<b>5.9 Long-term trend; Method used</b>	
<b>5.10 Favourable Reference Range (FRR)</b>	
<b>a) Area (km<sup>2</sup>)</b>	128,548
<b>b) Pre-defined increment</b>	
<b>c) Unknown</b>	No
<b>d) Method used</b>	Model-based approach
<b>e) Quality of information</b>	moderate
<b>5.11 Change and reason for change in surface area of range</b>	
<b>a) Change</b>	Yes
<b>b) Genuine change</b>	Yes
<b>c) Improved knowledge or more accurate data</b>	Yes
<b>d) Different method</b>	Yes

<b>e) No information</b>	No
<b>f) Other reason</b>	No
<b>g) Main reason</b>	Use of different method

## 5.12 Additional information

Range is based on presence data collected between 1995 and 2024. Areas that contain very isolated records may not have been included in the distribution. The range map has been produced following the same methodology that was used in 2007 and 2013 whereby a 45km alpha hull value has been used for all species with a starting range unit of individual 10km squares. In 2018, range was taken from Mathews et al, whereby an alpha hull value of 20km was drawn around the presence records, which represented the best balance between the inclusion of unoccupied sites (i.e. where records sparse but close enough for inclusion) and the exclusion of occupied areas due to gaps in the data (i.e. where records exist but are too isolated for inclusion). An additional 10km buffer was added to the final hull polygon to provide smoothing to the hull and to ensure that the hull covered the areas recorded, rather than intersecting them. That process led to the production of much finer detailed maps being produced. However, this approach to mapping was not an option for this reporting round (2018-2024).

The Favourable Reference Range is set at 1,148 hectads or 128,458 km<sup>2</sup>, which was the estimated current extent of occurrence in England (Mathews and Harrower, 2020; Natural England and Bat Conservation Trust, in prep.). It is considered that these figures reflect favourable range and distribution for the species.

## 6. Population

**6.1 Year or period** 1995-2024

### 6.2 Population size (in reporting unit)

<b>a) Unit</b>	number of individuals
<b>b) Minimum</b>	1,260,000
<b>c) Maximum</b>	5,360,000
<b>d) Best single value</b>	2,980,000
<b>6.3 Type of estimate</b>	95% confidence interval
<b>6.4 Quality of extrapolation to reporting unit</b>	low

## 6.5 Additional population size (using population unit other than reporting unit)

a) Unit

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b) Minimum

---

c) Maximum

---

d) Best single value

---

e) Type of estimate

**6.6 Population size; Method used** Complete survey or a statistically robust estimate

**6.7 Short-term trend; Period** 2017-2023

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**6.8 Short-term trend; Direction** Stable

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**6.9 Short-term trend; Magnitude**

a) Estimated minimum

---

b) Estimated maximum

---

c) Pre-defined range

---

d) Unknown

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e) Type of estimate

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f) Rate of decrease

**6.10 Short-term trend; Method used** Complete survey or a statistically robust estimate

**6.11 Long-term trend; Period**

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**6.12 Long-term trend; Direction**

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**6.13 Long-term trend; Magnitude**

a) Minimum

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b) Maximum

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c) Confidence interval

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d) Rate of decrease

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**6.14 Long-term trend; Method used**

**6.15 Favourable Reference Population (FRP)**

**ai) Population size**

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**a ii) Unit**

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**b) Pre-defined increment**

---

**c) Unknown** Yes

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**d) Method used**

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**e) Quality of information**

**6.16 Change and reason for change in population size**

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**a) Change** No

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**b) Genuine change**

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**c) Improved knowledge or more accurate data**

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**d) Different method**

---

**e) No information**

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**f) Other reason**

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**g) Main reason**

**6.17 Additional information**

The existing population estimate for *P.pygmaeus* is 2,980,000 (plausible intervals = 1,260,000 - 5,360,000; Mathews et al, 2018). It is generally accepted that the species is likely to have suffered a historical decline, however there is a lack of robust data available on the scale of this decline. Given the wide intervals around the population estimate and the uncertainty around historic trends it has not been possible to set a Favourable Reference Value for population at this time. Further research e.g. into historic population declines including novel genetic techniques, regional variations in trends and improved population estimates are required to establish an FRV for population.

**6.18 Age structure, mortality and reproduction deviation** No deviation from normal

## 7. Habitat for the species

### 7.1 Sufficiency of area and quality of occupied habitat (for long-term survival)

a) Is area of occupied habitat sufficient? Yes

b) Is quality of occupied habitat sufficient? Yes

c) If No or Unknown, is there a sufficiently large area of unoccupied habitat of suitable quality?

### 7.2 Sufficiency of area and quality of occupied habitat; Method used

a) Sufficiency of area of occupied habitat; Method used Based mainly on extrapolation from a limited amount of data

b) Sufficiency of quality of occupied habitat; Method used Based mainly on extrapolation from a limited amount of data

7.3 Short-term trend; Period 2013-2024

7.4 Short-term trend; Direction Stable

7.5 Short-term trend; Method used Based mainly on extrapolation from a limited amount of data

7.6 Long-term trend; Period

7.7 Long-term trend; Direction

7.8 Long-term trend; Method used

### 7.9 Additional information

No additional information

## 8. Main pressures

### 8.1 Characterisation of pressures

**Table 3:** Pressures affecting the species, including timing and importance/impact ranking. Pressures are defined as factors acting currently and/or during the reporting period (2019–2024). Rankings are: High (direct/immediate influence and/or large spatial extent) and Medium (moderate direct/immediate influence, mainly indirect and/or regional extent).

Pressure	Timing	Ranking
PA02: Conversion from one type of agricultural land use to another (excluding drainage and burning)	Ongoing and likely to be in the future	Medium (M)
PA04: Removal of small landscape features for agricultural land parcel consolidation (hedges, stone walls, rushes, open ditches, springs, solitary trees, etc.)	Ongoing and likely to be in the future	Medium (M)
PA14: Use of plant protection chemicals in agriculture	Ongoing and likely to be in the future	Medium (M)
PB02: Conversion from one type of forestry land use to another	Ongoing and likely to be in the future	Medium (M)
PB05: Logging without replanting or natural regrowth	Ongoing and likely to be in the future	Medium (M)
PD01: Wind, wave and tidal power (including infrastructure)	Ongoing and likely to be in the future	High (H)
PE01: Roads, paths, railroads and related infrastructure	Ongoing and likely to be in the future	High (H)
PF02: Construction or modification (e.g. of housing and settlements) in existing built-up areas	Ongoing and likely to be in the future	High (H)
PF12: Residential, commercial and industrial activities and structures generating noise, light, heat or other forms of pollution	Ongoing and likely to be in the future	High (H)

### 8.2 Sources of information

See section 14 References

### 8.3 Additional information

No additional information

## 9. Conservation measures

### 9.1: Status of measures

<b>a) Are measures needed?</b>	Yes
<b>b) Indicate the status of measures</b>	Measures identified and taken
<b>9.2 Main purpose of the measures taken</b>	Maintain the current range, population and/or habitat for the species
<b>9.3 Location of the measures taken</b>	Both inside and outside National Site Network
<b>9.4 Response to measures</b>	Medium-term results (within the next two reporting periods, 2025–2036)

### 9.5 List of main conservation measures

**Table 4:** Key conservation measures addressing current pressures and/or anticipated threats during the next two reporting periods (2025–2036). Measures are ranked by importance/impact: High (direct/immediate influence and/or large spatial extent) and Medium (moderate direct/immediate influence, mainly indirect and/or regional extent).

Conservation measure	Ranking
MA01: Prevent conversion of natural and semi-natural habitats, and habitats of species into agricultural land	Medium (M)
MA02: Restore small landscape features on agricultural land	Medium (M)
MA14: Other measures related to agricultural practices	Medium (M)
MB01: Prevent conversion of (semi-) natural habitats into forests and of (semi-) natural forests into intensive forest plantation	Medium (M)
MB04: Adapt/manage reforestation and forest regeneration	Medium (M)
MC03: Adapt/manage renewable energy installation, facilities and operation (excl. hydropower and abstraction activities)	High (H)
ME01: Reduce impact of transport operation and infrastructure	High (H)

MF04: Reduce/eliminate pollution to surface or ground waters from commercial, residential and recreational areas and activities, and from industrial activities and structures	High (H)
MF07: Reduce/eliminate pollution (incl. noise, light, heat, soil pollution) from industrial, commercial, residential and recreational areas and activities	High (H)

## 9.6 Additional information

Legal and administrative measures continue to be required to ensure that the protection provided by the legislation is effective. If roosts are to be destroyed, damaged, or lost due to development, adequate mitigation/compensation methods must be put in place to maintain the favourable conservation status of the species. Road design construction and operation including measures such as the provision of safe crossing structures and the loss and severance of bat habitat and lighting may mitigate impacts to bats. Guidance is available to help planners, developers and ecological consultants to consider the potential effects of onshore wind energy developments on bats. Guidance is also available for land managers on how to manage their land holdings for bats.

## 10. Future prospects

### 10.1a Future trends of parameters

<b>ai) Range</b>	Overall stable
<b>bi) Population</b>	Overall stable
<b>ci) Habitat for the species</b>	Overall stable

### 10.1b Future prospects of parameters

<b>aii) Range</b>	Good
<b>bii) Population</b>	Good
<b>cii) Habitat for the species</b>	Good

### 10.2 Additional information

The range for *P. pygmaeus* is likely to have remained stable as the species continues to be widespread and appears to be covering roughly the same range as in the previous reporting round. The population appears to show a slight increase annually through the

National Bat Monitoring Programme (NBMP) trend data from field survey results, but this is not statistically significant. It is considered that the habitat for *P. pygmaeus* has remained stable as it is taken as the range as the species is widespread and occupies a wide range of habitats and habitat mosaics.

## 11. Conclusions

**11.1 Range** Favourable (FV)

**11.2 Population** Unknown (XX)

**11.3 Habitat for the species** Favourable (FV)

**11.4 Future prospects** Favourable (FV)

**11.5 Overall assessment of Conservation Status** Favourable (FV)

**11.6 Overall trend in Conservation Status** Stable

### 11.7 Change and reason for change in conservation status

This field is not reported as the period 2019-2024 marks the first instance in which conservation status has been assessed at the national level, meaning no comparisons to previous reports can be drawn.

### 11.7 Change and reason for change in conservation status trend

This field is not reported as the period 2019-2024 marks the first instance in which conservation status has been assessed at the national level, meaning no comparisons to previous reports can be drawn.

### 11.8 Additional information

No additional information

## 12. UK National Site Network (pSCIs, SCIs, SACs) coverage for Annex II species

### 12.1 Population size inside the pSCIs, SCIs and SACs network

#### a) Unit

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**b) Minimum**

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**c) Maximum**

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**d) Best single value**

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**12.2 Type of estimate**

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**12.3 Population size inside the network; Method used**

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**12.4 Short-term trend of population size within the network; Direction**

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**12.5 Short-term trend of population size within the network; Method used**

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**12.6 Short-term trend of habitat for the species inside the pSCIs, SCIs and SACs network; Direction**

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**12.7 Short-term trend of habitat for the species inside the pSCIs, SCIs and SACs network; Method used**

**12.8 Additional information**

No additional information

## **13. Complementary information**

**13.1 Justification of percentage thresholds for trends**

No justification information

**13.2 Trans-boundary assessment**

No trans-boundary assessment information

**13.2 Other relevant information**

No other relevant information

## 14. References

### Biogeographical and marine regions

#### 4.2 Sources of information

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Mathews, F., Richardson, S.M., and Hosken, D.J. (2016). Understanding the risks to bat populations posed by wind turbines - Phase 2 - WC0753, Defra

Mitchell-Jones, T.J. (2010). Bats in houses - the conservation challenge. Pp 3965-3978 in *Species Management: challenges and solutions for the 21st century*. Baxter, J.M. and Galbraith, C.A. TSO Scotland, Edinburgh

NA

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Waring, S.D., Essah, E., Gunnell, K., and Bonser, R. (2013). Double jeopardy: the potential for problems when bats interact with breathable roofing membranes in the United Kingdom. *Architecture and Environment*, 1, 1-3

## Main pressures

### 8.2 Sources of information

No sources of information

## 15. Explanatory Notes

Field label	Note
1.5: Common name	<p>Pipistrellus pygmaeus is widely distributed throughout England with gaps in distribution probably reflecting an absence of survey data rather than an absence of the species. <i>P. pygmaeus</i> bats are frequently reported to make particular use of riparian habitat (Davidson-Watts and Jones, 2006; Nicholls and Racey, 2006; Lintott et al, 2016). In woodlands, activity of <i>P. pygmaeus</i> is positively linked with the amount of habitat fragmentation, possibly because they utilise edge habitats (Fuentes-Montemayor et al., 2013). <i>P. pygmaeus</i> usually roosts in buildings and can be found in a wide variety of constructions ranging from ancient churches to barns, warehouses, amenity buildings, and modern bungalows. They can also be found roosting in bat boxes and in trees. Many records come from householder requests for information or advice. The widespread use of bat detectors and structured surveys for the National Bat Monitoring Programme (NBMP) has increased the number of records in recent years.</p> <p><i>Pipistrellus pipistrellus</i> (s.l) was divided into <i>P. pipistrellus</i> (s.s) and <i>P.pygmaeus</i> in 1997, so field records prior to this cannot be assigned to either species with confidence (Barratt et al, 1997).</p>
5.5: Short-term trend; Method used	<p>Range is based on presence data collected between 1995-2024. Areas that contain very isolated records may not have been included in the distribution. The range map has been produced following the same methodology that was used in 2007 and 2013 whereby a 45km alpha hull value has been used for all species with a starting range unit of individual 10km squares. In 2018, range was taken from Mathews et al, whereby an alpha hull value of 20km was drawn around the presence records, which represented the best balance between the inclusion of unoccupied sites (i.e. where records are sparse but close enough for inclusion) and the exclusion of occupied areas due to gaps in the data (i.e. where records exist but are too</p>

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isolated for inclusion). An additional 10km buffer was added to the final hull polygon to provide smoothing to the hull and to ensure that the hull covered the areas recorded rather than intersecting them. That process led to the production of much finer detailed maps being produced. However, this approach to mapping was not an option for this reporting round (2018-2024).

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6.2: Population size

Mathews et al (2018) gives estimates of 1,260,000 individuals (lower plausible limit) to 5,360,000 (upper plausible limit). The estimates excluded colonies that contained less than 30 bats in order to ensure that counts did not include individuals in formation roosts that were then counted again at maternity sites. This may have led to some under-estimation of population size. However, most data were derived from NBMP data and here all roosts were included regardless of size since they were part of a longitudinal monitoring programme. Given that the estimated roost size is close to expert opinion and published data, it is likely to be a reasonable basis for the calculations.

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6.8: Short-term trend;  
Direction

The National Bat Monitoring Programme (NBMP) trends record a small increase (4.4% (95% CI -8.6% to 20.4%)) in the population index between 2017-2022, but this change is not statistically significant and the population is considered to have been stable in the short-term in England. There would seem to have been a small (not statistically significant) decline in the short-term population trend for this species for roost counts. However, it is likely that for this species, frequent roost switching results in a negative bias in Roost Count data. The Roost Count trend is therefore not considered a reliable measure of population change for this species. Mathews et al (2018) records the trend as being unknown as acoustic detectors used to record bat activity in the field have changed considerably over time and have become much more sensitive. There is considerable misidentification between the common pipistrelle and soprano pipistrelle, especially when using

	heterodyne detectors and there is also confusion with the <i>Myotis</i> species.
6.18: Age structure, mortality and reproduction	<p>There is no evidence to suggest any deviation from the normal age structure, mortality, or reproduction rates. However, this assessment is primarily based on anecdotal observations from bat workers in the field and stable trends in the NBMP bat hibernation surveys. No formal studies have been conducted to confirm these findings</p>
7.1: Sufficiency of area and quality of occupied habitat	<p><i>Pipistrellus pygmaeus</i> is an extremely widely distributed species and is found in almost any habitat type, ranging from grasslands to urban and suburban environments. However, the species requires a complex mosaic of habitats to support foraging, roosting and commuting behaviour. Boye &amp; Dietz (2005) and Jones &amp; Racey (2008) provide a good overview of this species' habitat requirements. Although most maternity colonies are in buildings, forests of any type are used as roosting and foraging areas. <i>P. pygmaeus</i> are frequently reported to make particular use of riparian habitat (Davidson-Watts and Jones, 2006; Nicholls and Racey, 2006; Lintott et al, 2016). In woodlands, activity of <i>P.pygmaeus</i> is positively associated with the amount of habitat fragmentation, possibly because they utilise edge environments (Fuentes-Montemayor et al, 2013). <i>P. pygmaeus</i> home ranges are reported to be much larger than <i>P. pipistrellus</i>. <i>P.pygmaeus</i> lactating females have been reported to make flights of &gt;10km whilst using conifer plantations as their primary habitat (Kirkpatrick, 2017). <i>P. pygmaeus</i> roosts tend to be located in areas close to waterways (Jenkins et al., 1998; Oakley and Jones, 1998), particularly in the case of large roosts (Mathews et al, 2018). In summer, the roost sites are predominantly in crevices in buildings, especially between tiles and the underlying roofing felt or behind boards on the gable. Furthermore, individuals and maternity colonies use tree holes, wood crevices, and bird or bat boxes as roosts. The species disperses to temporary sites and mating roosts during the autumn post-weaning period.</p>

7.2: Sufficiency of area and quality of occupied habitat; Methods used	The current area of occupancy in England is estimated to be 29,716 km <sup>2</sup> (Mathews and Harrower, 2020).
8.1: Characterisation of pressures	<p>Pressures can generally be divided into those that affect roosts and those that affect commuting and foraging (including prey availability). <i>Pipistrellus pygmaeus</i> forage across a mosaic of habitat types, though they make particular use of riparian habitat (Davidson-Watts and Jones, 2006; Nicholls and Racey, 2006; Lintott et al, 2016). Agricultural and forestry practices that remove or simplify these habitats or affect the biomass of insect prey could negatively affect populations. This is one of the primary species killed at wind turbine sites and in road collisions. It is unclear whether the scale of casualties is sufficient to impact on local populations (Mathews et al, 2016; Fensome and Mathews, 2016). Although roosts are strictly protected through legislation, a variable number of licences are issued every year permitting exclusion, destruction and damage. Changes to building regulations and efforts to make buildings more energy-efficient have tended to reduce their accessibility and thermal suitability for bats. Breathable roofing membranes also pose a threat of entanglement (Mirchell-Jones, 2010; Waring et al, 2013).</p>
8.3: Additional information	<p>There is limited current evidence on the risks or potential benefits to bats from the desynchronisation of biological and ecological processes due to climate change. While some changes, such as longer foraging seasons or increased prey availability in certain regions, could have positive effects, there is insufficient evidence to confirm this. Many bat species rely on precise seasonal cues for hibernation and foraging, and disruptions in food availability, such as shifts in insect emergence, could negatively impact their survival. Hibernating bats depend on stored energy and the predictable availability of prey upon emergence. Therefore, despite the uncertainty, it is important to consider this factor when assessing the broader impacts of climate change on bats.</p>

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9.5: List of main  
conservation measures

Legal and administrative measures continue to be required to ensure that the protection provided by the legislation is effective. If roosts are to be destroyed, damaged or lost due to development, adequate mitigation/compensation methods must be put in place to maintain the favourable conservation status of the species. Road design construction and operation including measures such as the provision of safe crossing structures and the loss and severance of bat habitat and lighting may mitigate impacts to bats. Guidance has been developed to help planners, developers and ecological consultants to consider the potential effects of onshore wind energy developments on bats. Guidance is also available for land managers on how to manage their land holdings for bats.