

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

**Fourth Report by the United Kingdom
under Article 17**

on the implementation of the Directive
from January 2013 to December 2018

Supporting documentation for the
conservation status assessment for the species:

S5009 - Soprano pipistrelle (*Pipistrellus pygmaeus*)

SCOTLAND

IMPORTANT NOTE - PLEASE READ

- The information in this document is a country-level contribution to the UK Report on the conservation status of this species, submitted to the European Commission as part of the 2019 UK Reporting under Article 17 of the EU Habitats Directive.
- The 2019 Article 17 UK Approach document provides details on how this supporting information was used to produce the UK Report.
- The UK Report on the conservation status of this species is provided in a separate document.
- The reporting fields and options used are aligned to those set out in the European Commission guidance.
- Explanatory notes (where provided) by the country are included at the end. These provide an audit trail of relevant supporting information.
- 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; (iii) the field was not relevant to this species (section 12 Natura 2000 coverage for Annex II species) and/or (iv) the field was only relevant at UK-level (sections 9 Future prospects and 10 Conclusions).
- For technical reasons, the country-level future trends for Range, Population and Habitat for the species are only available in a separate spreadsheet that contains all the country-level supporting information.
- The country-level reporting information for all habitats and species is also available in spreadsheet format.

Visit the JNCC website, <https://jncc.gov.uk/article17>, for further information on UK Article 17 reporting.

Report on the main results of the surveillance under Article 11 for Annex II, IV and V species (Annex B)

NATIONAL LEVEL

1. General information

1.1 Member State	UK (Scotland information only)
1.2 Species code	5009
1.3 Species scientific name	Pipistrellus pygmaeus
1.4 Alternative species scientific name	
1.5 Common name (in national language)	Soprano pipistrelle

2. Maps

2.1 Sensitive species	No
2.2 Year or period	1995-2016
2.3 Distribution map	Yes
2.4 Distribution map Method used	Based mainly on extrapolation from a limited amount of data
2.5 Additional maps	No

3. Information related to Annex V Species (Art. 14)

3.1 Is the species taken in the wild/exploited?	No																
3.2 Which of the measures in Art. 14 have been taken?	<table> <tr> <td>a) regulations regarding access to property</td><td>No</td></tr> <tr> <td>b) temporary or local prohibition of the taking of specimens in the wild and exploitation</td><td>No</td></tr> <tr> <td>c) regulation of the periods and/or methods of taking specimens</td><td>No</td></tr> <tr> <td>d) application of hunting and fishing rules which take account of the conservation of such populations</td><td>No</td></tr> <tr> <td>e) establishment of a system of licences for taking specimens or of quotas</td><td>No</td></tr> <tr> <td>f) regulation of the purchase, sale, offering for sale, keeping for sale or transport for sale of specimens</td><td>No</td></tr> <tr> <td>g) breeding in captivity of animal species as well as artificial propagation of plant species</td><td>No</td></tr> <tr> <td>h) other measures</td><td>No</td></tr> </table>	a) regulations regarding access to property	No	b) temporary or local prohibition of the taking of specimens in the wild and exploitation	No	c) regulation of the periods and/or methods of taking specimens	No	d) application of hunting and fishing rules which take account of the conservation of such populations	No	e) establishment of a system of licences for taking specimens or of quotas	No	f) regulation of the purchase, sale, offering for sale, keeping for sale or transport for sale of specimens	No	g) breeding in captivity of animal species as well as artificial propagation of plant species	No	h) other measures	No
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3.3 Hunting bag or quantity taken in the wild for Mammals and Acipenseridae (Fish)

a) Unit

b) Statistics/ quantity taken	Provide statistics/quantity per hunting season or per year (where season is not used) over the reporting period					
	Season/ year 1	Season/ year 2	Season/ year 3	Season/ year 4	Season/ year 5	Season/ year 6
Min. (raw, ie. not rounded)						
Max. (raw, ie. not rounded)						
Unknown	No	No	No	No	No	No

3.4. Hunting bag or quantity taken in the wild Method used

3.5. Additional information

BIOGEOGRAPHICAL LEVEL

4. Biogeographical and marine regions

4.1 Biogeographical or marine region where the species occurs

Atlantic (ATL)

4.2 Sources of information

Bat Conservation Trust (2018). The State of the UK's Bats 2017. Bat Conservation Trust, London. Available at (http://www.bats.org.uk/pages/results_and_reports.html)

Boye, P and Dietz, M. (2005). Research Report No 661: Development of good practice guidelines for woodland management for bats. English Nature, Peterborough.

Davidson-Watts, I. and Jones, G. (2006). Differences in foraging behaviour between *Pipistrellus pipistrellus* (Schreber, 1774) and *Pipistrellus pygmaeus* (Leach, 1825). *Journal of Zoology*, 268 (1), 55-62

Fensome, A. G. and Mathews, F. (2016). Roads and bats: a meta-analysis and review of evidence on vehicle collisions and barrier effects. *Mammal Review*, 46 (4), 311-323

Fuentes-Montemayor, E., Goulson, D., Cavin, L., Wallace, J.M., and Park, K.J. (2013). Fragmented woodlands in agricultural landscapes: The influence of woodland character and landscape context on bats and their insect prey. *Agriculture, Ecosystems and Environment*, 172, 6-15

Glendell, M. and Vaughan, N. (2002). Foraging activity of bats in historic landscape parks in relation to habitat composition and park management. *Animal Conservation*, 5 (4), 309-316

Jones, G and Racey, P.A. (2008). Common pipistrelle *Pipistrellus pipistrellus*, Soprano pipistrelle *Pipistrellus pygmaeus*. Pages 343-351 In Harris, S and Yalden, D.W. *Mammals of the British Isles: Handbook*, 4th edition. The Mammal Society, Southampton. 799pp.

Lintott, P.R., Bunnefeld, N. and Park, K.J. (2015). Opportunities for improving the foraging potential of urban waterways for bats. *Biological Conservation*, 191,

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224-233.

Lintott, P.R., Barlow, K., Bunnefeld, N., Briggs, P., Gajas Roig, C., and Park, K.J. (2016). Differential responses of cryptic bat species to the urban landscape.

Ecology and Evolution, 6 (7), 2044-2052

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

Mathews, F., Kubasiewicz, L.M., Gurnell, J., Harrower, C., McDonald, R.A., Shore, R.F (2018). A review of the population and conservation status of British Mammals. A report by the Mammal Society under contract to Natural England, Natural Resources Wales and Scottish Natural Heritage.

Nicholls, B. and 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. and Racey, P (2006b). Contrasting home-range size and spatial partitioning in cryptic and sympatric bats. *Behavioural Ecology and Sociobiology*, 61, 131-142

Newson, S.E., Evans, H.E., Gillings, S., Jarrett, D. & Wilson, M.W. 2017. A survey of high risk bat species across southern Scotland. Scottish Natural Heritage Commissioned Report No. 1008.

5. Range

5.1 Surface area (km²)

5.2 Short-term trend Period

5.3 Short-term trend Direction

Stable (0)

5.4 Short-term trend Magnitude

a) Minimum

b) Maximum

5.5 Short-term trend Method used

5.6 Long-term trend Period

5.7 Long-term trend Direction

5.8 Long-term trend Magnitude

a) Minimum

b) Maximum

5.9 Long-term trend Method used

5.10 Favourable reference range

a) Area (km²)

b) Operator

c) Unknown

d) Method

5.11 Change and reason for change in surface area of range

Improved knowledge/more accurate data

Use of different method

The change is mainly due to: Improved knowledge/more accurate data

5.12 Additional information

6. Population

6.1 Year or period

2016-2017

6.2 Population size (in reporting unit)

a) Unit

number of map 1x1 km grid cells (grids1x1)

b) Minimum

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	c) Maximum	
	d) Best single value	
6.3 Type of estimate	Best estimate	
6.4 Additional population size (using population unit other than reporting unit)	a) Unit	number of individuals (i)
	b) Minimum	512000
	c) Maximum	2180000
	d) Best single value	
6.5 Type of estimate	95% confidence interval	
6.6 Population size Method used	Complete survey or a statistically robust estimate	
6.7 Short-term trend Period	2007-2018	
6.8 Short-term trend Direction	Stable (0)	
6.9 Short-term trend Magnitude	a) Minimum	
	b) Maximum	
	c) Confidence interval	
6.10 Short-term trend Method used	Based mainly on extrapolation from a limited amount of data	
6.11 Long-term trend Period		
6.12 Long-term trend Direction		
6.13 Long-term trend Magnitude	a) Minimum	
	b) Maximum	
	c) Confidence interval	
6.14 Long-term trend Method used		
6.15 Favourable reference population (using the unit in 6.2 or 6.4)	a) Population size	
	b) Operator	
	c) Unknown	
	d) Method	
6.16 Change and reason for change in population size	Improved knowledge/more accurate data	
	Use of different method	
	The change is mainly due to: Use of different method	
6.17 Additional information		

7. Habitat for the species

7.1 Sufficiency of area and quality of occupied habitat	a) Are area and quality of occupied habitat sufficient (to maintain the species at FCS)?	Yes
	b) Is there a sufficiently large area of occupied AND unoccupied habitat of suitable quality (to maintain the species at FCS)?	
7.2 Sufficiency of area and quality of occupied habitat Method used	Based mainly on extrapolation from a limited amount of data	
7.3 Short-term trend Period	1995-2016	
7.4 Short-term trend Direction	Stable (0)	

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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

8. Main pressures and threats

8.1 Characterisation of pressures/threats

Pressure	Ranking
Conversion from one type of agricultural land use to another (excluding drainage and burning) (A02)	M
Removal of small landscape features for agricultural land parcel consolidation (hedges, stone walls, rushes, open ditches, springs, solitary trees, etc.) (A05)	H
Use of other pest control methods in agriculture (excluding tillage) (A23)	M
Conversion to other types of forests including monocultures (B02)	M
Logging without replanting or natural regrowth (B05)	M
Wind, wave and tidal power, including infrastructure (D01)	H
Roads, paths, railroads and related infrastructure (e.g. bridges, viaducts, tunnels) (E01)	H
Construction or modification (e.g. of housing and settlements) in existing urban or recreational areas (F02)	H
Residential or recreational activities and structures generating noise, light, heat or other forms of pollution (F24)	M
Industrial or commercial activities and structures generating noise, light, heat or other forms of pollution (F25)	M
Threat	Ranking
Conversion from one type of agricultural land use to another (excluding drainage and burning) (A02)	M
Removal of small landscape features for agricultural land parcel consolidation (hedges, stone walls, rushes, open ditches, springs, solitary trees, etc.) (A05)	H
Use of other pest control methods in agriculture (excluding tillage) (A23)	M
Conversion to other types of forests including monocultures (B02)	M
Logging without replanting or natural regrowth (B05)	M
Wind, wave and tidal power, including infrastructure (D01)	M
Roads, paths, railroads and related infrastructure (e.g. bridges, viaducts, tunnels) (E01)	H
Construction or modification (e.g. of housing and settlements) in existing urban or recreational areas (F02)	H

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Residential or recreational activities and structures generating M
noise, light, heat or other forms of pollution (F24)

Industrial or commercial activities and structures generating M
noise, light, heat or other forms of pollution (F25)

8.2 Sources of information

8.3 Additional information

9. Conservation measures

9.1 Status of measures

a) Are measures needed? Yes

b) Indicate the status of measures Measures identified and taken

9.2 Main purpose of the measures taken

Maintain the current range, population and/or habitat for the species

9.3 Location of the measures taken

Both inside and outside Natura 2000

9.4 Response to the measures

Medium-term results (within the next two reporting periods, 2019-2030)

9.5 List of main conservation measures

Prevent conversion of natural and semi-natural habitats, and habitats of species into agricultural land (CA01)

Restore small landscape features on agricultural land (CA02)

Prevent conversion of (semi-) natural habitats into forests and of (semi-)natural forests into intensive forest plantation (CB01)

Adapt/manage reforestation and forest regeneration (CB04)

Adapt/manage renewable energy installation, facilities and operation (CC03)

Reduce impact of transport operation and infrastructure (CE01)

Reduce/eliminate diffuse pollution to surface or ground waters from industrial, commercial, residential and recreational areas and activities (CF05)

Reduce/eliminate noise, light, heat or other forms pollution from industrial, commercial, residential and recreational areas and activities (CF09)

9.6 Additional information

10. Future prospects

10.1 Future prospects of parameters

a) Range

b) Population

c) Habitat of the species

10.2 Additional information

11. Conclusions

11.1. Range

11.2. Population

11.3. Habitat for the species

11.4. Future prospects

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11.5 Overall assessment of Conservation Status

11.6 Overall trend in Conservation Status

11.7 Change and reasons for change in conservation status and conservation status trend

a) Overall assessment of conservation status

No change

The change is mainly due to:

b) Overall trend in conservation status

No change

The change is mainly due to:

11.8 Additional information

12. Natura 2000 (pSCIs, SCIs and SACs) coverage for Annex II species

12.1 Population size inside the pSCIs, SCIs and SACs network (on the biogeographical/marine level including all sites where the species is present)

a) Unit

b) Minimum

c) Maximum

d) Best single value

12.2 Type of estimate

12.3 Population size inside the network Method used

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

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

12.6 Additional information

13. Complementary information

13.1 Justification of % thresholds for trends

13.2 Trans-boundary assessment

13.3 Other relevant Information

Distribution Map

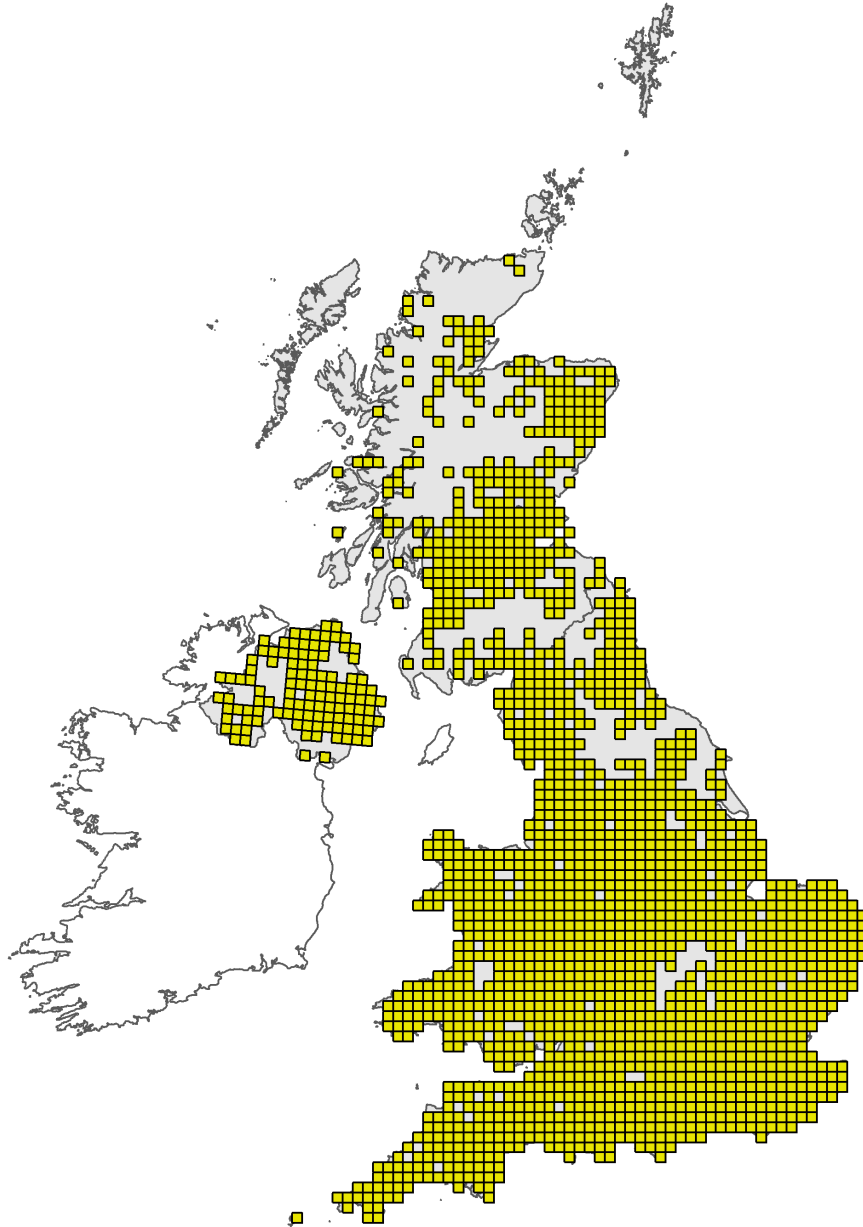


Figure 1: UK distribution map for S5009 - Soprano pipistrelle (*Pipistrellus pygmaeus*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

The 10km grid square distribution map is based on available species records within the current reporting period. For further details see the 2019 Article 17 UK Approach document.

Range Map

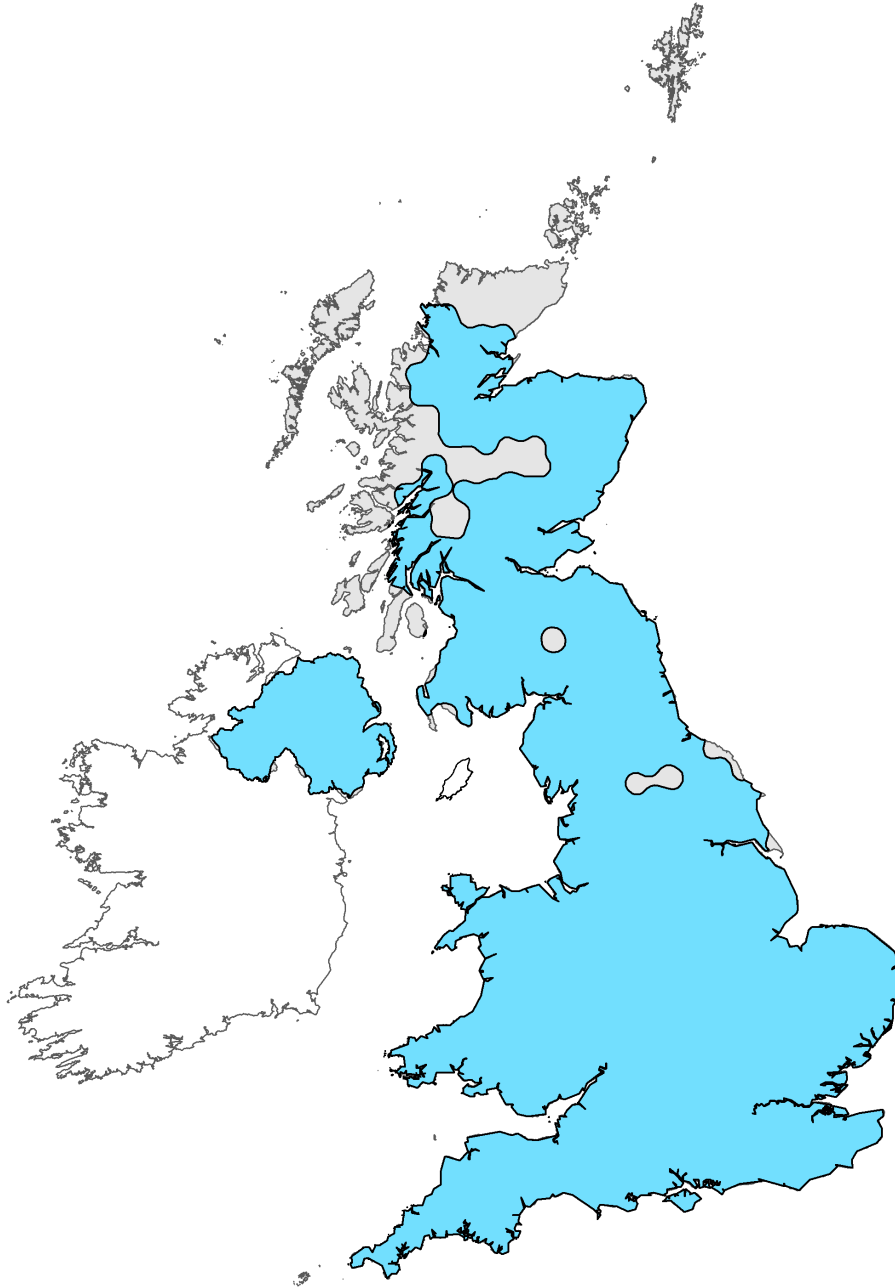


Figure 2: UK range map for S5009 - Soprano pipistrelle (*Pipistrellus pygmaeus*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

The range map has been produced by The Mammal Society applying a range mapping tool as outlined in Matthews et al. (2018), to the 10km grid square distribution map presented in Figure 1. The alpha value for this species was 20km. For further details see the 2019 Article 17 UK Approach document.

Explanatory Notes

Species name: *Pipistrellus pygmaeus* (5009)

Field label	Note
1.5 Common name	<p><i>P. pygmaeus</i> is widely distributed throughout Scotland 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 A. 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 environments (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 be found in bat boxes and will also roost in trees. Many records come from householder requests for information or advice. The widespread use of bat detectors and structured surveys for National Bat Monitoring Programme (NBMP) has increased the number of records in recent years.</p>

Species name: *Pipistrellus pygmaeus* (5009) Region code: ATL

Field label	Note
5.3 Short term trend; Direction	<p>Range is based on presence data collected between 1995-2016. Areas that contain very isolated records may not have been included in the area of distribution. The range has been taken from Mathews et al 2018, 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. This differs from the approach taken in 2013 and 2007 whereby a 45km alpha hull value was used for all species with a starting range unit of individual 10km squares. The new method has led to much finer detail maps being produced underpinned by data gathered at a much finer resolution. The stable trend is based on expert opinion and the Mathews et al. range map.</p>
6.8 Short term trend; Direction	<p>The National Bat Monitoring Programme (NBMP) population trends record no significant change in the Scottish population since the last Article 17 reporting round. The time series from the NBMP indicates a non-significant trend suggesting a stable population, however the data are fairly limited for this species. There would seem to have been a significant decline in the short-term population trend for this species from 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.</p>
6.16 Change and reason for change in population size	<p>Acoustic detectors used to record bat activity in the field have changed considerably over time and have become much more sensitive. Data from the NBMP indicates that there has been a slight increase in population for this species every year since the last Article 17 reporting round.</p>

7.1 Sufficiency of area and quality of occupied habitat	<p><i>P. 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 & Dietz (2005) and Jones & 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> bats are frequently reported to make particular use of riparian habitat (Davidson-Watts and Jones, 2006, Nicholls and A. 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 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 >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 slates/tiles and the underlying sarking 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>
7.4 Short term trend; Direction	This species is a generalist and uses a wide range of habitats. This stable habitat trend is expert opinion, with Mathews et al suggesting that the habitat future prospects for this species is stable.
8.1 Characterisation of pressures/ threats	<p>Pressures can generally be divided into those that affect roosts and those that affect commuting and foraging (including prey availability). A02, A23, B02, B05 - <i>P. pygmaeus</i> forage across a mosaic of habitat types, though they make particular use of riparian habitat (Davidson-Watts and Jones, 2006, Nicholls and A. 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. D01, E01 - 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 and Fensome & Mathews, 2016. F02, F24, F25 - 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.</p>
9.6 Additional information	<p>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 need to take into account the likely impact on bats, for example, in relation to the provision of safe crossing structures and the loss and severance of bat habitat and lighting. Guidance is being developed and will shortly be available from the agencies to help planners, developers and ecological consultants to consider the potential effects of onshore wind energy developments on bats. Guidance is available for land managers on how to manage their land holdings for bats.</p>
10.1 Future prospects of parameters	<p>Future population trend is assessed as stable based on the previous trend in Scotland. This differs from elsewhere in GB where an upward trend is predicted. The range for <i>P. pygmaeus</i> 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 (2007-2012), even though different methods were used to perform this calculation. It is considered that the habitat for <i>P. pygmaeus</i> has remained stable as it is taken a equivalent to the range and the species is widespread occupying a wide variety of habitats and habitat mosaics.</p>