

**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:

**S1320 - Brandt's bat (*Myotis brandtii*)**

**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	1320
1.3 Species scientific name	<i>Myotis brandtii</i>
1.4 Alternative species scientific name	
1.5 Common name (in national language)	Brandt's bat

### 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	Insufficient or no data available
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?	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 National Bat Monitoring Programme. Annual Report 2017, Bat Conservation Trust, London.
- Berge, L., 2007. Resource partitioning between the cryptic species Brandt's bat (*Myotis brandtii*) and the whiskered bat (*M. mystacinus*) in the UK, University of Bristol.
- Brown, P.A., 2016. The Cryptic Group of Small *Myotis* Bats (*M. Mystacinus*, *M. Brandtii* and *M. Alcahoë*) and Habitat Use by Woodland Bats Species in Britain, University of Bristol.
- Dietz, C., Kiefer, A. 2016. Bats of Britain and Europe. Bloomsbury, United Kingdom.
- Glover, A.M., Altringham, J.D., 2008. Cave selection and use by swarming bat species. *Biological Conservation* 141, 1493-1504.
- 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., 1991. Hibernial ecology of whiskered bats (*Myotis mystacinus*) and Brandt's bats (*Myotis brandtii*) sharing the same roost site. *Myotis* 29, 121-128.
- 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.
- 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.
- Norberg, U.M., Rayner, J.M. 1987. Ecological morphology and flight in bats



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

6.6 Population size Method used Insufficient or no data available

6.7 Short-term trend Period

6.8 Short-term trend Direction Unknown (x)

6.9 Short-term trend Magnitude  
a) Minimum  
b) Maximum  
c) Confidence interval

6.10 Short-term trend Method used Insufficient or no data available

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  
No change  
The change is mainly due to:

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)? Unknown

b) Is there a sufficiently large area of occupied AND unoccupied habitat of suitable quality (to maintain the species at FCS)? Unknown

7.2 Sufficiency of area and quality of occupied habitat Method used Insufficient or no data available

7.3 Short-term trend Period 1995-2016

7.4 Short-term trend Direction Unknown (x)

7.5 Short-term trend Method used Insufficient or no data available

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

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

parcel consolidation (hedges, stone walls, rushes, open ditches, springs, solitary trees, etc.) (A05)

Abandonment of grassland management (e.g. cessation of grazing or mowing) (A06) M

Removal of old trees (excluding dead or dying trees) (B08) M

Logging without replanting or natural regrowth (B05) H

Removal of dead and dying trees, including debris (B07) H

Clear-cutting, removal of all trees (B09) H

Roads, paths, railroads and related infrastructure (e.g. bridges, viaducts, tunnels) (E01) H

Conversion from other land uses to housing, settlement or recreational areas (excluding drainage and modification of coastline, estuary and coastal conditions) (F01) M

Threat	Ranking
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Removal of small landscape features for agricultural land parcel consolidation (hedges, stone walls, rushes, open ditches, springs, solitary trees, etc.) (A05)	M
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Abandonment of grassland management (e.g. cessation of grazing or mowing) (A06)	M
---	---

Removal of old trees (excluding dead or dying trees) (B08)	H
--	---

Logging without replanting or natural regrowth (B05)	M
--	---

Removal of dead and dying trees, including debris (B07)	H
---	---

Clear-cutting, removal of all trees (B09)	M
---	---

Roads, paths, railroads and related infrastructure (e.g. bridges, viaducts, tunnels) (E01)	H
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Conversion from other land uses to housing, settlement or recreational areas (excluding drainage and modification of coastline, estuary and coastal conditions) (F01)	H
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## 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

Adapt/manage reforestation and forest regeneration (CB04)

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Reduce impact of transport operation and infrastructure (CE01)

Manage conversion of land for construction and development of infrastructure (CF01)

Restore small landscape features on agricultural land (CA02)

Adapt/change forest management and exploitation practices (CB05)

## 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

### 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

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

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

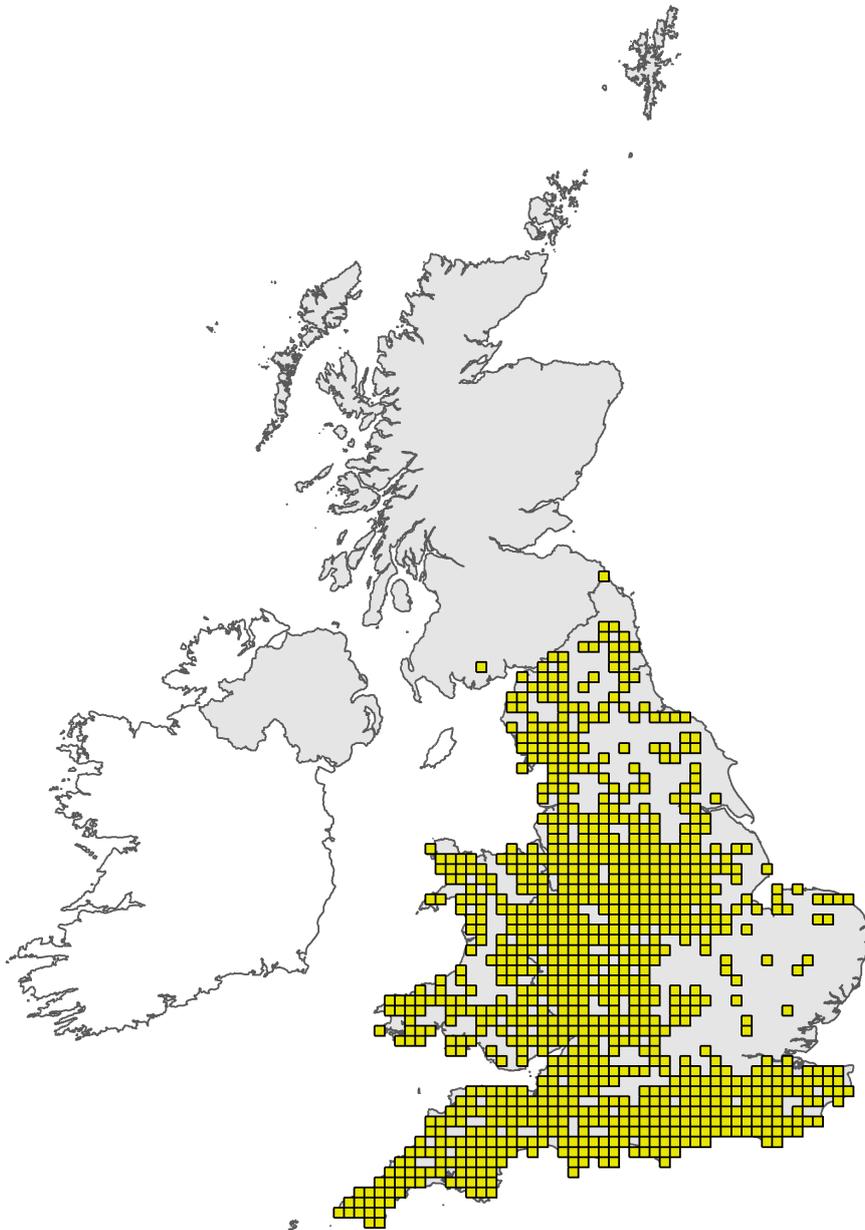


Figure 1: UK distribution map for S1320 - Brandt's bat (*Myotis brandtii*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

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 S1320 - Brandt's bat (*Myotis brandtii*). 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 applying a bespoke range mapping tool for Article 17 reporting (produced by JNCC) to the 10km grid square distribution map presented in Figure 1. The alpha value for this species was 45km. For further details see the 2019 Article 17 UK Approach document.

# Explanatory Notes

## Species name: *Myotis brandtii* (1320)

Field label	Note
1.5 Common name	<p><i>Myotis brandtii</i> is a cryptic species that is often confused with Whiskered bats (<i>M. mystacinus</i>) and Alcatthoe bats (<i>M. alcathoe</i>). Brandt's bat was only being recognised as a separate species in the UK in 1970. It remains likely that the species are still frequently confused. They can roost in the same buildings as the much more common <i>Pipistrellus</i> spp. (Dietz and Keifer 2016) and may be overlooked as a consequence. In addition there is a high degree of overlap in the echolocation parameters. When recorded in cluttered environments - which they commonly frequent - there is also a high degree of similarity with the calls of other members of the <i>Myotis</i> genus (Russ 2012). Therefore confidence in the correct species identification using acoustic records alone is low. Genotyping has even revealed errors in identification of species in the hand, highlighting the difficulties of monitoring this group of small <i>Myotis</i> (Brown 2016). The presence of Brandt's bat in Scotland is identified from DNA analysis from a single instance of droppings found in a building in Galloway. The Southern Scotland Bat Survey has increased the number of Whiskered/Brandt's records there is no way of knowing how many, if any, of these records are Brandt's Bat.</p>

## Species name: *Myotis brandtii* (1320) Region code: ATL

Field label	Note
5.11 Change and reason for change in surface area of range	<p>There is no reliable information on the range of this species in Scotland. The new method for calculating range used by Mathews et. al., 2018 has not been used for this assessment because additional data for whiskered bat distribution in Scotland were included in the UK dataset after the Mathews report was published. There were no new data for Brandt's bat, but it is extremely difficult separating whiskered bat and Brandt's bat distribution records, except in Scotland where the species does not generally occur. Instead the UK range surface area was calculated using the 2007/2013 method devised by JNCC whereby a 45km alpha hull value was used with a starting range unit of individual 10km squares.</p>
6.2 Population size	<p>There is no reliable information on the population of this species in Scotland, although Harris et al 1995 suggested a figure of 500, but with a very low level of confidence. It is stated that this estimate was based on expert judgement and extrapolation from limited field surveys. The 1995 population estimate for Great Britain was based on very limited information, extrapolating from known size of <i>Pipistrellus pipistrellus</i> colonies in relation to size of Brandt's colonies following the methods described by Speakman (1991) and Harris et al (1995). Better data are needed to provide a reliable population estimate.</p>
6.16 Change and reason for change in population size	<p>Accurate predictions of population size cannot be made as no confirmed roosts are known in Scotland, and it is highly likely that there is considerable misidentification of the species. It is therefore unknown whether there has been a change in population size between reporting rounds.</p>

7.1 Sufficiency of area and quality of occupied habitat

Brandt's bats require a complex mosaic of habitats to support foraging, roosting and commuting behaviour. Coniferous woodland, mixed woodland, forest edges and clearings are all frequently used, especially wetland areas (Berge 2007, Boye and Dietz 2005). Tree lines and hedges also play an important role as hunting grounds (Dietz and Kiefer 2016). It has a broad dietary range, feeding on Diptera (including midges and brown lacewings) and Lepidoptera (moths) but also gleans Araneida (spiders) and diurnal Diptera from vegetation (Vaughan 1997, Berge 2007). The species is negatively affected by habitat isolation and may be particularly vulnerable to increased forest patchiness (Ekman & DeJong 1996). One radiotracking study found the species had a maximum foraging distance of 2.3 km from the roost (Berge 2007). Loose bark and large holes in tree trunks are the original roost sites of Brandt's bats, but tree holes and bat boxes are also used, especially by males during mating time. Maternity colonies are more commonly found in buildings in wall crevices or roof lofts, and more rarely in trees, bridges and bat boxes (Schober and Grimmberger 1989). Winter roosts are commonly in disused mines and caves, occasionally in cellars (Berge and Jones 2008). The species also swarms at underground sites August - October, with a peak in early August (Parsons et al 2003). These sites should also be considered important habitat features for the species. There is thought to be a sufficient amount of habitat in the UK to support a viable population of the species.

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

There is some detailed information on the habitat requirements/limitations of this species, but the total area of suitable habitat is unknown as the species depends on a matrix of habitats in a landscape. To obtain a proper estimate of suitable habitat used by the species, it would be necessary to first identify all of the foraging and roosting habitat located within the current range boundary; determine whether or not each of these features were being used; and subsequently calculate the combined area of all currently used habitats. This process would require very detailed habitat information at a fine scale. We do not currently have this level of information.

7.4 Short term trend; Direction

There is insufficient data on any change in the level of suitable habitat or any change in the quality of habitat for the species. This is extremely difficult question to answer as this is a generalist species, using a mosaic of habitats across a large area.

8.1 Characterisation of pressures/ threats

Pressures can generally be divided into those that affect roosts and those that affect commuting and foraging (including prey availability). Brandt's bats forage within woodland, woodland edges and clearings, treelines and hedges. Agricultural and forestry practices that remove, modify or fragment these habitats, or affect the biomass of suitable insect prey could negatively affect populations.

9.5 List of main conservation measures

The presence of Brandt's bat in Scotland is identified from DNA analysis from a single instance of droppings found in a building in Galloway. The Southern Scotland Bat Survey has increased the number of Whiskered/Brandt's records there is no way of knowing how many, if any, of these records are Brandt's Bat. The listed conservation measures are those that are thought to be appropriate based on what is known about the species elsewhere.