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

Conservation status assessment for the species:

S5003 - Alcathoe bat (*Myotis alcathoe*)

UNITED KINGDOM

IMPORTANT NOTE - PLEASE READ

- The information in this document represents 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.
- It is based on supporting information provided by the geographically-relevant Statutory Nature Conservation Bodies, which is documented separately.
- The 2019 Article 17 UK Approach document provides details on how this supporting information contributed to the UK Report and the fields that were completed for each parameter.
- The reporting fields and options used are aligned to those set out in the European Commission guidance.
- Maps showing the distribution and range of the species are included (where available).
- Explanatory notes (where provided) are included at the end. These provide additional audit trail information to that included within the UK assessments. Further underpinning explanatory notes are available in the related country-level 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 Natura 2000 coverage for Annex II species).
- The UK-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**
1.2 Species code	**5003**
1.3 Species scientific name	**Myotis alcathoe**
1.4 Alternative species scientific name	
1.5 Common name (in national language)	Alcathoe bat

2. Maps

2.1 Sensitive species	No
2.2 Year or period	2010-2016
2.3 Distribution map	Yes
2.4 Distribution map Method used	Based mainly on expert opinion with very limited 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?	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

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

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

Brown, P. A. 2016. The Cryptic Group of Small Myotis Bats (M. Mystacinus, M. Brandtii and M. Alcathoe) and Habitat Use by Woodland Bats Species in Britain. PhD Thesis, University of Bristol.
Jan, C. M. I., K. Frith, A. M. Glover, R. K. Butlin, C. D. Scott, F. Greenaway, M. Ruedi, A. C. Frantz, D. A. Dawson and J. D. Altringham (2010). Myotis alcathoe Confirmed in the UK from Mitochondrial and Microsatellite DNA. Acta Chiropterologica 12(2): 471-483.
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.
Dietz, C., Kiefer, A., 2016. Bats of Britain and Europe. Bloomsbury, United Kingdom.
Lucan, R.K., Andreas, M., Benda, P., Bartonicka, T., Brezinova, T., Hoffmannova, A., Hulova, S., Hulva, P., Neckarova, J., Reiter, A., 2009. Alcathoe bat (Myotis alcathoe) in the Czech Republic: distributional status, roosting and feeding ecology. Acta Chiropterologica 11, 61-69.
Danko, S., Krist03afn, A., Kristof03afk, J., 2010. Myotis alcathoe in eastern Slovakia: occurrence, diet, ectoparasites and notes on its identification in the field. Vespertilio 13, 77-91.
John Altringham. Sent to JNCC (LH) by NE (Kat Walsh) 03/10/2012
Von Helversen, O., Heller, K.-G., Mayer, F., Nemeth, A., Volleth, M., Gombkoto, P., 2001. Cryptic mammalian species: a new species of whiskered bat (Myotis alcathoe n. sp.) in Europe. Naturwissenschaften 88, 217-223.
JNCC., 2013. Third Report by the United Kingdom under Article 17 on the

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

implementation of the Habitats Directive from January 2007 to December 2012.

5. Range

5.1 Surface area (km²)	5048	
5.2 Short-term trend Period	2013-2018	
5.3 Short-term trend Direction	Unknown (x)	
5.4 Short-term trend Magnitude	a) Minimum	b) Maximum
5.5 Short-term trend Method used	Based mainly on expert opinion with very limited data	
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	x
	d) Method	The FRR for this species is Unknown. This species was only recently discovered in the UK, which means there is insufficient information to set an FRR value. For further information see the 2019 Article 17 UK Approach document.
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	There appears to have been an increase in the range surface area for this species. However, the increase may not be genuine, and could relate to surveyor effort and increased knowledge of the species rather than a genuine change. A new, more robust method for calculating range (Mathews et al. 2018) has been used to assess UK range surface area for this species. In 2013 range was estimated as 800 km2, so there appears to have been a large increase in range. However, Alcathoe bat is only known in a few regions of England. Intensive survey effort at 108 locations across England in 2014, with subsequent molecular analysis of 140 faecal samples, did not identify any further locations.	

6. Population

6.1 Year or period	2009-2016	
6.2 Population size (in reporting unit)	a) Unit	number of map 1x1 km grid cells (grids1x1)
	b) Minimum	
	c) Maximum	
	d) Best single value	25
6.3 Type of estimate	Best estimate	

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

6.4 Additional population size (using population unit other than reporting unit)	a) Unit	
	b) Minimum	
	c) Maximum	
	d) Best single value	
6.5 Type of estimate		
6.6 Population size Method used	Based mainly on expert opinion with very limited data	
6.7 Short-term trend Period	2010-2016	
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	x
	d) Method	The FRP for this species is Unknown. This species was only recently discovered in the UK, which means there is insufficient information to set an FRP value. For further information see the 2019 Article 17 UK Approach document.
6.16 Change and reason for change in population size	No change	
	The change is mainly due to:	
6.17 Additional information	The recent discovery of this species in the UK means that it is not possible to provide an assessment of change in population size.	

7. Habitat for the species

7.1 Sufficiency of area and quality of occupied habitat	a) Are area and quality of occupied habitat sufficient (for long-term survival)?	Unknown
	b) Is there a sufficiently large area of unoccupied habitat of suitable quality (for long-term survival)?	Unknown
7.2 Sufficiency of area and quality of occupied habitat Method used	Insufficient or no data available	
7.3 Short-term trend Period	2010-2016	
7.4 Short-term trend Direction	Unknown (x)	

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

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
Conversion to other types of forests including monocultures (B02)	H
Logging without replanting or natural regrowth (B05)	H
Removal of dead and dying trees, including debris (B07)	H
Removal of old trees (excluding dead or dying trees) (B08)	H
Roads, paths, railroads and related infrastructure (e.g. bridges, viaducts, tunnels) (E01)	M
Extraction of minerals (e.g. rock, metal ores, gravel, sand, shell) (C01)	M
Sports, tourism and leisure activities (F07)	M
Clear-cutting, removal of all trees (B09)	H

Threat	Ranking
Conversion to other types of forests including monocultures (B02)	M
Logging without replanting or natural regrowth (B05)	M
Removal of dead and dying trees, including debris (B07)	M
Removal of old trees (excluding dead or dying trees) (B08)	M
Roads, paths, railroads and related infrastructure (e.g. bridges, viaducts, tunnels) (E01)	M
Extraction of minerals (e.g. rock, metal ores, gravel, sand, shell) (C01)	M
Sports, tourism and leisure activities (F07)	M
Clear-cutting, removal of all trees (B09)	M

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

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

9.3 Location of the measures taken	Both inside and outside Natura 2000
9.4 Response to the measures	Long-term results (after 2030)

9.5 List of main conservation measures

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/change forest management and exploitation practices (CB05)
Reduce impact of transport operation and infrastructure (CE01)
Reduce impact of outdoor sports, leisure and recreational activities (CF03)
Adapt/manage extraction of non-energy resources (CC01)
Stop forest management and exploitation practices (CB06)

9.6 Additional information

10. Future prospects

10.1 Future prospects of parameters	a) Range	Unknown
	b) Population	Unknown
	c) Habitat of the species	Unknown
10.2 Additional information	Future trend of Range is Unknown; Future trend of Population is Unknown; and Future trend of Habitat for the species is Unknown. The recent discovery of this species in the UK means that there is insufficient information to determine overall future prospects. For further information on how future trends inform the Future Prospects conclusion see the 2019 Article 17 UK Approach document.	

11. Conclusions

11.1. Range	Unknown (XX)
11.2. Population	Unknown (XX)
11.3. Habitat for the species	Unknown (XX)
11.4. Future prospects	Unknown (XX)
11.5 Overall assessment of Conservation Status	Unknown (XX)
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	Conclusion on Range reached because: (i) the short-term trend direction in Range surface area is unknown.

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

Conclusion on Population reached because: (i) the short-term trend direction in Population size is unknown; and (ii) the current Population size is unknown.

Conclusion on Habitat for the species reached because: (i) the area of occupied and unoccupied habitat is unknown and (ii) the habitat quality is unknown for the long-term survival of the species; and (iii) the short-term trend in area of habitat is unknown.

Conclusion on Future prospects reached because: (i) the Future prospects for Range are unknown; (ii) the Future prospects for Population are unknown; and (iii) the Future prospects for Habitat for the species are unknown.

Overall assessment of Conservation Status is Unknown because all of the conclusions are unknown.

Overall trend in Conservation Status is based on the combination of the short-term trends for Range – unknown, Population – unknown, and Habitat for the species – unknown.

Overall assessment of conservation status has not changed for this species since 2013.

Overall trend was not specified in 2013 but from the information provided it would have been Unknown in 2013 and so there is no change.

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	

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

13.3 Other relevant Information	Alcathoe bat was only confirmed in England in 2010 and knowledge on this species is limited. There is insufficient information to report on range, population, habitat for the species, future prospects and assess overall conservation status of this species at this time. Therefore, the parameter conclusions, overall conclusion and trend in status are all Unknown.

Distribution Map

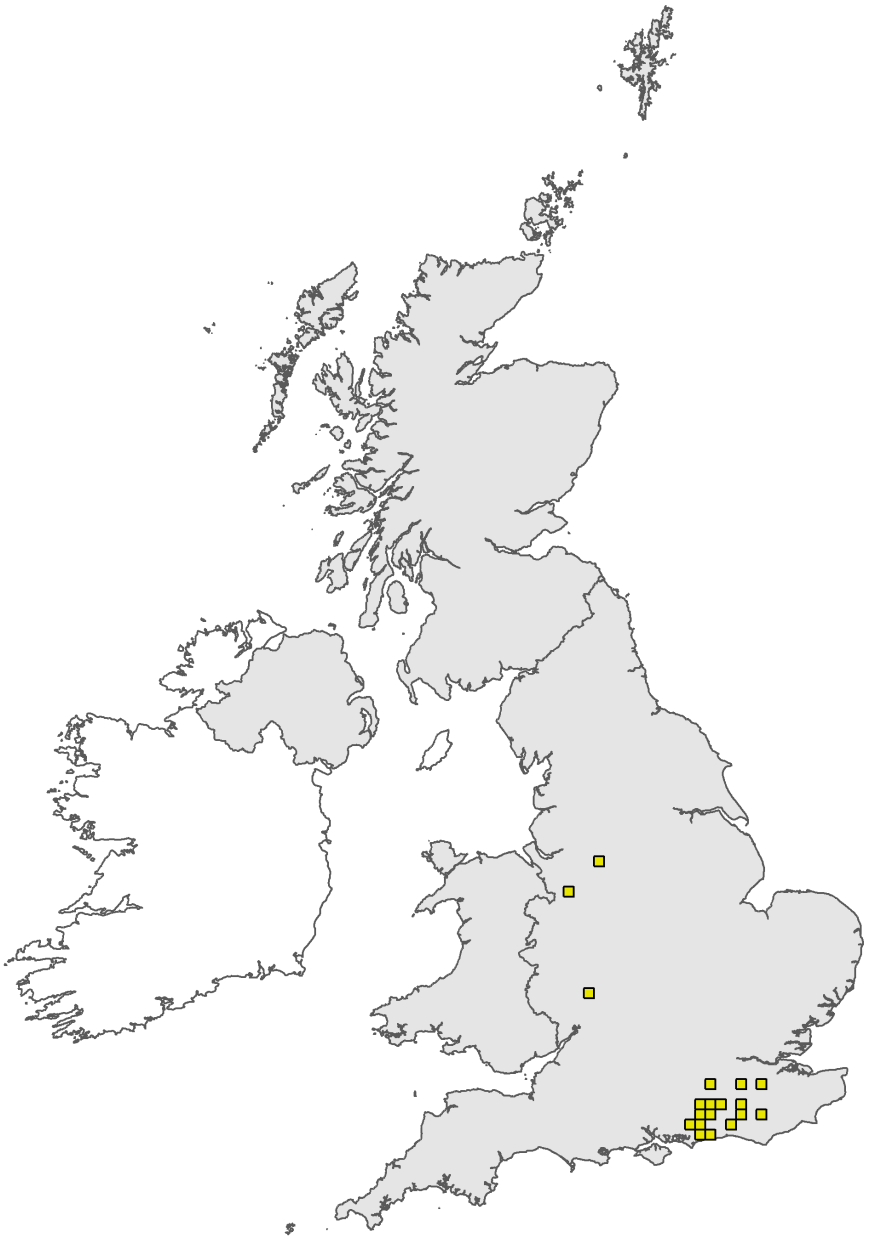

Figure 1: UK distribution map for S5003 - Alcathoe bat (*Myotis alcathoe*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

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 S5003 - Alcathoe bat (*Myotis alcathoe*).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: Myotis alcathoe (5003)

Field label	Note
2.2 Year or Period	2003-2016. The species was first described in 2001 from individuals caught in Greece. The species was first confirmed in England through the DNA analysis of wing biopsies collected primarily at swarming sites between 2003-2009. (Altringham, J 2012. pers communication).
2.3 Distribution map	Identification based on physical appearance alone is difficult as the species has similar characteristics to the Whiskered bat (M. mystacinus) and the Brandts bat (M. brandtii). However, the species has a distinctive echolocation call, which makes it possible to separate this species from other myotis species that are often found in England. The species was first described in 2001 from individuals caught in Greece. The species was first confirmed in England through the DNA analysis of wing biopsies collected primarily at swarming sites between 2003-2009. (Altringham, J 2012. pers communication).

Species name: Myotis alcathoe (5003) Region code: ATL

Field label	Note
5.11 Change and reason for change in surface area of range	Range is given by Mathews et al. (2018) as 5040 km2 (current distribution based on 20km kernels around all known records since 1995). A17 in 2013 estimated range as 800 km2. It is thought that the increase in range is due to improved knowledge of the distribution of this species through intensive survey effort rather than a genuine increase in range. Alcathoe bat is only known in a few regions of England namely Sussex, Surrey, West Kent and Ryedale, North Yorkshire. Whilst some of this patchy distribution may be due to lack of survey effort or misidentification, intensive survey effort at 108 locations across England (largely swarming sites but also woodlands) in 2014, with subsequent molecular analysis of 140 faecal samples, did not identify any further locations outside Sussex and Surrey (Jan et al. 2010; Brown 2016.). It is notable that the cluster of records in the south-east of England is separated from those in Yorkshire by approximately 350km. Although it is possible that this is an artefact of survey effort and/or misidentification, the gap was not filled during surveys with molecular verification of species identity (Brown 2016). The isolated records of Alcathoe bats in north Yorkshire do not appear on the distribution map due to the methods used to produce the map.
6.2 Population size	The recent discovery of this species means that it is not possible to estimate population size at this time. The species has been recorded in 25 1x1km grid squares in England.
6.4 Additional population size	The lack of information on roost (or colony) density makes population estimation extremely difficult. Given that at least 8 maternity colonies have been identified, and small numbers of individuals are also captured at swarming sites and other surveys in Yorkshire and the South East of England, the minimum population is likely to be at least 2,000 individuals. However, it must be emphasised that the evidence is extremely poor: further systematic surveys including molecular identification of species is urgently required. No estimation of Alcathoe bat population sizes was made for the last Article 17 Report.
6.8 Short term trend; Direction	The recent discovery of this species means that it is not possible to provide an assessment of the population trend for this species at this time.

7.1 Sufficiency of area and quality of occupied habitat	The specific area of habitat occupied by this species in the UK is unknown. It is unknown whether the amount of habitat in the UK is sufficient to support a viable population of the species. The sites where the presence of Alcathoe bats has been confirmed in England are characterised by extensive areas of seminatural woodland. This broadly seems to fit with the habitat types that the species are found in across Europe. Evidence from elsewhere in Europe suggests a preference for old woodlands, structured edges of broadleaved woodland, and riparian habitats with large trees. Alcathoe bats tend to forage in areas of dense vegetation often near water bodies. Limited radio-tracking data in Europe shows that the animal's forage both in the crowns of trees and over water, and hunting areas are usually within 3km of the roost, though individuals are recorded travelling up to 6km. The roosting habitat of this species are not well characterised. However, it appears to roost almost exclusively in cracks/crevices in trees during the active season, particularly in oak trees. Caves are visited during the swarming period which is how the species was first discovered in this country and are likely to be used for hibernation alongside trees.
7.2 Sufficiency of area and quality of occupied habitat; Method used	There is limited information on the habitat requirements/limitations of this species, as such the total area of suitable habitat is unknown. To obtain a proper estimate of suitable habitat used by the species, it would be necessary to first identify all of the foraging and roosting habitat located within the current range boundary; determine whether or not each of these features were being used; and subsequently calculate the combined area of all currently used habitats. This process would require very detailed habitat information at a fine scale across the UK. We do not currently have this level of information.
8.1 Characterisation of pressures/ threats	Pressures and threats can generally be divided into those that affect roosts and those that affect commuting and foraging (including prey availability). M. alcathoe is primarily a woodland species as they use woodland trees to roost in and the wider woodland habitat to forage within. Forestry operations that prevent the maintenance or development of this resource are likely to have an adverse affect on this species. The species also uses caves for swarming purposes and potentially hibernation. Activities which may affect future occupation of caves i.e. Mining or recreational activities may have an adverse affect on the population.
9.6 Additional information	Legal and administrative measures continue to be required to ensure that the protection provided by the legislation is effective. Guidance is provided to ensure best practice is followed and legislation is not breached when carrying out woodland and forestry operations in order 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 available for land managers on how to manage their land holdings for bats.