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:

S1322 - Natterer's bat (*Myotis nattereri*)

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	**1322**
1.3 Species scientific name	**Myotis nattereri**
1.4 Alternative species scientific name	
1.5 Common name (in national language)	Natterer'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	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?	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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<table>
<tr><td>3.3 Hunting bag or quantity taken in the wild for Mammals and Acipenseridae (Fish)</td><td colspan="7">a) Unit</td></tr>
<tr><td></td><td>b) Statistics/ quantity taken</td><td colspan="6">Provide statistics/quantity per hunting season or per year (where season is not used) over the reporting period</td></tr>
<tr><td></td><td></td><td>Season/ year 1</td><td>Season/ year 2</td><td>Season/ year 3</td><td>Season/ year 4</td><td>Season/ year 5</td><td>Season/ year 6</td></tr>
<tr><td></td><td>Min. (raw, ie. not rounded)</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Max. (raw, ie. not rounded)</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Unknown</td><td>No</td><td>No</td><td>No</td><td>No</td><td>No</td><td>No</td></tr>
</table>

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. 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. Smith, P.G. & Rivers, N.M. 2008. Natterer's bat Myotis nattereri. Pp 323-328. In Harris, S & Yalden, D.W. Mammals of the British Isles: Handbook, 4th edition. The Mammal Society, Southampton. 799pp.

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	

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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	Use of different method	
	The change is mainly due to: Use of different method	
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	
	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	1490
	c) Maximum	260000
	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	2005-2017	
6.8 Short-term trend Direction	Decreasing (-)	
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		

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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)?	Yes
7.2 Sufficiency of area and quality of occupied habitat Method used	Based mainly on expert opinion with very limited data	
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
Conversion into agricultural land (excluding drainage and burning) (A01)	M
Removal of small landscape features for agricultural land parcel consolidation (hedges, stone walls, rushes, open ditches, springs, solitary trees, etc.) (A05)	H
Conversion to other types of forests including monocultures (B02)	M
Logging without replanting or natural regrowth (B05)	H
Logging (excluding clear cutting) of individual trees (B06)	M
Removal of dead and dying trees, including debris (B07)	M
Removal of old trees (excluding dead or dying trees) (B08)	H
Clear-cutting, removal of all trees (B09)	M

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Roads, paths, railroads and related infrastructure (e.g. bridges, viaducts, tunnels) (E01)	H
Residential or recreational activities and structures generating noise, light, heat or other forms of pollution (F24)	M

Threat	Ranking
Conversion into agricultural land (excluding drainage and burning) (A01)	M
Removal of small landscape features for agricultural land parcel consolidation (hedges, stone walls, rushes, open ditches, springs, solitary trees, etc.) (A05)	H
Conversion to other types of forests including monocultures (B02)	M
Logging without replanting or natural regrowth (B05)	M
Logging (excluding clear cutting) of individual trees (B06)	M
Removal of dead and dying trees, including debris (B07)	M
Removal of old trees (excluding dead or dying trees) (B08)	H
Clear-cutting, removal of all trees (B09)	M
Roads, paths, railroads and related infrastructure (e.g. bridges, viaducts, tunnels) (E01)	H
Residential or recreational activities and structures generating noise, light, heat or other forms of pollution (F24)	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
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)

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)

Reduce impact of transport operation and infrastructure (CE01)

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

9.6 Additional information

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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

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

12.6 Additional information

13. Complementary information

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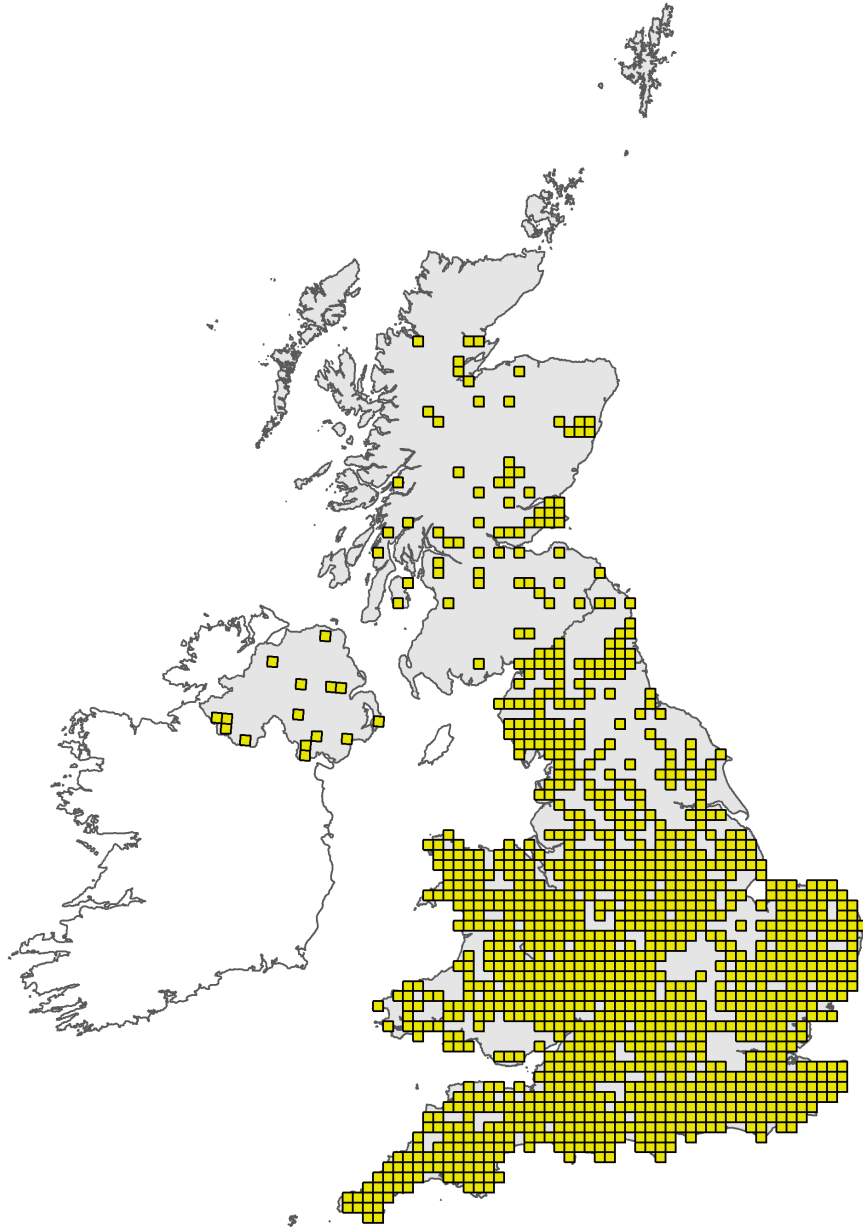
Distribution Map

Figure 1: UK distribution map for S1322 - Natterer's bat (*Myotis nattereri*). 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.
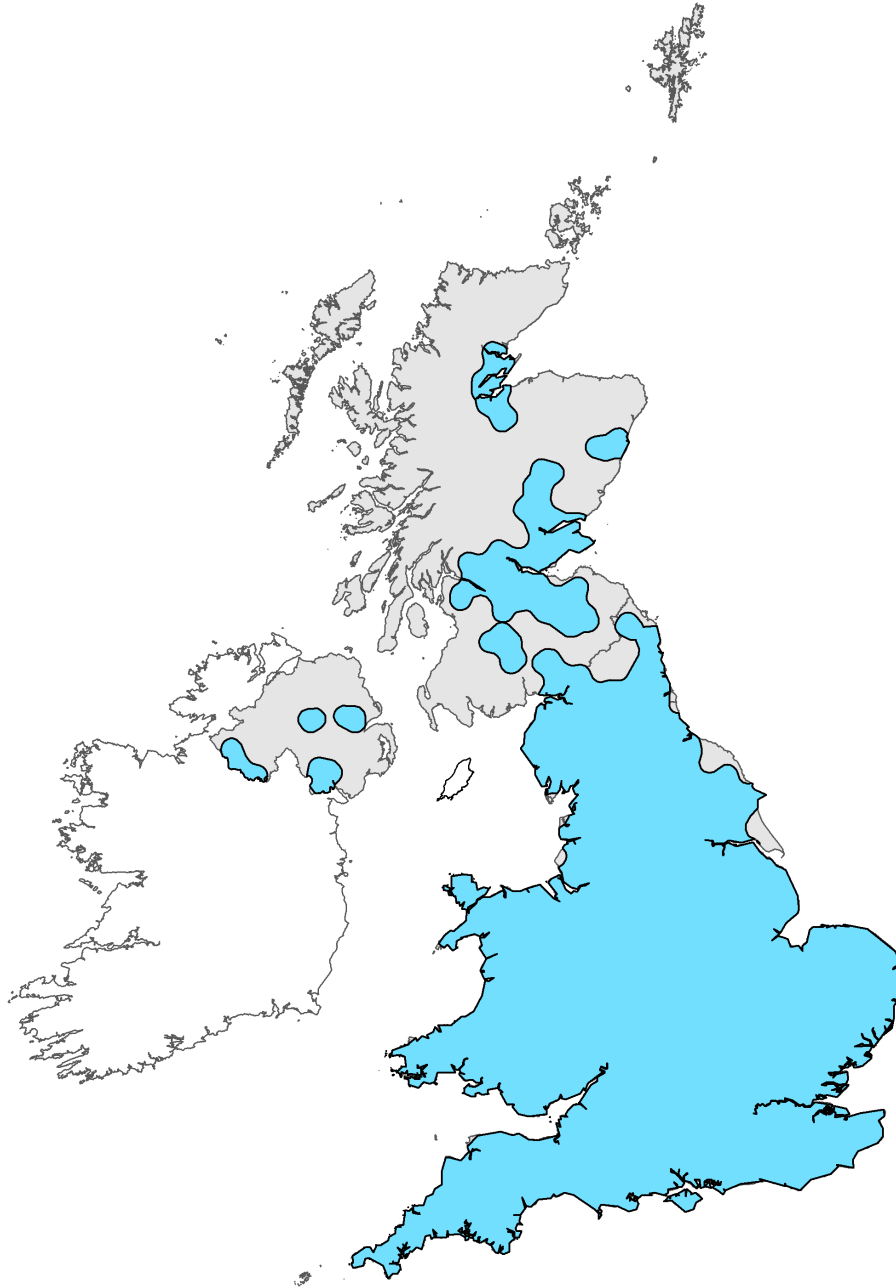
Range Map

Figure 2: UK range map for S1322 - Natterer's bat (*Myotis nattereri*).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 nattereri (1322) Region code: ATL

Field label	Note
5.3 Short term trend; Direction	Range is considered to be stable despite an apparent reduction since the 2013 report as suggested by the map in Mathews et al (2018). However, the authors note that the range in Scotland, particularly in the west and Borders, may be more extensive than estimated. This is certainly the case, as shown in Newson et al (2018) and by unpublished information on Natterer's bat occurrence. Range is based on presence data collected between 1995-2016 and acoustic records from the Southern Scotland Bat Survey (Newson et al., 2017). 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.
5.11 Change and reason for change in surface area of range	The range as indicated in Mathews et al (2018) suggests a significant reduction since the 2013 report, however the authors note that the range in Scotland, particularly in the west and Borders, may be more extensive than estimated. This is certainly the case, as shown in Newson et al (2018) and by unpublished information on Natterer's bat occurrence.
6.4 Additional population size	Mathews et al, (2018) give two sets of population estimates for Scotland depending whether the estimate is based on woodland area alone or a combination of this and other (mixed) habitats. Collectively these estimates range from 1,490 individuals (lower plausible limit) to 260,000 (upper plausible limit).
6.8 Short term trend; Direction	Caution is required when concluding a decline here. The latest NBMP report (Bat Conservation Trust, 2018) suggests a significant decline in Natterer's bats in Scotland based on hibernation counts from 21 sites, however the report states this is fewer sample sites than would be ideal to produce trends and as such the results may be unreliable.
6.16 Change and reason for change in population size	The estimates given in Mathews et al, (2018) have such wide confidence intervals attached that it is not possible to conclude anything about change in the Scottish population size.

7.1 Sufficiency of area and quality of occupied habitat	M. nattereri require a complex mosaic of habitats to support foraging, roosting and commuting behaviour. Boye & Dietz (2005) provides a good overview of this species' habitat requirements. Various woodland types are used as roost sites and foraging areas. M. nattereri forages in deciduous, mixed and coniferous forests, along forest edges, tree rows, hedges, and in pasture and arable land. In springtime most foraging activity is in open habitats such as orchards, fields and pastures with hedgerows and trees or near waters. However, in summer, foraging activity is concentrated in woodlands and the species even uses dense coniferous forests. M. nattereri prefers to forage at distances up to 1,500 metres from roosts. They tend to have core foraging areas of two to 20 hectares within a home range of 100-600 hectares, which are visited every night by the same individuals. M. nattereri use linear features such as hedges and alleys for flight paths. During summer M. nattereri choose roost sites in woodlands and human settlements. Maternity colonies have been found in lofts, wall crevices, tree holes, wood crevices, and in forests also in bird and bat boxes. Many are located in cattle sheds or barns. Hibernation takes place in caves and mines and even ordinary buildings that have high humidity and temperatures above freezing. The animals often stay near the entrance of the hibernaculum. Summer and winter habitats may be separated by distances of up to 185 kilometres, but most are less than 80 kilometres apart.
10.1 Future prospects of parameters	Habitat and range are considered likely to remain stable (there is no evidence of decline/reduction in either), but based on exsting sources (NBMP data) future population trend is unknown due to lack of reliable data.