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:

S1317 - Nathusius' pipistrelle (*Pipistrellus nathusii*)

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	**1317**
1.3 Species scientific name	**Pipistrellus nathusii**
1.4 Alternative species scientific name	
1.5 Common name (in national language)	Nathusius' 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 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

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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

Barlow, K., D. Hargreaves and F. Mathews (2016). Understanding the ecology, current status and conservation threats for Nathusius' pipistrelle in Great Britain - a pilot study. Final Report to the People's Trust for Endangered Species, People's Trust for Endangered Species.
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)
Dietz, C., Helversen, O. von and Nill, D. (2009). Bats of Britain, Europe & Northwest Africa. A & C Black Publishers Ltd, London.
Hutson, A.M., F. Spitzenberger, J.Juste, S. Aulagnier, J. Palmeirim, A. Karatas and Paunovic (2008) Pipistrellus nathusii. In: IUCN 2013. IUCN Red List of Threatened Species. Version 2013. 1.
Hutterer, R. (2005). Bat migrations in Europe; a review of banding data and literature. BfN, Bonn, Naturschutz und Biologische Viefalt 28.
Ijas, A., A. Kahliainen, V.V. Vasko and T.M. Lilley (2017). Evidence of the Migratory Bat, Pipistrellus nathusii, Aggregating to the Coastlines in the Northern Baltic Sea. Acta Chiropterologica., 19, 127-139
Lundy, M., Montgomery, I and Russ, J. (2010). Climate change - linked range expansion of Nathusius' pipistrelle bat, Pipistrellus nathusii (Keyserling & Blasius, 1839). Journal of Biogeography, 37, 2232-2242
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.
Moussy, C., D.J. Hosken, F. Mathews, G.C. Smith, J.N. Aegerter and Bearhop

(2013). Migration and dispersal patterns of bats and their influence on genetic structure. Mammal Review, 43 (3), 183-195
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	Unknown (x)	
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:	Use of different method
5.12 Additional information		

6. Population

6.1 Year or period		
6.2 Population size (in reporting unit)	a) Unit b) Minimum c) Maximum d) Best single value	number of map 1x1 km grid cells (grids1x1)
6.3 Type of estimate		
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	Insufficient or no data available	
6.7 Short-term trend Period	2007-2018	
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
Removal of small landscape features for agricultural land parcel consolidation (hedges, stone walls, rushes, open ditches, springs, solitary trees, etc.) (A05)	M

Use of plant protection chemicals in agriculture (A21)	M
Drainage for use as agricultural land (A31)	H
Modification of hydrological flow or physical alteration of water bodies for agriculture (excluding development and operation of dams) (A33)	M
Conversion to other types of forests including monocultures (B02)	M
Logging without replanting or natural regrowth (B05)	M
Clear-cutting, removal of all trees (B09)	M
Wind, wave and tidal power, including infrastructure (D01)	H
Roads, paths, railroads and related infrastructure (e.g. bridges, viaducts, tunnels) (E01)	M

Threat	Ranking
Removal of small landscape features for agricultural land parcel consolidation (hedges, stone walls, rushes, open ditches, springs, solitary trees, etc.) (A05)	M
Use of plant protection chemicals in agriculture (A21)	M
Drainage for use as agricultural land (A31)	H
Modification of hydrological flow or physical alteration of water bodies for agriculture (excluding development and operation of dams) (A33)	M
Conversion to other types of forests including monocultures (B02)	M
Logging without replanting or natural regrowth (B05)	M
Clear-cutting, removal of all trees (B09)	M
Wind, wave and tidal power, including infrastructure (D01)	M
Roads, paths, railroads and related infrastructure (e.g. bridges, viaducts, tunnels) (E01)	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)

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Restore small landscape features on agricultural land (CA02)

Manage drainage and irrigation operations and infrastructures in agriculture (CA15)

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)

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

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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

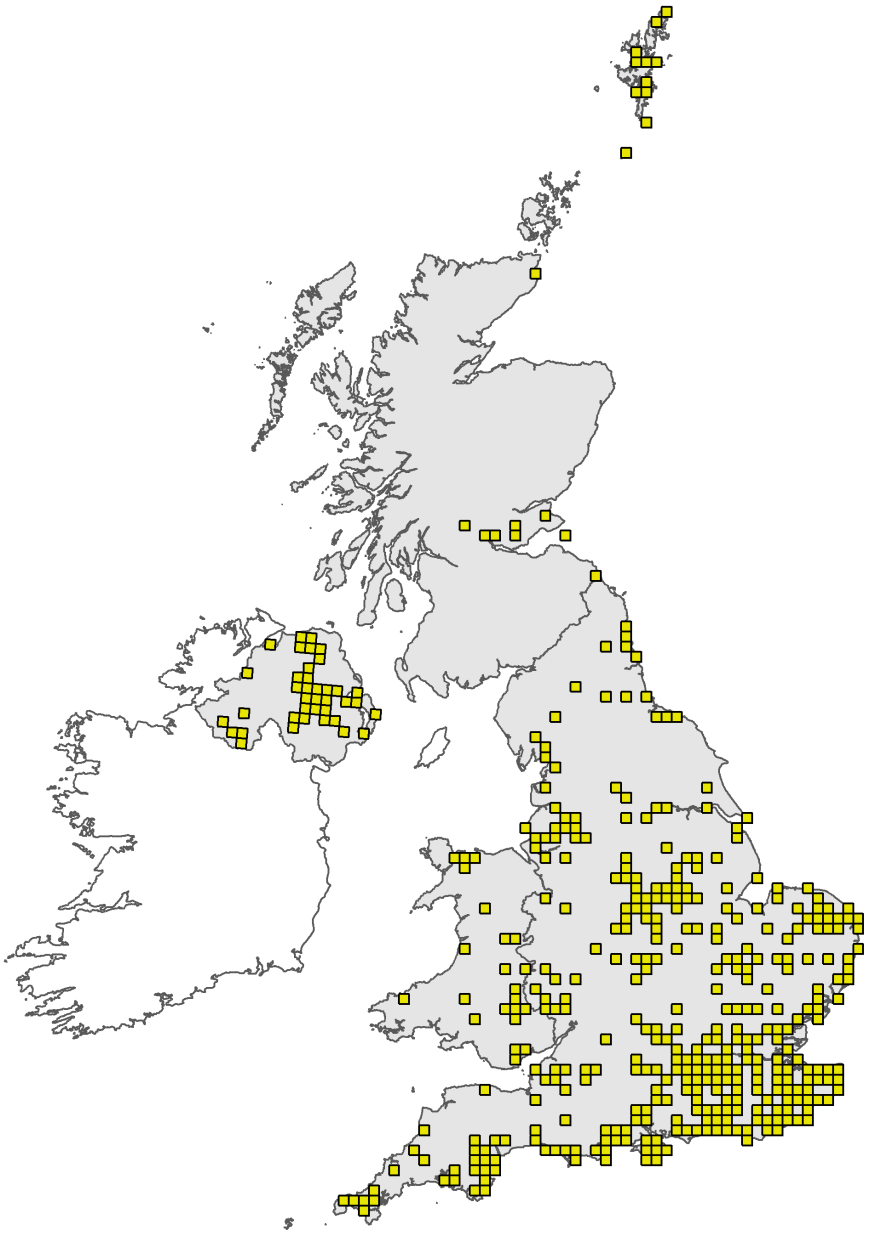

Figure 1: UK distribution map for S1317 - Nathusius' pipistrelle (*Pipistrellus nathusii*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

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

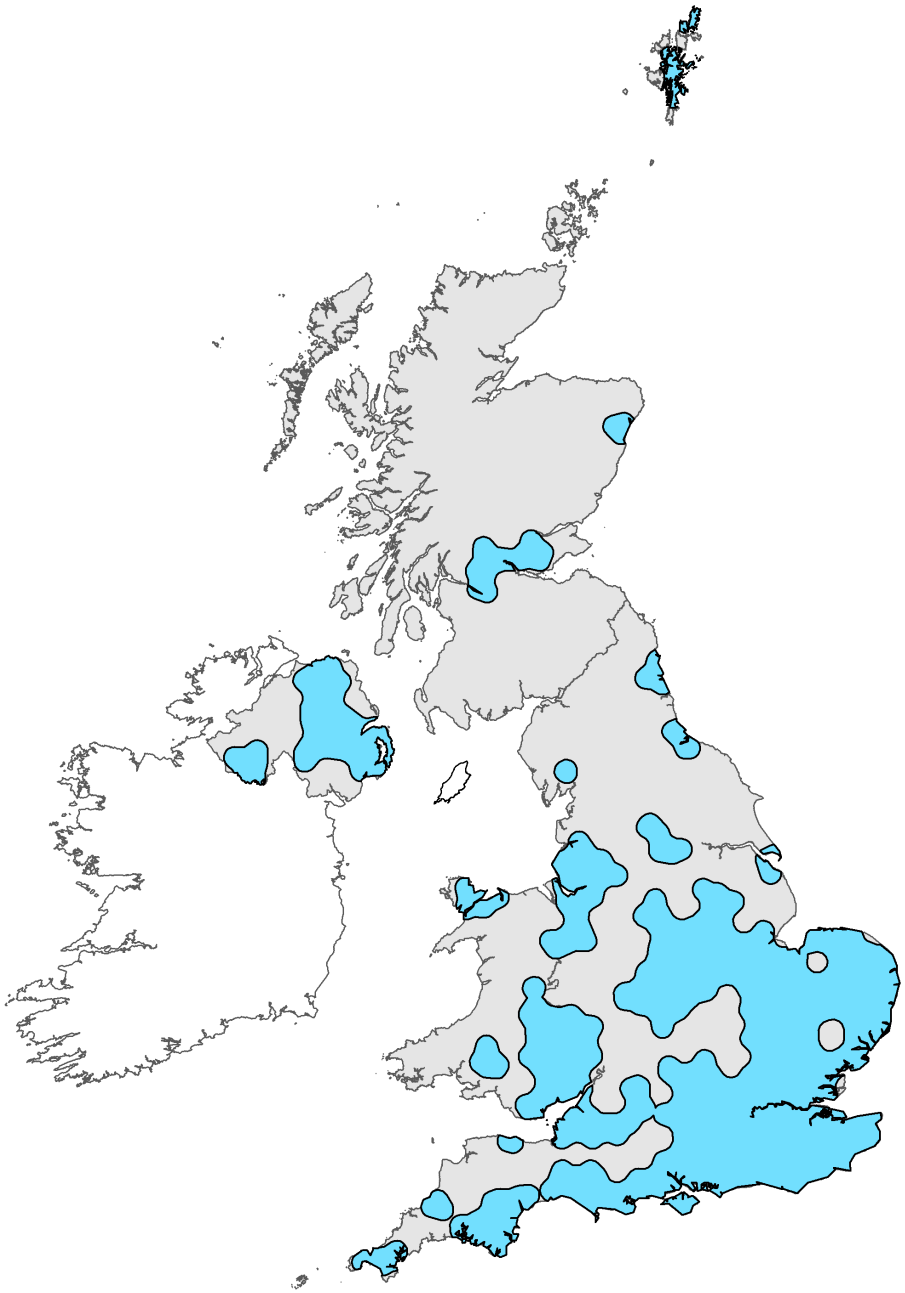

Figure 2: UK range map for S1317 - Nathusius' pipistrelle (*Pipistrellus nathusii*).Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

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 nathusii (1317) Region code: ATL

Field label	Note
5.3 Short term trend; Direction	The range of this species in Scotland is unclear and is most likely to reflect recorder effort and the time period of the records used, rather than the true distribution of the species. It is also complicated by the species' migratory behaviour.
5.11 Change and reason for change in surface area of range	The range of this species in Scotland is unclear and is most likely to reflect recorder effort and the time period of the records used, rather than the true distribution of the species. It is also complicated by the species' migratory behaviour.
6.3 Type of estimate	It is not possible to estimate the population of this species as there are no known roosts (to date) in Scotland and it is known to be migratory, (as reflected in the scattered nature of the existing records).
6.8 Short term trend; Direction	Since the 2013 report there has been a sustained effort to gain a better understanding of this species in GB, particularly it's migratory status. Although there are consistent records during the summer months (as well as during the autumn peak period for recording this species) suggesting residency and breeding, no roosts of this species have been confirmed in Scotland to date. The National Nathusius' Pipistrelle Project, launched in 2014 has added greatly to the number of records through trapping and ringing studies with the aid of acoustic lures, acoustic studies and targetted bat box checks. The extent to which records reflect individual migrants and vagrants rather than larger populations is unclear. However, the scale of the change is such that it seems reasonable to infer that there is a genuine increase in the number of Nathusius' pipistrelle bats in GB (Mathews et al, 2018). No population estimate is available, but Newson et al (2017) suggest that the minimum size of the Scottish population is in the hundreds and, based on, albeit scarce, male advertisement calls, there are likely to be few maternity colonies in southern Scotland, at least.
7.1 Sufficiency of area and quality of occupied habitat	The area and quality of habitat for the species has been assessed as unknown as there is insufficient information available for this species to undertake this assessment. There is a general lack of information on Nathusius' pipistrelle in GB. Most detector records come from within a few km of large freshwater lakes and this is where recent capture efforts have focussed (Mathews et al, 2018). The species routinely forages in deciduous mixed woodlands, damp lowland forests, riparian forests but also coniferous forests, park landscapes and often over water bodies (Dietz et al, 2009). Roosting sites in Europe are primarily within trees, though the species adopts bat and bird boxes and can be found within residential buildings. It is not known whether this behaviour also occurs in Scotland, but it is known in England.
7.4 Short term trend; Direction	As the area and quality of known occupied and unknown habitat cannot be assessed the short term trend direction is unknown.
7.5 Short term trend; Method used	There is insufficient information to assess the trend.

8.1 Characterisation of pressures/ threats	Pressures/threats can generally be divided into those that affect commuting and foraging (including prey availability). The species routinely forages in deciduous mixed woodlands, damp lowland forests, riparian forests but also coniferous forests, park landscapes and often over water bodies (Dietz et al, 2009). Roosting sites in Europe are primarily within trees, though the species adopts bat and bird boxes and can be found within residential buildings. Agricultural and forestry practices that remove or simplify these habitats or affect the biomass of insect prey could negatively affect populations. This is the only species in GB with clear evidence of considerable movement between GB and continental Europe. In addition, records of Nathusius' pipistrelle bat have been made on North Sea oil rigs, and in the English Channel using acoustic detectors installed on passenger ferries (Mathews et al, 2018). Stable isotope analyses of the fur samples collected as part of the Nathusius' Pipistrelle Project have provided evidence that at least part of the British population is derived from the far east of Europe (Barlow et al., 2016). The species is known to be at high risk of collision with wind turbines based on evidence elsewhere in Europe, though data in GB is lacking as few sites in coastal or other high-risk areas have been monitored and data are also lacking on migratory routes (Mathews et al, 2018).
9.1 Status of measures	Legal and administrative measures continue to be required to ensure that the protection provided by the legislation is effective. However, although a few measures have been identified for the species, the list is likely to be incomplete as several knowledge gaps persist for this species and further research is needed to identify further measures and the practical implementation of those measures for this species. There is a particular need to determine the resident and breeding status of the species and the main migratory routes that it uses. There is also a need to quantify the risk posed by offshore and onshore wind turbines to this species.
9.5 List of main conservation measures	These are suggested conservation measures based on our limited understanding of the requirements of this species. Legal and administrative measures continue to be required to ensure that the protection provided by the legislation is effective. 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.
10.1 Future prospects of parameters	It is thought that the range of this species has been expanding in recent years, possibly linked with climate change (Lundy et al., 2010) in addition to the evident increase in observer effort, as such the future prospects for this species for continued range expansion, at least in the short term would appear to be good. Whilst, there would appear to be an increase in the population of Nathusius' pipistrelle bats due to increased observer effort and improved technology i.e improved acoustic detectors the extent to which records reflect individual migrants and vagrants rather than larger populations is still unclear and continued survey effort needs to be undertaken to be able to establish what the future prospects for this species might be in terms of the population parameter. There is little information on occupancy for this species within geographic regions and across differing habitat types so it is not yet possible to determine the future prospects in terms of the habitat parameter for this species.