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:

S1314 - Daubenton's bat (*Myotis daubentonii*)

WALES

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 (Wales information only)**
1.2 Species code	**1314**
1.3 Species scientific name	**Myotis daubentonii**
1.4 Alternative species scientific name	
1.5 Common name (in national language)	Daubenton'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	Complete survey or a statistically robust estimate
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

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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:	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 b) Minimum c) Maximum d) Best single value	number of map 1x1 km grid cells (grids1x1)

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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	2860
	c) Maximum	466000
	d) Best single value	
6.5 Type of estimate	95% confidence interval	
6.6 Population size Method used	Based mainly on extrapolation from a limited amount of data	
6.7 Short-term trend Period	2006-2017	
6.8 Short-term trend Direction	Increasing (+)	
6.9 Short-term trend Magnitude	a) Minimum	
	b) Maximum	
	c) Confidence interval	
6.10 Short-term trend Method used	Complete survey or a statistically robust estimate	
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	Genuine change 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	1999-2016	
7.4 Short-term trend Direction	Stable (0)	
7.5 Short-term trend Method used	Based mainly on extrapolation from a limited amount of data	

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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)	H
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)	H
Industrial or commercial activities and structures generating noise, light, heat or other forms of pollution (F25)	H
Mixed source pollution to surface and ground waters (limnic and terrestrial) (J01)	H
Conversion to other types of forests including monocultures (B02)	M
Logging without replanting or natural regrowth (B05)	M
Construction or modification (e.g. of housing and settlements) in existing urban or recreational areas (F02)	M
Modification of hydrological flow or physical alteration of water bodies for agriculture (excluding development and operation of dams) (A33)	M
Modification of hydrological conditions, or physical alteration of water bodies and drainage for forestry (including dams) (B27)	M

Threat	Ranking
Conversion from one type of agricultural land use to another (excluding drainage and burning) (A02)	H
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)	H
Industrial or commercial activities and structures generating noise, light, heat or other forms of pollution (F25)	H
Mixed source pollution to surface and ground waters (limnic and terrestrial) (J01)	H
Conversion to other types of forests including monocultures (B02)	M
Logging without replanting or natural regrowth (B05)	M
Construction or modification (e.g. of housing and settlements) in existing urban or recreational areas (F02)	M

Modification of hydrological flow or physical alteration of water bodies for agriculture (excluding development and operation of dams) (A33)	M
Modification of hydrological conditions, or physical alteration of water bodies and drainage for forestry (including dams) (B27)	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		Long-term results (after 2030)

9.5 List of main conservation measures

Prevent conversion of natural and semi-natural habitats, and habitats of species into agricultural land (CA01)
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)
Reduce impact of transport operation and infrastructure (CE01)
Adapt/change forest management and exploitation practices (CB05)
Adapt/manage renewable energy installation, facilities and operation (CC03)
Other measures related to agricultural practices (CA16)
Reduce impact of mixed source pollution (CJ01)
Reduce impact of outdoor sports, leisure and recreational activities (CF03)
Other measures related to residential, commercial, industrial and recreational infrastructures, operations and activities (CF12)

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

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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

13.1 Justification of % thresholds for trends	
13.2 Trans-boundary assessment	
13.3 Other relevant Information	

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Distribution Map

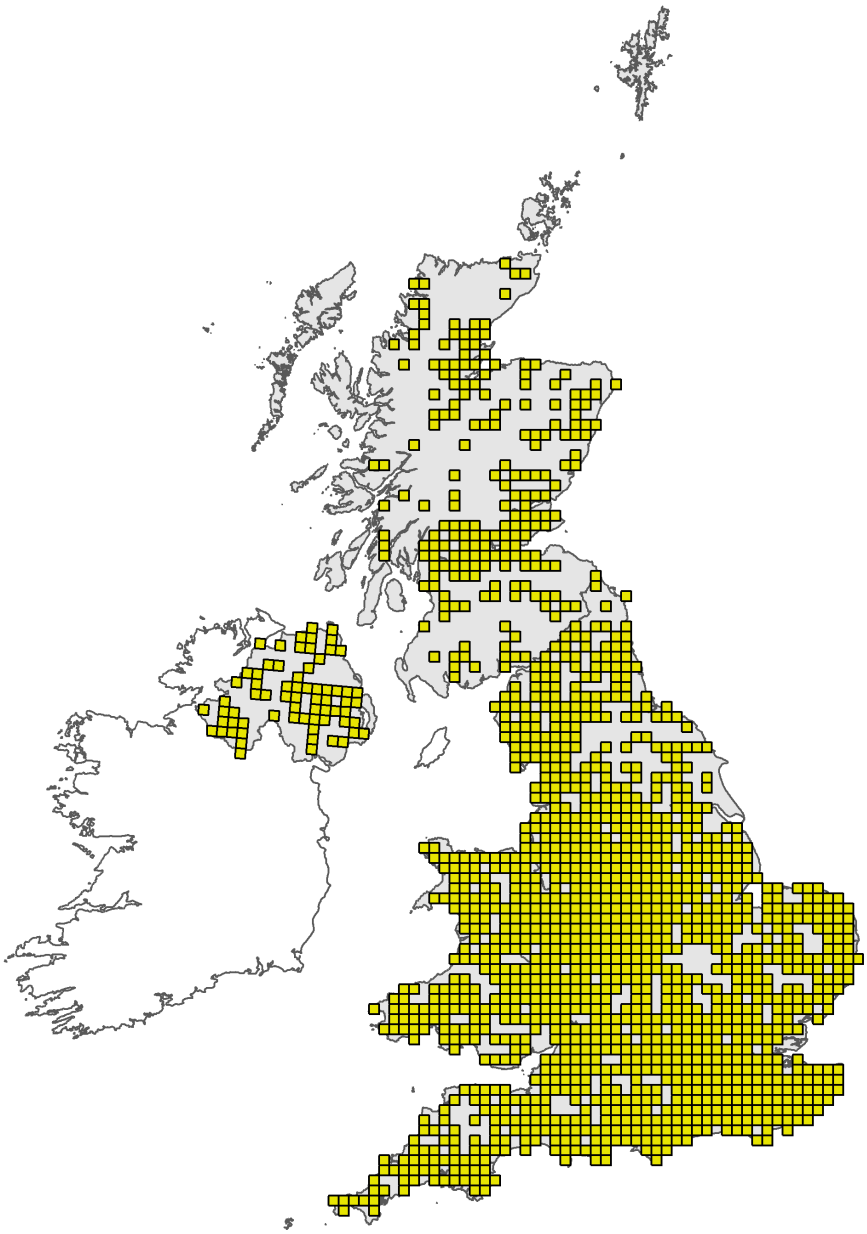

Figure 1: UK distribution map for S1314 - Daubenton's bat (*Myotis daubentonii*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

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

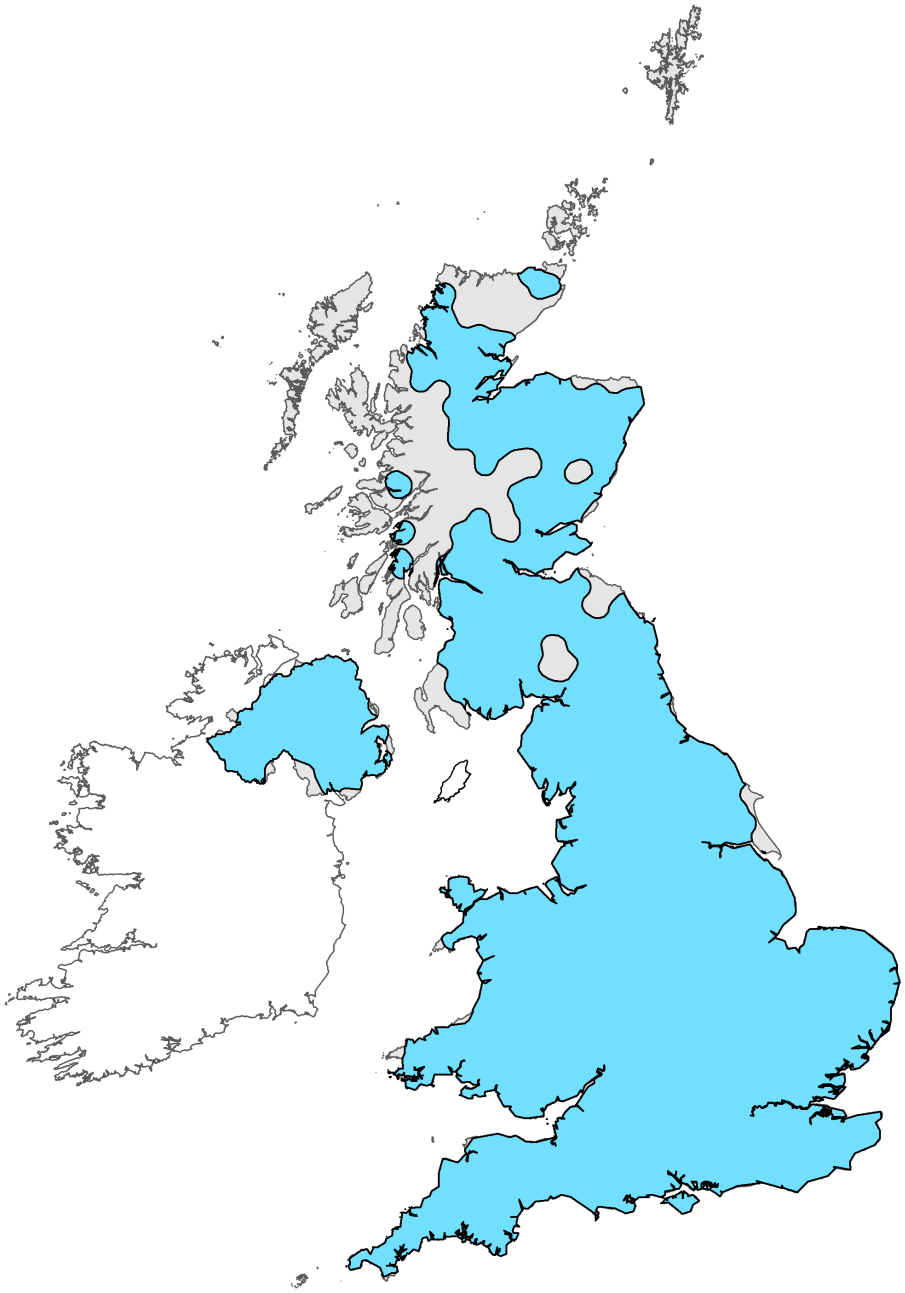

Figure 2: UK range map for S1314 - Daubenton's bat (*Myotis daubentonii*).Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

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 daubentonii (1314)

Field label	Note
2.2 Year or Period	This time period has been selected as distribution has been calculated using data from Mathews et al. 2018.
2.4 Distribution map; Method used	Although there have been no structured distribution surveys, Daubenton's bat has been reasonably well recorded by local bat groups and during monitoring surveys organised by the National Bat Monitoring Programme. Some gaps in range in Wales are likely due to a lack of records rather than true absence. Roosting locations for this species are very poorly recorded with few records; data is mainly from detector records of bats foraging over water giving confidence in identification.

Species name: Myotis daubentonii (1314) Region code: ATL

Field label	Note
5.3 Short term trend; Direction	Myotis daubentonii is a widely distributed species, commonly recorded foraging low over still waterbodies making identification relatively straight forward. Gaps in range in Wales are likely due to a lack of records and the methodology rather than true absence. The short-term range trend is considered stable for this species.
5.11 Change and reason for change in surface area of range	Area of land contained within the range is given as 20,400 km2 for Wales (Mathews et al. 2018). 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 bat 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, leading to the production of a more accurate FRR. Added to which acoustic detectors have changed considerably over the years in both accuracy and sensitivity, which also adds to the production of this value. Whilst the increased use of advanced / full spectrum bat detectors is likely to have resulted in increased detector records of this species, roosts for this species undoubtedly remains significantly under-recorded due to the fact that they are not commonly encountered in houses.

6.4 Additional population size	Based on Mathews et al. 2018 methodology: a) Unit = Individuals b) Minimum = 2,860 c) Maximum = 466,000 d) Best Single Value: 108,000 Mathews et al. 2018 population estimates were derived by first calculating the adult bat density (bats/km2) within poor, average and good habitat and then multiplying this with the total habitable area within their range to give lower, median and upper population estimates. Habitable area was defined as all habitats within the range excluding montane habitats since these are unlikely to provide suitable locations for roosts. Because of the landscape-wide movements of bats and their dependency on a matrix of habitats and roosting locations, it is not currently possible to make more refined estimates of the area of suitable habitat to be used for population calculations. Details of calculations are as follows: Adult bat density (bats/km2) Median density=[(median n. bats/roost[1]) * (p female [2]) * (n roosts/typical km2 average habitat)]* 2 Lower limit=[(lower plausible n. bats/roost) * (p female min) * (plausible n. roosts/typical km2 poor habitat)]* 2 Upper limit = [(upper plausible n. bats/roost) * (p female max) * (plausible n. roosts/typical km2 good habitat)]* 2 [1] roost is typical maternity roost in the pre-parturition period. n. is number of adults. [2] p female : proportion female. p female min and p female max are lowest and highest plausible proportions of adult females in typical maternity roost Population size Total Adult Population = Median adult density (bats/km2) * total habitable area within range (km2) Lower Limit=Lower limit adult density (bats/km2) * total habitable area within range (km2) Upper Limit=Upper limit adult density (bats/km2) * total habitable area within range (km2) The plausible range of the estimated population size for Daubenton's bats is extremely wide. This is partly because of uncertainty about roost size. The median roost size was 40 but the 95% confidence intervals were 20-143 individuals. It appears likely, based on data from elsewhere in Europe, that Daubenton's bats have a fission-fusion social structure and frequently move roosts (Lucan and Radil, 2010). Not only do colonies switch roosts very frequently, but the group can also divide across multiple sites before re-joining. It is possible that there is some over-estimation caused by smaller subunits of the colony not being counted and a tendency for observers to report large roosts only, biasing the data towards the roost containing greater numbers of individuals. However, this bias may be counteracted by the difficulty of performing complete exit counts. The roost density estimates are likely to be underestimated in both the published literature and expert opinion since a relatively low proportion of all roosts are in houses, and it is difficult to find roosts in trees, bridges and tunnels. Therefore the true population size is likely to be somewhat higher than the lower limit.
6.6 Population size; Method used	The reported figure in 6.2 is based on occupied 1km grid squares and is therefore reliant on existing records. The reported figure in 6.4 is based mainly on extrapolation from a limited amount of data.
6.8 Short term trend; Direction	There are two long-term trend studies of M. daubentonii coordinated by the NBMP; the hibernation surveys and the Waterway survey. The data from the waterway surveys is considered more statistically robust. Long term data shows a 2% annual increase from 1999 and a statistically significant 66.7 rise in the 12-year index since 2006, although in the long-term there has been no significant change in the smoothed index since 2000 (BCT, 2018a).

6.16 Change and reason for change in population size	The difference in population size between reporting rounds is most attributable to a change in methodology, although more data are also available, and the trend data shows there will have been a small increase in population. In NRW 2013, population was reported as individuals however the given EU reporting unit is 1x1km grid squares for this report; this figure is based on the supporting datasets produced by Mathews et al. 2018. The reported Alternative Population (see 6.4) is also based on Mathews et al. 2018 with a best estimate that differs markedly from that provided by Harris et al. 1995 (value 15,000). The change in value is principally due to the use of a different method, though the Harris value does fall within the plausible limit estimates of Mathews et al. 2018. The new estimate, taken from Mathews et al. (2018) is considered to be more robust.
7.1 Sufficiency of area and quality of occupied habitat	Area: 20,400 km2. Habitable area as given by Mathews et al. 2018 has been used as a proxy for occupied habitat and is considered sufficient. The habitable area calculation defined all the area within the range as habitable excluding montane habitat since this is unlikely to include suitable locations for maternity roosts. Quality: Whilst we do not have a reliable measure of the quality of the occupied habitat, the population trend is not showing a decline and the species continues to be widespread across a mosaic of habitats. It is therefore assumed that quality is sufficient to support a viable population of the species and maintain FCS. M. daubentonii requires a complex mosaic of habitats to support foraging, roosting and commuting behaviour. Boye & Dietz (2005) provides a good overview of this species' habitat requirements. Foraging areas are predominantly at open water bodies and slow flowing rivers. M. daubentonii prefers water bodies, rivers and streams with trees or bushes on the banks to provide shelter from wind. Foraging success is also influenced by the amount of weed cover on the water surface. Sometimes, mainly in springtime, the bats also forage away from water, e.g. woodland clearings. The use of particular foraging areas generally follows the abundance of Nematocera and Ephemeroptera. When riparian insect abundance is reduced due to windy weather or cold temperatures, M. daubentonii preferentially forages in woodlands. In oak forests individual home ranges were identified with an average size of about 49 hectares. The species can cover distances of 7-8 km between roosting and foraging areas without difficulty. Woodlands are most important as roost sites, especially if they are close to water bodies. Summer roosts are predominantly in trees, sometimes in wall crevices in buildings or underneath bridges. Preferred roosts are in old woodpecker holes, which become enlarged upwards by rotting within a living tree. Fissures in stems, wood crevices, hollow branches, and bird or bat boxes are also used. Most roosts are found in or near the trunk of a broadleaf tree at a height of 1 to 25 metres above the ground with a trunk diameter of at least 30 centimetres. Roost trees are often situated near the forest edge, with more than 40% within 30 metres of the edge. Most males roost alone, and in May and June they also use underground roost sites. Summer roosts are changed frequently. Maternity colonies switch among a network of several roost sites. Winter roosts include caves, mines, cellars and other underground habitats. In order to obtain an estimate of actual occupied habitat, 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. However the population trend is increasing and the species is widespread, using a mosaic of habitats; it is therefore assumed that quality is sufficient to support a viable population of the species and maintain FCS.

7.2 Sufficiency of area and quality of occupied habitat; Method used	Habitable area was defined as all habitats within the range excluding montane habitats since these are unlikely to provide suitable locations for roosts. Because of the landscape-wide movements of bats and their dependency on a matrix of habitats and roosting locations, it is not currently possible to make more refined estimates of the area of suitable habitat within the range. The habitable area within the range is estimated to be 20,400km2.
7.4 Short term trend; Direction	M. daubentonii is a widespread and mobile species utilising a range of habitats in a flexible way. However, two important habitats for the species are woodland and freshwater. The former is increasing in extent in Britain and water quality is improving (Carey et al. 2008). Although the estimated area of suitable habitat for this species appears to have increased since the last Article 17 report, it is likely that this results from mapping species records at a finer scale, using an alpha hull value of 20km an adding an additional 10km buffer to the final hull polygon to provide smoothing to ensure that the hull covered the areas recorded.

8.1 Characterisation of pressures/ threats	Pressures: Pressures can generally be divided into those that affect roosts and those that affect commuting and foraging (including prey availability). E01: Roads, paths railroads and related infrastructure (e.g. bridges, viaducts, tunnels), B02: Conversion to other types of forests including monocultures, B05: Logging without replanting or natural regrowth, F02: Construction or modification (of e.g. housing and settlements) in existing urban or recreational areas: Roosts are in trees, underground places and occasionally in buildings, usually close to water. Human intrusions that eliminate, block up or modify such places or disturb bats whilst hibernating or at mating sites could have a negative effect on the population. E01: Roads, paths railroads and related infrastructure (e.g. bridges, viaducts, tunnels), A02: Conversion from one type of agricultural land use to another (excluding drainage and burning), F24: Residential or recreational activities and structures generating noise, light, heat or other forms of pollution, F25: Industrial or commercial activities and structures generating noise, light, heat or other forms of pollution, J01: Mixed source pollution to surface and ground waters (limnic and terrestrial), A33: Modification of hydrological flow or physical alternation of water bodies for agriculture (excluding development and operation of dams), B27: Modification of hydrological conditions, or physical alternation of water bodies and drainage for forestry (including dams), F31: Other modification of hydrological conditions for residential or recreational development, F32: Other modification of hydrological conditions for industrial or commercial development, A23: Use of other pest control methods in agriculture (excluding tillage): Daubenton's bats forage primarily over water, but also over lowland farmland, woodland, parkland and woodland edges. Water management, alterations to water quality and riparian vegetation management (Abbott et al, 2009; Racey et al, 1998; Vaughn et al, 1996), agricultural or forestry practices that remove, modify or fragment these habitats, or affect the biomass of suitable insect prey through impacts on water quality will all negatively affect populations. The impact of lighting, particularly around bridges and waterways (Mathews et al, 2018) and the negative impact of noise (Shirley et al, 2001) and collisions with vehicles (Fensome & Mathews, 2016) will also impact bats although the significance of such impacts is currently data deficient. Threats: Treats can also can generally be divided into those that will affect roosts and those that will affect commuting and foraging (including prey availability). E01: Roads, paths railroads and related infrastructure (e.g. bridges, viaducts, tunnels), B02: Conversion to other types of forests including monocultures, B05: Logging without replanting or natural regrowth, F02: Construction or modification (of e.g. housing and settlements) in existing urban or recreational areas: Roosts are in trees, underground places and occasionally in buildings, usually close to water. Human intrusions that eliminate, block up or modify such places or disturb bats whilst hibernating or at mating sites could have a negative effect on the population. These issues are all likely to continue into the future. E01: Roads, paths railroads and related infrastructure (e.g. bridges, viaducts, tunnels), A02: Conversion from one type of agricultural land use to another (excluding drainage and burning), F24: Residential or recreational activities and structures generating noise, light, heat or other forms of pollution, F25: Industrial or commercial activities and structures generating noise, light, heat or other forms of pollution, J01: Mixed source pollution to surface and ground waters (limnic and terrestrial), A33: Modification of hydrological flow or physical alternation of water bodies for agriculture (excluding development and operation of dams), B27: Modification of hydrological conditions, or physical alternation of water bodies and drainage for forestry (including dams), F31: Other modification of hydrological conditions for residential or recreational development, F32: Other modification of hydrological conditions for industrial or commercial development, A23: Use of other pest control methods in agriculture (excluding tillage): Daubenton's bats forage primarily over water, but also over lowland farmland, woodland, parkland and woodland edges. Water management, alterations to water quality and riparian vegetation management (Abbott et al, 2009; Racey et al, 1998; Vaughn et al, 1996), agricultural or forestry practices that remove, modify or

	fragment these habitats, or affect the biomass of suitable insect prey through impacts on water quality will all negatively affect populations. The impact of lighting, particularly around bridges and waterways (Mathews et al, 2018) and the negative impact of noise (Shirley et al, 2001) and collisions with vehicles (Fensome & Mathews, 2016) will also impact bats although the significance of such impacts is currently data deficient. These threats to foraging and commuting habitats will also continue into the future.
9.5 List of main conservation measures	Legal and administrative measures continue to be required to ensure that the protection provided by the legislation is effective and that protected habitats for the species are managed appropriately. CE01: Reduce impact of transport operation and infrastructure: Road design, construction and operation need to take into account the likely impact on bats, e.g. in relation to the provision of safe crossing structures and the loss of and severance of bat habitat and lighting. CA01: Prevent conversion of natural and semi-natural habitats, and habitats of species into agricultural land, CF05: Reduce/eliminate diffuse pollution to surface or ground waters from industrial, commercial, residential and recreational areas and activities, CF09: Reduce/eliminate noise, light, heat or other forms pollution from industrial, commercial, residential and recreational areas and activities, CB05: Adapt/change forest management and exploitation practices, CC03: Adapt/manage renewable energy installation, facilities and operation, CA16: Other measures related to agricultural practices, CJ01: Reduce impact of mixed source pollution: M. daubentonii mainly forage over water and within woodland. It roosts within trees and built structures, often near water. Environmental land management schemes and appropriate management practices in the agricultural, forestry, and water management sectors are now widely used to ensure these habitats are well-managed and appropriately protect water bodies to ensure pray abundance. Such practices are required to continue in order to achieve conservation goals. CF12: Other measures related to residential, commercial, industrial and recreational infrastructures, operations and activities: Planning at landscape scale is required to conserve commuting routes and foraging areas. CF03: Reduce impact of outdoor sports, leisure and recreational activities: Impacts of recreation (caving) on swarming and hibernation sites need to be limited.
10.1 Future prospects of parameters	10.1a Future prospects of -range. The future prospects of range for this species is considered to be overall stable in Wales. M. daubentonii range is widespread through Wales; no specific short-term drivers for expansion or contraction have been identified and therefore there is no reason to assume that range will vary significantly within the next 12 years unless population crashes occur. 10.1b Future prospects of -Population The future prospects of population for this species is considered to be overall stable in Wales. Whilst the short-term trend drawn from the National Bat Monitoring Programme is positive together with a longer-term average annual increase of 2% based on waterway surveys and 1.2% based on hibernation surveys. There has been no significant change in the overall smoothed population index. 10.1c Future prospects of -Habitat of the species The future prospects of habitat of the species is considered to be overall stable in Wales. We do not have a reliable measure of the quality of the occupied habitat, however M. daubentonii is widespread and uses a mosaic of habitats and there are no specific identified drivers of change across these habitats. There is therefore no reason to assume that the current reported trend will not continue over the next 12 years.