Report under The Conservation of Habitats and Species Regulations 2017 (as amended), Regulation 9A

2019-2024

Conservation status assessment for the species:

S1304 - Greater horseshoe bat

(*Rhinolophus ferrumequinum*)

Wales

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This report was produced by JNCC in collaboration with Natural Resources Wales.

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Important note - Please read

- The information in this document represents the Wales Report under The Conservation of Habitats and Species Regulations 2017 (as amended), Regulation 9A, for the period 2019-2024.
- It is based on supporting information provided by Natural Resources Wales, which is documented separately.
- The Habitats Regulations reporting 2019-2024 Approach Document provides details on how this supporting information contributed to the UK Report and the fields that were completed for each parameter.
- Maps showing the distribution and range of the species are included.
- Explanatory notes (where provided) are included at the end. These provide additional audit trail information to that included within the assessments. Further underpinning explanatory notes are available in the related country 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 National Site Network coverage for Annex II species).

Further details on the approach to the Habitats Regulations Reporting 2019-2024 are available on the [JNCC website](#).

Assessment Summary: Greater horseshoe bat

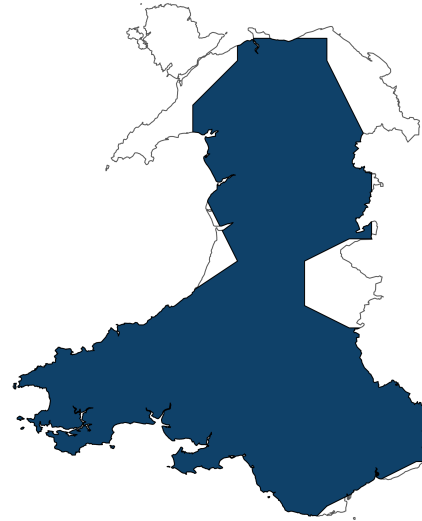## Distribution Map
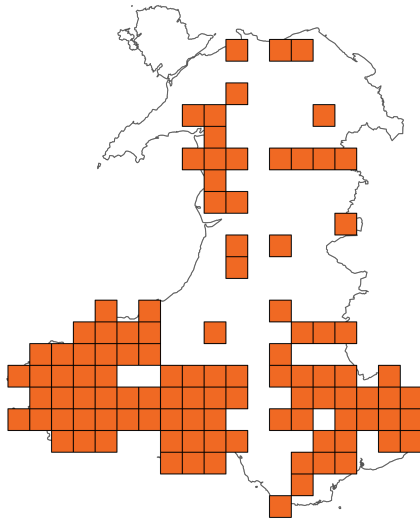
Range Map

Figure 1: Wales distribution and range map for S1304 - Greater horseshoe bat (*Rhinolophus ferrumequinum*). 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.

Table 1: Table summarising the conservation status for S1304 - Greater horseshoe bat (*Rhinolophus ferrumequinum*). Overall conservation status for species is based on assessments of range, population, habitat for the species, and future prospects.

Overall Conservation Status (see section 11)

Favourable (FV)

Breakdown of Overall Conservation Status

Range (see section 5)	**Favourable (FV)**
Population (see section 6)	**Favourable (FV)**
Habitat for the species (see section 7)	**Favourable (FV)**
Future prospects (see section 10)	**Favourable (FV)**

List of Sections

National Level

1. General information

1.1 Country	Wales
1.2 Species code	S1304
1.3 Species scientific name	*Rhinolophus ferrumequinum*
1.4 Alternative species scientific name	
1.5 Common name	Greater horseshoe bat
Annex(es)	II, IV

2. Maps

2.1 Sensitive species	No
2.2 Year or period	1995-2024
2.3 Distribution map	Yes
2.4 Distribution map; Method used	Complete survey or a statistically robust estimate

2.5 Additional information

No additional information

3. Information related to Annex V Species

3.1 Is the species taken in the wild / exploited?

3.2 What measures have been taken?

a) Regulations regarding access to property

b) Temporary or local prohibition on the taking of specimens in the wild and exploitation

c) Regulation of the periods and/or methods of taking specimens

d) Application of hunting and fishing rules which take account of the conservation of such populations

e) Establishment of a system of licences for taking specimens or of quotas

f) Regulation of the purchase, sale, offering for sale, keeping for sale, or transport for sale of specimens

g) Breeding in captivity of animal species as well as artificial propagation of plant species

Other measures

Other measures description

3.3: Hunting bag or quantity taken in the wild for Mammals and Acipenseridae (Fish)

a) Unit

Table 2: Quantity taken from the wild during the reporting period (see 3.3a for units). For species with defined hunting seasons, Season 1 refers to 2018/2019 (autumn 2018 to spring 2019), and Season 6 to 2023/2024. For species without hunting seasons, data are reported by calendar year: Year 1 is 2019, and Year 6 is 2024.

	Season/ year 1	Season/ year 2	Season/ year 3	Season/ year 4	Season/ year 5	Season/ year 6
b) Minimum	-	-	-	-	-	-
c) Maximum	-	-	-	-	-	-
d) Unknown	-	-	-	-	-	-

3.4: Hunting bag or quantity taken in the wild; Method used

3.5: Additional information

No additional information

Biogeographical Level

4. Biogeographical and marine regions

4.1 Biogeographical or marine region where the species occurs   ATL

4.2 Sources of information

See section 14 References

5. Range

5.1 Surface area (km²)	17,204.86
5.2 Short-term trend; Period	2013-2024
5.3 Short-term trend; Direction	Increasing
5.4 Short-term trend; Magnitude	
a) Estimated minimum	
b) Estimated maximum	
c) Pre-defined range	
d) Unknown	
e) Type of estimate	
f) Rate of decrease	
5.5 Short-term trend; Method used	Complete survey or a statistically robust estimate
5.6 Long-term trend; Period	
5.7 Long-term trend; Direction	
5.8 Long-term trend; Magnitude	
a) Minimum	
b) Maximum	
c) Rate of decrease	

5.9 Long-term trend; Method used

5.10 Favourable Reference Range (FRR)

a) Area (km²)

b) Pre-defined increment	Current range is less than 2% smaller than the FRR
c) Unknown	No
d) Method used	Reference-based approach
e) Quality of information	moderate

5.11 Change and reason for change in surface area of range

a) Change	Yes
b) Genuine change	Yes
c) Improved knowledge or more accurate data	Yes
d) Different method	Yes
e) No information	No
f) Other reason	No
g) Main reason	Use of different method

5.12 Additional information

No additional information

6. Population

6.1 Year or period	2019-2024

6.2 Population size (in reporting unit)

a) Unit	number of individuals
b) Minimum	3,223
c) Maximum	6,446

d) Best single value	4,512
6.3 Type of estimate	Best estimate
6.4 Quality of extrapolation to reporting unit	

6.5 Additional population size (using population unit other than reporting unit)

a) Unit	number of map 1x1 km grid cells
b) Minimum	
c) Maximum	
d) Best single value	220
e) Type of estimate	Best estimate
6.6 Population size; Method used	Complete survey or a statistically robust estimate
6.7 Short-term trend; Period	2017-2022
6.8 Short-term trend; Direction	Increasing
6.9 Short-term trend; Magnitude	
a) Estimated minimum	36.7
b) Estimated maximum	290
c) Pre-defined range	
d) Unknown	No
e) Type of estimate	95% confidence interval
f) Rate of decrease	
6.10 Short-term trend; Method used	Complete survey or a statistically robust estimate
6.11 Long-term trend; Period	1999-2023
6.12 Long-term trend; Direction	Increasing
6.13 Long-term trend; Magnitude	

a) Minimum	146.1
b) Maximum	1,161.2
c) Confidence interval	95
d) Rate of decrease	
6.14 Long-term trend; Method used	Complete survey or a statistically robust estimate

6.15 Favourable Reference Population (FRP)

ai) Population size	
aii) Unit	
b) Pre-defined increment	Current population is less than 5% smaller than the FRP
c) Unknown	No
d) Method used	Reference-based approach
e) Quality of information	moderate

6.16 Change and reason for change in population size

a) Change	Yes
b) Genuine change	Yes
c) Improved knowledge or more accurate data	No
d) Different method	No
e) No information	No
f) Other reason	No
g) Main reason	Genuine change

6.17 Additional information

No additional information

6.18 Age structure, mortality and reproduction deviation	Unknown

7. Habitat for the species

7.1 Sufficiency of area and quality of occupied habitat (for long-term survival)

a) Is area of occupied habitat sufficient?	Yes
b) Is quality of occupied habitat sufficient?	Unknown
c) If No or Unknown, is there a sufficiently large area of unoccupied habitat of suitable quality?	Yes

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

a) Sufficiency of area of occupied habitat; Method used	Complete survey or a statistically robust estimate
b) Sufficiency of quality of occupied habitat; Method used	Based mainly on expert opinion with very limited data
7.3 Short-term trend; Period	2013-2024
7.4 Short-term trend; Direction	Stable
7.5 Short-term trend; Method used	Based mainly on expert opinion with very limited data
7.6 Long-term trend; Period	
7.7 Long-term trend; Direction	
7.8 Long-term trend; Method used	

7.9 Additional information

No additional information

8. Main pressures

8.1 Characterisation of pressures

Table 3: Pressures affecting the species, including timing and importance/impact ranking. Pressures are defined as factors acting currently and/or during the reporting period (2019–2024). Rankings are: High (direct/immediate influence and/or large spatial extent) and Medium (moderate direct/immediate influence, mainly indirect and/or regional extent).

Pressure	Timing	Ranking
PA04: Removal of small landscape features for agricultural land parcel consolidation (hedges, stone walls, rushes, open ditches, springs, solitary trees, etc.)	Ongoing and likely to be in the future	High (H)
PA05: Abandonment of management/use of grasslands and other agricultural and agroforestry systems (e.g. cessation of grazing, mowing or traditional farming)	Ongoing and likely to be in the future	High (H)
PA10: Livestock farming (without grazing)	Ongoing and likely to be in the future	High (H)
PB02: Conversion from one type of forestry land use to another	Ongoing and likely to be in the future	Medium (M)
PB05: Logging without replanting or natural regrowth	Ongoing and likely to be in the future	Medium (M)
PC01: Extraction of minerals (e.g. rock, metal ores, gravel, sand, shell)	Ongoing and likely to be in the future	Medium (M)
PE01: Roads, paths, railroads and related infrastructure	Ongoing and likely to be in the future	High (H)
PF02: Construction or modification (e.g. of housing and settlements) in existing built-up areas	Ongoing and likely to be in the future	High (H)
PF05: Sports, tourism and leisure activities	Ongoing and likely to be in the future	High (H)
PM07: Natural processes without direct or indirect influence from human activities or climate change	Only in future	High (H)
PM06: Other natural catastrophes	Ongoing and likely to be in the future	High (H)

8.2 Sources of information

See section 14 References

8.3 Additional information

No 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 National Site Network
9.4 Response to measures	Medium-term results (within the next two reporting periods, 2025–2036)

9.5 List of main conservation measures

Table 4: Key conservation measures addressing current pressures and/or anticipated threats during the next two reporting periods (2025–2036). Measures are ranked by importance/impact: High (direct/ immediate influence and/or large spatial extent) and Medium (moderate direct/immediate influence, mainly indirect and/or regional extent).

Conservation measure	Ranking
MA02: Restore small landscape features on agricultural land	Medium (M)
MA05: Adapt mowing, grazing and other equivalent agricultural activities (e.g. burning)	High (H)
MA09: Manage the use of natural and synthetic fertilisers as well as chemicals in agricultural for plant and animal production	High (H)
MB05: Adapt/change forest management and exploitation practices	Medium (M)
ME01: Reduce impact of transport operation and infrastructure	High (H)
ME05: Manage/reduce/eliminate noise, light and other forms of pollution from transport	High (H)
MF01: Managing the impacts of converting land for construction and development of infrastructure	High (H)

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MF03: Reduce impact of outdoor sports, leisure and recreational activities (incl. restoration of habitats)	Medium (M)
MS03: Restoration of habitat of species from the directives	Medium (M)

9.6 Additional information

No additional information

10. Future prospects

10.1a Future trends of parameters

ai) Range	Very Positive - increasing >1% (more than one percent) per year on average
bi) Population	Very Positive - increasing >1% (more than one percent) per year on average
ci) Habitat for the species	Overall stable

10.1b Future prospects of parameters

aii) Range	Good
bii) Population	Good
cii) Habitat for the species	Good

10.2 Additional information

No additional information

11. Conclusions

11.1 Range	Favourable (FV)
11.2 Population	Favourable (FV)
11.3 Habitat for the species	Favourable (FV)
11.4 Future prospects	Favourable (FV)
11.5 Overall assessment of Conservation Status	Favourable (FV)

11.6 Overall trend in Conservation Status   Improving

11.7 Change and reason for change in conservation status

This field is not reported as the period 2019-2024 marks the first instance in which conservation status has been assessed at the national level, meaning no comparisons to previous reports can be drawn.

11.7 Change and reason for change in conservation status trend

This field is not reported as the period 2019-2024 marks the first instance in which conservation status has been assessed at the national level, meaning no comparisons to previous reports can be drawn.

11.8 Additional information

No additional information

12. UK National Site Network (pSCIs, SCIs, SACs) coverage for Annex II species

12.1 Population size inside the pSCIs, SCIs and SACs network

a) Unit	number of individuals
b) Minimum	
c) Maximum	
d) Best single value	3,027
12.2 Type of estimate	Minimum
12.3 Population size inside the network; Method used	Complete survey or a statistically robust estimate
12.4 Short-term trend of population size within the network; Direction	Increasing
12.5 Short-term trend of population size within the network; Method used	Complete survey or a statistically robust estimate

12.6 Short-term trend of habitat for the species inside the pSCIs, SCIs and SACs network; Direction	Stable
12.7 Short-term trend of habitat for the species inside the pSCIs, SCIs and SACs network; Method used	Based mainly on expert opinion with very limited data

12.8 Additional information

No additional information

13. Complementary information

13.1 Justification of percentage thresholds for trends

No justification information

13.2 Trans-boundary assessment

No trans-boundary assessment information

13.2 Other relevant information

No other relevant information

14. References

Biogeographical and marine regions

4.2 Sources of information

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Main pressures

8.2 Sources of information

No sources of information

15. Explanatory Notes

Field label	Note
2.2: Year or Period	R. ferrumequinum has a restricted and fragmented distribution in Great Britain, with populations scattered across south-west and southern England and south and south-west Wales. Individuals, perhaps vagrants or colonisers, have been recorded more widely, particularly in north Wales and the Welsh borders. There have been more such records in recent years, but it is not yet clear if these represent established populations. This time period has been selected as distribution has been calculated using data from Mathews et al. 2018 and with the addition of LERC data to update. The extended time period is not considered problematic as the species has shown range expansion. Data have been collected as part of long-term studies and structured long-term monitoring as well as on an ad hoc basis. This is a well-studied species and data quality is considered to be good. The horseshoe bats are easily identifiable using visual or bat detector identification. Their habit of roosting in the open (within the roost site), rather than in crevices means that the presence of colonies is likely to be noticed. Confusion is possible with the more common and widespread lesser horseshoe bat (R. hipposideros) if roosting bats are not seen close up (e.g. in mines or cave chambers). In such circumstances, records are not considered as valid unless confirmed using another method.
5.11: Change and reason for change in surface area of range	In the 2019 Article 17 report, the area of land (including unsuitable habitat) contained within the range was given as 13,230 km2 (Mathews et al. 2018). Mathews et al. 2018, applied an alpha hull value of 20km 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 this reporting round, and also the 2013 and 2007 reports, whereby a 45km alpha hull value was used for all species with a starting range unit of individual 10km squares.

To produce the range maps JNCC were provided with any additional 10km x 10km grid squares where bats roost records were located between 2018 and 2024, along with the 2019 Article 17 report data. No grid squares have been removed as there have not been any widespread surveys that could indicate loss of a species from any area.

The resulting updated maps produced by JNCC indicate a range of 17,204 km2. This is a significant increase and is mainly due to a change in methods, but a small genuine change should not be overlooked.

An increasing number of new records of small numbers of animals at the edge of their range indicates that the range may be expanding. There is better/more recording effort for bats in general due in part to the requirement to survey in advance of developments and better co-ordination of data through the local environmental record centre (LERC) network in Wales. However there does appear to be a genuine change as the sites where R. ferrumequinum bats (individuals or small numbers of animals) are recorded for the first time are often sites that have been monitored for many years for their lesser horseshoe bat colonies. The presence of R. ferrumequinum bats would therefore have been previously recorded if present.

An increase in range may be due in part to climate change as the species in Wales is on the northern and western edges of its range. It may also be due to more effective protection and management of roost sites for the more

widespread lesser horseshoe bats (R. hipposideros) bat which have similar roost requirements. Increased breeding success is also promoting dispersal of young further afield.

Mathews et al. 2018 states 'Comprehensive monitoring of cave and mine hibernation sites for lesser horseshoes in North Wales during the mid-1980s, nor monitoring of lesser horseshoe roosts by the Vincent Wildlife Trust from 1990 onwards resulted in any records of greater horseshoes. The discovery of greater horseshoes breeding in the Tanat Valley and areas of Herefordshire over the past decade indicate a real shift in the population to the north.'

In 2021, S. Dyer observed a single greater horseshoe pup within a roost in North West Wales, this is the first evidence of breeding in the region.

6.2: Population size	Unit = Individuals Minimum = 3218 (based on 50% male occupancy) Maximum = 6436 (based on 100% female occupancy) Best Single Value = 4505 Individuals (based on 70% female occupancy)
6.6: Population size; Method used	The population data is derived from annual counts at the five known breeding roosts undertaken between 2021-24 (as available) as part of the National Bat Monitoring Programme greater horseshoe summer colony roost counts. A total population estimate is then calculated to account for the female to male ratios likely to be present in breeding roosts. Mathews et al. (2018) state 'The Best estimate provided here is therefore based on expert opinion that 70% of the individuals in maternity colonies are female. The lower limit uses a conservative assumption of 50% females, meaning that the entire population is counted at maternity sites; whereas the upper limit assumes that the maternity site contains only females, so the true population is double the number of animals observed at the maternity

	sites.
	It has been assumed that there are equal numbers of male and female bats in the population overall, given the lack of any contrary evidence in the literature or from expert opinion.'
	The Best Single Value does not take into account the small populations in the Welsh boarders and North Wales. Equally, for one roost the latest count available was from 2022. Arguably if these data gaps could be filled, population estimates would be higher.
6.7: Short-term trend; Period	Based on Bat Conservation Trust (2024) NBMP short-term period of 5 years.
6.8: Short-term trend; Direction	Bat Conservation Trust. 2024 states that the Welsh short term trend based on hibernation data shows the smoothed survey index has increased significantly by 156% (95% CI 36.7% to 290%). Only trends based on hibernation count data are available for Wales, these are currently considered to be more statistically robust over maternity roost counts; this is due to the low number of maternity roosts being counted. Therefore it is hibernation data trend that has been reported.
	For GB, a trend based on maternity roost count data is possible and shows a statistically significantly increase of 14.0% (95% CI 2.3% to 27.6%).
	NBMP trend direction in Wales based on hibernation data is supported by the positive change in the Best Single Value given in this report (4512; based on maternity roost count data from 2022-24) compared to the last reporting round (2751; based on maternity roost count data from 2017).
6.12: Long-term trend; Direction	Between 1999 and 2023 the smoothed survey index has increased in Wales significantly by 420.3% (95% CI 146.1% to 1161.2%) based on hibernation site survey data from average 56 sites per year which contribute to the overall

	trend analysis (sites surveyed in two or more years with greater horseshoe bat present in at least one year).
6.16: Change and reason for change in population size	Surveillance of the 5 known Welsh maternity roosts is normally undertaken annually and creates accurate data giving a minimum count with a high degree of confidence. Due to the limited number of maternity roosts however, hibernation site survey data is considered more robust; hibernation data, supports the maternity roost count trends further demonstrating that the increase in population reported is genuine. The drivers for this change include legislative protection of maternity roosts preventing destruction / disturbance, allowing interventions to improve thermal conditions which improves reproductive success, and mild winters permitting population growth.
6.18: Age structure, mortality and reproduction	There have been no studies in the last 7 years to enable a conclusion to be drawn.
7.1: Sufficiency of area and quality of occupied habitat	area = 13,200 km2. Habitable area for Wales as given by Mathews et al. (2018) has been used as a proxy for occupied habitat. 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. It has not been possible to update the figure for this report.
	Whilst the habitat requirements of the species have been well-studied the total extent of suitable habitat is currently unknown. It may be possible to model the area of suitable habitat for the species, but this has not yet been done. Ground truthing of any models would also be required.
	Although we do not have a reliable measure of the quality of the occupied habitat the population trend for the species is increasing and therefore the area and quality of occupied habitat is likely to be sufficient to maintain the species at FCS.
	R. ferrumequinum mainly occupies lowlands, usually below

800m. The species requires a mosaic of grazed pasture and woodlands within a radius of 4km from roost sites. This should provide enough food during the spring and summer months for pregnant and lactating females, as well as for the young on their early foraging flights; usually within 1km from the roost. The ideal habitat is a landscape mosaic of permanent pasture and ancient, deciduous woodland, linked with an abundance of tall bushy hedges with a good supply of insect food (Ransome. 1997; 2000). A study on the preferred habitat of R. ferrumequinum carried out over a number of different sites suggests in order of preference, habitats most often visited are: Cattle pastures (39%), Ancient semi-natural woodland (19%) > Meadows (10%) > Other pastures (10%) > Broad leaved woodlands > Others (Ransome & McOwat. 1994). The order of preference changes throughout the seasons with woodlands being utilised more frequently in cooler months, possibly as they maintain a 1 – 1.5°C higher temperature than open pasture which may be enough to encourage insect flight. R. ferrumequinum has quite specific roosting requirements. Maternity roosts are usually in attics of old buildings, but caves and mines will also be utilised. The species hibernates underground in caves and disused mines and occasionally cellars and tunnels. It prefers warmer sites than those chosen by other bat species, 11°C in October down to 7°C in February (Ransome. 1990) ideally with a high humidity >90% (Harris et al. 1995). If the temperature fluctuates individuals will awake from hibernation to search for a more suitable site. When hibernating they are especially prone to arousal by lights or noises when at 9°C or above, or at dusk (Ransome & Jones. 2008). R. ferrumequinum is very faithful to its roosts and hibernation sites are generally close to maternity roosts.

8.1: Characterisation of pressures	PA05: Abandonment of management/use of grasslands and other agricultural and agroforestry systems (e.g. cessation of grazing, mowing or traditional farming) & PA10: Livestock farming (without grazing) :

Abandonment of pastoral systems and lack of grazing, particularly of cattle grazing (Ransome, 1996) compounded by use of anthelmintics. (McCracken, 1993). Dung beetles form a key component of the species diet (PA10).

PF02: Construction or modification (e.g. of housing and settlements) in existing built-up areas, PA04: Removal of small landscape features for agricultural land parcel consolidation (hedges, stone walls, rushes, open ditches, springs, solitary trees, etc.):

Increasing urbanisation results in loss of foraging habitat, severance of commuting routes and isolation of colonies.

Demolition and conversion of buildings results in loss of roost sites. This species requires large open roof spaces with large access points which are easily lost when converted.

PE01: Roads, paths, railroads and related infrastructure:

These pressures also act via construction of new, and widening/realignment of existing linear infrastructure projects. The species is low flying and likely to be vulnerable to mortality through direct collision with vehicles (Fensome & Mathews, 2016). Lighting from urbanisation and infrastructure can sever commuting routes, impact foraging areas and delay emergence times.

PF05: Sports, tourism and leisure activities & PC01: Extraction of minerals (e.g. rock, metal ores, gravel, sand, shell):

Use of underground sites for recreational purposes (e.g. caving, adventure trips, coasteering) cause disturbance to hibernating bats affecting their ability to survive the winter, or causing them to abandon sites. Modern mineral

extraction methods are unlikely to create suitable mines and galleries for future occupation when previously abandoned mine sites are re-opened or re-engineered. Mine collapse and flooding and reopening of mines can all threaten the species.

PB05: Logging without replanting or natural regrowth & PB02: Conversion from one type of forestry land use to another :

Loss/reduction in value and extent of woodland habitat is a moderate pressure on this species (see 7.2).

PM07: Natural processes without direct or indirect influence from human activities or climate change:

The loss of mating roosts may lead to inbreeding (Rossiter et al., 2001).

PF02: Construction or modification (e.g. of housing and settlements) in existing built-up areas:

The rate of demolition and conversion of buildings resulting in loss of roost sites is unlikely to decrease.

PM06 - Other natural catastrophes:

Regarding natural catastrophes, long-term research has shown that the greatest threat to populations is mass starvation in late cold springs (Ransome, 1989). The impact of these can be ameliorated by providing good quality habitat close to hibernation sites.

A06- Abandonment of grassland management & A14 - Livestock farming (without grazing):

Abandonment of pastoral systems and lack of grazing, particularly of cattle grazing compounded by use of anthelmintics is likely to remain a threat.

	PA04: Removal of small landscape features for agricultural land parcel consolidation (hedges, stone walls, rushes, open ditches, springs, solitary trees, etc.): loss of foraging habitat, severance of commuting routes and isolation of colonies is likely to remain a threat.
9.5: List of main conservation measures	MF03: Reduce impact of outdoor sports, leisure and recreational activities (incl. restoration of habitats) & MF01: Managing the impacts of converting land for construction and development of infrastructure:
	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. This helps to address Pressures PF02, PM07, PF05, PC01.
	ME01: Reduce impact of transport operation and infrastructure & ME05: Manage/reduce/eliminate noise, light and other forms of pollution from transport:
	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. This helps to address Pressures PE01 & PA04.
	MA09: Manage the use of natural and synthetic fertilisers as well as chemicals in agricultural for plant and animal production; MA02: Restore small landscape features on agricultural land; MA05: Adapt mowing, grazing and other equivalent agricultural activities (e.g. burning); MS03: Restoration of habitat of species from the directives; MB05: Adapt/change forest management and exploitation practices; MF01: Managing the impacts of converting land for construction and development of infrastructure:
	R. ferrumequinum hunts over cattle-grazed pasture and in deciduous or mixed woodland. Environmental land

	management schemes in the agricultural and forestry sectors are now widely used to ensure these habitats in the vicinity of roosts are well-managed and provide appropriate insect food at the correct time of year. All maternity roosts are protected, many as Natura 2000 sites, and are managed to maintain appropriate conditions for the bats. Planning at landscape scale is required to conserve commuting routes and foraging areas. These measures help to address Pressures PA05, PA10, PB05 & PB02.
10.1: Future trends and prospects of parameters	Future prospects of range The future prospects of range for this species is considered to be positive in Wales given the reported increasing population trend, the recently observed changes in range northward (Mathews et al. 2018), there is no reason to assume that the increase in range will not continue over the next 12 years. Future prospects of population The future prospects of population for this species is considered to be positive in Wales. There is no reason to assume that the current reported increasing population trend will not continue over the next 12 years. Future prospects of habitat for species The future prospects of habitat of the species is considered to be overall stable in Wales. Currently available habitat is considered sufficient to maintain the species at FCS and there are no specific wide scale threats to the habitat for the species. There is therefore no reason to assume that the current reported trend will not continue over the next 12 years.
11.1: Range	Conclusion on Range reached because: (i) the short-term trend direction in Range surface area is increasing; and (ii) the current Range surface area is approximately equal to the Favourable Reference Range.

11.2: Population	Conclusion on Population reached because:(i) the short-term trend direction in Population size is increasing; (ii) the current Population size is approximately equal to the Favourable Reference Population; and iii) reproduction, mortality and age structure does not have data available.
11.3: Habitat for the species	Conclusion on Habitat for the species reached because: i) the area of occupied habitat is sufficiently large for the long-term survival of the species (ii) it is unknown whether the quality of occupied habitat is suitable for the long-term survival of the species; and iii) there is a sufficiently large area of occupied and unoccupied habitat of suitable quality for long term survival (iv) the short-term trend in area of habitat is stable.
11.4: Future prospects	Conclusion on Future prospects reached because: (i) the Future prospects for Range are good; (ii) the Future prospects for Population are good; and (iii) the Future prospects for Habitat for the species are good.
11.5: Overall assessment of Conservation Status	Overall assessment of Conservation Status is Favourable because all of the conclusions are Favourable.
12.1: Population size inside the pSCIs, SCIs and SACs network	Best single value = 3027 (Actual Observed individuals). Based on 2022-2024 NBMP data (Bat Conservation Trust. 2024a).
12.3: Population size inside the network; Method used	In Natural Resources Wales (2013), the number given used the same methodology for population calculations however this assumed all males born within a roost stay within the confines of a SAC. This is unlikely, so the 2018 estimate gave a 'best single value' based on actual observed individuals counted within maternity roosts. This method has again been adopted for this report. It should be noted that this figure is likely to be closer to a minimum value as it also does not take into account additional occurrences away from the maternity roosts within SACs where greater horseshoe bats are a designating feature or occurrences within SACs where greater horseshoe bats are not a designated feature. It should also be noted that this estimate is only applicable during the maternity season and

	the number within the winter hibernation season may be lower.
12.4: Short-term trend of the population size within the network; Direction	In the 2018 reporting round the best single value (Actual Observed individuals) was given as 1795. In this report the figure has increased to 3027 .
6.15: Favourable Reference Population (FRP)	The UK-level FRV for population was developed by JNCC using an audit trail based on the year the FRV was first established and any changes made in subsequent reporting rounds. The audit may draw from any combination of the 2007, 2013, or 2019 Habitats Directive reports and reflects the full rationale used for the 2019 Article 17 reporting. This FRV was reviewed by Welsh experts and considered appropriate for use in Wales based on current population trends and abundance.
5.10: Favourable Reference Range (FRR)	The UK-level FRV for range was developed by JNCC using an audit trail based on the year the FRV was first established and any changes made in subsequent reporting rounds. The audit may draw from any combination of the 2007, 2013, or 2019 Habitats Directive reports and reflects the full rationale used for the 2019 Article 17 reporting. This FRV was reviewed by Welsh experts and considered appropriate for use in Wales based on current distribution and trends.