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

2019-2024

Conservation status assessment for the species:

S1013 - Geyer's whorl snail

(*Vertigo geyeri*)

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: Geyer's whorl snail

Distribution Map

Range Map

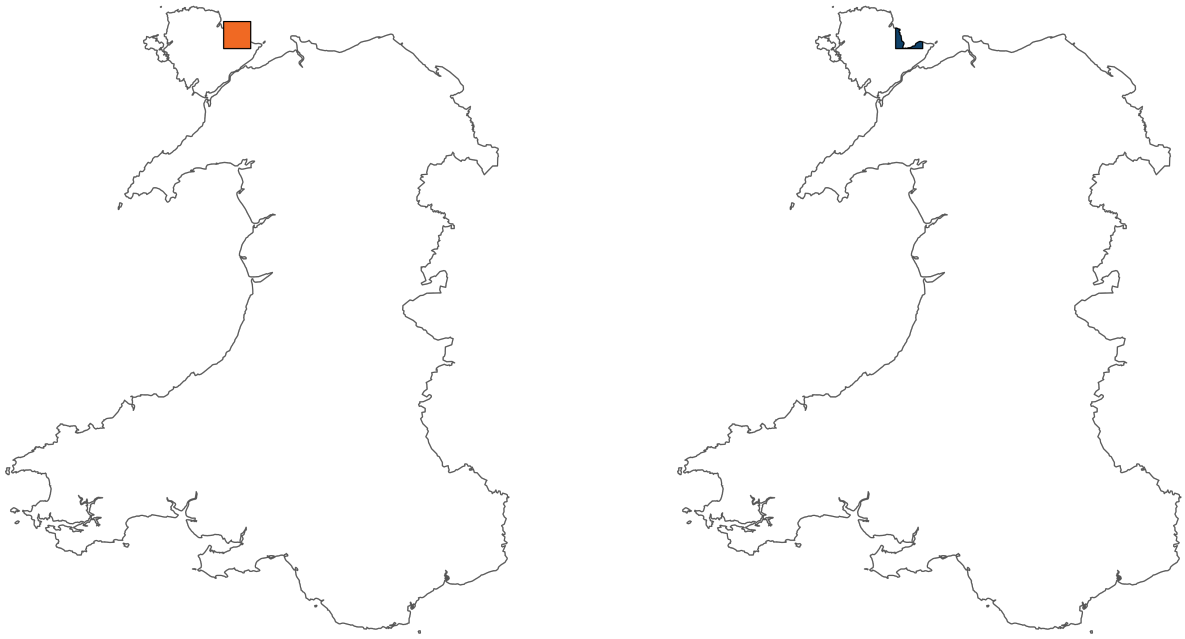

Figure 1: Wales distribution and range map for S1013 - Geyer's whorl snail (*Vertigo geyeri*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority. 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 S1013 - Geyer's whorl snail (*Vertigo geyeri*). 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)

Unfavourable-bad (U2)

Breakdown of Overall Conservation Status

Range (see section 5)	**Unfavourable-bad (U2)**
Population (see section 6)	**Unfavourable-bad (U2)**
Habitat for the species (see section 7)	**Unfavourable-bad (U2)**
Future prospects (see section 10)	**Unfavourable-bad (U2)**

List of Sections

National Level

1. General information

1.1 Country	Wales
1.2 Species code	S1013
1.3 Species scientific name	*Vertigo geyeri*
1.4 Alternative species scientific name	
1.5 Common name	Geyer's whorl snail
Annex(es)	II

2. Maps

2.1 Sensitive species	No
2.2 Year or period	2004-2024
2.3 Distribution map	Yes
2.4 Distribution map; Method used	Based mainly on extrapolation from a limited amount of data

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)	24.7
5.2 Short-term trend; Period	2013-2024
5.3 Short-term trend; Direction	Decreasing
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	Decreasing >1% (more than one percent) per year on average
5.5 Short-term trend; Method used	Based mainly on extrapolation from a limited amount of data
5.6 Long-term trend; Period	2001-2024
5.7 Long-term trend; Direction	Decreasing
5.8 Long-term trend; Magnitude	
a) Minimum	
b) Maximum	
c) Rate of decrease	

	Decreasing >1% (more than one percent) per year on average
5.9 Long-term trend; Method used	Based mainly on extrapolation from a limited amount of data

5.10 Favourable Reference Range (FRR)

a) Area (km²)	
b) Pre-defined increment	Current range is between 51% and 100% smaller than the FRR
c) Unknown	No
d) Method used	Expert opinion
e) Quality of information	

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	No
e) No information	No
f) Other reason	No
g) Main reason	Improved knowledge/more accurate data

5.12 Additional information

No additional information

6. Population

6.1 Year or period	2004-2024

6.2 Population size (in reporting unit)

a) Unit	number of map 1x1 km grid cells

b) Minimum	1
c) Maximum	1
d) Best single value	1
6.3 Type of estimate	Best estimate
6.4 Quality of extrapolation to reporting unit	high

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

a) Unit	
b) Minimum	
c) Maximum	
d) Best single value	
e) Type of estimate	

6.6 Population size; Method used	Based mainly on extrapolation from a limited amount of data
6.7 Short-term trend; Period	2004-2024
6.8 Short-term trend; Direction	Decreasing
6.9 Short-term trend; Magnitude	
a) Estimated minimum	
b) Estimated maximum	
c) Pre-defined range	Decreasing 51 - 100%
d) Unknown	No
e) Type of estimate	Pre-defined range
f) Rate of decrease	Decreasing >1% (more than one percent) per year on average
6.10 Short-term trend; Method used	Based mainly on extrapolation from a limited amount of data
6.11 Long-term trend; Period	1985-2024

6.12 Long-term trend; Direction	Decreasing
6.13 Long-term trend; Magnitude	
a) Minimum	
b) Maximum	
c) Confidence interval	
d) Rate of decrease	
6.14 Long-term trend; Method used	Based mainly on extrapolation from a limited amount of data

6.15 Favourable Reference Population (FRP)

ai) Population size	
aii) Unit	
b) Pre-defined increment	Current population is between 51% and 100% smaller than the FRP
c) Unknown	No
d) Method used	Expert opinion
e) Quality of information	

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

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

a) Sufficiency of area of occupied habitat; Method used	Based mainly on extrapolation from a limited amount of data
b) Sufficiency of quality of occupied habitat; Method used	Based mainly on extrapolation from a limited amount of data

7.3 Short-term trend; Period	2004-2024
7.4 Short-term trend; Direction	Decreasing
7.5 Short-term trend; Method used	Based mainly on extrapolation from a limited amount of 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
PA07: Intensive grazing or overgrazing by livestock	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)
PA08: Extensive grazing or undergrazing by livestock	Ongoing and likely to be in the future	High (H)
PA17: Agricultural activities generating pollution to surface or ground waters (including marine)	Ongoing and likely to be in the future	High (H)
PA21: Active abstraction of water for agriculture	Ongoing and likely to be in the future	High (H)
PJ01: Temperature changes and extremes due to climate change	Ongoing and likely to be in the future	High (H)
PJ03: Changes in precipitation regimes due to climate change	Ongoing and likely to be in the future	High (H)
PL01: Abstraction from groundwater, surface water or mixed water (mixed or unknown drivers)	Ongoing and likely to be in the future	Medium (M)
PL05: Modification of hydrological flow (mixed or unknown drivers)	Only in future	High (H)
PM07: Natural processes without direct or indirect influence from human activities or climate change	Ongoing and likely to be in the future	High (H)
PJ10: Change of habitat location, size, and / or quality due to climate change	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	Restore the habitat of the species (related to 'Habitat for the species')
9.3 Location of the measures taken	Only inside 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
MA04: Reinstate appropriate agricultural practices to address abandonment, including mowing, grazing, burning or equivalent measures	Medium (M)
MA05: Adapt mowing, grazing and other equivalent agricultural activities (e.g. burning)	High (H)
MA06: Stop mowing, grazing and other equivalent agricultural activities e.g. burning (incl. restore or improve habitats)	High (H)
MA13: Manage agricultural drainage and water abstraction (incl. the restoration of drained or hydrologically altered habitats)	Medium (M)
MJ01: Implement climate change mitigation measures	Medium (M)

MJ02: Implement climate change adaptation measures	Medium (M)
MM01: Management of habitats (others than agriculture and forest) to slow, stop or reverse natural processes that occur without direct or indirect influence from human activities or climate change	High (H)
MS02: Reintroduce species from the directives	Medium (M)
MS03: Restoration of habitat of species from the directives	High (H)

9.6 Additional information

No additional information

10. Future prospects

10.1a Future trends of parameters

ai) Range	Very Negative - decreasing >1% (more than one percent) per year on average
bi) Population	Very Negative - decreasing >1% (more than one percent) per year on average
ci) Habitat for the species	Very negative - important deterioration

10.1b Future prospects of parameters

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

10.2 Additional information

No additional information

11. Conclusions

11.1 Range	Unfavourable-bad (U2)
11.2 Population	Unfavourable-bad (U2)
11.3 Habitat for the species	Unfavourable-bad (U2)

11.4 Future prospects	Unfavourable-bad (U2)
11.5 Overall assessment of Conservation Status	Unfavourable-bad (U2)
11.6 Overall trend in Conservation Status	Deteriorating

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 map 1x1 km grid cells
b) Minimum	
c) Maximum	
d) Best single value	1
12.2 Type of estimate	Best estimate
12.3 Population size inside the network; Method used	Based mainly on extrapolation from a limited amount of data

12.4 Short-term trend of population size within the network; Direction	Decreasing
12.5 Short-term trend of population size within the network; Method used	Based mainly on extrapolation from a limited amount of data
12.6 Short-term trend of habitat for the species inside the pSCIs, SCIs and SACs network; Direction	Decreasing
12.7 Short-term trend of habitat for the species inside the pSCIs, SCIs and SACs network; Method used	Based mainly on extrapolation from a limited amount of 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

(92/43/EEC) Supporting documentation for the Third Report by the United Kingdom under Article 17 on the implementation of the Directive

Cameron, R.A.D. 2003. Life-cycles, molluscan and botanical associations of Vertigo angustior and Vertigo geyeri (Gastropoda, Pulmonata: Vertiginidae). Heldia. 5: 95-110.

Fowles, A.P. 2013. European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora

from January 2007 to December 2012 Conservation status assessment for Species: S1013 – Geyer's Whorl Snail (Vertigo geyeri).

from January 2013 to December 2018 Conservation status assessment for Species: S1013 – Geyer's Whorl Snail (Vertigo geyeri).

Howe, M.A. 2019. European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC) Supporting documentation for the Fourth Report by the United Kingdom under Article 17 on the implementation of the Directive

Howe, M.A. 2020. Vertigo geyeri account August 2020. NRW unpublished report. Natural Resources Wales, Bangor.

Killeen, I.J. & Moorkens, E. 2004. Condition monitoring of Vertigo geyeri on Cors Erddreiniog & Waun Eurad, Corsydd Môn/Anglesey Fens candidate Special Area of Conservation, Wales. CCW Contract Science No. 625. Countryside Council for Wales, Bangor.

Killeen, I.J. & Moorkens, E. 2008. Condition monitoring of Vertigo geyeri on Waun Eurad and Cors Erddreiniog SAC. CCW Environmental Monitoring Report No. 42. Countryside Council for Wales, Bangor.

Lloyd, D. 2005. The condition of Vertigo geyeri on Corsydd Llyn / Lleyn Fens SAC. CCW File note, 17 October 2005. Countryside Council for Wales, Bangor.

Lloyd, D. 2008. The condition of Vertigo geyeri on Corsydd Llyn / Lleyn Fens SAC. CCW File note, 10 October 2008. Countryside Council for Wales, Bangor.

Lloyd, D. 2014. The condition of Vertigo geyeri on Waun Eurad 2014- Anglesey Fens SAC. NRW File note, 10 September 2014. Natural Resources Wales, Bangor.

Sharland, E. 2000. Autecology of Vertigo angustior and Vertigo geyeri in Wales. CCW Contract Science No. 392. Countryside Council for Wales, Bangor.

Sharland, E.C. 2001. Autecology of Vertigo angustior and Vertigo geyeri in Wales. Ph.D., University of Sheffield.

Willing, M.J. 2012. The status and distribution of Geyer's Whorl Snail Vertigo geyeri at Craig y Cilau National Nature Reserve in 2011, with a wider search of other sites in south-east Wales supporting base-rich seepages. CCW Contract Science No. 1018. Countryside Council for Wales, Bangor.

Willing, M.J. 2017. A survey for Geyer's Whorl Snail Vertigo geyeri on Cors Erddreiniog SSSI and Cors Geirch SSSI in 2016. NRW Evidence Report No. 209. Natural Resources Wales, Bangor.

Willing, M.J. 2018. Surveys for Desmoulin's Whorl Snail Vertigo moulinsiana on Cors Geirch NNR/SSSI and the Afon Penrhos floodplain & for Geyer's Whorl Snail Vertigo geyeri on Cors Geirch NNR in 2017. NRW Evidence Report No. 258. Natural Resources Wales, Bangor.

Willing, M.J. 2020. Surveys for Geyer's Whorl Snail Vertigo geyeri on Cors Erddreiniog SSSI & Cors Geirch SSSI and for Desmoulin's Whorl Snail Vertigo moulinsiana on Cors Geirch SSSI in 2019. NRW Evidence Report No. 404. Natural Resources Wales, Bangor.

Willing, M.J. in prep. A survey for Geyer's Whorl Snail Vertigo geyeri on Waun Eurad in November 2021. NRW unpublished report. Natural Resources Wales, Bangor.

Main pressures

8.2 Sources of information

No sources of information

15. Explanatory Notes

Field label	Note
5.3: Short-term trend; Direction	See 5.11
5.11: Change and reason for change in surface area of range	It is now assumed that in Wales Vertigo geyeri is restricted to a single locality, with recent extirpations on Cors Erddreiniog and Cors Geirch. The most recent survey in November 2021 recorded 61 shells.
6.2: Population size	There have been five occupied 1x1km grids in three hectads since year 2004, with 3 on Cors Erddreiniog, 1 on Cors Geirch and 1 on Waun Eurad. However, since 2008 the snail has been recorded from just Waun Eurad.
6.14: Long-term trend; Method used	The snail has been recorded from three Welsh localities – Cors Geirch SSSI (1996 to 2005 or 2008) on the Llŷn peninsula, and Cors Eddreiniog SSSI (1985 to 2007) and Waun Eurad SSSI (1996 to 2021) on Anglesey. At all three sites, it was associated with open, sedge-rich seepages typically with tussocks of black bog-rush Schoenus nigricans. It is considered extinct on Cors Erddreiniog and Cors Geirch following recent surveys, with the remaining Welsh population on Waun Eurad being small, as is the area of suitable habitat. Here, a total of 66 shells was recorded in November 2021.
7.2: Sufficiency of area and quality of occupied habitat; Methods used	Killeen & Moorkens (2004) mapped c. 6250 sq m. of suitable habitat at Waun Eurad in 2003, with the amount unchanged in 2007 but with a slight decline in quality (Killeen & Moorkens, 2008). It was suspected that this was due to the exceptionally wet conditions that summer, resulting in some areas losing vegetation cover, and that this natural event did not give cause for concern. Suitable habitat was not mapped in 2014 (Lloyd, 2014). Since then, Waun Eurad has experienced a number of summer droughts which is likely to have had a significant impact upon the snail population. It was last recorded here in 2021 (Willing, in prep.). Summer droughts have since occurred in 2022 and 2023.

8.1: Characterisation of pressures	Vertigo geyeri is associated with short, open, calcareous seepages and flushes. These are very narrow and highly vulnerable ecotones which are very vulnerable to changes in grazing or hydrology, particularly as occupied seepages are often no more than a few square metres in area. Abandonment (PA05), overgrazing (PA07) and undergrazing (PA08) can all cause a deterioration in habitat quality. A lack of grazing also results in natural succession and a ranker sward and a build up of litter. At Waun Eurad, the hydrological regime is threatened by off-site abstraction (PA21; PL05), drainage (PL02) and pollution (PA17). Recent summer droughts have resulted in the loss of surface seepages (PL01; PM07), site desiccation (PJ01; PJ03; PJ10) and vegetation changes.
9.5: List of main conservation measures	Recent conservation efforts have attempted to establish appropriate grazing regimes to maintain open seepages in order to avoid undergrazing and overgrazing of suitable habitat (MA04; MA05; MA06), with mixed results. Impact of hydrological changes currently being investigated. A reintroduction to Cors Erddreiniog is being considered as part of the Natur am Byth! Project.
10.2: Additional information	With the species now restricted in Wales to a single small locality, Waun Eurad SSSI which supports just 6250 square metres of suitable habitat, the future prospects for Vertigo geyeri are very poor. Whilst the site does have statutory protection, this has not prevented the extirpation of the snail from its two other Welsh localities. Recent summer droughts will have had an adverse impact upon the population at Waun Eurad.
11.1: Range	Conclusion on Range reached because: (i) the short-term trend direction in Range surface area is decreasing by more than 1% per year; and (ii) the current Range surface area is more than 10% below the Favourable Reference Range.
11.2: Population	Conclusion on Population reached because:(i) the short-term trend direction in Population size is decreasing by more than 1% per year; (ii) the current Population size is more than 25% below 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 not sufficiently large for long-term survival of the species (ii) the quality of occupied habitat is not suitable for the long-term survival of the species; and iii) there is a not 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 decreasing; and v) expert opinion determines that the habitat quality of occupied and unoccupied habitat is bad; and vi) expert opinion determines that the habitat area is clearly insufficient.
11.4: Future prospects	Conclusion on Future prospects reached because: (i) the Future prospects for Range are bad; (ii) the Future prospects for Population are bad; and (iii) the Future prospects for Habitat for the species are bad.
11.5: Overall assessment of Conservation Status	Overall assessment of Conservation Status is Unfavourable-bad because all of the conclusions are Unfavourable-bad.
12.1: Population size inside the pSCIs, SCIs and SACs network	One 1x1km square since 2008, on Waun Eurad.
12.6: Short-term trend of the habitat for the species within the network; Direction	Populations have been lost on Cors Geirch (Corsydd Llyn SAC) and from one of two sites, Cors Erddreiniog, with Corsydd Mon SAC. It is now restricted to a single locality in Wales, Waun Eurad SSSI within Corsydd Mon SAC where a very small population was recorded in 2021.
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. Following expert review, a Wales-level FRV was derived based on population trend and abundance data specific to Wales, rather than adopting the

	UK-level value. The revised FRV has been set as the GB red list is driven by the Scotland sites. Looking at Wales alone it would be critically endangered. 51-100% selected as we are at immediate risk of extinction.
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. Following expert review, a Wales-level FRV was derived based on distribution and trend evidence specific to Wales, rather than adopting the UK-level value. The revised FRV has been set at between 51% and 100% smaller than the FRR. This species has gone from being in 3 localities to 1.