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:

S1013 - Geyer's whorl snail (*Vertigo geyeri*)

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)

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<td>1.2 Species code</td>
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<tr>
<td>1.3 Species scientific name</td>
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<tr>
<td>1.4 Alternative species scientific name</td>
</tr>
<tr>
<td>1.5 Common name (in national language)</td>
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3.3 Hunting bag or quantity taken in the wild for Mammals and Acipenseridae (Fish)

<table>
<thead>
<tr>
<th></th>
<th>a) Unit</th>
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<tbody>
<tr>
<td>b) Statistics/quantity taken</td>
<td>Provide statistics/quantity per hunting season or per year (where season is not used) over the reporting period</td>
</tr>
<tr>
<td></td>
<td>Min. (raw, ie. not rounded)</td>
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<tr>
<td>Season/ year 1</td>
<td></td>
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<tr>
<td>Season/ year 2</td>
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<tr>
<td>Season/ year 3</td>
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<td>Season/ year 4</td>
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<td>Season/ year 5</td>
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<tr>
<td>Season/ year 6</td>
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</tbody>
</table>

3.4. Hunting bag or quantity taken in the wild Method used

3.5. Additional information

4. Biogeographical and marine regions

4.1 Biogeographical or marine region where the species occurs

Atlantic (ATL)


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
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other sites in south-east Wales supporting base-rich seepages. CCW Contract Science No. 1018. Countryside Council for Wales, Bangor.

### 5. Range

<table>
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<th>5.2 Short-term trend Period</th>
<th>5.3 Short-term trend Direction</th>
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<th>5.8 Long-term trend Magnitude</th>
<th>5.9 Long-term trend Method used</th>
<th>5.10 Favourable reference range</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Decreasing (-)</td>
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<td></td>
<td></td>
<td>a) Minimum</td>
<td>b) Maximum</td>
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<tr>
<td>5.11 Change and reason for change in surface area of range</td>
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<td></td>
<td>Genuine change</td>
<td>The change is mainly due to:</td>
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<td>Genuine change</td>
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### 6. Population

<table>
<thead>
<tr>
<th>6.1 Year or period</th>
<th>6.2 Population size (in reporting unit)</th>
<th>6.3 Type of estimate</th>
<th>6.4 Additional population size (using population unit other than reporting unit)</th>
<th>6.5 Type of estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004-2017</td>
<td>number of map 1x1 km grid cells (grids1x1)</td>
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<td>Best estimate</td>
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<td></td>
<td></td>
<td>a) Unit</td>
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<td></td>
<td></td>
<td>b) Minimum</td>
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<td></td>
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<td>c) Maximum</td>
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<td>d) Best single value</td>
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<table>
<thead>
<tr>
<th>6.6 Population size (in reporting unit)</th>
<th>6.7 Type of estimate</th>
<th>6.8 Additional population size (using population unit other than reporting unit)</th>
<th>6.9 Type of estimate</th>
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</table>
### 6. Population size Method used
Based mainly on extrapolation from a limited amount of data

### 6.7 Short-term trend Period
2004-2017

### 6.8 Short-term trend Direction
Decreasing (-)

### 6.9 Short-term trend Magnitude
- a) Minimum
- b) Maximum
- c) Confidence interval

### 6.10 Short-term trend Method used
Based mainly on extrapolation from a limited amount of data

### 6.11 Long-term trend Period
1985-2017

### 6.12 Long-term trend Direction
Decreasing (-)

### 6.13 Long-term trend Magnitude
- a) Minimum
- b) Maximum
- c) Confidence interval

### 6.14 Long-term trend Method used
Based mainly on extrapolation from a limited amount of data

### 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
  - The change is mainly due to: Genuine change

### 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)? No
- b) Is there a sufficiently large area of occupied AND unoccupied habitat of suitable quality (to maintain the species at FCS)? No

#### 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
2004-2017

#### 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
1985-2017

#### 7.7 Long-term trend Direction
Decreasing (-)

#### 7.8 Long-term trend Method used
Based mainly on extrapolation from a limited amount of data

#### 7.9 Additional information

### 8. Main pressures and threats

#### 8.1 Characterisation of pressures/threats

<table>
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<th>Pressure</th>
<th>Ranking</th>
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10. Future prospects

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

Restore the habitat of the species (related to ‘Habitat for the species’)

9.3 Location of the measures taken

Only inside Natura 2000

9.4 Response to the measures

Medium-term results (within the next two reporting periods, 2019-2030)

9.5 List of main conservation measures

Adapt mowing, grazing and other equivalent agricultural activities (CA05)

Stop mowing, grazing and other equivalent agricultural activities (CA06)

Management of habitats (others than agriculture and forest) to slow, stop or reverse natural processes (CL01)

Improvement of habitat of species from the directives (CS03)

9.6 Additional information

10. Future prospects
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10.1 Future prospects of parameters
   a) Range
   b) Population
   c) Habitat of the species

10.2 Additional information

11. Conclusions

11.1. Range
11.2. Population
11.3. Habitat for the species
11.4. Future prospects
11.5 Overall assessment of Conservation Status
11.6 Overall trend in Conservation Status
11.7 Change and reasons for change in conservation status and conservation status trend
   a) Overall assessment of conservation status
      No change
      The change is mainly due to:
   b) Overall trend in conservation status
      No change
      The change is mainly due to:

11.8 Additional information

12. Natura 2000 (pSCIs, SCIs and SACs) coverage for Annex II species

12.1 Population size inside the pSCIs, SCIs and SACs network (on the biogeographical/marine level including all sites where the species is present)
   a) Unit
   b) Minimum
   c) Maximum
   d) Best single value

12.2 Type of estimate
   Best estimate
   Based mainly on extrapolation from a limited amount of data

12.3 Population size inside the network Method used

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 Additional information

13. Complementary information

13.1 Justification of % thresholds for trends
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13.2 Trans-boundary assessment

13.3 Other relevant Information
Figure 1: UK distribution 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. For further details see the 2019 Article 17 UK Approach document.
Figure 2: UK 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 range map has been produced by applying a bespoke range mapping tool for Article 17 reporting (produced by JNCC) 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.
<table>
<thead>
<tr>
<th>Field label</th>
<th>Note</th>
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</thead>
<tbody>
<tr>
<td>5.3 Short term trend; Direction</td>
<td>See 5.11</td>
</tr>
<tr>
<td>5.11 Change and reason for change in surface area of range</td>
<td>Whilst Vertigo geyeri was recorded on Waun Eurad in 2014 and the population is likely to persist, surveys for the snail on Cors Erddreiniog and Cors Geirch in 2016 and 2017 have failed to find any specimens. Declines in numbers on Cors Erddreiniog had been reported in 2007 when it was last recorded on the site, and the snail has not been recorded on Cors Geirch since 2005 (with a possible record in 2008 having no voucher material). Whilst the snail can be overlooked, suitable habitat at both sites is scarce and declining and it is assumed for the purpose of current Article 17 reporting that it is extinct on these sites, leaving just a single population in Wales on Waun Eurad.</td>
</tr>
<tr>
<td>6.8 Short term trend; Direction</td>
<td>Whilst Vertigo geyeri was recorded on Waun Eurad in 2014 and the population is likely to persist, surveys for the snail on Cors Erddreiniog and Cors Geirch in 2016 and 2017 have failed to find any specimens. Declines in numbers on Cors Erddreiniog had been reported in 2007 when it was last recorded on the site, and the snail has not been recorded on Cors Geirch since 2005 (with a possible record in 2008 having no voucher material). Whilst the snail can be overlooked, suitable habitat at both sites is scarce and declining and it is assumed for the purpose of current Article 17 reporting that it is extinct on these sites, leaving just a single population in Wales on Waun Eurad.</td>
</tr>
<tr>
<td>6.9 Short term trend; Magnitude</td>
<td>Within the period a decline from 5 to 1, 1x1km grid squares.</td>
</tr>
<tr>
<td>6.14 Long term trend; Method used</td>
<td>Whilst Vertigo geyeri was recorded on Waun Eurad in 2014 and the population is likely to persist, surveys for the snail on Cors Erddreiniog and Cors Geirch in 2016 and 2017 have failed to find any specimens. Declines in numbers on Cors Erddreiniog had been reported in 2007 when it was last recorded on the site, and the snail has not been recorded on Cors Geirch since 2005 (with a possible record in 2008 having no voucher material). Whilst the snail can be overlooked, suitable habitat at both sites is scarce and declining and it is assumed for the purpose of current Article 17 reporting that it is extinct on these sites, leaving just a single population in Wales on Waun Eurad. It should be noted that population size fluctuates dramatically in Vertigo species from year to year in response to habitat changes, vegetation structure, humidity, hydrology and other factors. Coupled with episodic monitoring, it is difficult to determine if populations have been lost from sites and more regular and extensive survey work may relocate the snail on Cors Erddreiniog and Cors Geirch</td>
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</table>
Lloyd (2005) mapped 4306 sq metres of potential habitat at Cors Geirch and Killeen & Moorkens (2004) mapped c. 6250 sq m. at Waun Eurad. Cors Erddreiniog has not been investigated in such detail but Killeen & Moorkens (2008) reported that compartments amounting to 11.45ha contained suitable habitat. It is likely that less than 10% of these compartments actually supports sedge lawn so there will be a maximum of 11.500 sq metres on Cors Erddreiniog that could be occupied by Vertigo geyeri (though this figure may be a substantial over-estimate). During repeat monitoring of Cors Geirch in 2008 (Lloyd 2008) no habitat was classified as being in optimal condition and only 38% of the habitat was found to be in sub-optimal condition. On Waun Eurad, Killeen & Moorkens (2008) found that the amount of suitable habitat was unchanged but there had been a slight decline in quality. 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. In contrast, much of the habitat on Cors Erddreiniog was reported as being unsuitable due to inadequate grazing levels. Substantial areas have since been strimmed and grazed to improve quality. It is thought that size and quality of habitat has continued to deteriorate on Cors Erddreiniog and Cors Geirch to the present.

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. Both overgrazing (A09) and undergrazing (A10) can cause a deterioration in habitat quality. A lack of grazing also results in natural succession and a ranker sward (L02) and a build up of litter (L03). On Welsh sites, the hydrological regime is primarily under control of NRW and hence seasonal fluctuations in rainfall pattern are the major influence on groundwater levels. Two of the three sites, however, suffer from vegetation succession as a result of insufficient grazing and manual strimming has been necessary to keep seepage fen open. Threats: As with Pressures (which are expected to continue), small seepages are vulnerable to modification of hydrological flow (K04), eutrophication (L04), drainage (K02) and water abstraction (K01). Climate change may cause increased drying out of seepages and result in habitat changes (N05).

Whilst restricted to Waun Eurad SSSI which supports just 6250 square metres of suitable habitat, the future prospects for Vertigo geyeri in Wales are very negative. The site does have statutory protection but this has not prevented the apparent loss of the snail from its two other Welsh localities.

The population has apparently been lost from Corsydd Llyn SAC (last recorded with certainty in 2005). On Corsydd Mon, the population is extant on Waun Eurad SSSI (last recorded in 2014) but has apparently been lost from Cors Erddreiniog SSSI (last recorded in 2008).