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

Conservation status assessment for the species:

S1016 - Desmoulin's whorl snail (*Vertigo moulinsiana*)

UNITED KINGDOM

IMPORTANT NOTE - PLEASE READ

- The information in this document represents 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.
- It is based on supporting information provided by the geographically-relevant Statutory Nature Conservation Bodies, which is documented separately.
- The 2019 Article 17 UK Approach document provides details on how this supporting information contributed to the UK Report and the fields that were completed for each parameter.
- The reporting fields and options used are aligned to those set out in the European Commission guidance.
- Maps showing the distribution and range of the species are included (where available).
- Explanatory notes (where provided) are included at the end. These provide additional audit trail information to that included within the UK assessments. Further underpinning explanatory notes are available in the related country-level 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 Natura 2000 coverage for Annex II species).
- The UK-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.

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NATIONAL LEVEL

1. General information

1.1 Member State	**UK**
1.2 Species code	**1016**
1.3 Species scientific name	**Vertigo moulinsiana**
1.4 Alternative species scientific name	
1.5 Common name (in national language)	Desmoulin's whorl snail

2. Maps

2.1 Sensitive species	No
2.2 Year or period	1998-2018
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

England
Abrehart T.R. 2014. Annex A: SAC status reporting on Vertigo moulinsiana in Norfolk and Sufolk 2014. An ecological survey including vegetation and invertebrates observations undertaken for Natural England by Abrehart Ecology.
Abrehart T.R. (2013). Baseline data for the population size and distribution of Vertigo moulinsiana (Desmoulin's Whorl Snail) at Aqualate Mere NNR, Staffordshire. March 2013. An ecological survey including floral and fauna observations undertaken for Natural England by Abrehart Ecology.
MJ Willing (2015) SAC Status reporting on Vertigo moulinsiana in England: monitoring at selected sites on the Hampshire / Wiltshire River Avon and tributary rivers Wylye and Bourne. Report to Natural England.
Abrehart T.R. 2014. Annex A: SAC status reporting on Vertigo moulinsiana in Norfolk and Sufolk 2014. An ecological survey including vegetation and invertebrates observations undertaken for Natural England by Abrehart Ecology.
Killeen. IJ. 2015. SAC Status reporting on Vertigo moulinsiana in England: monitoring at selected sites on the Hampshire / Wiltshire River Avon and tributary rivers Wylye and Bourne. Report to Natural England
Abrehart T.R. 2014. Annex A: SAC status reporting on Vertigo moulinsiana at Westbere Marshes, Kent 2014. An ecological survey including vegetation and invertebrates observations undertaken for Natural England by Abrehart Ecology.
Abrehart T. R. 2015. Baseline survey for population size and distribution of Vertigo
moulinsiana (Desmoulin's Whorl Snail) at Fenemere SSSI, Shropshire, 2014.
Abrehart T.R. (2012). Baseline data for the population size and distribution of Vertigo moulinsiana (Desmoulin's Whorl Snail) at Quoisley Mere, Cheshire SSSI.

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October 2012. An ecological survey including floral and fauna observations undertaken for Natural England by Abrehart Ecology.
Abrehart T. R. 2015. Investigation into the abundance and distribution of Desmoulin's Whorl Snail
Vertigo moulinsiana Chapel Mere SSSI, Cholmondeley Estate, Cheshire, 2015.
MJ Willing . 2016. New Vertigo moulinsiana finds south of Amesbury (extracts from survey report undertaken for Atkins as part of work undertaken for the Highways Agency in relation to the A303 Stonehenge Tunnel proposals).
Improvement Programme for England's Natura 2000 Sites (IPENS) Site Improvement Plan: Waveney and Little Ouse Valley Fens. Natural England, 2015.
Abrehart Ecology 2017. Desmoulin's Whorl Snail (Vertigo moulinsiana) Article 17 Condition Assessment of River Wensum SAC for Natural England by Abrehart Ecology 2017
Kerney, M. P. Atlas of the non-marine mollusca of the british isles, 1976, NERC, ITE.
Bratton J.H (ed) British Red Data Books.3. Invertebrates other than insects. JNCC. 1991.
Improvement Programme for England's Natura 2000 Sites (IPENS) Site Improvement Plan: The Broads. Natural England, 2014
Jones, R. Denham Lock Wood: preliminary invertebrate survey. Richard A. Jones 2017, London Wildlife Trust.
Wales
Boyce, D.C. 2008. Monitoring invertebrate features on Sites of Special Scientific Interest: the wetland invertebrate assemblage on Rhos Goch National Nature Reserve, Radnorshire. CCW Regional Report No. CCW/SEW/07/2. Countryside Council for Wales.
Fowles, A.P. 2013. European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora
(92/43/EEC) Supporting documentation for the Third Report by the United Kingdom under Article 17 on the implementation of the Directive from January 2007 to December 2012 Conservation status assessment for Species: S1016 - Desmoulin's Whorl Snail (Vertigo moulinsiana).
Killeen, I.J. 2000. Status and distribution of Des Moulin's whorl snail Vertigo moulinsiana on Cors Geirch SSSI. CCW Contract Science No. 373. Countryside Council for Wales, Bangor.
Killeen, I.J. 2004. Condition monitoring of Vertigo moulinsiana in Cors Geirch, Corsydd Lleyn/Lleyn Fens candidate Special Area of Conservation, Wales. CCW Contract Science No. 624. Countryside Council for Wales, Bangor.
Lloyd, D. 2008. The condition of Vertigo moulinsiana on Corsydd Llyn / Lleyn Fens SAC. CCW File note, 10 October 2008. Countryside Council for Wales, Bangor.
Willing, M.J. 2016. The status of Desmoulin's Whorl Snail Vertigo moulinsiana at Rhos Goch NNR in 2015. NRW Evidence Report No. 157. Natural Resources Wales, Bangor.
Willing, M.J. 2017. A survey for Desmoulin's Whorl Snail Vertigo moulinsiana on Cors Geirch NNR/SSSI and the Afon Penrhos floodplain in 2016. NRW Evidence Report No. 210. Natural Resources Wales, Bangor.
Willing, M.J. in prep. A survey for Desmoulin's Whorl Snail Vertigo moulinsiana on the Afon Penrhos floodplain in 2017. 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.

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5. Range

5.1 Surface area (km²)	4945.23	
5.2 Short-term trend Period	2007-2018	
5.3 Short-term trend Direction	Decreasing (-)	
5.4 Short-term trend Magnitude	a) Minimum	b) Maximum
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
5.9 Long-term trend Method used		
5.10 Favourable reference range	a) Area (km²)	20004.17
	b) Operator	
	c) Unknown	
	d) Method	The FRR is the same as in 2013. The value is considered to be large enough to support a viable population and no lower than the range estimate when the Habitats Directive came into force in the UK. For further information see the 2019 Article 17 UK Approach document.
5.11 Change and reason for change in surface area of range	Genuine change Improved knowledge/more accurate data	
	The change is mainly due to:	Genuine change
5.12 Additional information	The short term trend direction is considered most likely to be decreasing >1% (more than one percent) per year on average, based on the reported declines in England. The current range surface area calculation does not represent the real range surface area. It is not clear from the reported information what the exact genuine decline has been since 2013 in the number of occupied 10x10 km squares. This is due to change in availability of underpinning mapping data compared to 2013. Quantifying the extent of the genuine decline versus that resulting from reduced data availability is not possible.	

6. Population

6.1 Year or period	1998-2018	
6.2 Population size (in reporting unit)	a) Unit	number of map 1x1 km grid cells (grids1x1)
	b) Minimum	
	c) Maximum	
	d) Best single value	54
6.3 Type of estimate	Best estimate	
6.4 Additional population size (using population unit other than reporting unit)	a) Unit	number of map 10x10 km grid cells (grids10x10)
	b) Minimum	
	c) Maximum	

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	d) Best single value	
6.5 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	1998-2018	
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	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	278 with unit number of map 1x1 km grid cells (grids1x1)
	b) Operator	
	c) Unknown	
	d) Method	The FRP is the same as in 2013. The value is considered to be large enough to support a viable population and no less than when the Habitats Directive came into force in the UK. For further information see the 2019 Article 17 UK Approach document.
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:	Genuine change
6.17 Additional information	The short term trend direction is considered most likely to be decreasing >1% (more than one percent) per year on average, based on the reported declines in England and Wales. It is not clear from the reported information what the exact genuine decline has been since 2013 in the number of occupied 1x1 km squares (partly because some of the population information used in 2013 is not available for use in the 2019 reporting). The FRP is considered to be more than 25% above the current population. Quantifying the extent of the genuine decline versus that resulting from reduced data availability is not possible.	

7. Habitat for the species

7.1 Sufficiency of area and quality of occupied habitat	a) Are area and quality of occupied habitat sufficient (for long-term survival)?	No
	b) Is there a sufficiently large area of unoccupied habitat of suitable quality (for long-term survival)?	No

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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	1998-2018
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	In England, which holds the majority of the UK population, habitat quality rather than area has declined. This is in part due to changes in the hydrological conditions.

8. Main pressures and threats

8.1 Characterisation of pressures/threats

Pressure	Ranking
Mowing or cutting of grasslands (A08)	H
Agricultural activities generating diffuse pollution to surface or ground waters (A26)	M
Abstraction from groundwater, surface water or mixed water (K01)	H
Droughts and decreases in precipitation due to climate change (N02)	H
Increases or changes in precipitation due to climate change (N03)	H

Threat	Ranking
Mowing or cutting of grasslands (A08)	H
Agricultural activities generating diffuse pollution to surface or ground waters (A26)	M
Abstraction from groundwater, surface water or mixed water (K01)	H
Droughts and decreases in precipitation due to climate change (N02)	H
Increases or changes in precipitation due to climate change (N03)	H

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, but none yet taken

9.2 Main purpose of the measures taken

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9.3 Location of the measures taken

9.4 Response to the measures

9.5 List of main conservation measures

Stop mowing, grazing and other equivalent agricultural activities (CA06)
Manage water abstraction for public supply and for industrial and commercial use (CF11)
Restore habitats impacted by multi-purpose hydrological changes (CJ03)
Adopt climate change mitigation measures (CN01)

9.6 Additional information

10. Future prospects

10.1 Future prospects of parameters

a) Range	Bad
b) Population	Bad
c) Habitat of the species	Poor

10.2 Additional information

Future trend of Range is Negative - decreasing <=1% (one percent or less) per year on average; Future trend of Population is Negative - decreasing <=1% (one percent or less) per year on average; and Future trend of Habitat for the species is Negative - decreasing <=1% (one percent or less) per year on average. For further information on how future trends inform the Future Prospects conclusion see the 2019 Article 17 UK Approach document.

11. Conclusions

11.1. Range	Unfavourable - Bad (U2)
11.2. Population	Unfavourable - Bad (U2)
11.3. Habitat for the species	Unfavourable - Inadequate (U1)
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 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

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. Conclusion on Population reached because: (i) the short-term trend direction in Population size is decreasing by more than 1% per year; and (ii) the current Population size is more than 25% below the Favourable Reference Population.

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Conclusion on Habitat for the species reached because: (i) the area of occupied and unoccupied habitat is sufficiently large; (ii) the habitat quality is not adequate for the long-term survival of the species; and (iii) the short-term trend in area of habitat is decreasing.
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 poor.
Overall assessment of Conservation Status is Unfavourable-bad because three of the conclusions are Unfavourable-bad.
Overall trend in Conservation Status is based on the combination of the short-term trends for Range - decreasing, Population - decreasing, and Habitat for the species - decreasing.
The Overall assessment of Conservation Status has not changed between 2013 and 2019.
The Overall trend in Conservation Status has not changed between 2013 and 2019.

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	number of map 1x1 km grid cells (grids1x1)
	b) Minimum	
	c) Maximum	
	d) Best single value	27
12.2 Type of estimate		Best estimate
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		Decreasing (-)
12.5 Short-term trend of population size within the network Method used		Complete survey or a statistically robust estimate
12.6 Additional information		

13. Complementary information

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

Distribution Map

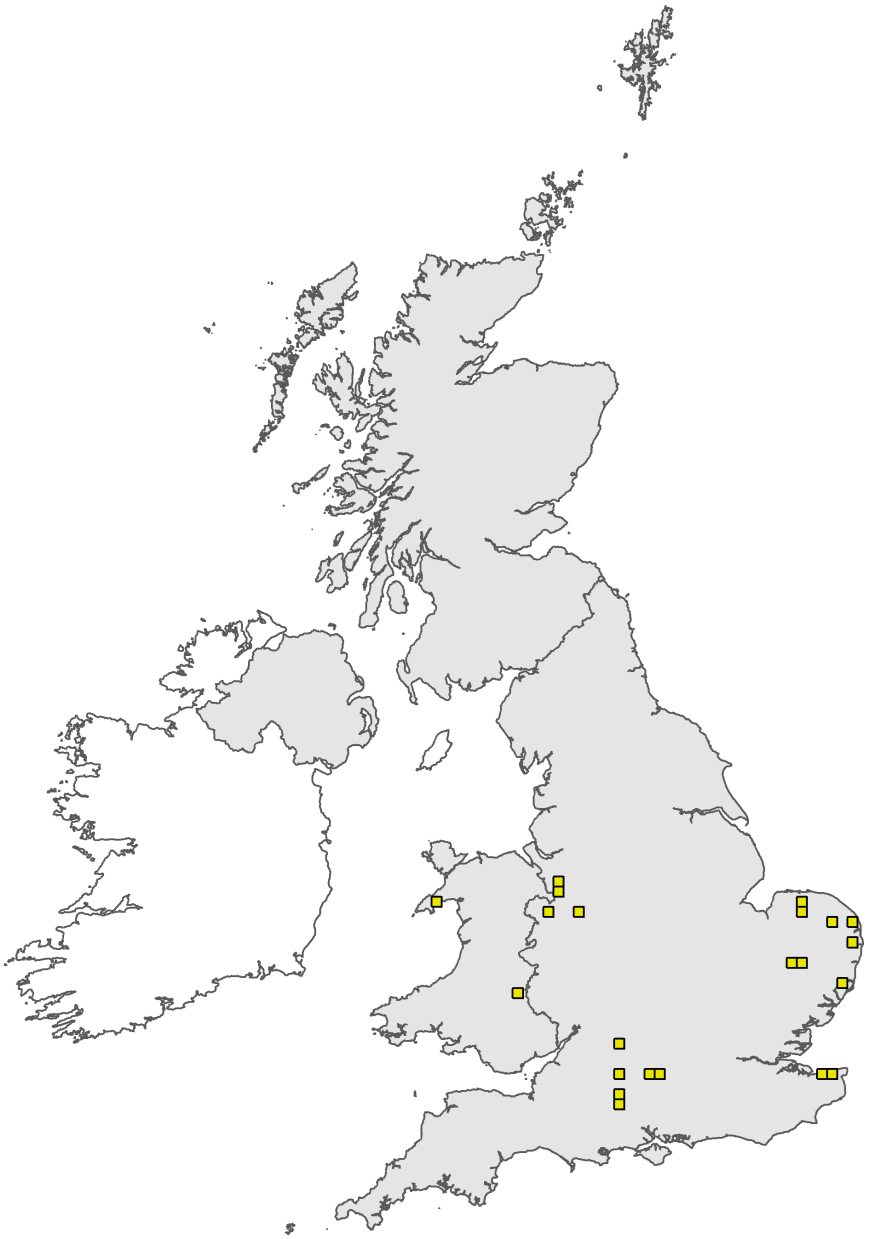

Figure 1: UK distribution map for S1016 - Desmoulin's whorl snail (*Vertigo moulinsiana*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

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 S1016 - Desmoulin's whorl snail (*Vertigo moulinsiana*). 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.