

**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*)

IMPORTANT NOTE – PLEASE READ

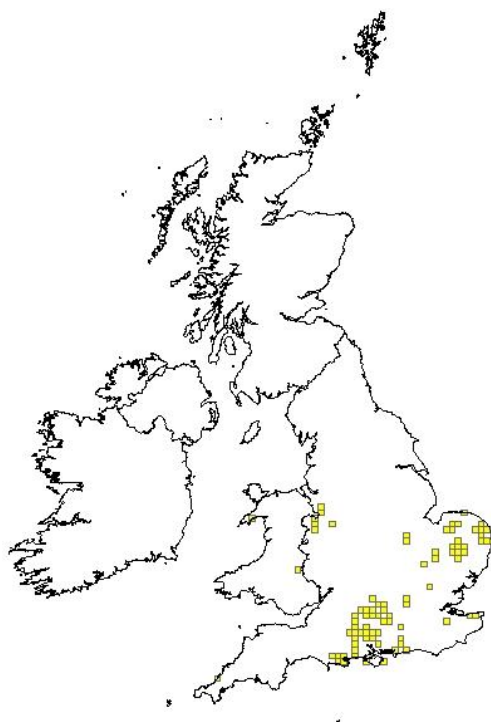
- The country-level reporting information contained in this document is a contribution to the Article 17 UK report for the habitat/species concerned.
- It has been provided by **Natural England** and refers only to the state of the habitat/species in **England** - it does not constitute an assessment for the whole of the UK.
- The Article 17 UK Approach document provides details on how this information has been used and, combined with information supplied by other Statutory Nature Conservation Bodies
- The format of the document is closely aligned to that set out by the European Commission for Member State reporting – as a result, some of the fields are not applicable at a country-level and have deliberately been left blank – in addition, the content of most fields is constrained by the EC reporting categories.

Reporting format on the 'main results of the surveillance under Article 11' for Annex II, IV & V species

<i>Field name</i>	<i>Brief explanations</i>	
0.2 Species	0.2.1 Species code	S1016
	0.2.2 Species scientific name	<i>Vertigo moulinsiana</i>
	0.2.3 Alternative species scientific name Optional	
	0.2.4 Common name Optional	Desmoulin's whorled snail

1.1 Maps

1.1.1 Distribution map		Sensitive	False
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1.1.2 Method used - map	Complete survey/Complete survey or a statistically robust estimate
1.1.3 Year or period	2007-2012
1.1.4 Additional distribution map	False
1.1.5 Range map	

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2.1 Biogeographical region & marine regions	ATL
2.2 Published sources	<p>" Article 17 Report on <i>Vertigo moulinsiana</i> distribution in the Midland Meres, December 2011 to January 2012. An ecological survey including floral and fauna observations undertaken for Natural England by Abrehart Ecology.</p> <p>Article 17 Reporting cycle on <i>Vertigo moulinsiana</i> at Crose Mere, Sweat Mere and Fenemere November 2011. An ecological survey including floral and fauna observations undertaken for Natural England by Abrehart Ecology.</p> <p>Monitoring populations of <i>Vertigo moulinsiana</i> at selected sites on the Wiltshire River Avon and tributary rivers Wylye and Bourne, (Natural England Article 17 Reporting on <i>Vertigo</i> snails in England) Dr. M. J. Willing</p> <p>Monitoring populations of <i>Vertigo moulinsiana</i> at selected sites on the Hampshire River Frome and River Piddle (Natural England Article 17 Reporting on <i>Vertigo</i> snails in England) Dr. M. J. Willing</p> <p>Killeen, IJ, (2011) A CONDITION ASSESSMENT OF VERTIGO MOULINSIANA IN THE KENNET & LAMBOURN SAC, BERKSHIRE, MALACOLOGICAL SERVICES, Report to Natural England.</p> <p>Article 17 Reporting cycle on <i>Vertigo moulinsiana</i> in Norfolk and Suffolk, November 2011. Lot 4 , An ecological survey including floral and faunal observations undertaken for Natural England by Abrehart Ecology.</p> <p>Abrehart T.R. (2012). Baseline data for the population size and distribution of <i>Vertigo moulinsiana</i> (Desmoulin's Whorl Snail) at Quoisley Mere, Cheshire SSSI. October 2012. An ecological survey including floral and fauna observations undertaken for Natural England by Abrehart Ecology.</p> <p>Article 17 Reporting cycle on <i>Vertigo moulinsiana</i> at Denham Lock Wood SSSI, Hillingdon and Sawbridgeworth SSSI, Hertfordshire, November 2011 Lot 5 , An ecological survey including floral and faunal observations undertaken for Natural England by Abrehart Ecology</p> <p>Article 17 Reporting cycle on <i>Vertigo moulinsiana</i> at Crose Mere, Sweat Mere and Fenemere November 2011. Lot 6 , An ecological survey including floral and fauna observations undertaken for Natural England by Abrehart Ecology.</p>

	<p>Killeen, IJ (2011) A CONDITION ASSESSMENT OF VERTIGO MOULINSIANA IN WESTBERE MARSHES, KENT, MALACOLOGICAL SERVICES, Contract to Natural England.</p> <p>Joint Nature Conservation Committee. 2007. Second Report by the UK under Article 17 on the implementation of the Habitats Directive from January 2001 to December 2006. Peterborough: JNCC. Available from: www.jncc.gov.uk/article17"</p>

2.3 Range	
2.3.1 Surface area Range	1.1 km sq loss of Desmoulin's populations across a number of fen systems, evaluated by summing SSSI units and estimating non-SSSI areas where it had previously been found but is no longer. Equates to about 17 "sites", though fewer SSSI which are often built of component marshes. This is a real decline. These data from an analysis of the component Article 17 reports cited in 2.2.
2.3.2 Method used Surface area of Range	Complete survey/ Complete survey or a statistically robust estimate
2.3.3 Short-term trend Period	2001-2012
2.3.4 Short term trend Trend direction	stable A number of new West Midlands locations have been discovered, and although the habitat areas are relatively small, they will add an area that is derived out in the alpha hull calculations. As such, the short term trend is one if increase in range. The actual area of useable habitat is, of course, much smaller than this. As in the previous assessment, the range of habitat is not restricted as such.
2.3.5 Short-term trend Magnitude	a) Minimum
	b) Maximum
2.3.6 Long-term trend Period	1989-2012
2.3.7 Long-term trend Trend direction	decrease
2.3.8 Long-term trend	a) Minimum

Magnitude	Optional	
	b) Maximum	
2.3.9 Favourable reference range	a) Value in km²	
	b) Operator for FRR	approximately equal to
	c) FRR is unknown (indicated by "true")	False
	d) Method used to set FRR	
	a) Genuine change?	False
	b) Improved knowledge/more accurate data?	True
	c) Use of different method (e.g. "Range tool")?	False

2.4 Population		
2.4.1 Population size estimation (using individuals or agreed exceptions where possible)	a) Unit	
	b) Minimum	
	c) Maximum	
2.4.2 Population size estimation (using population unit other than individuals)	a) Unit	number of map 1x1 km grid cells equates to 40 ten km sqs.

Optional (<i>if 2.4.1 filled in</i>)	b) Minimum	89
	c) Maximum	89
2.4.3 Additional information on population estimates / conversion Optional	a) Definition of "locality"	
	A combination of NBN data from the period and the new survey data; the figure for the 1km sqs should be regarded as a minimum.	
	b) Method to convert data	
	c) Problems encountered to provide population size estimation	Uncertainty of the 1 km sq data underpinning the previous assessment, and how much more data has been liberated since the report was made. Audits should really capture full geographic scale for a species at both levels.
2.4.4 Year or period	1989-2012	
2.4.5 Method used Population size	Complete survey/ Complete survey or a statistically robust estimate	
	This species was subject to targeted survey across the main SSSI/ SAC and wider countryside sites within which it was recorded as occurring in the recent past. Whilst surveyors were instructed to have a minimum sampling effort, this was countered by a requirement to well cover the area, so no upper limit was placed on effort. On the large riverine sites, representative areas were surveyed, often based on previous survey effort. Population classes were used rather than counts, but these have not been used, though have been retained for a rough assessment of the sample data and the numbers of samples taken with no snails, and this with bigger, or smaller number of animals, as a rough gauge of population fitness across the range in England.	
2.4.6 Short-term trend Period	2001-2012	
2.4.7 Short-term trend Trend direction	decrease	
	There are real, within and whole-site scale losses in the core of this species range, with the same surveyors noting losses on parts of sites and whole sites within larger wetland complexes. This is particularly true along some of the riverine fen systems. Out of 919 standard site samples (6 sample trays = 0.5m sq), only 22.63% (208) were deemed strong, with 139 samples being considered unfavourable compared to previous surveys, and a huge 572 samples (62.24%) either not finding the snail and/or reporting a direct loss from known sites. Despite an enhanced number of samples taken across the Natura 2000 series, it only managed second rank to the SSSI series in the number of samples deemed favourable (74 in SAC to 104 samples in the SSSI series. Non designated sites had a 26.8% favourable sample set, with 30 samples, but the second largest loss/ not finding value of the whole sample (65	

	<p>samples in this category out of the 112 total taken on these non-sites). Although counts were made within the samples taken, the population dynamics of these species show huge surges, making point counts a little meaningless and so one has to be mindful of that in the above call on favourability made above, which is heavily influenced by the counts. The absence data is more telling as this points out real losses or localised contractions within the range. The 2006 Article 17 assessment was based on a much coarser evaluation grid and would not have picked up the declines and, indeed, may have pointed to an expansion as it would add in the new Midlands population centres. By concentrating on previously recorded sites at a finer scale can a more clearer picture be gained.</p>	
2.4.8 Short-term trend Magnitude	a) Minimum	
	b) Maximum	
	c) Confidence interval	
2.4.9 Short-term trend Method used	Complete survey/Complete survey or a statistically robust estimate	
2.4.10 Long-term trend – Period	1989-2012	
2.4.11 Long-term trend Trend direction	decrease	
	<p>The losses, whilst real, may well be the result of quite tight temporal impacts of the population from reductions in water levels and tables, as much as a gradual attrition of the population base, although in some areas both processes may have worked together to drive local extinctions. Overall, the picture for this species has not been good, having declined from 278 one km sqs in the period 1989-2012, down to 123 one km sqs from 2001-2012, a loss of 155 one km sqs. Whilst a proportion of those losses will not but real but an artifact of lack of recording, the recent surveys have demonstrated real losses within the riparian and marshland edges of our rivers, leaving only the meres and more isolated wetlands holding populations of any significance. The overall call on condition ought to be viewed with this geographical difference in mind.</p>	
2.4.12 Long-term trend Magnitude Optional	a) Minimum	

	b) Maximum	
	c) Confidence interval	
2.4.13 Long term trend Method used	2	
2.4.14 Favourable reference population	a) Number of individuals/agreed exceptions/other units	278
	b) Operator	approximately equal to
	c) FRP is unknown indicated by "true"	False
	d) Method used to set FRP	The one km sq count in the period 1991 to 2012 for the UK; this baseline does suggest the extent of the losses experienced by this species. The longer term trend period exceeds this and so has a higher count, but as a baseline the 278 seems adequate. Though slightly longer than the period for which the Directive has been in place, it is not considered that the population will have altered that much in the couple of intervening years, and so is put forward as a pragmatic response to the historical population situation.
2.4.15 Reason for change Is the difference between the value reported at 2.4.1 or 2.4.2 and the previous reporting round mainly due to:	a) Genuine change?	True
	b) Improved knowledge/more accurate data?	True
	The move away from the coarse 10 km sq assessment is important to capture the declines; the last assessment counted the species in 68 ten km sqs, whilst this sees it in 40, though the one km sq counts and the	

	data from the individual samples paints a more depressing picture of population losses within sites, and from whole sites. It is recommended that this level of scrutiny is maintained in the future reports for this species.	
	c) Use of different method (e.g. "Range tool")?	False

2.5 Habitat for the species		
2.5.1 Area estimation	40	
2.5.2 Year or period	2007-2011	
2.5.3 Method used Habitat for the species	Estimate based on partial data with some extrapolation and/or modelling	
2.5.4 Quality of the habitat	a) Habitat quality	Moderate
	b) Assessment method	1-5 ground wetness scale used; noting of principal vegetation components in areas sampled. The 40km square figure is an estimate of the area of rich tall fen, as taken from the UKBAP assessment (per comm NE's fen specialist). This is likely to be an over-estimate of the actual narrow habitat niche actually used. The decline, which is hard to quantify, is based on a decline in condition (=mostly drying out) rather than actual loss of the habitat.
2.5.5 Short-term trend Period	2006-2011	
2.5.6 Short-term trend Trend direction	decrease	
2.5.7 Long-term trend Period	1996-2011	
2.5.8 Long-term trend Trend direction	decrease	
2.5.9 Area of suitable habitat for the species	a) Value in km²	
	The relatively narrow riparian fringe used by Desmoulin's snail on river systems is hard to calculate, and will be a fraction of the bounding polygon on either side of the river corridor. This narrowness is part of the reason, probably, for the decline in riverine systems; the larger	

	areas found in the shallowly sloping mere edges of the Midland sites give a much greater habitat zone the species can use. Subsequent work by Abrehart (2012) at Quoisely Mere showed that some 5ha of habitat is present at this site, capable of supporting some 31 million snails. The other Midlands meres will have similar levels of importance for this species.	
	b) Absence of data indicated as '0'	
2.5.10 Reason for change Is the difference between the value reported at 2.5.1 and the previous reporting round mainly due to	a) Genuine change?	True
	b) Improved knowledge/more accurate data?	True
	c) Use of different method (e.g. "Range tool")?	False

2.6 Main pressures		
a) Pressure	b) Ranking	c) Pollution qualifier
	H = high importance M = medium importance L = low importance	
J02: human induced changes in hydraulic conditions	H	
K01: abiotic (slow) natural processes	H	
A04: grazing	M	
H02: Pollution to groundwater (point sources and diffuse sources)	M	
A08: Fertilisation	L	

The extremely low river levels on several of the snail localities was noted by the surveyors, leaving the adjacent fen systems much drier than they should be, and resulting in invasion by drier tolerant plant species, and reduction or localised extinction of the snail. Whether drought is the only driver is a moot point. The abstraction thresholds are frequently set to sustain riverine ecosystems, though on the SAC wetlands, the Review of Consents and subsequent water level standards should have qualified this level to account for marginal fen wetting. The real drop in ground water levels as evidenced by drought orders etc will not have helped.

it is considered by the surveyors that in-catchment dispersal of Desmoulin's whorled snail may well be facilitated by flood events, so a lack of floods coupled with then lower water levels may have acted in concert to diminish local populations.

2.6.1 Method used – Pressures	based exclusively or to a larger extent on real data from sites/occurrences or other data sources
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2.7 Threats		
a) Threat	b) Ranking	c) Pollution qualifier
	H = high importance M = medium importance L = low importance	
J02: human induced changes in hydraulic conditions	H	
K01: abiotic (slow) natural processes	H	
A04: grazing	M	

The prospect of more erratic rainfall patterns, leading to greater abstraction for consumption, or excessive flood events removing upstream populations, seems to bode ill for riverine riparian populations of this species.

2.7.1 Method used – Threats	expert opinion
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2.8 Complementary information	
2.8.1 Justification of % thresholds for trends	
2.8.2 Other relevant information	<p>Abstractions are regulated and were subject to a review of Consents around the SAC series, though the drying trend which these riverine systems have experienced over the last few years seemed to have dropped water levels of the adjacent and marginal fens to levels that compromise the snail. In this respect, low rainfall is more of a threat than abstraction at the moment</p> <p>The biggest losses seems to concentrate on riverine systems as opposed to those populations on more isolated fens, marshes and the marginal vegetation of meres. This is not so much a water quality as probably a water quantity factor, leaving the adjacent fens drier than is required for this hydrophilic species. This is, of late, probably a reduction in precipitation issue rather than abstraction, though a review perhaps is needed to re-balance the decisions on abstraction.</p> <p>The 9 new West Midlands populations have added some 8,262 snails (adults and juveniles) into the assessment, it previously only having been known from Sweat Mere SSSI, and opens up the possibility of a new population centre within the range, albeit it very isolated as the meres have little meaningful</p>

	<p>connection to each other, and none with the southern part of the range in the UK.</p> <p>In the overall Norfolk & Suffolk survey, the surveyor noted: Of the ten sites surveyed, only seven still held a population of <i>Vertigo moulinsiana</i>, of these only four held healthy populations. A total of 203 samples were taken across all the sites in the most suitable habitats they contained, of these only 43 samples produced specimens of <i>Vertigo moulinsiana</i>.</p>
2.8.3 Trans-boundary assessment	

2.9 Conclusions (*assessment of conservation status at end of reporting period*)

Please refer to the United Kingdom assessment for this species.

3 Natura 2000 coverage & conservation measures - Annex II species (*only applies to species listed under Annex II of the Directive*)

3.1 Population							
3.1.1 Population size Estimation of population size included in the SAC network	<table border="1"> <tr> <td>a) Unit</td> <td>number of map 1x1 km grid cells</td> </tr> <tr> <td>b) Minimum</td> <td>25</td> </tr> <tr> <td>c) Maximum</td> <td>25</td> </tr> </table>	a) Unit	number of map 1x1 km grid cells	b) Minimum	25	c) Maximum	25
	a) Unit	number of map 1x1 km grid cells					
	b) Minimum	25					
	c) Maximum	25					
3.1.2 Method used Estimate based on partial data with some extrapolation and/or modelling							
3.1.3 Trend of population size within the network (short-term trend) decrease Despite an enhanced number of samples taken across the Natura 2000 series, it only managed second rank to the SSSI series in the number of samples deemed strong enough (74 in SAC to 104 samples in the SSSI series. Non designated sites had a 26.8% favourable sample set, with 30 samples, but the second largest loss/ not finding value of the whole sample (65 samples in this category out of the 112 total taken on these non-sites). It is acknowledged though, that the populations do undergo							

	<p>natural surges, and some of the variation will be quite natural and not indicative of decline.</p> <p>Within the SAC series, a number of local populations have been lost: Since the selection of the sites for inclusion in the Kennett & Lambourn SAC in 1996/1997 the snail had been completely lost from Hunts Green and Bagnor Island (the translocation site), and local populations had become extinct or major declines occurred at Boxford and Rack Marsh. Within the Waveney & Ouse Valley Fens SAC, Thelnetham Fen SSSI: a total of 18 samples were taken, of which none contained <i>Vertigo moulinsiana</i>.</p> <p>On the River Wensum SAC, at Hellesdon Marshes SSSI, a total of 22 samples were taken, none of which contained <i>Vertigo moulinsiana</i>. There was no suitable habitat at Hellesdon Marshes SSSI. The report notes that Hellesdon Marshes SSSI showed considerable suffering from low water levels, most of the site was very dry. Re-establishing the hydrological connectivity of this system should be addressed. The River Wensum appears to have had a dramatic decline of <i>Vertigo moulinsiana</i> in recent years and should be extensively surveyed to establish if there is a viable population in the catchment.</p> <p>The 2011 survey have shown that <i>Vertigo moulinsiana</i> is still widespread at Westbere Marshes on the north side of the River Great Stour from where it was found in 42 of the 61 sample sites. However, it was not found in any of the 17 sample sites that constituted the most likely habitat areas to the south side of the river. This is in contrast to the survey of 2000, where the south side of the river, west of Little Puckstone farm, the snail was found alongside ditches with margins vegetated by <i>Carex acutiformis</i> and <i>Glyceria maxima</i>. On the north side of the river (Westbere Marshes), <i>V. moulinsiana</i> was found to be widespread and locally common in a range of habitats including overgrown ditches, fen/carr at the margins of Westbere Lake, and open areas of reedbed with <i>Glyceria</i>.</p> <p>These changes were consistent with a reduction in water tables and a general drying out of riverine sites, but although hydrological explanations appeared to explain several of the recorded crashes in <i>V. moulinsiana</i> populations, there were still some observations that did not appear to be consistent with such explanation, so other factors may also be involved.</p> <p>In contrast, many of the more isolated fen sites seem to have fared better.</p>
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3.2 Conservation measures

Conservation measures taken (i.e. already being implemented) within the reporting period and provided information about their importance, location and evaluation.

3.2.1 Measure	3.2.2 Type	3.2.3 Ranking	3.2.4 Location	3.2.5 Broad evaluation of the measure
		H = high importance	where the measure is PRIMARILY applied	

	a) Legal/statutory	b) Administrative	c) Contractual	d) Recurrent	e) One-off	M = medium importance L = low importance	a) Inside	b) Outside	c) Both inside & outside	a) Maintain	b) Enhance	c) Long term	d) No effect	e) Unknown	f) Not evaluated
4.0: Other wetland-related measures				Y		M			Y		Y				
4.2: Restoring/improving the hydrological regime	Y	Y		Y		H			Y				Y		
4.3: Managing water abstraction	Y	Y		Y		M			Y				Y		

The population losses across the river systems suggests some hydrological impacts, although the linkage is not clear cut. The narrow riparian zone used by the species is vulnerable to changes in the hydrological regime, though how much of this is related to short term drought, or abstraction impacts not taking account of drought, is hard to untangle. Surveyors have reported much of the riparian habitat looking in good condition, so the losses may have sprung from short term but serious impacts. Loss of upstream colonies also break the chain of re-occupation through any flooding events, as it is believed that this species may well be able to raft or transported vegetation.