European Community Directive
on the Conservation of Natural Habitats
and of Wild Fauna and Flora
(92/43/EEC)

Second Report by the United Kingdom under Article 17

on the implementation of the Directive from January 2001 to December 2006

Conservation status assessment for :

S1016: *Vertigo moulinsiana* - Desmoulin's whorl snail

S1016 *Vertigo moulinsiana* Desmoulin's Whorl Snail

Audit trail compiled and edited by JNCC and the Invertebrate Inter-Agency Working Group

This document is an audit of the data and judgements on conservation status in the UK's report on the implementation of the Habitats Directive (January 2001 to December 2006) for this species. Superscript numbers accompanying the headings below, cross-reference to headings in the corresponding Annex B reporting form. This supporting information should be read in conjunction with the UK approach for species (see 'Assessing Conservation Status: UK Approach').

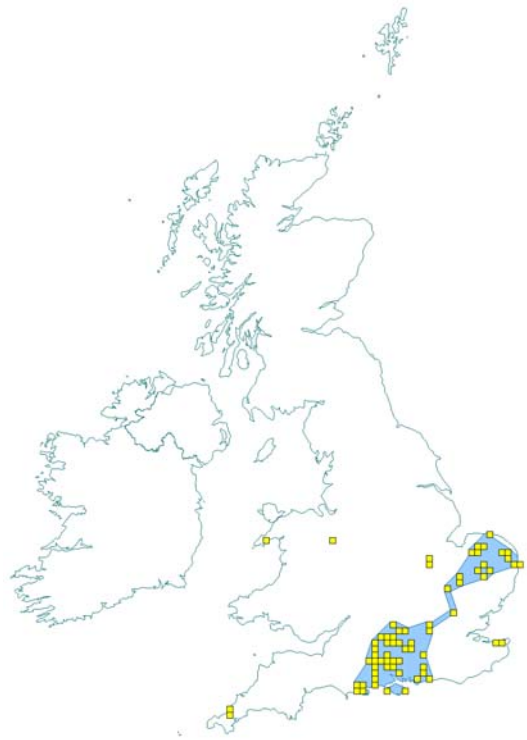
1. Range Information[2.3]

1.1 Surface area of range[2.3.1]

17,466 km^2

The above estimate was calculated using records collected from 1990 onwards within the Alpha Hull software. Extent of occurrence was used as a proxy measure for range (see Map 1.1), and a 10km resolution was assumed. The value of alpha was set at 20km to reflect the mobility of this species.

Map 1.1. Current extent of occurrence and occupied 10-km squares (1990-2002)



Data sources provided in Section 6

1.2 Date of range determination[2.3.2]

1990 – 2002

The current extent of occurrence was calculated using records collected between1990 to 2002 (2002 being the most recent records available).

1.3 Quality of range data[2.3.3]

Moderate

There has been good coverage from the recording scheme run by the Conchological Society of Great Britain and Ireland, with extensive surveys targeted specifically at the species. However data from recent survey work has not yet been collated: data from the NBN includes records collected by the Conchological Society before 1999. Discussion with surveyors and report authors indicates that the range of the species is probably more widespread than formerly thought, but in the absence of better information data quality is reported as moderate.

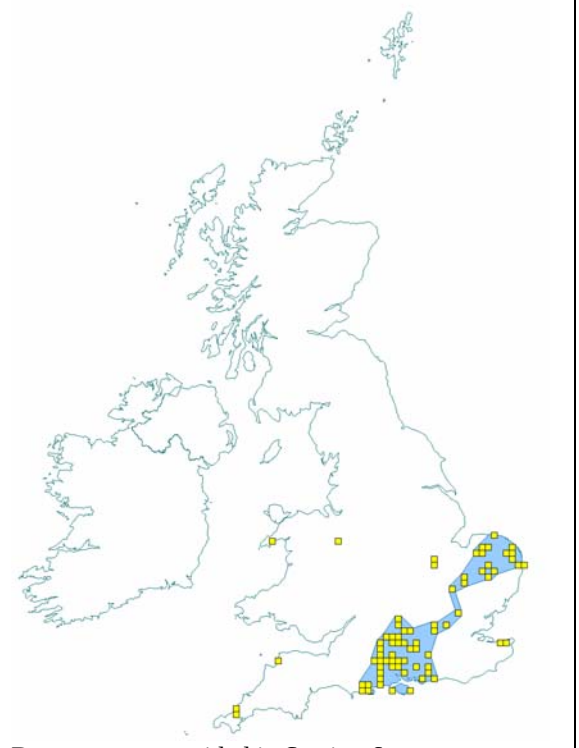
1.4 Range trend[2.3.4] and range trend magnitude[2.3.5]

Stable

Recent recording has considerably increased our knowledge of this species' distribution; it has been found in a number of new areas and habitat types as a result of targeted survey and more casual recording. For this reason, the 'historic' extent of occurrence (Map 2.1) was calculated using all records from 1960 to 2002, the assumption being that this species is likely to have always been present in those 10km squares that have only recently been identified as a result of increased survey.

Based upon this, 'historic' extent of occurrence has been calculated as 18,555km^2. Since 'current' has been calculated as 17,466km^2, this suggests a 6% decline since the 1960s.

Map 1.2. Historic extent of occurrence and occupied 10-km squares (1960-2002)



Data sources provided in Section 6

1.5 Range trend period [2.3.6]

1960 – 2002

1.6 Reasons for reported trend in range[2.3.7]

Not applicable

1.7 Favourable reference range[2.7.1]

17,466 km^2

The decision tree in Note 1 has been used as a guide in determining the favourable reference range estimate (see 'Assessing Conservation Status: UK Approach').

Current range is stable and not restricted. There is no evidence to suggest that it is insufficiently large to support the species at favourable status. The favourable reference range has therefore been set as equal to current.

1.8 Range conclusion[2.8]

Favourable

There has been no reliable evidence of a contraction in range, and in expert opinion, the current range is an adequate favourable reference value. So, in accordance with Annex C, range has been assessed as favourable.

2. Population of the species[2.4]

2.1 Population estimate[2.4.1]

68 occupied 10-km squares

There is no UK population estimate at present. Number of occupied 10-km squares has therefore been used as a surrogate, based on records collected between 1990 and 2002 (see Map 1.1).

Populations at individual sites have been found to fluctuate, probably in tune with the wetness/dryness of the site though this has not been 100% proven. The most recent estimates at some sites, during a period of dry weather, have been shown to be lower than earlier surveys, with apparent loss of some subpopulations, it is not known whether these will recover, be re-colonised or remain lost.

2.2 Date of population estimate[2.4.2]

1990 – 2002

In the absence of more recent/comprehensive data, the 'current' population has been calculated using the same time class as that used for 'current' range.

2.3 Method of population estimate[2.4.3]

2 = extrapolation from surveys of part of the population, sampling

In the absence of true population data, the number of occupied 10-km squares has been used as a surrogate. The estimate was derived from the Conchological Society's mollusc (non-marine) data for Great Britain and Ireland (which includes all survey data collected by members of the Conchological Society), and Natural England's Invertebrate Site Register (which comprises data gathered from a wide variety of often scattered sources). Neither of these sources represents a complete inventory of the species.

2.4 Quality of population data[2.4.4]

Poor

No comprehensive population estimate exists for this species, and the estimate reported is based on records dated from 1990-2002 only. Further, population can only be reported at a coarse, 10km scale. Data quality is therefore reported as poor.

2.5 Population trend[2.4.5] and population trend magnitude[2.4.6]

Unknown

Intensive numerical surveys have been undertaken at a number of sites, though not yet for a long enough timescale to detect any real trend. Also, there is considerable intrinsic variability of this annual species at sites between years - in the last few dry years, there has been a downward trend at a small number of sites, but it is uncertain whether this is part of a longer term trend.

2.6 Population trend period[2.4.7]

1994 – 2006

2.7 Reasons for reported trend in population[2.4.8]

Not applicable

2.8 Justification of % thresholds for trends[2.4.9]

Not applicable

2.9 Main pressures[2.4.10]

502 Routes, autoroutes
800 Landfill, land reclamation and drying out, general
850 Modification of hydrographic functioning, general
853 management of water levels
910 Silting up
920 Drying out
930 Submersion
950 Biocenotic evolution

2.10 Threats[2.4.11]

502 Routes, autoroutes
800 Landfill, land reclamation and drying out, general
850 Modification of hydrographic functioning, general
853 management of water levels
910 Silting up
920 Drying out
930 Submersion
950 Biocenotic evolution

2.11 Favourable reference population[2.7.2]

Unknown

The decision tree in Note 1 has been used as a guide in determining the favourable reference population estimate (see 'Assessing Conservation Status: UK Approach').

Current abundance is still largely unknown, as are current trends. Where number of occupied 10-km squares is used as a proxy (with 'historic' comprising records from 1960-2002 (see Map 1.2), records suggest a decline of 7% since the 1960s (from 73 to 68 10-km squares).

However, current data is insufficient to judge vulnerability of extant populations to stochastic events. For these reasons, population has been assessed as unknown.

2.12 Population conclusion[2.8]

Unknown

There is insufficient information available to assess population at present.

3. Habitat for the Species in the Biogeographic Region or Sea[2.5]

Vertigo moulinsiana is commonly quoted as requiring unshaded, calcareous floodplain marshland dominated by large wetland graminoids, especially *Glyceria maxima*, larger *Carax* species, *Phragmites* and *Cladium*, in particular areas with groundwater more or less at the surface and the majority of populations are known from these types of habitat. However, some recent discoveries have been in other habitats, including densely vegetated grazing marsh ditches with considerable dense litter, coastal short herb-rich fen associated with dunes. The common factor at all sites being a sufficiently humid environment for the species.

3.1 Surface area of habitat[2.5.2]

Unknown

3.2 Date of estimation[2.5.3]

Not applicable

3.3 Quality of data on habitat area[2.5.4]

Poor

Knowledge of *V. moulinisana*'s habitat was formerly thought to be very good. However, recent discoveries indicate that the species may be present in populations in other habitats elsewhere, currently unknown. The species is very small and occurs in cryptic locations and is therefore likely to be overlooked in habitats where it is unexpected.

No area estimate has been calculated to date.

3.4 Habitat trend[2.5.5]

Unknown

Habitat is thought to be relatively stable at present. However, evidence shows that any loss or deterioration of habitat, in particular changes in water levels, will quickly effect sub-populations of this annual species causing local extinctions (Tattersfield & Killeen 2006). This may be attributable to drier weather or to changes in water levels brought about by local water abstraction or to a combination of factors. As monitoring continues and more is understood about the ecology of the species habitat requirements should become clearer.

3.5 Habitat trend period[2.5.6]

2002 – 2006

In the absence of comprehensive data, inferences on habitat trends can only be made in the shorter term.

3.6 Reasons for reported trend in habitat[2.5.7]

Not applicable

3.7 Suitable habitat for the species (in km^2)[2.7.3]

Unknown

3.8 Habitat conclusion[2.8]

Unknown

The species has proved slightly more versatile in its habitat requirements than formerly thought and despite a possible temporary downturn in part of one of its key sites, overall, expert opinion is that habitat for the known sites for this species is Favourable. That said, we do not have sufficient data to assess recently discovered sites. Our knowledge of *V.moulinsiana* habitat requirements is patchy, hence the overall conclusion is given here as Unknown.

4. Future Prospects[2.6]

Good prospects

V.moulinsiana has been the subject of a species action plan under the UK Biodiversity Action Plan, and is included on the revised UKBAP list. This species is offered good legislative protection, is actively managed at some sites and, at present, is not subject to any substantial threats. As this is an annual species that is particularly sensitive to water levels within its habitat, future prospects could change to become unfavourable quite quickly. As it is not possible to reliably forecast possible changes to habitat quality over the period of the next reporting round the present assessment is that future prospects are good.

4.1 Future prospects conclusion[2.8]

Favourable

5. Overall Conclusion [2.8]

Unknown

Range and Future Prospects have been assessed as Favourable, Population and Habitat have been assessed as Unknown, therefore in accordance with Annex C, the overall conclusion is Unknown.

Table 5.1. Summary of conclusions

Parameter	Judgement	Grounds for Judgement (in accordance with Annex C)	Reliability*
Range	Favourable	Stable (loss and expansion in balance) or increasing and not smaller than the 'favourable reference range'	2
Population	Unknown	Insufficient reliable information available	N/A
Habitat	Unknown	Insufficient reliable information available	2
Future Prospects	Favourable	Main pressures and threats to the species not significant; species will remain viable on the long-term	2
Overall Assessment	Unknown	Two or more 'Unknown' combined with Favourable or all 'Unknown'	2

*1=High, 2=Moderate, 3=Low

High – Expert opinion is that the concluding judgement accurately reflects the current situation based on a professional understanding of the species. For range, population, and habitat, quality of data used to establish the current estimate has been identified as "good"; data used to inform trends is comprehensive and up to date.

Moderate – A greater understanding of the feature, or the factors affecting it, is required before a confident concluding judgement can be made by experts. For range, population, and habitat, the current estimate and/or trend are based on recent, but incomplete or limited survey data; or alternately, a comprehensive, but outdated (pre-1994) review.

Low – Judgements, and comprising estimates, are based predominately on expert opinion.

N/A – Assessment conclusion is "unknown", on the basis of insufficient reliable information

6. References

BAKER, R. & HOWLETT, D. 1997. Norfolk Biodiversity Action Plan for *Vertigo moulinsiana* (Oupuy). *Unpublished report*. Ted Ellis Trust/English Nature.

BBONT. 1997. A species action plan for Desmoulin's whorl snail (*Vertigo moulinsiana*) in Berkshire, Buckinghamshire and Oxfordshire. *Unpublished report* by BBONT & English Nature, Berkshire.

CAMERON, R.A.D. 1992. *Vertigo moulinsiana*, *V. IiIljeborgi* and others in Shropshire. *Journal of Conchology*, London, **34**: 186.

CAMERON, R.A.D. 1992. A survey of six marshes in Shropshire for land molluscs. *Joint Nature Conservation Committee Report*. 130. Peterborough: Joint Nature Conservation Committee.

CHATFIELD, J. 1997. Field work on the River Itchen to search for Vertigo moulinsiana, 26/27 March 1996. In: Vertigo moulinsiana: Surveys and studies commissioned in 1995-96. *English Nature Research Reports*. 217. Ed. C.M. Drake, pp. 5-8.

CHATFIELD, J. 1997. Survey for *Vertigo moulinsiana* at Chilbolton Common. In: Vertigo moulinsiana: Surveys and studies commissioned in 1995-96. *English Nature Research Reports*. 217. Ed. C.M. Drake, pp. 2-4.

CHATFIELD, J.E. 1997. Desmoulin's whorl snail (*Vertigo moulinsiana*) at selected sites in Oxfordshire, Berkshire and Hampshire. *Unpublished report*. English Nature.
DAVIS, S.G. 1957. Notes on *Vertigo moulinsiana* (Dupuy) in Hampshire and the Isle of Wight. *Journal of Conchology*, **24**: 192.

DAVIS, S.G. 1957. Vertigo moulinsiana (Dupuy) in Dorset. Journal of Conchology, **24**: 193-194. DRAKE, C.M. (Ed.). 1997. *Vertiqo moulinsiana*: Surveys and studies commissioned in 1995-96. *English Nature Research Reports*. 217. English Nature.

DRAKE, C.M. 2000. A review of the status, distribution and habitat requirements of Vertigo moulinsiana in England. *Journal of Conchology*, **36**: 63-79.

DRAKE, C.M. 2005. Records of rare aquatic molluscs in Norfolk grazing marshes. Trans. *Norfolk Norwich Nat Soc*. **38**. 48-53.

ENGLISH NATURE. 2001. *Desmolin's whorl snail: a rare European snail*. English Nature, Peterborough.

HIGHWAYS AGENCY. 1996. A34 Newbury bypass agreed action plan for Vertigo moulinsiana. *Unpublished report*, Highways Agency, Birmingham.

HOLYOAK, G.A. 2003. Habitats of Vertigo moulinsiana (Gastropoda: Vertiginidae) in Cornwall. *Journal of Conchology*, **38**: 79-86.

HOLYOAK, D.T., HOLYOAK, G.A. & WILLING, M.J. 2001. Distribution of Desmoulin's Whorl Snail *Vertigo moulinsiana* (Gastropoda) on the River Frome, Dorset. Unpublished report to the Environment Agency, Blandford Forum.

KILLEEN, I.J. 1991. The Mollusca of East Walton Common. *Invertebrate Site Register Report*. 3. Peterborough: Joint Nature Conservation Committee.

KILLEEN, I.J. 1992. The land and freshwater molluscs of Suffolk. Ipswich, Suffolk Naturalists Society. KILLEEN, I.J. 1996. A34 Newbury bypass factual report. Survey for the snail *Vertigo moulinsiana*. *Unpublished report*. Highways Authority.

KILLEEN, I.J. 1997. An assessment of the status and distribution of the terrestrial pulmonate snail Vertigo moulinsiana (Dupuy) in the Kennet and Lambourn Valleys, Berkshire. In: *Vertigo moulinsiana*: Surveys and studies commissioned in 1995-96. *English Nature Research Reports*. 217. Ed. C.M. Drake, pp. 9-24.

KILLEEN, I.J. 1997. Further survey of the River Avon and tributaries (Wiltshire/Hampshire) and associated wetland habitats to assess their importance for the snail *Vertigo moulinsiana*. In: *Vertigo moulinsiana*: Surveys and studies commissioned in 1995-96. *English Nature Research Reports*. 217. Ed. C.M. Drake, pp. 42-43.

KILLEEN, I.J. 1997. A survey of the River Avon and tributaries (Wiltshire/Hampshire) and associated wetland habitats to assess their importance for the snail *Vertigo moulinsiana*. In: *Vertigo moulinsiana*: Surveys and studies commissioned in 1995-96. *English Nature Research Reports*. 217. Ed. C.M. Drake, pp. 25-41.

KILLEEN, I.J. 1997. A survey to determine boundaries of pSSSI for *Vertigo moulinsiana* on the River Bourne, Wiltshire. In: *Vertigo moulinsiana*: Surveys and studies commissioned in 1995-96. *English Nature Research Reports*. 217. Ed. C.M. Drake, pp. 44-45.

KILLEEN, I.J. 1998. A survey of Forestry Commission land near Santon Downham for the terrestrial mollusc *Vertigo moulinsiana*. *Unpublished report*. Malacological Services.

KILLEEN, I. J. 2000. *Vertigo moulinsiana* in Kent. *Journal of Conchology*, **37**: 81.

KILLEEN, I.J. 2003. A review of EUHSD *Vertigo* species in England and Scotland (Gastropoda, Pulmonata: Vertiginidae). *Heldia*, **5**: 73-84.

KILLEEN, I.J. 2003. Ecology of Desmoulin's whorl snail. Conserving Natura 2000 *Rivers Ecoloqy Series.* No. 6. English Nature.

KILLEEN, I.J. & WILLING, M.J. 2002. Desmoulin's Whorl Snail (*Vertigo moulinsiana*) distribution survey of the River Avon cSAC. Unpublished report to the Environment Agency, Exeter.

KILLEEN, I.J. & MOORKENS, EA 2003. Monitoring Desmoulin's whorl snail. Conserving Natura 2000 *Rivers Monitoring Series*. No. 6. English Nature.

KILLEEN, I.J. & STEBBINGS, RE. 1997. A34 Newbury bypass. Results of monitoring the translocated habitat for *Vertigo moulinsiana*. First annual report. *Unpublished report*. Mott MacDonald, Winchester.

KILLEEN, I.J. & STEBBINGS, RE. 1998. A34 Newbury bypass. Results of monitoring the translocated habitat for *Vertigo moulinsiana*. Second annual report. *Unpublished report*. Mott MacDonald, Winchester.

KILLEEN, I. & STEBBINGS, R.E. 1999. A34 Newbury bypass. Results of monitoring the translocated habitat for *Vertigo moulinsiana*. Third annual report. *Unpublished report* to Mott. MacDonald, Winchester.

KIRBY, P. 1997. *Vertigo moulinsiana* survey of sites in Hertfordshire and Essex, March 1996. In: *Vertigo moulinsiana*: Surveys and studies commissioned in 1995-96. *English Nature Research Reports*. 217. Ed. C.M. Drake, pp. 46-55.

LANGMEAD, L.B. 1946. *Vertigo moulinsiana* Dupuy in West Sussex. *Journal of Conchology*, **22**: 186.

PITCHFORD, G.W. 1969. *Vertigo moulinsiana* (Dupuy) in Dorset. *Conchologists' Newsletter*, **30**: 130.

PLANT, C.W. 1991. Invertebrates at the Frays Farm/Denham Lock complex, Middlesex: an assessment. *Unpublished report*. English Nature.

SEDDON, M.B. 1997. Distribution of Vertigo moulinsiana (Dupuy, 1849) in Europe. In: Vertigo moulinsiana: Surveys and studies commissioned in 1995-96. *English Nature Research Reports*. 217. Ed. C.M. Drake, pp. 56-68.

STEBBINGS, R.E. & KILLEEN, I.J. 1998. Translocation of habitat for the snail Vertigo moulinsiana in England. In: Molluscan conservation: a strategy for the 21st Century. *Journal of Concholoqy*. Special Publication No. 2. Eds. I.J. Killeen, M.B. Seddon , & A.M. Holmes, pp. 191-204. Conchological Society of Great Britain and Ireland.

STRATTON, L.W. 1954. The Mollusca of Hertfordshire. *Transactions of the Hertfordshire Natural History Society*, **24**: 81-118.

TATTERSFIElD, P. & KILLEEN, I. 2006. Major declines in populations of the wetland snail *Vertigo moulinsiana* in a UK protected wetland site. *Tentacle*. **14** 17-18.

TATTERSFIElD, P. & MCINNES, R. 2003. Hydrological requirements of *Vertigo moulinsiana* on three candidate Special Areas of Conservation in England (Gastropoda, Pulmonata: Vertiginidae). *Heldia*, **5**: 135-147.

WEIDELI, M. 1993. Pewsey field meeting. *Conchologists' Newsletter*, **7**: 189-190.

WEIDELI, M. 1995. Field meeting in the Newbury area: 15 October 1995. *Conchologists' Newsletter,* **7**: 462-463.

WILLING, M.J. 1991. A molluscan survey of wetlands in the Rother Valley, West Sussex. Invertebrate Site Register Report. 6. Peterborough: Joint Nature Conservation Committee.

WILLING, M.J. 1992. A molluscan survey of wetlands in the Rother Valley, West Sussex (extension report). *Joint Nature Conservation Committee Report.* 76. Peterborough: Joint Nature Conservation Committee.

WILLING, M.J. 1996. Field survey of selected sites on the route of the proposed Newbury bypass (16 March 1996). *Unpublished report*. Friends of the Earth.

WILLING, M.J. 1998. A molluscan survey of selected sites around Chichester Harbour. A unpublished survey commissioned by Chichester Harbour Conservancy

WILLING, M.J. 1999. *Bishop's Waltham Moors: A preliminary molluscan survey 1999*. An unpublished report for Hampshire Countryside Service, Netley Abbey, Southampton

WILLING, M.J. 2002. Bishop's Waltham Moors: Terrestrial Molluscan Survey (2000 – 2002). Hampshire County Council, Countryside Service, Netley Abbey, Southampton

WILLING, M.J. 1998. A molluscan survey: Lower Avon Valley. Unpublished report for the Environment Agency, Blandford Forum.

WILLING, M.J. 2003. A review of the Emu Ltd "Fishbourne Ecological Study" December 2002 Draft Report No. 03/j/05/0439/0329 with particular reference to Desmoulin's Whorl Snail *Vertigo moulinsiana* and giving conclusions and recommendations. Unpublished report to Mott MacDonald

WILLING, M.J. 2005a. Fishbourne Reedbed, Chichester Harbour – *Vertigo moulinsiana.* Unpublished report (Contract No. VB.09.M.05.06) to English Nature, Lewes.

WILLING, M.J. 2005b. Harlow North: A molluscan survey of selected areas to assess status of *Vertigo moulinsiana* and other rare species of conservation importance. A survey commissioned by Ecological Planning & Research Ltd., Winchester

WILLING, M.J. 2006. A Molluscan survey for Desmoulin's Whorl Snail *Vertigo moulinsiana* and the Fine-lined Pea Mussel *Pisidium tenuilineatum* at Upper Woodford (River Avon) & near Dinton (River Nadder). A survey commissioned by English Nature as part of the STREAM project (contract report no. LIFE05 NAT/UK/)143 – A1/919. Devizes.

WILLING, M.J., HOLYOAK, G. & HOLYOAK. D. T. 2005. Report to the Environment Agency on a survey of historic sites for five UK BAP Priority Species (*Pisidium tenulineatum, Pseudanodonta complanata Segmentina nitida, Valvata macrostoma* and

Vertigo moulinsiana) of Mollusca in the South Wessex area, 2004 – 2005. Unpublished report to the Environment Agency, Blandford Forum.

Map Data Sources

Conchological Society - Mollusc (non-marine) data for Great Britain and Ireland; Natural England - Invertebrate Site Register (via the NBN Gateway)

KILLEEN, I.J. 2000. *Vertigo moulinsiana* in Kent. Journal of Conchology, 37, 81-82

HOLYOAK, G.A. 2003. Habitats of *Vertigo moulinsiana* (Gastropoda: Vertiginidae) in Cornwall. Journal of Conchology 38(1): 79-85