

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 :

**S1390: *Marsipella profunda* - Western rustwort.**

Please note that this is a section of the report. For the complete report visit <http://www.jncc.gov.uk/article17>

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## **S1390 *Marsupella profunda* Western rustwort**

*Audit trail compiled and edited by JNCC and the Plant Conservation 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').

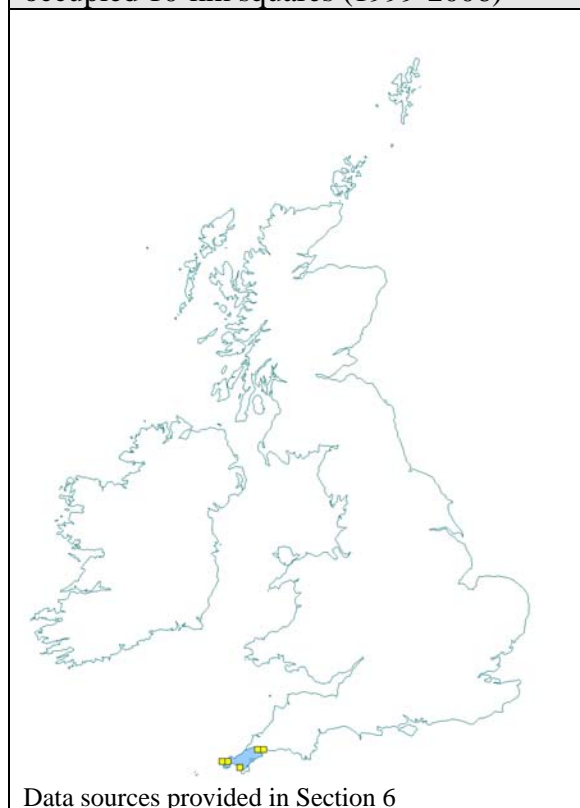
### **1. Range Information<sup>2.3</sup>**

#### **1.1 Surface area of range<sup>2.3.1</sup>**

**1,308km<sup>2</sup>**

The above estimate was calculated within Alpha Hull software, using extent of occurrence as a proxy measure for range (as shown in Map 1.1 below). The value of alpha was set at 50 km to reflect the dispersal capacity of this species, and its dynamic nature in colonising suitable new china clay workings. The alpha hull (range area) was clipped to include terrestrial areas only.

**Map 1.1** Current extent of occurrence and occupied 10-km squares (1999-2006)



#### **1.2 Date of range determination<sup>2.3.2</sup>**

**1999 – 2006**

All sites in SSSIs/SACs were surveyed in 2006. Several other important sites however have not been surveyed since 1999-2003. A new population was also found in 2007. However, there are plans to relocate this to an existing site, so it has not been included in consideration of the 'current' range.

### **1.3 Quality of range data<sup>2.3.3</sup>**

#### **Good**

This species has been well surveyed; all known sites in SSSIs/SACs were visited in 2006, and all sites have been surveyed since 1999.

### **1.4 Range trend<sup>2.3.4</sup> & Range trend magnitude<sup>2.3.5</sup>**

#### **Stable**

*Marsupella profunda* was not recognised as a separate species in the UK until 1990. However, professional opinion is that the range is unlikely to have been much greater than its current limits. This is because it is a hyperoceanic plant with exacting habitat requirements, and this provides a natural restriction to range.

Since the first systematic surveys were undertaken, some sites have been lost from within the known range. However, these comprised very small, outlier populations, considered marginal in terms of species survival. Therefore, overall, range has probably remained stable.

### **1.5 Range trend period<sup>2.3.6</sup>**

#### **1999 – 2006**

No systematic surveys were undertaken until 1999. Therefore, trends can only be considered from 1999 onwards.

### **1.6 Reasons for reported trend in range<sup>2.3.7</sup>**

#### **Not applicable**

### **1.7 Favourable reference range<sup>2.7.1</sup>**

#### **1,308km<sup>2</sup> (Equal to current)**

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').

Given that the species' habitat requirements provide a natural restriction to its range, and also that the species was only recognised in 1990, the current estimate has been set as the favourable reference range.

### **1.8 Range conclusion<sup>2.8</sup>**

#### **Favourable**

The current range is stable, and equal to the favourable reference range. Therefore, in accordance with Annex C, the assessment for range is favourable.

## **2. Population of the species<sup>2.4</sup>**

### **2.1 Population estimate<sup>2.4.1</sup>**

#### **7 sites**

In 2006, the species was known at seven sites, some of which contained large (albeit fluctuating) populations. A new, very small population was identified in January 2007.

However, there are plans to translocate this to an existing site. Therefore, it has not been included in the reported estimate. Number of sites has been used as a proxy for population due to the natural fluctuations in numbers of plants.

## **2.2 Date of population estimate<sup>2.4.2</sup>** **2006**

## **2.3 Method of population estimate<sup>2.4.3</sup>** **3 = from comprehensive inventory** Unpublished survey data (D. Holyoak).

## **2.4 Quality of population data<sup>2.4.4</sup>** **Moderate**

Known populations have been well-surveyed. However, many potential sites cannot be surveyed due to lack of agreed access to industrially operational sites. Therefore, the reported population may be an under-estimate.

## **2.5 Population trend<sup>2.4.5</sup> & Population trend magnitude<sup>2.4.6</sup>** **Stable**

*M. profunda* is a dynamic species, and populations are always changing. Since 1990, it has been known at 10-11 sites, with 3-4 sites having been lost since. All of these lost populations have been small.

Since 2001, the number of sites appears to have remained stable. However, populations within these sites are prone to extreme fluctuations.

## **2.6 Population trend period<sup>2.4.7</sup>** **2001 – 2006**

## **2.7 Reasons for reported trend in population<sup>2.4.8</sup>** **Not applicable**

## **2.8 Justification of % thresholds for trends<sup>2.4.9</sup>** **Not applicable**

## **2.9 Main pressures<sup>2.4.10</sup>**

**390 Mining and extraction activities not referred to above** - The cessation of the china clay industry in west Cornwall

**950 Biocenotic evolution**– Natural succession

## **2.10 Threats<sup>2.4.11</sup>**

**390 Mining and extraction activities not referred to above** - The cessation of the china clay industry in west Cornwall

## **2.11 Favourable reference population<sup>2.7.2</sup>**

**At least 10 sites**

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’).

Since it exists in few sites, and undergoes extreme fluctuations in the number of subpopulations and individuals, expert opinion is that current population is not sufficient to ensure long-term viability. However, quantifying a favourable reference value for such a dynamic plant is difficult, and for this reason can only be reported as 'at least ten sites'.

## **2.12 Population conclusion<sup>2.8</sup>**

### **Unfavourable – Bad**

The current population is more than 25% below the favourable reference value. However, over the past five years it has been more or less stable, and it may be that there are additional sites that have not yet been surveyed due to lack of access. Because of this, the assessment is Unfavourable – Bad, but with low confidence (as there could be more sites than are known).

## **3. Habitat for the species in the Biogeographic region or sea<sup>2.5</sup>**

This liverwort colonises moist, crumbling mica-rich weathered granite and china clay waste. It is a pioneer species, and is probably fairly mobile within its very restricted habitat: new plants growing rapidly from spores as older plants are eventually out-competed by surrounding vascular plant vegetation. It will not tolerate heavy shade.

### **3.1 Surface area of habitat<sup>2.5.2</sup>**

**Unknown**

### **3.2 Date of estimation<sup>2.5.3</sup>**

**Not applicable**

### **3.3 Quality of data on habitat area<sup>2.5.4</sup>**

**Poor**

New habitat is created by active china clay mining. However, quarries can only be surveyed when they are no longer operational. Therefore, although new habitat is still being produced in east Cornwall, very little is known about it.

### **3.4 Habitat trend<sup>2.5.5</sup>**

**Decreasing**

Active china clay quarrying has now stopped in west Cornwall and hence the area of suitable habitat has declined.

### **3.5 Habitat trend period<sup>2.5.6</sup>**

**1994 – 2006**

Active mining in west Cornwall stopped in the early 1990s. However, it will have been in decline for several years prior to this.

### **3.6 Reasons for reported trend in habitat<sup>2.5.7</sup>**

**3 = Direct human influence (restoration, deterioration, destruction)**

**5 = Natural processes**

The decline and eventual stopping of active china clay quarrying in west Cornwall. Some populations are also threatened by natural succession.

### **3.7 Suitable habitat for the species (in km<sup>2</sup>)<sup>2.7.3</sup>**

**Unknown**

### **3.8 Habitat conclusion<sup>2.8</sup>**

**Unfavourable – Bad and deteriorating**

The west Cornwall sites in this region are considered to be in Unfavourable condition (Common Standards Monitoring). China clay quarrying is continuing in east Cornwall, and therefore there should be a dynamic succession of suitable sites. However, access issues mean that these have been difficult to monitor. Despite the possibility that there are further sites in this area, the habitat area is still declining due to the loss of the west Cornwall quarrying.

Although there is not, as yet, an appropriate means of estimating current habitat area, expert opinion is that there is insufficient habitat available to support viable populations in the longer term. Given this, and the continuing habitat decline, the assessment (in accordance with Annex C) is Unfavourable – Bad and deteriorating.

## **4. Future Prospects<sup>2.6</sup>**

**Bad prospects**

“Long-term viability at risk; species likely to become extinct.”

The species is the subject of a Species Action Plan under the UK Biodiversity Action Plan. (It is also included on the revised UKBAP list.)

With the cessation of china clay quarrying in west Cornwall (referred to above), the future prospects for this species are bad. Active management will be necessary to maintain sites in suitable condition or to provide new sites for colonisation. The loss of the west Cornish sites would have serious implications for the range, population level, and area of suitable habitat.

This species colonises fresh china clay substrate. Initially, few other plants can tolerate this habitat because of the extreme pH and chemical factors. However, over time, these are weathered by rain, and the gradual input of nutrients enables other species to establish, facilitating natural succession. Therefore, for *M. profunda* to persist at a location, there needs to be continued production of raw substrate.

At present, the species is being actively managed. Therefore, in the short term, prospects are relatively good. However, the use of heavy machinery for this purpose is often restricted due to health and safety issues. Herbicide applications have been tested as an alternate approach for management, but these can only be used over relatively small areas.

Since continually trying to hold back succession is going to become increasingly difficult in both practical and financial terms, future prospects for the longer term can only be reported as Bad.

### **4.1 Future prospects conclusion<sup>2.8</sup>**

**Unfavourable – Bad**

## **5. Overall Conclusion<sup>2.8</sup>**

**Unfavourable – Bad and deteriorating**

Range is Favourable, population is Unfavourable – Bad, habitat is Unfavourable – Bad and deteriorating, and (long term) future prospects are Unfavourable – Bad. Therefore, in accordance with Annex C (where on or more parameter is judged as Unfavourable – Bad), the overall conclusion is Unfavourable – Bad and deteriorating.

**Table 5.1.** Summary of conclusions

Parameter	Judgement	Grounds for Judgement (in accordance with Annex C)	Reliability*
<b>Range</b>	Favourable	Current range is stable and equal to the favourable reference range.	1
<b>Population</b>	Unfavourable – Bad	Current population estimate is more than 25% lower than the favourable reference population.	3
<b>Habitat</b>	Unfavourable – Bad and deteriorating	Area of habitat is not sufficiently large to ensure the long term survival of the species and is continuing to decline.	3
<b>Future Prospects</b>	Unfavourable – Bad	Although prospects in the short-term future are good, severe influence of pressures and threats to the species (i.e. cessation of china clay mining); very bad prospects for its future, long-term viability at risk.	2
<b>Overall Assessment</b>	Unfavourable – Bad and deteriorating	One or more Unfavourable – Bad.	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

CHURCH, J. M., HODGETTS, N. G., PRESTON, C. D. & STEWART, N. F. 2004. British Red Data Books: mosses and liverworts. Joint Nature Conservation Committee

HOLYOAK, D. 1999. Reports on status & conservation in Cornwall. *Report to English Nature.*

HOLYOAK, D. 2001. Reports on status & conservation in Cornwall. *Report to English Nature.*

### **Map Data Source**

Threatened Bryophyte Database, British Bryological Society (via the National Biodiversity Network (NBN) Gateway).