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 :

S1400: *Leucobryum glaucum* - Large white-moss

S1400 *Leucobryum glaucum* Large white-moss

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[2.3]

The species occurs throughout the UK, although there are parts of the country with very few records, particularly in the English Midlands and Northern Ireland.

1.1 Surface area of range[2.3.1]
Unknown

General bryophyte mapping work has two date classes in the UK: up to 1950, and 1950 to present. Although a new atlas is in preparation, and there has been increased recording in recent years, it is unsafe to assume that squares without recent records, but with a record post-1950 represent recent losses. This will only be known if a new date class is included in mapping work, and comprehensive coverage is gained for this date class. Therefore, post-1950 records is the closest estimate of the current range. If records from 1950 to 2006 are used to calculate an Alpha Hull, with the value of alpha set at 20 km to reflect the dispersal capacity of this species, then the extent of occurrence is 178,338 km^2. However, it is reported as unknown since it is considered that 1950 is too long ago to be included in current estimates, and changes that have occurred since then are unknown.

1.2 Date of range determination[2.3.2]
Not applicable

1.3 Quality of range data[2.3.3]
Poor

Hill *et al.* (1992) provides reasonable survey coverage for the whole of the UK. However, the date class is large and it is possible that there may have been significant changes within the last 50 years.

1.4 Range trend[2.3.4] & Range trend magnitude[2.3.5]
Unknown

It is not possible to measure changes since 1950, and biases in recording effort mean that it is unsafe to assume that squares without recent records, but with a current record (post-1950) represent recent losses.

1.5 Range trend period [2.3.6]
1994 – 2006

1.6 Reasons for reported trend in range[2.3.7]
**Not applicable**

1.7 Favourable reference range[2.7.1]

Unknown (Equal to 1994 range)
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').

The trend and current extent are unknown. Since the species is widespread, it is reasonable to assume that the 1994 range was equivalent to the favourable reference range. This value is believed to be in the region of 175,000 km^2 based on an understanding of historic records (Map 1.1 below). However, there is insufficient information to confirm this. Hence, the favourable reference range is reported as unknown.

Map 1.1 Current extent of occurrence and occupied 10-km squares (1950-2006)

Data sources provided in Section 6
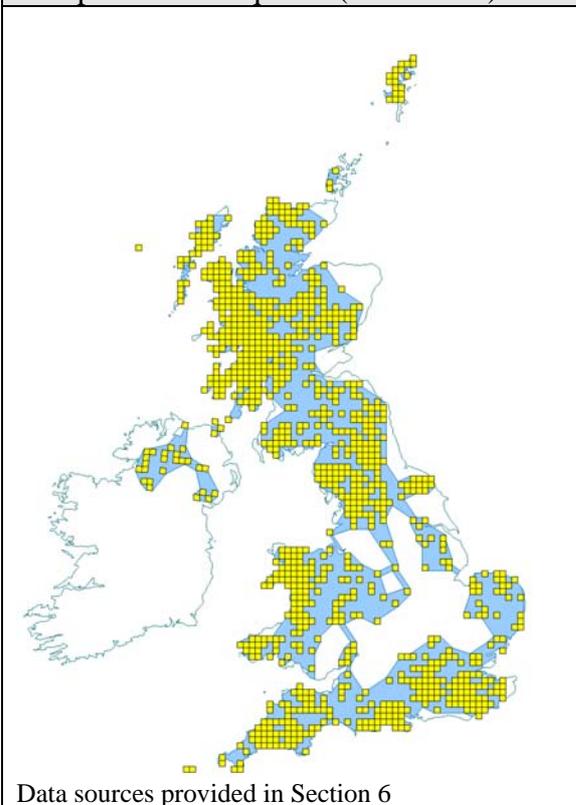
1.8 Range conclusion[2.8]

Unknown
The only possible conclusion is Unknown given that the current extent, the trend, and the relationship with the favourable reference range are all unknown. It may be favourable.

2. Population of the species[2.4]

2.1 Population estimate[2.4.1]

Unknown
It is not possible to give any true population estimate for a plant that can provide extensive cover over large areas and which is widespread and locally plentiful over large parts of the

country. Also, it is not possible to give a current estimate of the number of occupied 10-km squares, since the data are only available including records from 1950 onwards.

2.2 Date of population estimate[2.4.2]
Not applicable

2.3 Method of population estimate[2.4.3]
Not applicable

2.4 Quality of population data[2.4.4]
Poor

As was discussed for range, the only accurate assessment of data is 'post 1950', and it is possible that there have been significant changes during this time. Furthermore, because the estimate can only be made at a very coarse scale (occupied 10-km squares), data quality is assessed as Poor.

2.5 Population trend[2.4.5] & Population trend magnitude[2.4.6]
Unknown

There has been increased recording in recent years, it is unsafe to assume that squares without recent records, but with a current record (post-1950) represent recent losses. It is not possible to measure changes since 1950.

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]
140 Grazing
180 Burning
952 Eutrophication
810 Drainage

2.10 Threats[2.4.11]
140 Grazing
141 Abandonment of pastoral systems
180 Burning
952 Eutrophication
810 Drainage

2.11 Favourable reference population[2.7.2]
Unknown (Equal to 1994 population)

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').

The trend and current population are unknown. Since the species is abundant, it is reasonable to assume that the 1994 population was equivalent to the favourable reference population. However, there is no estimate for this.

2.12 Population conclusion[2.8]
Unknown
The only possible conclusion is Unknown given that the current extent, the trend, and the relationship with the favourable reference population are all unknown. It may be favourable.

3. Habitat for the species in the Biogeographic region or sea[2.5]
Hill *et al*. (1992) states: "The main habitats include acidic woodland, damp and wet heathland, moorland, and various types of mire from lowland valley bogs and fens to upland blanket bog. Although patchy in its occurrence, it may be locally plentiful and an important structural component of the ground vegetation, forming massive hummocks which become colonized by other bryophytes and vascular plants. It does not grow directly on base-rich outcrops, but is very occasionally found in grass-heath on acid soil overlying limestone."

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
Habitats within protected areas have been relatively well monitored and documented. However, survey effort outside these boundaries is relatively poor.

3.4 Habitat trend[2.5.5]
Decreasing
Leucobryum glaucum is found across such a diversity of habitats, and it would be difficult to report a trend that was applicable to all. However, many wetland areas have suffered from declines in both area and quality as a result of hydrological changes (often resulting from changes in land use and urban development) and pollution incidents. However, increased protection of wetland areas probably means that this decline has slowed.

3.5 Habitat trend period[2.5.6]
1994 – 2006

3.6 Reasons for reported trend in habitat[2.5.7]
3 = direct human influence
4 = indirect anthropo(zoo)genic influence

3.7 Suitable habitat for the species (in km2)[2.7.3]
Unknown

3.8 Habitat conclusion[2.8]
Unfavourable – Inadequate

The area of available habitat seems sufficiently large to ensure the long term survival of the species. However, the habitat is (or has recently) decreased in area, and the habitat quality may not be sufficient. Taking Common Standards Monitoring results for the 'Wetlands' habitat group suggests that only 54% of blanket bogs, 21% of lowland raised bogs, 46% of upland fens and marshes, and 38% of lowland fens and marshes are currently in favourable condition. This suggests that the overall condition should be considered Bad, but Inadequate has been selected since it is difficult to relate the habitat condition to the long-term prospects for this species.

4. Future Prospects[2.6]
Good prospects
"Species expected to survive and prosper".

The future prospects for range appears good unless climate change causes major shifts. The population has almost certainly declined more than the 10-km distribution suggests, however protection of areas probably means that this decline has slowed. The prospects for the habitat quality are reasonable, although Common Standards Monitoring results show a low proportion currently classified as Favourable.

4.1 Future prospects conclusion[2.8]
Favourable

5. Overall Conclusion [2.8]
Unfavourable – Inadequate

Table 5.1. Summary of conclusions

Parameter	Judgement	Grounds for Judgement (in accordance with Annex C)	Reliability*
Range	Unknown	No or insufficient reliable information available	N/A
Population	Unknown	No or insufficient reliable information available	N/A
Habitat	Unfavourable - Inadequate	Any other combination Area of habitat may be sufficiently large but there is evidence to suggest that habitat area is decreasing and quality may not be sufficient to support the species at favourable status	2
Future Prospects	Favourable	Main pressures and threats to the species not significant; species will remain viable on the long-term	3
Overall Assessment	Unfavourable - Inadequate	One or more Unfavourable - Inadequate, no Unfavourable - Bad	3

*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

HILL, M. O., PRESTON, C. D. & SMITH A. J. E. (1992) *Atlas of the Bryophytes of Britain and Ireland*; *Volume 2, Mosses (Except Diplolepideae)*. Harley Books

WILLIAMS, J.M. (ed.) 2006. Common *Standards Monitoring For Designated Sites: First Six Year Report 2006*. Joint Nature Conservation Committee

Map Data Source

Bryophyte data for Great Britain and Ireland, British Bryological Society (via the National Biodiversity Network (NBN) Gateway).