

**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 :
S1395: *Petalophyllum ralfsii* - Petalwort**

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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S1395 *Petalophyllum ralfsii* Petalwort

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 current range is somewhat disjunct, with few areas where it is possible to claim 'continuous range'. There is one locality each in Scotland and Northern Ireland. There are single localities in Northumberland, Norfolk, south and north Devon; it is present in Cornwall and it is found at numerous sites along the Welsh coast. However, there is some disjunction between north and south Wales. Areas where it may be possible to claim some continuity of range are in Cornwall, south Wales, and north Wales with Lancashire.

1.1 Surface area of range^{2.3.1}

2,486km²

The above estimate was calculated using records dated 1990 onwards within Alpha Hull software, using extent of occurrence as a proxy measure for range (see Map 1.1). The value of alpha was set at 20 km to reflect the dispersal capacity of this species. This calculation excluded an incidental record in Carmarthenshire (SN7847) in 2000 (*Petalophyllum ralfsii* was identified on imported coastal sand, dumped on a track within the Nant y Bai abandoned mine site. A brief survey in 2003 failed to re-find the species. It will almost certainly have succumbed to loss of sand by wind and rain erosion, and succession.)

1.2 Date of range determination^{2.3.2}

1990 – 2006

It is expert opinion that records dated from 1990 onwards provide the best available representation of current range.

1.3 Quality of range data^{2.3.3}

Good

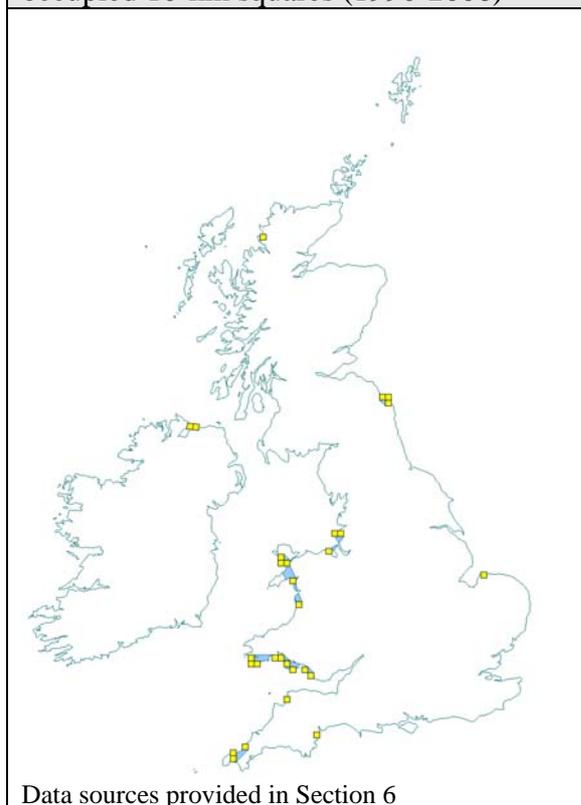
The Threatened Bryophyte Database aims to be a comprehensive inventory of all records available in Great Britain (GB). There may be gaps due to delay in records being sent for input or lack of recent survey in particular areas, but generally coverage and quality of data held in the database are good. Northern Ireland data are held by the Environment and Heritage Service (EHS(NI)) and are also of good quality.

1.4 Range trend^{2.3.4} & Range trend magnitude^{2.3.5}

Stable

The current trend is believed to be stable, and this is also the case if more historical data are included.

Map 1.1 Current extent of occurrence and occupied 10-km squares (1990-2006)



1.5 Range trend period^{2.3.6} 1994 – 2006

1.6 Reasons for reported trend in range^{2.3.7} Not applicable

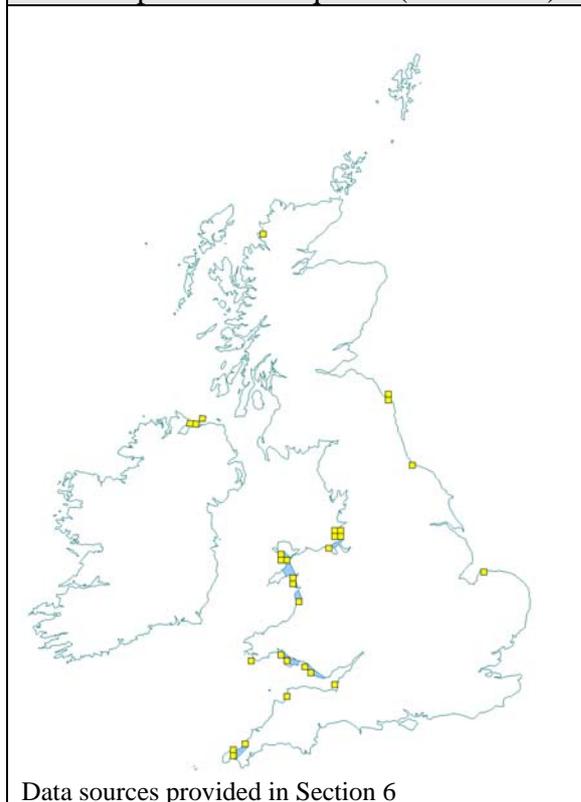
1.7 Favourable reference range^{2.7.1} 2,486km² (Equal to 1994 range)

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 current range is stable, and is not so restricted as to be threatened by stochastic events. Therefore, it is appropriate to set the favourable reference range as equal to the range in 1994. Available records suggest that range has been stable since the turn of the 20th Century, and there is no reason to believe it needs to be larger for species survival. This is also the range that was present when the Habitats Directive came into force in 1994.

Map 1.2 shows historic extent of occurrence (calculated using records dated between 1930 and 1989). This has been calculated as 2,237 km² (using Alpha Hull software and using an alpha value of 20 km). A comparison of this, and the current extent of occurrence (2,486 km²), suggests negligible change since the turn of the 20th Century (the range in Wales has remained stable over this time period – most apparent gains are probably due to increased recording).

Map 1.2. Historic extent of occurrence
and occupied 10 km-squares (1930-1989)



1.8 Range conclusion^{2.8}

Favourable

Current range is stable and equal to the favourable reference range. The overall range assessment is therefore Favourable.

2. Population of the species^{2.4}

2.1 Population estimate^{2.4.1}

>666,000 thalli

Large populations (thousands of thalli) are extant at four or five Welsh sites, including very large numbers at Brownslade Burrows, Pembrokeshire (418,186 thalli estimated in March 2002). On the basis of Plantlife surveys and those of National Nature Reserve (NNR) managers, the Welsh population is estimated to be well over 400,000 thalli (Holyoak, 2002). The population in 2004/5 in Scotland and England was approximately 266,000 thalli; population counts are included in the Site Condition Monitoring (SCM) form for Scotland, in contract data held by Plantlife for England (J. Duckworth, *pers. comm.*) and data provided by D. Holyoak. In Northern Ireland there was a count of 33 thalli in two locations in 1999.

2.2 Date of population estimate^{2.4.2}

1999 – 2006

The total population size is based on site estimates made between 1999 and 2006.

2.3 Method of population estimate^{2.4.3}

2 = extrapolation from surveys of part of the population

Annual counts have been recorded for many of the sites since 2001. The current estimate has been interpolated from these independent recordings.

2.4 Quality of population data^{2.4.4}

Moderate

Definitive counts are very difficult for this species because, the visible parts of the plants fluctuate massively in numbers; underground parts (swollen storage organs somewhat akin to rhizomes) can persist between seasons, though it is not known for how long. Counts of above-ground thalli can vary enormously between seasons at the same location, and this seems to largely depend on rainfall and hence water table. Counts in a single year therefore are unreliable and should be treated with caution when it comes to determining trends.

2.5 Population trend^{2.4.5} & Population trend magnitude^{2.4.6}

Stable

Over the past decade, expert opinion is that, overall (accepting natural annual fluctuations in visible life stages), populations are stable due to increased protection and more focussed management.

In England, populations appear to have been stable at most sites from 1997-2004, but with significant increases in west Cornwall (along Towans from Phillack to Godrevy) and north Devon (Braunton Burrows). A large population (approx. 216,000 thalli) was discovered in west Cornwall in 2005. However, there have been some decreases in the population on the Sefton Coast since 1997. Additionally, both the large population discovered in 2005 and the small single population in west Norfolk are currently threatened.

In Northern Ireland, the single extant population (Ballymaclary NNR, Co. Londonderry) is small and threatened.

The only Scottish population known (Achnahaird Bay in west Ross) is large and protected in a Site of Special Scientific Interest (SSSI). Further populations might yet be discovered in machair and dune habitats of Western Scotland, especially in the Inner Hebrides and Outer Hebrides.

In Wales there are a number of very large populations, but small populations at several other sites are potentially threatened.

2.6 Population trend period^{2.4.7}

1996 – 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}

400 Urbanised areas, human habitation

608 camping and caravans

720 Trampling, overuse – there is some evidence to suggest that moderate levels of disturbance may be favourable for this species. However, high levels of disturbance can be damaging.

750 Other pollution or human impacts/activities – e.g. campfires

930 Submersion

950 Biocenotic evolution - succession

951 Drying out

2.10 Threats^{2.4.11}

400 Urbanised areas, human habitation

608 camping and caravans

720 Trampling, overuse

750 Other pollution or human impacts/activities – e.g. campfires

900 Erosion

930 Submersion

950 Biocenotic evolution - succession

951 Drying out

Historically, populations are thought to have been lost from sand dunes sites due to development (caravan parks, etc.), and this has led to a slight decline.

2.11 Favourable reference population^{2.7.2}

>666,000 thalli (Equal to current)

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’).

Taking into account the natural annual fluctuations, the current population is sufficiently large and well-structured to be considered viable for the foreseeable future.

2.12 Population conclusion^{2.8}

Favourable

The population is stable, and the current estimate is not less than the favourable reference population. Hence, in accordance with Annex C guidance, the population is assessed as favourable.

3. Habitat for the species in the Biogeographic region or sea^{2.5}

All sites in Britain are closely associated with sand dunes. It especially favours dune-slacks, with fewer records in dune areas from near pond edges, along damp pathways and in small hollows. It tolerates only light shading. It invariably occurs on calcareous substrates, with a basic reaction. It requires firm or compacted substrates, avoiding really loose or mobile sand, with ideally the water table at or near the surface. Most sites have some bare substratum exposed, commonly 10-50% of bare humic sand amongst low vegetation. All English and Welsh sites are dry for large parts of a normal summer and most are wet or flooded in at least some winters. The Scottish site apparently stays wet throughout the year due to inflow of fresh water.

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

Although *P. ralfsii*'s habitat requirements have been relatively well documented, habitat area at this fine scale is unknown.

3.4 Habitat trend^{2.5.5}

Decreasing

At present, many sites can be reported as being in good condition for the species. However, there are particular concerns in Lancashire, Norfolk and Northumberland, where even on good sites, losses have been noted due to eutrophication (dog dunging) and vehicle damage. In Lancashire, much of the habitat is becoming unsuitable due to vegetation growth, and there are similar problems in Northumberland where there has been a reduction in rabbit grazing. Reduction in pony trampling at Talacre Warren, north Wales has led to some decline.

Although habitat area is difficult to determine with any degree of confidence, the historical declining trend across many UK dune systems suggests that *P. ralfsii* habitat is also likely to have suffered decline. The magnitude of this decline is unknown however.

3.5 Habitat trend period^{2.5.6}

1994 – 2006

The habitat trend is considered over a similar period to the range and population estimates.

3.6 Reasons for reported trend in habitat^{2.5.7}

3. direct human influence (restoration, deterioration, destruction)

4. indirect anthropo(zoo)genic influence

5. natural processes

Eutrophication (from dog dung), vehicle damage, and changes in vegetation growth (cause by successional change and a reduction in rabbit grazing in some areas).

3.7 Suitable habitat for the species (in km²)^{2.7.3}

Unknown

3.8 Habitat conclusion^{2.8}

Unfavourable – Inadequate

There are continuing threats to habitat quality, particularly in Lancashire, Norfolk and Northumberland. This is sufficient to lead to a judgement of Unfavourable – Inadequate.

4. Future Prospects^{2.6}

Poor prospects

“Species likely to struggle unless conditions change”.

P. ralfsii is the subject of a Species Action Plan under the UK Biodiversity Action Plan (and is included on the revised UKBAP list).

The management problems at some sites, despite their protected status, suggests that future prospects cannot be reported as ‘species expected to survive and prosper’. A more

appropriate assessment is that the species is likely to struggle, at least in some parts of its range, unless conditions change. There are particular concerns in Lancashire, Norfolk and Northumberland, where even on good sites, losses have been noted due to eutrophication (dog dunging) and vehicle damage. In Lancashire, much of the habitat is becoming unsuitable due to vegetation growth, and there are similar problems in Northumberland where there has been a reduction in rabbit grazing. Reduction in pony trampling at Talacre Warren, north Wales has led to some decline.

Some of the very small populations may be at risk from stochastic events. Many of the populations may eventually be at risk from climate change (e.g. decreased rainfall leading to drying out of dune slacks; higher sea levels and storms leading to loss of habitat through erosion and submersion).

4.1 Future prospects conclusion^{2,8}

Unfavourable – Inadequate

In accordance with Annex C, the future prospects are reported as Unfavourable – Inadequate, since the pressures and threats are significant, but not severe.

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	Favourable	Current range is stable and not smaller than the favourable reference range	1
Population	Favourable	Current population is not lower than favourable reference population	2
Habitat	Unfavourable – Inadequate	Area of habitat is sufficiently large (and stable) but habitat quality is declining at some sites	2
Future Prospects	Unfavourable – Inadequate	Any other combination Pressures and threats are significant but not severe	2
Overall Assessment	Unfavourable – Inadequate	One or more Unfavourable – Inadequate but no 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. 2001. *British Red Data Books: mosses and liverworts*. Joint Nature Conservation Committee.

HOLYOAK, D.T. 2002. *Petalwort Petalophyllum ralfsii: Report to Plantlife on work carried out in England and Wales during 2001 and 2002*. Countryside Council for Wales/English Nature Contract Report.

Map Data Sources

Threatened Bryophyte Database, British Bryological Society (via the National Biodiversity Network (NBN) Gateway); Environment and Heritage Service (Northern Ireland).