

**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:

S1395 - Petalwort (*Petalophyllum ralfsii*)

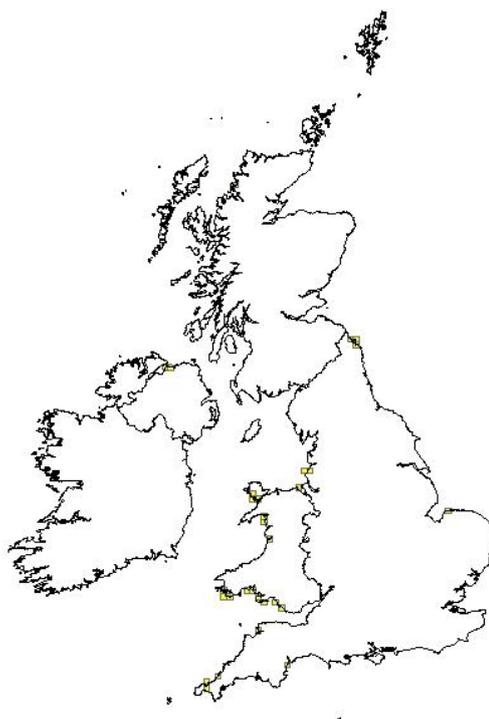
**IMPORTANT NOTE – PLEASE READ**

- 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 **Northern Ireland Environment Agency** and refers only to the state of the habitat/species in **Northern Ireland** - 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>	
<b>0.2 Species</b>	<b>0.2.1 Species code</b>	<b>S1395</b>
	<b>0.2.2 Species scientific name</b>	<b><i>Petalophyllum ralfsii</i></b>
	<b>0.2.3 Alternative species scientific name</b> Optional	
	<b>0.2.4 Common name</b> Optional	

<b>1.1 Maps</b>			
<b>1.1.1 Distribution map</b>		<b>Sensitive</b>	<b>False</b>



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

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<b>2.1 Biogeographical region &amp; marine regions</b>	<b>ATL</b>
<b>2.2 Published sources</b>	<p>"Atherton, I., Bosanquet, S., and Lawley, M. 2010. Mosses and Liverworts of Britain and Ireland- a field guide. British Bryological Society, Plymouth.</p> <p>CHURCH, J.M., HODGETTS, N.G., PRESTON, C.D. &amp; STEWART, N.F. 2001. British Red Data Books: mosses and liverworts. Joint Nature Conservation Committee.</p> <p>HOLYOAK, D.T. 2002. Petalwort <i>Petalophyllum ralfsii</i>: Report to Plantlife on work carried out in England and Wales during 2001 and 2002. Countryside Council for Wales/English Nature Contract Report.</p> <p>Holyoak, D.T. 2003. The distribution of bryophytes in Ireland. An annotated review of the occurrence of liverworts and mosses in the Irish vice-counties based mainly on the records of the British Bryological Society. Dinas Powys, Vale of Glamorgan: Broadleaf Books.</p> <p>Holyoak, D.T. 2006. Progress towards a species inventory for conservation of bryophytes in Ireland. <i>Biology and Environment, Proceedings of the Royal Irish Academy</i> 106B (3): 225-236.</p> <p>Lockhart, B., Hodgetts, N. &amp; Holyoak, D. (2012). Rare and threatened bryophytes of Ireland. National Museums Northern Ireland Publication No 028."</p>

<b>2.3 Range</b>	
<b>2.3.1 Surface area Range</b>	
<b>2.3.2 Method used Surface area of Range</b>	Complete survey/Complete survey or a statistically robust estimate
<b>2.3.3 Short-term trend Period</b>	2001-2012
<b>2.3.4 Short term trend Trend direction</b>	stable
<b>2.3.5 Short-term trend Magnitude</b>	<b>a) Minimum</b>
	<b>b) Maximum</b>

<b>2.3.6 Long-term trend Period</b>	<b>1988-2012</b>	
<b>2.3.7 Long-term trend Trend direction</b>	<b>stable</b>	
	Given that there were only two historical sites for the species (and one at Portrush became extinct long ago), it is believed that the range has been stable since 1988.	
<b>2.3.8 Long-term trend Magnitude</b>  Optional	<b>a) Minimum</b>	
	<b>b) Maximum</b>	
<b>2.3.9 Favourable reference range</b>	<b>a) Value in km<sup>2</sup></b>	
	<b>b) Operator for FRR</b>	
	<b>c) FRR is unknown (indicated by "true")</b>	False
<b>d) Method used to set FRR</b>	<p><b>In NI, the species became extinct from its Portrush localities long ago - it was first recorded here in 1928 and appears not to have been refound.</b></p> <p><b>The species is now confined to a single small population in the Ballymaclary National Nature Reserve (County Londonderry). The species occurs mainly in seasonally damp hollows ('slacks') among sand dunes. At Ballymaclary NNR it grows in old wheel ruts in the slacks, where it is restricted to two areas each a few metres across near a road. The total population is unlikely to exceed a few dozen thalli.</b></p> <p><b>The range (single locality at Magilligan) has been stable in recent times (although the actual colony appears to be in decline - see 2.9.2).</b></p>	

<b>2.3.10 Reason for change</b> Is the difference between the reported value in 2.3.1 and the previous reporting round mainly due to...	<b>a) Genuine change?</b>	False
	<b>b) Improved knowledge/more accurate data?</b>	False
	<b>c) Use of different method (e.g. "Range tool")?</b>	False

<b>2.4 Population</b>		
<b>2.4.1 Population size estimation</b> (using individuals or agreed exceptions where possible)	<b>a) Unit</b>	
	<b>b) Minimum</b>	
	<b>c) Maximum</b>	
<b>2.4.2 Population size estimation</b> (using population unit other than individuals) Optional ( <i>if 2.4.1 filled in</i> )	<b>a) Unit</b>	number of localities
	<b>b) Minimum</b>	1
	<b>c) Maximum</b>	1
<b>2.4.3 Additional information on population estimates / conversion</b> Optional	<b>a) Definition of "locality"</b>	In NI the species has declined to a single small population at Ballymaclary NNR, where it grows in old wheel ruts in the dune slacks.
	<b>b) Method to convert data</b>	
	<b>c) Problems encountered to provide population size estimation</b>	
<b>2.4.4 Year or period</b>	2007-2012	
<b>2.4.5 Method used</b>	Complete survey/Complete survey or a statistically robust	

<b>Population size</b>	<b>estimate</b>	
<b>2.4.6 Short-term trend Period</b>	<b>2001-2012</b>	
<b>2.4.7 Short-term trend Trend direction</b>	<b>stable</b>	
<b>2.4.8 Short-term trend Magnitude</b>	<b>a) Minimum</b>	
	<b>b) Maximum</b>	
	<b>c) Confidence interval</b>	
<b>2.4.9 Short-term trend Method used</b>	<b>Complete survey/ Complete survey or a statistically robust estimate</b>	
<b>2.4.10 Long-term trend – Period</b>	<b>1988-2012</b>	
<b>2.4.11 Long-term trend Trend direction</b>	<b>unknown</b>	
	Given the fact that detailed counts of rosettes were only initiated on a systematic basis in 1999 (Holyoak, 1999), it is impossible to provide a definitive assessment of the long-term population trend.	
<b>2.4.12 Long-term trend Magnitude</b>  Optional	<b>a) Minimum</b>	
	<b>b) Maximum</b>	
	<b>c) Confidence interval</b>	
<b>2.4.13 Long term trend Method used</b>	<b>0</b>	
<b>2.4.14 Favourable</b>	<b>a) Number of</b>	<b>1</b>

<b>reference population</b>	<b>individuals/agreed exceptions/other units</b>	
	<b>b) Operator</b>	
	<b>c) FRP is unknown indicated by "true"</b>	False
	<b>d) Method used to set FRP</b>	<p>In Northern Ireland it has declined to a single small population in the Ballymaclary National Nature Reserve (County Londonderry). The species occurs mainly in seasonally damp hollows ('slacks') among sand dunes. At Ballymaclary NNR it grows in old wheel ruts in the slacks, where it is restricted to two areas each a few metres across near a road. The total population is unlikely to exceed a few dozen thalli.</p> <p>Given that the population here is so small and threatened, the favourable reference population in Northern Ireland is considered to be larger than the current population. Accordingly FRP is assessed as <b>Bad and Declining</b>.</p>
<b>2.4.15 Reason for change</b> Is the difference between the value reported at 2.4.1 or 2.4.2 and the previous reporting round mainly due to:	<b>a) Genuine change?</b>	False
	<b>b) Improved knowledge/more accurate data?</b>	False
	<b>c) Use of different method (e.g. "Range tool")?</b>	False

<b>2.5 Habitat for the species</b>	
<b>2.5.1 Area estimation</b>	<p><b>0</b> All sites in Britain are closely associated with sand dunes. It especially</p>

	<p>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.</p> <p>Although <i>P. ralfsii</i>'s habitat requirements have been relatively well documented, habitat area at this fine scale is unknown.</p> <p>There is thought to be a sufficient amount of habitat in the UK to support a viable population of the species.</p>	
<b>2.5.2 Year or period</b>	<b>2007-2012</b>	
<b>2.5.3 Method used</b>	<b>Absent data</b>	
<b>Habitat for the species</b>		
<b>2.5.4 Quality of the habitat</b>	<b>a) Habitat quality</b>	<b>Unknown</b>
	<b>b) Assessment method</b>	<b>Although <i>P. ralfsii</i>'s habitat requirements have been relatively well documented, habitat area at this fine scale is unknown.</b>
<b>2.5.5 Short-term trend Period</b>	<b>2001-2012</b>	
<b>2.5.6 Short-term trend Trend direction</b>	<b>unknown</b>	
<b>2.5.7 Long-term trend Period</b>	<b>1988-2012</b>	
<b>2.5.8 Long-term trend Trend direction</b>	<b>unknown</b>	
<b>2.5.9 Area of suitable habitat for the species</b>	<b>a) Value in km<sup>2</sup></b>	<b>0</b>
	<b>b) Absence of data indicated as '0'</b>	
<b>2.5.10 Reason for change</b> Is the difference between the value reported at 2.5.1 and the previous reporting round mainly due to	<b>a) Genuine change?</b>	<b>False</b>
	<b>b) Improved knowledge/more accurate data?</b>	<b>False</b>

	<b>c) Use of different method (e.g. "Range tool")?</b>	<b>False</b>

<b>2.6 Main pressures</b>		
<b>a) Pressure</b>	<b>b) Ranking</b>	<b>c) Pollution qualifier</b>
	H = high importance M = medium importance L = low importance	
A04: grazing	H	
J02: human induced changes in hydraulic conditions	H	
K02: Biocenotic evolution, succession	H	
H01: Pollution to surface waters (limnic & terrestrial, marine & brackish)	M	
H02: Pollution to groundwater (point sources and diffuse sources)	M	

<p>The main pressures to the species in NI:</p> <p><b>A04 - Grazing</b> The species is very low-growing and cannot compete in a tall sward. Lack of grazing may therefore threaten its survival.</p> <p><b>K02</b> Natural succession to scrub in the habitat in which it grows is also a significant pressure, particularly if exacerbated by a lack of grazing.</p> <p><b>J02 Changes in hydrology</b> The species depends upon the substrate being suitably wet; any drying out will have a detrimental impact on the species.</p> <p><b>H01/H02 Water pollution</b> Water pollution - through surface or groundwater - could impact on the species as it is sensitive to changes in water chemistry and/or increased competition from more robust species.</p> <p>NOTE: aerial deposition of N not believed to be a threat to the species, as predicted values of N (7.585 kg N/ha/yr) fall below the critical thresholds for dune slacks (i.e. 10-15 kg N/ha/yr).</p>	
<b>2.6.1 Method used – Pressures</b>	<b>based exclusively or to a larger extent on real data from sites/occurrences or other data sources</b>

<b>2.7 Threats</b>		
<b>a) Threat</b>	<b>b) Ranking</b>	<b>c) Pollution qualifier</b>

	H = high importance M = medium importance L = low importance	
A04: grazing	H	
H01: Pollution to surface waters (limnic & terrestrial, marine & brackish)	H	
H02: Pollution to groundwater (point sources and diffuse sources)	H	
J02: human induced changes in hydraulic conditions	H	
K02: Biocenotic evolution, succession	H	
M01: Changes in abiotic conditions	M	

Threats are largely similar to pressures, as the impacts may be ongoing into the future:

A04 Grazing  
(esp lack of grazing)

K02 Natural Succession

J02 Human induced changes in hydrology

H01/H02 Water pollution

M01 Climate Change

In addition, the species may be vulnerable to changes in climate, which could impact upon the delicate hydrological balance that the species appears to require.

<b>2.7.1 Method used – Threats</b>	<b>expert opinion</b>
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<b>2.8 Complementary information</b>	
<b>2.8.1 Justification of % thresholds for trends</b>	
<b>2.8.2 Other relevant information</b>	<b>Petalwort <i>Petalophyllum ralfsii</i> is a pale green thalloid liverwort with erect lamellae on its upper surface, that grows in open, damp, calcareous dune slacks, often on low hummocks rather than on the very wet ground, on compacted sandy/muddy bryophyte-rich turf. Most localities are referable to Annex I type 2190 Humid dune slacks. It has occasionally been recorded in other coastal grassland where conditions are</b>

	<p><b>similar. Closely associated species may include the mosses <i>Barbula convoluta</i>, <i>Bryum</i> spp., <i>Didymodon tophaceus</i>, <i>Ditrichum flexicaule</i> (sensu lato), <i>Hypnum lacunosum</i>, glaucous sedge <i>Carex flacca</i>, the grasses common bent <i>Agrostis capillaris</i>, red fescue <i>Festuca rubra</i> and Yorkshire-fog <i>Holcus lanatus</i>, and buck's-horn plantain <i>Plantago coronopus</i>. At some sites, it appears to be increasing as a result of trampling and soil compaction. At one site, the area where <i>P. ralfsii</i> grows is used by vehicles and it can be found on the sides of paths. It does not grow in water-filled slacks or in slacks where willow <i>Salix</i> spp. scrub predominates.</b></p>
	<p>Petalwort <i>Petalophyllum ralfsii</i> is a pale green thalloid liverwort with erect lamellae on its upper surface, that grows in open, damp, calcareous dune slacks, often on low hummocks rather than on the very wet ground, on compacted sandy/muddy bryophyte-rich turf. Most localities are referable to Annex I type 2190 Humid dune slacks. It has occasionally been recorded in other coastal grassland where conditions are similar. Closely associated species may include the mosses <i>Barbula convoluta</i>, <i>Bryum</i> spp., <i>Didymodon tophaceus</i>, <i>Ditrichum flexicaule</i> (sensu lato), <i>Hypnum lacunosum</i>, glaucous sedge <i>Carex flacca</i>, the grasses common bent <i>Agrostis capillaris</i>, red fescue <i>Festuca rubra</i> and Yorkshire-fog <i>Holcus lanatus</i>, and buck's-horn plantain <i>Plantago coronopus</i>. At some sites, it appears to be increasing as a result of trampling and soil compaction. At one site, the area where <i>P. ralfsii</i> grows is used by vehicles and it can be found on the sides of paths. It does not grow in water-filled slacks or in slacks where willow <i>Salix</i> spp. scrub predominates.</p>
<b>2.8.3 Trans-boundary assessment</b>	

**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

**a) Unit**

**number of localities**

**b) Minimum**

**1**

	<b>c) Maximum</b>	<b>1</b>
<b>3.1.2 Method used</b>	<b>Complete survey/Complete survey or a statistically robust estimate</b>	
<b>3.1.3 Trend of population size within the network (short-term trend)</b>	<b>decrease</b>	

<b>3.2 Conservation measures</b>															
Conservation measures taken (i.e. already being implemented) within the reporting period and provided information about their importance, location and evaluation.															
<b>3.2.1 Measure</b>	<b>3.2.2 Type</b>					<b>3.2.3 Ranking</b>  H = high importance M = medium importance L = low importance	<b>3.2.4 Location</b>  where the measure is PRIMARILY applied			<b>3.2.5 Broad evaluation of the measure</b>					
	<b>a) Legal/statutory</b>	<b>b) Administrative</b>	<b>c) Contractual</b>	<b>d) Recurrent</b>	<b>e) One-off</b>		<b>a) Inside</b>	<b>b) Outside</b>	<b>c) Both inside &amp; outside</b>	<b>a) Maintain</b>	<b>b) Enhance</b>	<b>c) Long term</b>	<b>d) No effect</b>	<b>e) Unknown</b>	<b>f) Not evaluated</b>
2.1: Maintaining grasslands and other open habitats	Y			Y		H	Y			Y	Y	Y			
4.1: Restoring/improving water quality	Y			Y		H	Y			Y	Y	Y			
4.2: Restoring/improving the hydrological regime	Y			Y		H	Y			Y	Y	Y			

There have been specific measures put in place at Magilligan to improve the condition of the dune slack habitat on which the species depends. Grazing has been reintroduced, with additional mechanical scrub control employed where necessary.

The hydrology of the dune slacks is currently being researched to assess if there are any further measures required to improve the hydrology and water quality of the dune slacks to improve their suitability for the species.