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:

S1378 - Cladonia subgenus Cladina subgenus of lichens *Cladonia subgenus Cladina*

IMPORTANT NOTE – PLEASE READ

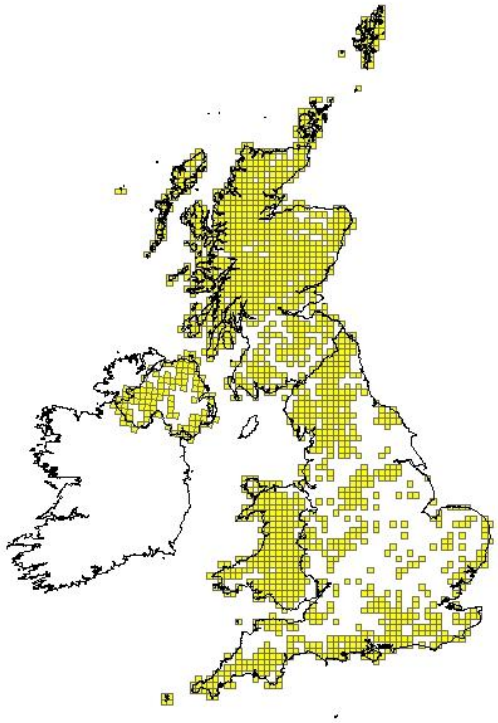
- The country-level reporting information contained in this document is a contribution to the Article 17 UK report for the habitat/species concerned.
- It has been provided by **Natural Resources Wales** and refers only to the state of the habitat/species in **Wales** - it does not constitute an assessment 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.

As of 1 April 2013, the Countryside Council for Wales, Environment Agency Wales and Forestry Commission Wales became Natural Resources Wales/Cyfoeth Naturiol Cymru

Reporting format on the 'main results of the surveillance under Article 11' for Annex II, IV & V species

Field name	*Brief explanations*	
0.2 Species	**0.2.1 Species code**	**S1378**
	0.2.2 Species scientific name	***Cladonia subgenus Cladina***
	0.2.3 Alternative species scientific name Optional	
	0.2.4 Common name Optional	

1.1 Maps			
1.1.1 Distribution map		**Sensitive**	**False**



1.1.2 Method used - map	**Estimate based on partial data with some extrapolation and/or modelling**
	Hectad (10 km sq) distribution data derived from records held by the British Lichen Society and other sources. The records submitted do NOT represent a systematic nationwide survey but rather a mixture of ad-hoc records and records made in the course of local surveys. The level of recording effort is unlikely to have been consistent across the period. We make the assumption on the basis of local expert knowledge that the true distribution is more extensive than the data shown.

1.1.3 Year or period	**2007-2012**
	The default period has been selected.
1.1.4 Additional distribution map	**False**
1.1.5 Range map	

2.1 Biogeographical region & marine regions	**ATL**
2.2 Published sources	**"Blackstock, T.H., Howe, E.A., Stevens, J.P., Burrows, C.R. and Jones. P.S. 2010. Habitats of Wales: a comprehensive field survey, 1979-1997. University of Wales Press.** **Hale, A.D.(2012). Article 17 Reporting - Supporting information for Countryside Council for Wales submission on Cladonia subgenus Cladina (lichens).** **Hobbs, R.J. (1985). The Persistence of Cladonia Patches in Closed Heathland Stands. The Lichenologist,17, pp 103-109** **Kauppi, M. (1979). The Exploitation of Cladonia Stellaris In Finland. The Lichenologist, 11, pp 85-89** **Lõhmus, A. & Lõhmus, P. (2009). The importance of representative inventories for lichen conservation assessments: the case of Cladonia norvegica and C. parasitica. The Lichenologist, 41(1), pp 61-67** **Turner, A. (2012). Changes in the composition of low-alpine grassland and heath on the Carneddu Mountain Group, North Wales over the period 1951-2011. CCW Staff Science Report Final Draft** **van Herk, C. M. ,Mathijssen-Spiekman, E. A. M. , and de Zwart, D. (2003). Long distance nitrogen air pollution effects on lichens in Europe. The Lichenologist, 35(4), pp 347-359** **Unpublished. Lowland Peatland Survey of Wales 2004-present, CCW.** **Wirth, V. (2010). Ecological indicator values for lichens - enlarged and updated species list. Herzogia, 23. pp. 229-248."**

2.3 Range	
2.3.1 Surface area	

Range		
2.3.2 Method used Surface area of Range	**Estimate based on partial data with some extrapolation and/or modelling**	
	Hectad (10 km sq) distribution data derived from records held by the British Lichen Society and other sources. The records submitted do NOT reprsent a systematic nationwide survey but rather a mixture of ad-hoc records and records made in the course of local surveys. The level of recording effort is unlikely to have been consistent across the period. We make the assumption on the basis of local expert knowledge that the true distribution is more extensive than the data show. 10 km sq occupancy - combined records for all species of Cladonia subgenus Cladina.	
2.3.3 Short-term trend Period	**2001-2012**	
	It has been agreed between the UK Country Agencies that trends should be recorded between 1989-2000 and 2001-2012 for long-term, and between 2001-2006 and 2007-2012 (short-term)	
2.3.4 Short term trend Trend direction	**stable**	
	The 10km sq distribution data suggest a considerable increase in range in both the short-term and long-term periods. Again, this is likely to be an artefact of increased effort in making and collating records of lichens generally in Wales.	
2.3.5 Short-term trend Magnitude	**a) Minimum**	
	See Note 2.3.4	
	b) Maximum	
	See Note 2.3.4	
2.3.6 Long-term trend Period	**1989-2012**	
	See Note 2.3.3	
2.3.7 Long-term trend Trend direction	**stable**	
	The apparent increase from 99 (1989-2000) to 180 (2001-2012) is unlikely and considered to be due to increased recording effort and increased effort in collating lichen records generally. In any case the 10 km square resolution is inadequate to detect trends in population size for this group.	
2.3.8 Long-term trend Magnitude Optional	**a) Minimum**	
	See Note 2.3.7	
	b) Maximum	
	See Note 2.3.7	
2.3.9 Favourable reference	**a) Value in km²**	

range		
	b) Operator for FRR	
	c) FRR is unknown (indicated by "true")	**True**
	d) Method used to set FRR	
2.3.10 Reason for change Is the difference between the reported value in 2.3.1 and the previous reporting round mainly due to…	**a) Genuine change?**	**False**
	b) Improved knowledge/more accurate data?	**True**
	See Note 2.3.4	
	c) Use of different method (e.g. "Range tool")?	**False**

2.4 Population		
2.4.1 Population size estimation (using individuals or agreed exceptions where possible)	**a) Unit**	
	b) Minimum	
	c) Maximum	
2.4.2 Population size estimation (using population unit other than individuals) Optional *(if 2.4.1 filled in)*	**a) Unit**	**number of map 10x10 km grid cells**
	b) Minimum	**180**
	This figure is based on the number of occupied 10km squares based on records made 2007-2012	
	c) Maximum	**180**
	This figure is based on the number of occupied 10km squares based on	

	records made 2007-2012	
2.4.3 Additional information on population estimates / conversion Optional	**a) Definition of "locality"**	
	b) Method to convert data	
	c) Problems encountered to provide population size estimation	
2.4.4 Year or period	**2007-2012**	
	The default period has been selected	
2.4.5 Method used Population size	**Estimate based on partial data with some extrapolation and/or modelling**	
	See note 2.4.2b	
2.4.6 Short-term trend Period	**2001-2012**	
	The default period has been selected	
2.4.7 Short-term trend Trend direction	**stable**	
	See supporting information - Hale (2012) "Article 17 Reporting - Supporting information for Countryside Council for Wales submission on Cladonia subgenus Cladina (lichens)"	
2.4.8 Short-term trend Magnitude	**a) Minimum**	**234**
	This apparent huge increase is almost certainly due to increased recording effort	
	b) Maximum	**234**
	c) Confidence interval	
2.4.9 Short-term trend Method used	**Estimate based on partial data with some extrapolation and/or modelling**	
	See note 2.4.7	
2.4.10 Long-term trend – Period	**1989-2012**	
	Default period selected.	
2.4.11 Long-term trend Trend direction	**stable**	
	See note 2.4.12a	

2.4.12 Long-term trend Magnitude Optional	**a) Minimum**	**81**
	This apparent huge increase is almost certainly due to increased recording effort.	
	b) Maximum	**81**
	See note under 2.4.12a	
	c) Confidence interval	
2.4.13 Long term trend Method used	**2**	
	See note 2.4.7	
2.4.14 Favourable reference population	**a) Number of individuals/agreed exceptions/other units**	
	b) Operator	
	c) FRP is unknown indicated by "true"	**True**
	d) Method used to set FRP	
2.4.15 Reason for change Is the difference between the value reported at 2.4.1 or 2.4.2 and the previous reporting round mainly due to:	**a) Genuine change?**	**False**
	b) Improved knowledge/more accurate data?	**True**
	The apparent increase in the number of occupied 10km squares is almost certainly due to increased recording effort (see supporting information - Hale, 2012 - for more details.	
	c) Use of different method (e.g. "Range tool")?	**False**

2.5 Habitat for the species		
2.5.1 Area estimation	**1686.57**	
	The main habitats for species of Cladonia subgenus Cladina in Wales are: heathland; acid dunes; acid mires. Habitat surveys in Wales (see references) give the following figures for each of these: - heathland (dy and wet) - 92,154 ha; acid dunes - 103 ha; acid mires - 76,400 ha. The total of all these is 168,657 ha or 1,696.57 sq km. There is thought to be a sufficient amount of habitat in the UK to support a viable population of the species.	
2.5.2 Year or period	**1990-2012**	
	This date range covers the actual period of the Habitats of Wales survey. It is unlikely that there has been a significant reduction in the area of suitable habitat, although some of the component habitats are known to have declined in quality during the intervening period.	
2.5.3 Method used Habitat for the species	**Complete survey/Complete survey or a statistically robust estimate**	
	See note 2.5.1	
2.5.4 Quality of the habitat	**a) Habitat quality**	**Moderate**
	The habitats that are of principle importance for Cladonia subgenus Cladina in Wales are a) upland, lowland and alspine heaths; b) acid mires. Subalpine heaths are overall in unfavourable condition due to a range of issues including over-grazing (uplands), under-grazing (lowland), burning, N deposition etc. though some individual sites are still very good. Cladonia subgenus cladina are also a feature of the alpine and boreal heath and recent work in the Carneddau has shown that these have definitely declined. See Turner (2012) in the References	
	b) Assessment method	**Consultation with CCW habitat specialists**
2.5.5 Short-term trend Period	**2001-2012**	
	Default period selected.	
2.5.6 Short-term trend Trend direction	**decrease**	
	See note 2.5.4a	
2.5.7 Long-term trend Period	**1989-2012**	
	Default period selected.	
2.5.8 Long-term trend Trend direction	**decrease**	
	See note 2.5.4a	
2.5.9 Area of suitable habitat for the species	**a) Value in km²**	**0**
	We just do not have the data that would indicate what proportion of potentially suitable habitat is actually suitable.	

	b) Absence of data indicated as '0'	
2.5.10 Reason for change Is the difference between the value reported at 2.5.1 and the previous reporting round mainly due to	**a) Genuine change?**	**False**
	b) Improved knowledge/more accurate data?	**True**
	c) Use of different method (e.g. "Range tool")?	**False**

2.6 Main pressures		
a) Pressure	**b) Ranking**	**c) Pollution qualifier**
	H = high importance M = medium importance L = low importance	
G01: Outdoor sports and leisure activities, recreational activities	M	
H04: Air pollution, air-borne pollutants	M	A
I01: invasive non-native species	M	
K02: Biocenotic evolution, succession	M	

K02 - The main concern here is observations that Cladina species can decline in a closed heathland canopy. On the other hand there is evidence that reservoirs of mixed populations of Cladina do survive and presumably able to recolonise on opening of the canopy. See Hobbs, R.J. (1985) in references section. I01 - Incidental regeneration from dispersed conifer seeds is a threat at some heathland sites. G01 - Concentrated off-road vehicular activity including large 4-wheel drive vehicles, quad-bikes and even mountain bikes can cause considerable damage where it occurs. H04 - Lichens are well-known to be sensitive to air pollution, including nitogen oxides and ammonia. K02 - at some sites succession to scrub and trees can be a problem.	
2.6.1 Method used – Pressures	**mainly based on expert judgement and other data**
	See note 2.6

2.7 Threats		
a) Threat	**b) Ranking**	**c) Pollution qualifier**

	H = high importance M = medium importance L = low importance	
B01: forest planting on open ground	H	
H04: Air pollution, air-borne pollutants	M	N
I01: invasive non-native species	M	
K02: Biocenotic evolution, succession	M	

B01 - A large-scale expansion of tree-planting (as currently proposed) could be a significant and widespread threat. G01 - Anecdotal and incidental evidence suggests there has been an increase in recreational off-road driving in the Welsh uplands, threatening some heaths and mires at a local level. K02 - The main concern here is observations that Cladina species can decline in a closed heathland canopy, Canopy closure can occur in the absence of grazing or other control measures.. H04 - species of Cladina are intolerant of eutrophication/elevated Nitrogen levels and several are listed as amongst the most sensitive group of lichens to nitrogen pollution. (See Wirth, 2010, in References). Note also that nitogen can have an impact some way from it's source (see van Herk et al 2003 in References). I01 - Incidental regeneration of conifers from dispersed seeds may continue to be a problem at some sites.	
2.7.1 Method used – Threats	**expert opinion**
	See note 2.7

2.8 Complementary information	
2.8.1 Justification of % thresholds for trends	
2.8.2 Other relevant information	**Several of the Cladonia species within the subgenus Cladina are widespread in Wales, but rarely occur at any great density or abundance at individual localities. For that reason alone commercial collection seems unlikely. We have no evidence that commercial collection does occur in Wales. This group of lichens appears to have been included on Annex V because of concerns over large-scale collection in some Scandinavian countries - see for example Kauppi, M. (1979) in References.** **Useful trend data will only be obtained bytaking a more structured approach - see, for example Lõhmus, A. & Lõhmus, P. (2009) in References.**
2.8.3 Trans-boundary	

assessment	

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**	
	b) Minimum	
	c) Maximum	
3.1.2 Method used		
3.1.3 Trend of population size within the network (short-term trend)		

3.2 Conservation measures

Conservation measures taken (i.e. already being implemented) within the reporting period and provided information about their importance, location and evaluation.

3.2.1 Measure	**3.2.2 Type**	**3.2.3 Ranking** H = high importance	**3.2.4 Location** where the measure is PRIMARILY applied	**3.2.5 Broad evaluation of the measure**

	a) Legal/statutory	b) Administrative	c) Contractual	d) Recurrent	e) One-off	M = medium importance L = low importance	a) Inside	b) Outside	c) Both inside & outside	a) Maintain	b) Enhance	c) Long term	d) No effect	e) Unknown	f) Not evaluated