

**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:

S1413 - Clubmosses (*Lycopodium* sp.)

IMPORTANT NOTE – PLEASE READ

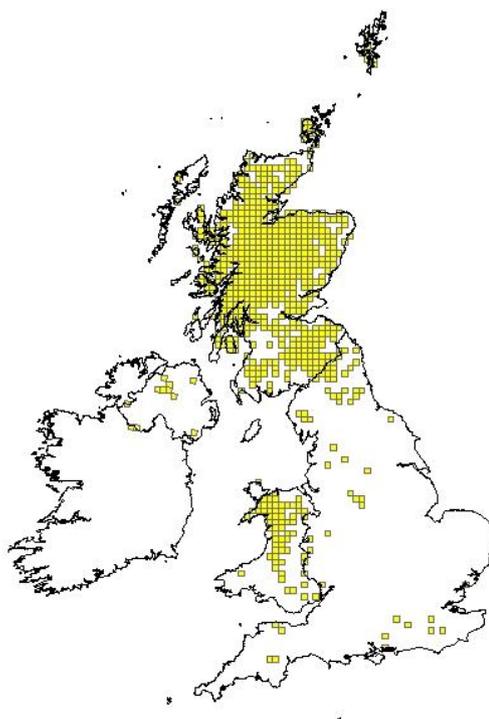
- The country-level reporting information contained in this document is a contribution to the Article 17 UK report for the habitat/species concerned.
- It has been provided by **Natural England** and refers only to the state of the habitat/species in **England** - it does not constitute an assessment 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>	
0.2 Species	0.2.1 Species code	S1413
	0.2.2 Species scientific name	<i>Lycopodium sp.</i>
	0.2.3 Alternative species scientific name Optional	
	0.2.4 Common name Optional	clubmosses

1.1 Maps

1.1.1 Distribution map		Sensitive	False
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1.1.2 Method used - map	<p>Estimate based on partial data with some extrapolation and/or modelling</p> <p>Only records of clubmosses in the genus <i>Lycopodium</i> are considered here, in line with the 2007 reporting round and advice from JNCC. English records relate entirely to <i>L. clavatum</i>, with no English records of <i>L. annotinum</i> during the period 2007-12 (previously recorded in three English hectads - BSBI maps scheme). There are no English records of <i>L. lagopus</i> (Rumsey, 2007). Records are likely to be incomplete, as there was no targeted survey during this period and the plants are mainly found in often remote upland sites. The inclusion of records from a larger range of dates was not felt to be appropriate for a species group that has</p>
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	been in a long decline, at least in its lowland sites.
1.1.3 Year or period	2007-2012
1.1.4 Additional distribution map	False
1.1.5 Range map	

2.1 Biogeographical region & marine regions	ATL
2.2 Published sources	<p>"PRESTON, C.D., PEARMAN, D.A. & DINES, T.D. 2002. New Atlas of the British & Irish Flora. Oxford University Press.</p> <p>RUMSEY, F.J., 2007. An overlooked boreal clubmoss <i>Lycopodium lagopus</i> (Laest. ex Hartm.) Zinserl. ex Kusen. (<i>Lycopodiaceae</i>) in Britain. <i>Watsonia</i> 26, 477-480."</p>

2.3 Range	
2.3.1 Surface area Range	
2.3.2 Method used Surface area of Range	<p>Estimate based on partial data with some extrapolation and/or modelling</p> <p>Only records of clubmosses in the genus <i>Lycopodium</i> are considered here, in line with the 2007 reporting round and advice from JNCC. English records in this period relate entirely to <i>L. clavatum</i>, with no English records of <i>L. annotinum</i> during this time. There are no English records of <i>L. lagopus</i> (Rumsey, 2007). Records are likely to be incomplete, as there was no targeted survey during this period and the plants are mainly found in often remote upland sites. The inclusion of records from a larger range of dates was not felt to be appropriate for a species group that has been in a long term decline, at least in its lowland sites.</p>
2.3.3 Short-term trend Period	2001-2012
2.3.4 Short term trend Trend direction	<p>unknown</p> <p>The best estimate for the range range given at the last reporting round (2007) was from the New Atlas (Preston, 2002), which used data from 1987-1999. Current data is from a shorter period without targeted survey effort and is incomplete. The short term trend, 2001 to 2012, is therefore considered to be unknown.</p>
2.3.5 Short-term trend Magnitude	<p>a) Minimum</p>

	b) Maximum	
2.3.6 Long-term trend Period	1989-2012	
2.3.7 Long-term trend Trend direction	decrease	
	Based on the incomplete information available, it is not possible to quantify trends since the Habitats Directive came into force in 1994. However, observations by species experts indicate that small, fragmented populations in the lowlands are being lost (as has been occurring throughout the twentieth century), and as a result, there has most likely been a gradual decline in range since the Habitats Directive came into force. However, in the absence of more substantive data at the 10-km resolution, the magnitude of the trend has been reported as unknown.	
2.3.8 Long-term trend Magnitude	a) Minimum	
Optional		
	b) Maximum	
2.3.9 Favourable reference range	a) Value in km²	
	b) Operator for FRR	
	c) FRR is unknown (indicated by "true")	False
	d) Method used to set FRR	The Favourable reference range was set at the current range during the 2007 reporting round.
2.3.10 Reason for change	a) Genuine change?	False
Is the difference between the reported value in 2.3.1 and the previous reporting round mainly due to...	b) Improved knowledge/more accurate data?	False

	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	
	Records come from 48 10-km squares in England in 2007-12. This is likely to be an underestimate as there was no targeted survey for <i>Lycopodium</i> during this period.	
	c) Maximum	
2.4.2 Population size estimation (using population unit other than individuals) Optional (<i>if 2.4.1 filled in</i>)	a) Unit	number of map 10x10 km grid cells
	Information on population sizes for <i>Lycopodium</i> species is limited. The only proxy measure available for population size is the number of occupied 10-km squares.	
	b) Minimum	48
	c) Maximum	94
	Records used to generate the 2007 distribution come from a total of 94 10-km squares in England. The plant is likely to still be present in most if not all of these hectads, so the maximum figure has been set at 94, which would represent a stable population. Given the expert view that the species of <i>Lycopodium</i> are in long term decline this figure might be too optimistic.	
2.4.3 Additional information on population estimates / conversion Optional	a) Definition of "locality"	
	Information on population sizes for <i>Lycopodium</i> species is limited. The only proxy measure available for population size is the number of occupied 10-km squares: 48 10-km squares in England in 2007-12. Although this species is widespread, it is also infrequent, and expert opinion is that providing an estimate at the 10 km scale disguises important population changes at a local level.	
	b) Method to convert data	
	c) Problems encountered to provide population size estimation	

2.4.4 Year or period	2007-2012	
2.4.5 Method used	Estimate based on partial data with some extrapolation and/or modelling	
2.4.6 Short-term trend Period	2001-2012	
2.4.7 Short-term trend Trend direction	unknown	
2.4.8 Short-term trend Magnitude	a) Minimum	
	b) Maximum	
	c) Confidence interval	
2.4.9 Short-term trend Method used	Estimate based on partial data with some extrapolation and/or modelling	
2.4.10 Long-term trend – Period	1989-2012	
2.4.11 Long-term trend Trend direction	decrease Observations by species experts indicate that small, fragmented populations in the lowlands, and also populations within its core upland areas, continue to be lost at a gradual but steady rate.	
2.4.12 Long-term trend Magnitude Optional	a) Minimum	0
	b) Maximum	49
	A decline from 94 hectads (2007 reporting round) to just 48 with records from 2007-12 would represent a 49% decline. This is most unlikely to be accurate with under-recording a major factor in this apparent decline. Observations by species experts, however, indicate that small, fragmented populations in the lowlands, and also populations within its core upland areas, continue to be lost at a gradual but steady rate. The rate of decline is unknown and almost certainly much less than might be inferred from the raw data.	

	c) Confidence interval	
2.4.13 Long term trend Method used	2	
2.4.14 Favourable reference population	a) Number of individuals/agreed exceptions/other units	
	b) Operator	
	c) FRP is unknown indicated by "true"	False
	d) Method used to set FRP	
	a) Genuine change?	False
	b) Improved knowledge/more accurate data?	False
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:	c) Use of different method (e.g. "Range tool")?	True
	The 2007 figure was based on Preston et al (2002) - an almost complete survey. This level of survey effort was not deployed during the shorter period 2007-12 so the records from that period underestimate the true population by an unknown amount.	

2.5 Habitat for the species**2.5.1 Area estimation**

Preston et al. (2002) states for *L. clavatum*: "A prostrate, evergreen perennial herb of heaths, moors and mountains. It is often frequent on base-rich micaceous soils, but also occurs on more acidic *Calluna* heath and *Nardus* grassland. Propagation is mostly vegetative, but spores can

	colonise new sites, particularly the disturbed soil of roadside embankments and quarries.”	
	Preston et al. (2002) states for <i>L. annotinum</i> : “A sprawling, evergreen herb typically found on mountains and moorlands amongst deep Calluna on hill slopes, and sometimes in <i>Pinus sylvestris</i> woods. It usually grows on acidic peaty soils, often overlying boulders, or in hollows where snow accumulates.”	
	The area of suitable habitat is not known.	
2.5.2 Year or period	2007-2012	
2.5.3 Method used Habitat for the species	Estimate based on expert opinion with no or minimal sampling	
2.5.4 Quality of the habitat	a) Habitat quality	Moderate
	Historically, much of England was nutrient poor. However, due to agricultural improvements, this is no longer the case. There is insufficient information to comment on more recent trends. The continuing declines in populations might suggest that the habitat continues to decline, but this may actually be due to old plants on small habitat fragments dying without regeneration being possible, despite the fact that the overall habitat area is currently stable. The grazing impacts in the upland areas are also poorly understood.	
	This is considered to be moderate. Expert opinion is that the species probably continue to decline at a slow but steady rate because of intensification of agriculture (especially fertilisation) and possibly drainage and changes in grazing pressure.	
	b) Assessment method	Expert opinion.
2.5.5 Short-term trend Period	1989-2012	
2.5.6 Short-term trend Trend direction	unknown	
2.5.7 Long-term trend Period	1989-2012	
2.5.8 Long-term trend Trend direction	unknown	
	Expert opinion is that the species probably continue to decline at a slow but steady rate because of intensification of agriculture (especially fertilisation) and possibly drainage and changes in grazing pressure. Many sites are protected by SSSI or SAC status or are managed under agri-environment schemes, although figures are not available as <i>Lycopodium</i> spp. are not notified features on these sites nor are they targeted through agri-environment schemes. Nonetheless land management is more likely to be positive on such sites and in areas covered by such agreements and this will ameliorate other negative trends to an unknown degree. The habitat trend is therefore given as unknown.	
2.5.9 Area of suitable habitat for the species	a) Value in km²	
	The requirements of the plants are reasonably well understood (see	

	2.5.1) but the area of suitable habitat is not known.	
	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?	False
	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	
A02.01:	H	
A08: Fertilisation	H	
A04.01:	M	
A04.03:	M	
J02.05:	M	

Many sites are protected by SSSI or SAC status or are managed under agri-environment schemes, although figures are not available as *Lycopodium* spp. are not notified features on these sites nor are they targeted through agri-environment schemes. Nonetheless land management is more likely to be positive on such sites and in areas covered by such agreements and this will ameliorate other negative trends to an unknown degree. The habitat trend is therefore given as unknown.

2.6.1 Method used – Pressures	based only on expert judgements
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2.7 Threats		
a) Threat	b) Ranking	c) Pollution qualifier
	H = high importance M = medium importance L = low importance	
A03.01:	H	

A08: Fertilisation	H	
A04.01:	M	
A04.03:	M	
J02.05:	M	

Many sites are protected by SSSI or SAC status or are managed under agri-environment schemes, although figures are not available as *Lycopodium* spp. are not notified features on these sites nor are they targeted through agri-environment schemes. Nonetheless land management is more likely to be positive on such sites and in areas covered by such agreements and this will ameliorate other negative trends to an unknown degree. The habitat trend is therefore given as unknown.

2.7.1 Method used – Threats expert opinion

2.8 Complementary information

2.8.1 Justification of % thresholds for trends

2.8.2 Other relevant information

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 M = medium importance L = low 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		a) Inside	b) Outside	c) Both inside & outside	a) Maintain	b) Enhance	c) Long term	d) No effect	e) Unknown	f) Not evaluated

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