European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC)

Fourth Report by the United Kingdom under Article 17

on the implementation of the Directive
from January 2013 to December 2018

Conservation status assessment for the species:

S1409 - Bog-mosses (*Sphagnum* spp.)

UNITED KINGDOM

IMPORTANT NOTE - PLEASE READ

- The information in this document represents the UK Report on the conservation status of this species, submitted to the European Commission as part of the 2019 UK Reporting under Article 17 of the EU Habitats Directive.
- It is based on supporting information provided by the geographically-relevant Statutory Nature Conservation Bodies, which is documented separately.
- The 2019 Article 17 UK Approach document provides details on how this supporting information contributed to the UK Report and the fields that were completed for each parameter.
- The reporting fields and options used are aligned to those set out in the European Commission guidance.
- Maps showing the distribution and range of the species are included (where available).
- Explanatory notes (where provided) are included at the end. These provide additional audit trail information to that included within the UK assessments. Further underpinning explanatory notes are available in the related country-level reports.
- Some of the reporting fields have been left blank because either: (i) there was insufficient information to complete the field; (ii) completion of the field was not obligatory; and/or (iii) the field was not relevant to this species (section 12 Natura 2000 coverage for Annex II species).
- The UK-level reporting information for all habitats and species is also available in spreadsheet format.

Visit the JNCC website, https://jncc.gov.uk/article17, for further information on UK Article 17 reporting.

Report on the main results of the surveillance under Article 11 for Annex II, IV and V species (Annex B)

NATIONAL LEVEL

1. General information

1.1 Member State	**UK**
1.2 Species code	**1409**
1.3 Species scientific name	**Sphagnum spp.**
1.4 Alternative species scientific name	
1.5 Common name (in national language)	Bog-mosses

2. Maps

2.1 Sensitive species	No
2.2 Year or period	
2.3 Distribution map	No
2.4 Distribution map Method used	Insufficient or no data available
2.5 Additional maps	No

3. Information related to Annex V Species (Art. 14)

3.1 Is the species taken in the wild/exploited?	Yes
3.2 Which of the measures in Art. 14 have been taken?	
a) regulations regarding access to property	No
b) temporary or local prohibition of the taking of specimens in the wild and exploitation	No
c) regulation of the periods and/or methods of taking specimens	No
d) application of hunting and fishing rules which take account of the conservation of such populations	No
e) establishment of a system of licences for taking specimens or of quotas	No
f) regulation of the purchase, sale, offering for sale, keeping for sale or transport for sale of specimens	No
g) breeding in captivity of animal species as well as artificial propagation of plant species	No
h) other measures	Yes

Some Sphagnum species have been propagated ex situ and reintroduced to upland areas of the English Pennines that were especially badly affected by industrial pollution, and guidance was written as part of an EU LIFE project (Moors for the Future Partnership, 2015).
There are discussions in Wales regarding certification of moss harvesting, and The Scottish Moss Collecting Code provides guidance in Scotland, but there is currently no regulatory mechanism for controlling Sphagnum harvest in the UK other than broad legislation under the 1981 Wildlife and Countryside Act and 1968 Theft Act.

Report on the main results of the surveillance under Article 11 for Annex II, IV and V species (Annex B)

3.3 Hunting bag or quantity taken in the wild for Mammals and Acipenseridae (Fish)

a) Unit

b) Statistics/ quantity taken	Provide statistics/quantity per hunting season or per year (where season is not used) over the reporting period					
	Season/ year 1	Season/ year 2	Season/ year 3	Season/ year 4	Season/ year 5	Season/ year 6
Min. (raw, ie. not rounded)						
Max. (raw, ie. not rounded)						
Unknown	No	No	No	No	No	No

3.4. Hunting bag or quantity taken in the wild Method used

3.5. Additional information

There is evidence of limited Sphagnum harvesting in the UK, and this harvesting is not considered to cause damage to Sphagnum populations nationally or locally. These species include S. quinquefarium, S. capillifolium rubellum and S. fallax, all of which are common carpet forming species.
The harvest is unregulated and uncertified, but there is existing guidance on moss harvesting in Scotland (The Scottish Moss Collection Code). There are also discussions around sustainable, certified moss harvesting in Wales (Jenny Wong pers. comm. 2017), but this is considered unlikely to pose a threat to Sphagnum either nationally or locally. This push for sustainable moss harvest focuses on young conifer plantations rather than other Sphagnum habitats such as bog, heath, fen or native woodland. There is no evidence to indicate that the situation is different in England, Northern Ireland or Scotland.
There is an ongoing decline in moss harvesting (not just Sphagnum harvesting) in Wales due to: negative publicity about the conservation impacts of the use of peat in horticulture; a reduction in the scale of traditional markets such as funeral wreathes; introduction of alternative linings for hanging baskets; importation of dried moss particularly from New Zealand, Chile and China; and the aging of the conifer plantations which reduces the area available for moss harvesting (Wong et al. 2016).

BIOGEOGRAPHICAL LEVEL

4. Biogeographical and marine regions

4.1 Biogeographical or marine region where the species occurs

Atlantic (ATL)

4.2 Sources of information

Blockeel, T.L., Bosanquet, S.D.S., Hill, M.O. & Preston, C.D. 2014. Atlas of British and Irish Bryophytes. Nature Bureau, Newbury.
Bosanquet, S.D.S. & Dines, T. 2011. A Bryophyte Red Data List for Wales. Plantlife, Salisbury.
Bosanquet, S.D.S., Genney, D.R. & Cox, J.H.S. 2018. Guidelines for the Selection of Biological SSSIs. Part 2: Detailed Guidelines for Habitats and Species Groups. Chapter 12 Bryophytes. Joint Nature Conservation Committee, Peterborough.

Report on the main results of the surveillance under Article 11 for Annex II, IV and V species (Annex B)

Callaghan, D.A., & Hodgetts, N.G. 2017. The Red List of British bryophytes. Unpublished report for Natural England.
Hill, M.O. 2017. Sphagnum fuscum and Sphagnum Beothuk in Britain and Ireland. Field Bryology 117: 24-30.
Lockhart, N., Hodgetts, N.G. & Holyoak, D.T. 2012. Rare and threatened Bryophytes of Ireland. National Museums Northern Ireland, Holywood.
Moors for the Future Partnership 2015. A Practitioners Guide to Sphagnum Reintroduction. MoorLIFE report (LIFE08 NAT/UK/00202).
Pescott, O. 2016. Revised lists of nationally rare and scarce bryophytes for Britain. Field Bryology 115: 22-30.
Tosh, D. 2018. Northern Ireland Sphagnum summary. Unpublished report for DAERA.
Wong J.L.G., Dickinson B.G. & Thorogood A. 2016 Assessing the scale of Sphagnum moss collection from Wales. NRW Evidence Reports. Report No 185, 38pp, Natural Resources Wales, Bangor.

5. Range

5.1 Surface area (km²)		
5.2 Short-term trend Period	2013-2018	
5.3 Short-term trend Direction	Stable (0)	
5.4 Short-term trend Magnitude	a) Minimum	b) Maximum
5.5 Short-term trend Method used	Based mainly on expert opinion with very limited data	
5.6 Long-term trend Period		
5.7 Long-term trend Direction		
5.8 Long-term trend Magnitude	a) Minimum	b) Maximum
5.9 Long-term trend Method used		
5.10 Favourable reference range	a) Area (km²)	224732
	b) Operator	
	c) Unknown	
	d) Method	The Favourable Reference Range (FRR) is the same as in 2013, which was 'approximately equal to', the then Range in 2013 i.e. 224,732 km2. The value is considered to be large enough to support a viable population and no lower than the range estimate when the Habitats Directive came into force in the UK. For further information see the 2019 Article 17 UK Approach document.
5.11 Change and reason for change in surface area of range	No change	
	The change is mainly due to:	
5.12 Additional information	No distribution map was created for the 2019 reporting and therefore no Range surface area was calculated/reported in 2019. The Range surface area in the 2013 reporting was 224,732 km2. It was determined by applying an alpha hull range tool to the distribution map. This was considered representative of the Range within the last reporting period. The 2013 assessment can be found here: http://jncc.defra.gov.uk/page-6387. There was no evidence from field recording of any significant decline in range as reported in 2013. Therefore, the current Range area has not been recalculated	

for 2019 reporting, but there is no reason to suggest it has changed since in 2013.

6. Population

6.1 Year or period		
6.2 Population size (in reporting unit)	a) Unit	
	b) Minimum	
	c) Maximum	
	d) Best single value	
6.3 Type of estimate		
6.4 Additional population size (using population unit other than reporting unit)	a) Unit	
	b) Minimum	
	c) Maximum	
	d) Best single value	
6.5 Type of estimate		
6.6 Population size Method used		
6.7 Short-term trend Period	2013-2018	
6.8 Short-term trend Direction	Stable (0)	
6.9 Short-term trend Magnitude	a) Minimum	
	b) Maximum	
	c) Confidence interval	
6.10 Short-term trend Method used	Based mainly on expert opinion with very limited data	
6.11 Long-term trend Period		
6.12 Long-term trend Direction		
6.13 Long-term trend Magnitude	a) Minimum	
	b) Maximum	
	c) Confidence interval	
6.14 Long-term trend Method used		
6.15 Favourable reference population (using the unit in 6.2 or 6.4)	a) Population size	
	b) Operator	Approximately equal to (≈)
	c) Unknown	
	d) Method	The Favourable Reference Population (FRP) in 2019 is the same as in 2013. The FRP in 2013 was an operator, namely 'approximately equal to' current. The population size estimate in 2013 was 1,897 (minimum) to 1,961 (maximum) number of map 10x10 km grid cells. An FRP operator has been used because it has not been possible to calculate the exact FRP. The FRP in 2013 was considered to be large enough to maintain a viable population and is no less that when the Habitats Directive came into force in the UK. For further details see the 2019 Article 17 UK Approach document. The 2013 assessment can be found here:

http://jncc.defra.gov.uk/page-6387.

6.16 Change and reason for change in population size	No change The change is mainly due to:
6.17 Additional information	Data collected within the current reporting period are insufficient to determine whether the actual (collective) population size in 2013-18 is any different to the population size estimate in the 2013 reporting. Despite the reported pressures, there are few, if any, losses of Sphagnum from entire 10x10 km squares, which is the unit used for the Favourable Reference Population (FRP).

7. Habitat for the species

7.1 Sufficiency of area and quality of occupied habitat	a) Are area and quality of occupied habitat sufficient (for long-term survival)?	No
	b) Is there a sufficiently large area of unoccupied habitat of suitable quality (for long-term survival)?	No
7.2 Sufficiency of area and quality of occupied habitat Method used	Based mainly on expert opinion with very limited data	
7.3 Short-term trend Period	2013-2018	
7.4 Short-term trend Direction	Decreasing (-)	
7.5 Short-term trend Method used	Based mainly on expert opinion with very limited data	
7.6 Long-term trend Period		
7.7 Long-term trend Direction		
7.8 Long-term trend Method used		
7.9 Additional information	Despite the reported pressures, there are few if any losses of Sphagnum from entire 10x10km squares, which is the population unit used for the Favourable Reference Population.	

8. Main pressures and threats

8.1 Characterisation of pressures/threats

Pressure	Ranking
Intensive grazing or overgrazing by livestock (A09)	H
Extensive grazing or undergrazing by livestock (A10)	H
Burning for agriculture (A11)	H
Agricultural activities generating diffuse pollution to surface or ground waters (A26)	M
Agricultural activities generating air pollution (A27)	M
Conversion to forest from other land uses, or afforestation (excluding drainage) (B01)	M
Modification of hydrological conditions, or physical alteration of water bodies and drainage for forestry (including dams) (B27)	M
Peat extraction (C05)	H

Mixed source air pollution, air-borne pollutants (J03)	M
Drainage (K02)	H

Threat	Ranking
Intensive grazing or overgrazing by livestock (A09)	H
Extensive grazing or undergrazing by livestock (A10)	H
Burning for agriculture (A11)	H
Agricultural activities generating diffuse pollution to surface or ground waters (A26)	M
Agricultural activities generating air pollution (A27)	M
Conversion to forest from other land uses, or afforestation (excluding drainage) (B01)	H
Modification of hydrological conditions, or physical alteration of water bodies and drainage for forestry (including dams) (B27)	M
Peat extraction (C05)	M
Mixed source air pollution, air-borne pollutants (J03)	M
Drainage (K02)	H

8.2 Sources of information

8.3 Additional information

9. Conservation measures

9.1 Status of measures

a) Are measures needed? No

b) Indicate the status of measures

9.2 Main purpose of the measures taken

9.3 Location of the measures taken

9.4 Response to the measures

9.5 List of main conservation measures

9.6 Additional information

Conservation measures are only required to be reported for Annex II species. This group of species is not on Annex II.

10. Future prospects

10.1 Future prospects of parameters

a) Range

b) Population

c) Habitat of the species

10.2 Additional information

Several pressures and threats to the species group are considered to be significant and not fully addressed by any existing conservation measures, and therefore the Future prospects of the species group are considered to be Unfavourable-inadequate.

Report on the main results of the surveillance under Article 11 for Annex II, IV and V species (Annex B)

11. Conclusions

11.1. Range	Favourable (FV)
11.2. Population	Favourable (FV)
11.3. Habitat for the species	Unfavourable - Inadequate (U1)
11.4. Future prospects	Unfavourable - Inadequate (U1)
11.5 Overall assessment of Conservation Status	Unfavourable - Inadequate (U1)
11.6 Overall trend in Conservation Status	Deteriorating (-)
11.7 Change and reasons for change in conservation status and conservation status trend	a) Overall assessment of conservation status No change The change is mainly due to: b) Overall trend in conservation status Use of different method The change is mainly due to: Use of different method
11.8 Additional information	Conclusion on Range reached because: (i) the short-term trend direction in Range surface area is stable and (ii) the current Range surface area is not less than the Favourable Reference Range. Conclusion on Population reached because: (i) the short-term trend direction in Population size is stable and (ii) the current Population size is approximately equal to the Favourable Reference Population. Conclusion on Habitat for the species reached because: (i) the area of occupied and unoccupied habitat is sufficiently large but (ii) the habitat quality is not adequate for the long-term survival of the species; and (iii) the short-term trend in area of habitat is decreasing. Conclusion on Future prospects reached because several of the pressures and threats are considered to be significant and not fully addressed by any existing conservation measures, particularly meaning the Future prospects of Habitat for the species are poor. Overall assessment of Conservation Status is Unfavourable-inadequate because two of the conclusions are Unfavourable-inadequate. Overall trend in Conservation Status is based on the combination of the short-term trends for Range - stable, Population - stable, and Habitat for the species - decreasing. The Overall assessment of Conservation Status has not changed since 2013. The Overall trend in Conservation Status has changed between 2013 and 2019 because of the removal of the Future prospects trend from the 2019 method used to assess Overall trend, and also due to expert opinion.

12. Natura 2000 (pSCIs, SCIs and SACs) coverage for Annex II species

12.1 Population size inside the pSCIs, SCIs and SACs network (on the biogeographical/marine level including all sites where the species is present)	a) Unit b) Minimum c) Maximum d) Best single value

Report on the main results of the surveillance under Article 11 for Annex II, IV and V species (Annex B)

12.2 Type of estimate	
12.3 Population size inside the network Method used	
12.4 Short-term trend of population size within the network Direction	
12.5 Short-term trend of population size within the network Method used	
12.6 Additional information	This group of species is not on Annex II.

13. Complementary information

13.1 Justification of % thresholds for trends	
13.2 Trans-boundary assessment	
13.3 Other relevant Information	The following 36 species are known to occur in the UK: Sphagnum affine, Sphagnum angustifolium, Sphagnum austinii, Sphagnum balticum, Sphagnum beothuk, Sphagnum capillifolium, Sphagnum compactum, Sphagnum contortum, Sphagnum cuspidatum, Sphagnum denticulatum, Sphagnum fallax, Sphagnum fimbriatum, Sphagnum flexuosum, Sphagnum fuscum, Sphagnum gigensohnii, Sphagnum inundatum, Sphagnum lindbergii, Sphagnum magellanicum, Sphagnum majus, Sphagnum molle, Sphagnum obtusum, Sphagnum palustre, Sphagnum papillosum, Sphagnum platyphyllum, Sphagnum pulchrum, Sphagnum quinquefarium, Sphagnum riparium, Sphagnum russowii, Sphagnum skyense, Sphagnum squarrosum, Sphagnum strictum, Sphagnum subnitens, Sphagnum subsecundum, Sphagnum tenellum, Sphagnum teres and Sphagnum warnstorfii. Note that: Sphagnum fuscum has been split into S. beothuk and S. fuscum s.str. (Hill, 2017); Sphagnum palustre is treated in GB as including S. centrale (Blockeel et al., 2014); Sphagnum capillifolium is treated in GB as including S. rubellum (Blockeel et al., 2014).