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

Supporting documentation for the
conservation status assessment for the habitat:

H7130 - Blanket bogs

NORTHERN IRELAND

IMPORTANT NOTE - PLEASE READ

- The information in this document is a country-level contribution to the UK Report on the conservation status of this habitat, submitted to the European Commission as part of the 2019 UK Reporting under Article 17 of the EU Habitats Directive.
- The 2019 Article 17 UK Approach document provides details on how this supporting information was used to produce the UK Report.
- The UK Report on the conservation status of this habitat is provided in a separate document.
- The reporting fields and options used are aligned to those set out in the European Commission guidance.
- Explanatory notes (where provided) by the country are included at the end. These provide an audit trail of relevant supporting information.
- 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 only relevant at UK-level (sections 10 Future prospects and 11 Conclusions).
- For technical reasons, the country-level future trends for Range, Area covered by habitat and Structure and functions are only available in a separate spreadsheet that contains all the country-level supporting information.
- The country-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 17 for Annex I habitat types (Annex D)

NATIONAL LEVEL

1. General information

1.1 Member State	**UK (Northern Ireland information only)**
1.2 Habitat code	**7130 - Blanket bogs (* if active bog)**

2. Maps

2.1 Year or period	2013-2018
2.3 Distribution map	Yes
2.3 Distribution map Method used	Complete survey or a statistically robust estimate
2.4 Additional maps	No

BIOGEOGRAPHICAL LEVEL

3. Biogeographical and marine regions

3.1 Biogeographical or marine region where the habitat occurs	**Atlantic (ATL)**
3.2 Sources of information	Cooper, A. & McCann, T. (2001). The Northern Ireland Countryside Survey 2000. Environment and Heritage Service, Belfast Cooper, A., McCann, T. and Rogers, D. (2009) Northern Ireland Countryside Survey 2007: Broad Habitat Change 1998-2007. Northern Ireland Environment Agency. Northern Ireland Environment Agency Research and Development Series No. 09/06. Belfast. 58 pp. McCann, T., Rogers, D. and Cooper, A. (2009) Northern Ireland Countryside Survey 2007: Field methods and technical manual. Northern Ireland Environment Agency. Northern Ireland Environment Agency, Research and Development Series No 09/07. Belfast. Murray, R., McCann, T. and Cooper, A. (1992). A Land Classification and Landscape Ecological Study of Northern Ireland. Department of the Environment NI and Department of Environmental Studies, University of Ulster, Coleraine. Rodwell, J.S. (1991). British Plant Communities. Volume 2, Mires and heaths. Cambridge: Cambridge University Press NIEA. Internal Condition Assessment Reports (various sites and years). Rodwell, J.S., Dring, J.C., Averis, A.B.V., Proctor, M.C.F., Malloch, A.J.C., Schaminee, J.H.J & Dargie, T.C.D. 1998. Review of Coverage of the National Vegetation Classification. Lancaster: Unit of Vegetation Science report to the Joint Nature Conservation Committee. Data on aerial Nitrogen deposition taken from Air Pollution Information System website - http://www.apis.ac.uk/ Lindsay, R.A. (1995). Bogs: The ecology, classification and conservation of ombrotrophic mires. Scottish Natural Heritage. Battleby.

4. Range

4.1 Surface area (in km²)		
4.2 Short-term trend Period		
4.3 Short-term trend Direction	Stable (0)	
4.4 Short-term trend Magnitude	a) Minimum	b) Maximum
4.5 Short-term trend Method used		
4.6 Long-term trend Period		

Report on the main results of the surveillance under Article 17 for Annex I habitat types (Annex D)

4.7 Long-term trend Direction 4.8 Long-term trend Magnitude	a) Minimum	b) Maximum	
4.9 Long-term trend Method used			
4.10 Favourable reference range	a) Area (km²) b) Operator c) Unknown No d) Method		
4.11 Change and reason for change in surface area of range	No change The change is mainly due to:		
4.12 Additional information			

5. Area covered by habitat

5.1 Year or period	2013-2018		
5.2 Surface area (in km²)	a) Minimum	b) Maximum	c) Best single value 1400
5.3 Type of estimate	Best estimate		
5.4 Surface area Method used	Complete survey or a statistically robust estimate		
5.5 Short-term trend Period	2007-2018		
5.6 Short-term trend Direction	Decreasing (-)		
5.7 Short-term trend Magnitude	a) Minimum	b) Maximum	c) Confidence interval
5.8 Short-term trend Method used	Based mainly on extrapolation from a limited amount of data		
5.9 Long-term trend Period	1994-2018		
5.10 Long-term trend Direction	Decreasing (-)		
5.11 Long-term trend Magnitude	a) Minimum	b) Maximum	c) Confidence interval
5.12 Long-term trend Method used	Based mainly on extrapolation from a limited amount of data		
5.13 Favourable reference area	a) Area (km²) b) Operator c) Unknown No d) Method		
5.14 Change and reason for change in surface area of range	No change The change is mainly due to:		
5.15 Additional information			

6. Structure and functions

6.1 Condition of habitat	a) Area in good condition (km²)	Minimum 8.975	Maximum 8.975
	b) Area in not-good condition (km²)	Minimum 119.3424	Maximum 119.3424
	c) Area where condition is not known (km²)	Minimum 1271.68	Maximum 1271.68
6.2 Condition of habitat Method used	Based mainly on extrapolation from a limited amount of data		
6.3 Short-term trend of habitat area in good condition Period	2013-2018		

Report on the main results of the surveillance under Article 17 for Annex I habitat types (Annex D)

6.4 Short-term trend of habitat area in good condition Direction	Stable (0)
6.5 Short-term trend of habitat area in good condition Method used	Based mainly on extrapolation from a limited amount of data
6.6 Typical species	Has the list of typical species changed in comparison to the previous reporting period? No
6.7 Typical species Method used	
6.8 Additional information	

7. Main pressures and threats

7.1 Characterisation of pressures/threats

Pressure	Ranking
Intensive grazing or overgrazing by livestock (A09)	M
Burning for agriculture (A11)	H
Agricultural activities generating air pollution (A27)	M
Drainage for use as agricultural land (A31)	M
Peat extraction (C05)	H
Wind, wave and tidal power, including infrastructure (D01)	M
Other invasive alien species (other then species of Union concern) (I02)	M
Droughts and decreases in precipitation due to climate change (N02)	M
Modification of hydrological conditions, or physical alteration of water bodies and drainage for forestry (including dams) (B27)	M

Threat	Ranking
Intensive grazing or overgrazing by livestock (A09)	M
Burning for agriculture (A11)	H
Agricultural activities generating air pollution (A27)	H
Drainage for use as agricultural land (A31)	M
Peat extraction (C05)	H
Wind, wave and tidal power, including infrastructure (D01)	M
Other invasive alien species (other then species of Union concern) (I02)	M
Droughts and decreases in precipitation due to climate change (N02)	H
Modification of hydrological conditions, or physical alteration of water bodies and drainage for forestry (including dams) (B27)	M

7.2 Sources of information

7.3 Additional information

8. Conservation measures

8.1 Status of measures	a) Are measures needed?	Yes

Report on the main results of the surveillance under Article 17 for Annex I habitat types (Annex D)

	b) Indicate the status of measures: Measures identified and taken
8.2 Main purpose of the measures taken	Maintain the current range, population and/or habitat for the species
8.3 Location of the measures taken	Both inside and outside Natura 2000
8.4 Response to the measures	Medium-term results (within the next two reporting periods, 2019-2030)
8.5 List of main conservation measures	

Prevent conversion of natural and semi-natural habitats, and habitats of species into agricultural land (CA01)

Adapt mowing, grazing and other equivalent agricultural activities (CA05)

Reduce/eliminate air pollution from agricultural activities (CA12)

Manage drainage and irrigation operations and infrastructures in agriculture (CA15)

Manage drainage and irrigation operations and infrastructures (CB14)

Adapt/manage renewable energy installation, facilities and operation (CC03)

Management, control or eradication of other invasive alien species (CI03)

Implement climate change adaptation measures (CN02)

Adapt/manage exploitation of energy resources (CC02)

8.6 Additional information

9. Future prospects

9.1 Future prospects of parameters	a) Range b) Area c) Structure and functions
9.2 Additional information	

10. Conclusions

10.1. Range 10.2. Area	
10.3. Specific structure and functions (incl. typical species)	
10.4. Future prospects	
10.5 Overall assessment of Conservation Status	
10.6 Overall trend in Conservation Status	
10.7 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 No change The change is mainly due to:
10.8 Additional information	

Report on the main results of the surveillance under Article 17 for Annex I habitat types (Annex D)

11. Natura 2000 (pSCIs, SCIs, SACs) coverage for Annex I habitat types

11.1 Surface area of the habitat type inside the pSCIs, SCIs and SACs network (in km² in biogeographical/ marine region)	a) Minimum b) Maximum c) Best single value 99.1555
11.2 Type of estimate	Best estimate
11.3 Surface area of the habitat type inside the network Method used	Complete survey or a statistically robust estimate
11.4 Short-term trend of habitat area in good condition within the network Direction	Increasing (+)
11.5 Short-term trend of habitat area in good condition within network Method used	Complete survey or a statistically robust estimate
11.6 Additional information	

12. Complementary information

12.1 Justification of % thresholds for trends	
12.2 Other relevant information	

Distribution Map

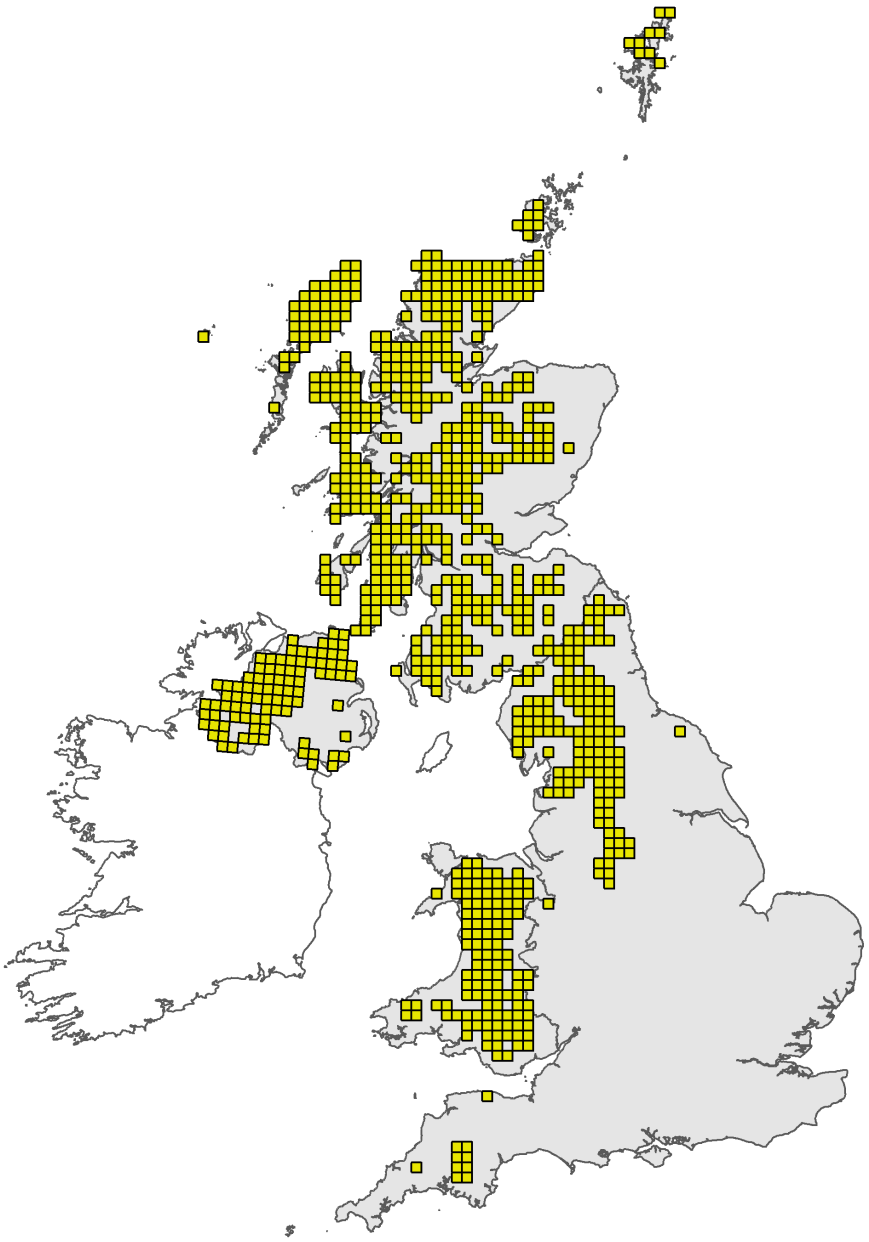

Figure 1: UK distribution map for H7130 - Blanket bogs. Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

The 10km grid square distribution map is based on available habitat records which are considered to be representative of the distribution within the current reporting period. For further details see the 2019 Article17 UK Approach document.

Range Map

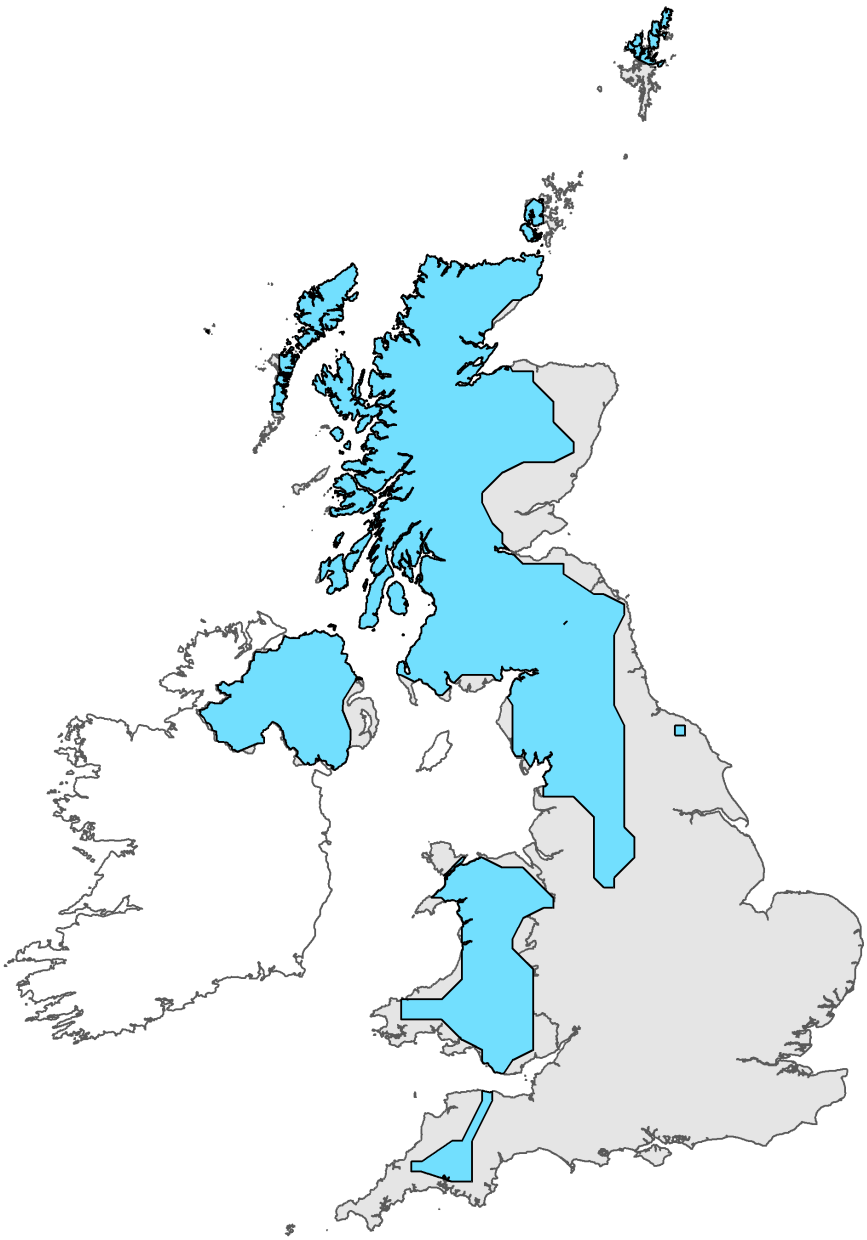

Figure 2: UK range map for H7130 - Blanket bogs. Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

The range map has been produced by applying a bespoke range mapping tool for Article 17 reporting (produced by JNCC) to the 10km grid square distribution map presented in Figure 1. The alpha value for this habitat was 25km. For further details see the 2019 Article 17 UK Approach document.

Explanatory Notes

Habitat code: 7130

Field label	Note
2.2 Distribution map	Blanket bog is a globally restricted peatland habitat confined to cool, wet, typically oceanic climates. The habitat includes bog pools, in addition to other communities such as fens and flushes which form an integral part of the blanket bog landscape. Distinguishing blanket bog from wet heath can be difficult, since degraded bogs often display vegetation similar to wet dwarf shrub heath. However heathlands generally occur on shallow peats, whilst blanket bog generally has a minimum peat thickness of 0.5m. The NI Peatland Survey (Cruickshank and Tomlinson, 1990) recorded 142,384 ha of blanket bog in NI. Over half (56%) had been cut or drained, with only 22,175 ha remaining intact (15% of all blanket bog). There may be some overlap with wet heath in the above figure. As NIPS was generally based upon aerial photographs, some of the vegetation recorded as bog may have occurred on shallow peats. In NI, although extensive areas of blanket bog are generally found at altitudes in excess of 200 m, a number of intermediate bogs are also included in this category, because they have more affinities to blanket bog than to lowland raised bog. These generally occur in the altitude range 150 to 200 m, but may be found at lower elevations in the extreme west, where even extensive blanket bog development occurs as low as 90 m. Areas of raised bog within blanket bog - 'Atlantic raised bog' (Moen, 1985) or 'unconfined raised bog' (Lindsay, 1995) - are also included. The most extensive areas of blanket bog are on the Antrim Plateau, the Sperrin Mountains and in County Fermanagh. Survey work by NIEA has identified a similar transition for blanket bogs from east to west in response to the climatic gradient, with the Pettigoe Plateau showing distinct affinities to low-level Atlantic blanket bog (Moore, 1968; Doyle, 1982). The peat here has formed at a much lower altitude than in the remainder of NI's blanket bogs. Once again, there are corresponding floristic differences, with such species as Purple Moor-grass Molinia caerulea and Black Bog-rush Schoenus nigricans becoming more abundant on the bog surface. The habitat takes in a number of NVC communities: M1 Sphagnum auriculatum bog pool community - as an oceanic community, this tends occur on intact blanket bogs especially in the west; M2 S. cuspidatum/recurvum bog pool community - also found on intact sites; M3 Eriophorum angustifolium bog pool community - this can occur in disturbed sites (e.g. old peat cuttings) but is also found in intact bogs where large, open-water pools are found, often in exposed situations; M17 Scirpus cespitosus-Eriophorum vaginatum blanket mire - the most common blanket bog community; M18 Erica tetralix-Sphagnum papillosum raised and blanket mire - tends to occur on deeper peat areas within blanket bogs, but often difficult to separate from M17 in NI; M19 Calluna vulgaris-Eriophorum vaginatum blanket mire - the most common community at higher altitudes; M20 Eriophorum vaginatum blanket and raised mire (generally a degraded type); M25 Molinia caerulea-Potentilla erecta mire - often occurs on gentle slopes where there is some water movement. In transitional areas where the peat becomes shallower, the wet heath community - M15 Scirpus cespitosus-Erica tetralix wet heath - occurs as part of the blanket bog mosaic. The habitat includes other Annex 1 habitats as part of the wider landscape-scale mosaic (e.g. Transition mires and quaking bogs, Natural dystrophic lakes and ponds, etc).
2.3 Distribution map; Method used	Map based upon NI Peatland Survey (Cruickshank and Tomlinson, 1988) with additional fieldwork by NIEA staff at other sites - SACs, ASSIs and other locations. During the reporting period, NIEA staff have generally visited SACs and ASSIs, with coverage of the habitat in the wider countryside more patchy.

Habitat code: 7130 Region code: ATL

Field label	Note

4.1 Surface area	The complete resource has not been surveyed since 1988, but we have no reason to believe that there has been a loss in range; certainly no loss in range has been recorded in the habitat on SACs or ASSIs since the condition assessment programme was introduced in 2002.
4.5 Short term trend; Method used	Based upon regular condition monitoring of protected blanket bog sites. These cover around 10% of the habitat in NI.
5.2 Surface area	NI Countryside Survey (Cooper, et al.,2009) estimates 143,393 ha of the habitat in NI. This is in line with previous estimates of the habitat (based upon the NI Peatland Survey (Cruickshank and Tomlinson, 1988), and the figure from the 2007 Report of 140,000 ha is retained. The S.E. of the estimate is 154.2 km2. NI Countryside Survey uses species composition for field mapping and does not use peat depth. Digital overlay of H4010 wet heath habitat parcels on Peatland Survey and AFBI Soil Survey data gives a rough estimate of ca. 15% of H4010 occurring on thin peat (<0.5m), mostly in the uplands (>152m). Therefore while there is overlap with the area estimate for H4010 wet heath, most of this is likely to be H7130 Blanket bogs.
5.6 Short term trend; Direction	Slight decrease was 10.2 km2 (-0.7%) with a S.E. of 19.8 km2. This change was not statistically significant (p=0.05, 95%).
5.8 Short term trend; Method used	Trend based upon NI Countryside Survey data for the period 1998 to 2007. Assumed that the trend has continued into the current reporting period. The NICS was based on field mapping within 288 25ha sample squares. Only upland (>152m) sample squares are included in the calculation, but with one lowland sample square (F118) assigned as blanket bog.
6.1 Condition of habitat	Recent condition assessment data for SACs and ASSIs shows that a high proportion of the habitat is in unfavourable condition. However, a reasonable proportion of this is recorded as recovering (i.e. combined data for SACs and ASSIs : 896 ha favourable (6%); 5140 ha unfavourable recovering (36%) ; 6795 ha unfavourable (48%); with about 9% recently declared ASSIs not yet assessed).
6.2 Condition of habitat; Method used	Condition has been largely assessed from data taken from the most recent Common Standards Monitoring of blanket bog SACs and ASSIs. However, a large part of the resource of H7130 lies outside the designated site network. Extrapolating the evidence from the protected sites network to the wider resource of H7130 suggests that a high proportion of the overall resource is likely to be in unfavourable condition, and this is supported by general trends identified in the NI Countryside Survey 1998-2007 (Cooper, et al., 2009). Although the latter is now somewhat out of date, it is likely that the broad trends identified are still valid.

7.1 Characterisation of pressures/ threats	CSM data for SACs suggest a high proportion of the habitat is in unfavourable condition; data for ASSIs with blanket bog as a selection feature display a similar trend. Previously, heavy grazing was responsible for much of this poor condition. However, recent condition assessments suggest that grazing intensity has been reduced over a significant area of the resource. Uncontrolled burning remains a significant issue. Outside the protected sites network, drainage and peat cutting remain as significant impacts on the habitat, in addition to construction of windfarms. Afforestation of blanket bog is now contrary to forestry policy; however, existing forests may have impacts on adjacent areas of blanket bog through drainage, evapotranspiration and colonisation by exotic conifer species. Climate change will inevitably have some effects on the habitat, through changing patterns of rainfall. It is difficult to predict what the long-term effects of this will be, although if, as current projections suggest, there are prolonged periods of drought, this may well have an adverse impact on Sphagnum bog-mosses. The habitat is sensitive to aerial Nitrogen deposition, with a critical load range listed in the APIS website as 5-10 kg N /ha/yr. Most of the habitat in NI receives above this - in some cases considerably higher than this. For example, Garron Plateau in the east of NI has a predicted annual rate of 17 kg/N/ha/year (average figure), compared to Cuilcagh Mountain in the west, which has a figure of 10.9 kg/N/ha/year (average figure). Apart from nutrient enrichment and the impacts on species composition, some key bog species are particularly sensitive to the effects of ammonia (i.e. Cladonia portentosa and Sphagnum spp).
7.2 Sources of information	Threats and pressures assessed from the most recent Common Standards Monitoring of the habitat at protected sites (SACs and ASSIs), in addition to data from the NI Countryside Survey and expert judgement to assess pressures in the wider countryside. Threats based upon current pressures and expert judgement on future trends.
8.1 Status of measures	Recent monitoring shows that the habitat is in unfavourable condition. However, measures have been put in place at several SACs and ASSIs to improve condition - e.g. drain blocking on the Garron Plateau SAC to restore hydrology (joint NIEA/RSPB/Water NI project - now part of Interreg Va programme); control of grazing impacts in the Cuilcagh Mountain SAC (Council initiative - Cuilcagh Mountain Park and GeoPark site). More measures will be put in place under the Interreg Va progarmme, and the Environmental farming Scheme (EFS).
8.2 Main purpose of the measures taken	Measures aimed at reducing damaging impacts from current pressures and future threats. The habitat is extensive across NI. Hence this is reported as Maintain the structure and functions, including the status of typical species (related to 'Specific structure and functions').
8.3 Location of the measures taken	Management measures have been taken at a number of sites - i.e. Garron Plateau SAC, Cuilcagh Mountain SAC, Altikeeragh ASSI. In addition, Interreg Va project will be developing conservation management plans and implementing management measures at several SACs, and Rural Development Plan (RDP) funds are being used to develop similar Conservation Management Plans at other blanket bog SACs. Several areas of blanket bog across NI - both within designated sites and outside - have been entered into the Environment Farming Scheme (EFS), which aims to implement sympathetic management.

9.1 Future prospects of parameters	Future Prospects for Range reported as Overall Stable. Area reported as Negative - slow decline in Blanket Bog area over time identified by NI Countryside Survey likely to have continued during the period of the report. Recent monitoring on SACs and ASSIs has shown that there are extensive areas of the habitat in unfavourable condition. Although specific site conservation measures have been put in place at several SACs and ASSIs to improve condition, and further measures will be put in place under the Interreg Va programme and the Environmental Farming Scheme (EFS), a large proportion of the habitat is outside the protected sites network. Furthermore, the habitat is sensitive to aerial Nitrogen deposition, with a critical load range listed in the APIS website as 5-10 kg N /ha/yr. Most of the habitat in NI receives above this - in some cases considerably higher than this. For example, Garron Plateau in the east of NI has a predicted annual rate of 17 kg/N/ha/year (average figure), compared to Cuilcagh Mountain in the west, which has a figure of 10.9 kg/N/ha/year (average figure). Apart from nutrient enrichment and the impacts on species composition, some key bog species are particularly sensitive to the effects of ammonia (i.e. Cladonia portentosa and Sphagnum spp). Although the Department is developing a road map to reduce atmospheric Nitrogen from agricultural sources, until this initiative is implemented and its impacts evaluated, advice from JNCC is that the assessment of future prospects for Structure and Function should be assessed as Negative.
10.1 Range	In NI, although there have undoubtedly been losses - particularly to afforestation and agricultural intensification - it is not believed that these have had any impact on the range of the habitat - available evidence from survey work and aerial photo coverage suggests that the range has remained stable since 1988. Certainly the habitat occurs widely over all suitable upland areas. Overall expert judgement is that the known distribution of H7130 is likely to be occupying most of its potential natural range; and that the favourable reference range and distribution for H7130 is likely to match closely the current range and distribution.
10.2 Area	In the past there have been significant losses in the extent of blanket bog, particularly to peat-cutting, afforestation and agricultural reclamation. Most of this was before 1994. Data from the NI Countryside Survey suggests that the extent of the habitat declined very slightly over the period 1998 to 2007 (i.e. decrease was 10.2 km2 (-0.7%) with a S.E. of 19.8 km2. This change was not statistically significant (p=0.05, 95%)). We have no reason to believe that this low rate of decline has changed over the intervening period. Hence the area is assessed as Unfavourable Inadequate (i.e. less than 1% area per year).
10.3 Specific structure and functions	The resource is reported as not good for structure and function. Within the protected sites network, a reasonable proportion is in recovering condition. However, the bulk of the resource is outside the protected sites network and is likley to be in worse condition. Hence an Unfavourable Bad assessment.
10.4 Future prospects	Despite some positive developments within the protected sites network as a result of conservation measures both already in place and planned for the future, the structure and function of the habitat is generally bad. Future prospects are uncertain in the light of potential impacts climate change, but the added impact of atmospheric Nitrogen deposition make this attribute Unfavourable Bad.
10.5 Overall assessment of Conservation Status	Range is stable; extent is unfavourable inadequate due to probabe low rate of loss. Structure and function is bad. Future prospects are bad, with climate change impacts currently unpredictable and atmospheric Nitrogen deposition still a major threat. Hence an overall unfavourable bad assessment.
11.1 Surface area of the habitat type inside the pSCIs, SCIs and SACs network	There are 8 SACs for the habitat in NI (Carn/Glenshane, Cuilcagh Mountain, Eastern Mournes, Garron Plateau, Pettigoe Plateau, Slieve Beagh, Teal Lough and West Fermanagh Scarplands). These cover nearly 10,000 ha of the habitat.

11.3 Surface area of the habitat type inside the network; Method used	The habitat across NI was mapped by the NI Peatland Survey. Area estimates for SACs has been refined by field survey. CSM of SACs is undertaken on a regular basis and no recent loss in extent has been recorded.
11.4 Short term trend of habitat area in good condition within the network; Direction	Assessment of increasing based upon recent condition assessment data. Although the majority of the habitat in the SAC network reported as unfavourable, a significant amount of the habitat in SACs is in unfavourable recovering status.
11.5 Short term trend of habitat area in good condition within the network; Method used	Assessment based upon recent condition assessment data. Note that a significant amount of the habitat in SACs is in unfavourable recovering status.