

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

**Second Report by the United Kingdom under
Article 17
on the implementation of the Directive
from January 2001 to December 2006**

**Conservation status assessment for :
H7130: Blanket bogs**

Please note that this is a section of the report. For the complete report visit <http://www.jncc.gov.uk/article17>

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H7130 Blanket bogs

Audit trail compiled and edited by JNCC and the JNCC Upland Lead Coordination Network

This paper and accompanying appendices contain background and data used to complete the standard EC reporting form (Annex D), following the methodology outlined in the document entitled “Assessment, monitoring and reporting under Article 17 of the Habitats Directive, Explanatory Notes & Guidelines, Final Draft 5, October 2006.” The superscript numbers below cross-reference to the headings in the corresponding Annex D reporting form. This supporting information should be read in conjunction with the UK approach for habitats (see ‘Assessing Conservation Status: UK Approach’).

1. National-biogeographic level information

1.1 General description and correspondence with National Vegetation Classification (NVC) and other habitat types

Table 1.1.1 provides a summary description of H7130 and its relations with UK classifications. These extensive peatlands have formed in areas where there is a climate of high rainfall and a low level of evapotranspiration, allowing peat to develop not only in wet hollows but over large expanses of undulating ground. The blanketing of the ground with a variable depth of peat gives the habitat type its name and results in the various morphological types according to their topographical position, e.g. saddle mires, watershed mires, valleyside mires. Other morphological types are less obviously defined. Eccentric mires, of which there are possibly only three in the UK, might be thought of as extreme, fan-shaped forms of valleyside mire that abut mineral ground at their upslope margins and have dramatic surface patterning aligned at right angles to the slope. Ladder fens form an integral part of some blanket bogs and have a characteristic surface patterning, with narrow pools and intervening low, narrow ridges parallel to the contours. Associated with this structure is a more species-rich flora than that of the surrounding mire expanse. This is due to local flushing of mineral nutrients through these fen areas, in contrast to the surrounding vegetation, which receives all its nutrients through precipitation, i.e. is ombrotrophic. Ladder fens may also be referable to H7140 (Transition mires and quaking bogs).

Table 1.1.1 Summary description of habitat H7130 and its relations with UK vegetation/habitat classifications

Classification	Correspondence with Annex I type	Comments
EU Interpretation Manual	52.1 – HyperAtlantic blanket bogs of the western coastlands of Ireland, western Scotland and its islands, Cumbria, Northern Wales; bogs locally dominated by sphagna (<i>Sphagnum auriculatum</i> , <i>S. magellanicum</i> , <i>S. compactum</i> , <i>S. papillosum</i> , <i>S. nemoreum</i> , <i>S. rubellum</i> , <i>S. tenellum</i> , <i>S. subnitens</i>), or, particularly in parts of western Ireland, mucilaginous algal deposits (<i>Zygonium</i>). 52.2 – Blanket bogs of high ground, hills and mountains in Scotland, Ireland, Western England and Wales.	These are the PAL.CLASS sub-types of H7130, found in the British Isles, based on CORINE classifications.
NVC	M1 <i>Sphagnum auriculatum</i> bog pool community M15 <i>Scirpus cespitosus-Erica tetralix</i> wet heath M17 <i>Scirpus cespitosus-Eriophorum vaginatum</i> blanket mire M18 <i>Erica tetralix-Sphagnum papillosum</i>	All of these NVC communities types have only partial correspondence to H7130. H7130 include both active bog (which has priority status) and non-active blanket bog. 'Active' is defined as supporting a significant area of vegetation that is normally peat

	<p>raised and blanket mire M19 <i>Calluna vulgaris</i>–<i>Eriophorum vaginatum</i> blanket mire M20 <i>Eriophorum vaginatum</i> blanket and raised mire M25 <i>Molinia caerulea</i>–<i>Potentilla erecta</i> mire</p>	<p>forming. M15 <i>Scirpus cespitosus</i> – <i>Erica tetralix</i> wet heath may also occur on blanket peat, but stands of <i>Scirpus</i> – <i>Erica</i> wet heath on shallower peats (<0.5 m depth) are generally referable to Annex I type H4010 (Northern Atlantic wet heaths with <i>Erica tetralix</i>). M25 <i>Molinia caerulea</i>–<i>Potentilla erecta</i> mire hollows within blanket bog often contain M1 <i>Sphagnum auriculatum</i>, M2 <i>Sphagnum cuspidatum/recurvum</i> or M3 <i>Eriophorum angustifolium</i> bog pool communities, and, particularly in Scotland, there may be examples of H3160 (natural dystrophic lakes and ponds). H7150 (depressions on peat substrates of the <i>Rhynchosporion</i>) occur locally around the margins of bog pools.</p>
BAP broad habitat type	<p>Bogs (Jackson 2000 / Web version www.jncc.gov.uk/page-2433)</p>	<p>Includes H7130 within a broader habitat definition. Includes Raised bogs as well as Blanket bogs. It also includes modified bog vegetation that essentially resembles wet or dry dwarf shrub heath but occurs on deep (>0.5 m) acid peat that would have once supported peat-forming vegetation.</p>
BAP priority habitat type	Blanket bog	Includes H7130 within a broader habitat definition.
JNCC CSM reporting categories, for SAC feature and ASSI/SSSI feature types	<p>Blanket bogs (See Williams 2006 www.jncc.gov.uk/page-3520)</p>	<p>A broader category which also covers: H7150 Depressions on peat substrates of the <i>Rhynchosporion</i>. H7140 Transition mires and quaking bogs</p>
JNCC CSM Guidance feature types	<p>Blanket bog and upland valley (upland) (JNCC 2005b www.jncc.gov.uk/page-2237)</p>	<p>Includes H7130 within a broader habitat definition. Also covers H7150 (depressions on peat substrates of the <i>Rhynchosporion</i>).</p>

Blanket bogs show a complex pattern of variation related to climatic factors, particularly illustrated by the variety of patterning of the bog surface in different parts of the UK. Such climatic factors also influence the floristic composition of bog vegetation. Many of the bogs in the Hebrides and Northern Ireland have affinities to types in western Ireland and thus exhibit more oceanic aspects of the range of variation, while those sites towards the eastern limit of blanket bog formation show more continental affinities.

An important element in defining variation is the relative proportion of pools on the bog surface. In general, the proportion of surface patterning occupied by permanent pools increases to the north and west, although the precise shape and pattern of pools appears to depend on local topography as well as geographical location. Variety within the bog vegetation mirrors this pattern and is also affected by altitude. Similarly, the number of associated habitats and communities, such as springs, flushes, fens and heath, is greater in the milder, wetter and geologically and topographically more complex north and west.

‘Active’ is defined as supporting a significant area of vegetation that is normally peat-forming. Typical species include the important peat-forming species, such as bog-mosses *Sphagnum* spp. and cottongrasses *Eriophorum* spp., or purple moor-grass *Molinia caerulea* in certain circumstances, together with heather

Calluna vulgaris and other ericaceous species. Thus sites, particularly those at higher altitude, characterised by extensive erosion features, may still be classed as 'active' if they otherwise support extensive areas of typical bog vegetation, and especially if the erosion gullies show signs of recolonisation.

The most abundant NVC communities on H7130 are:

- M17 *Scirpus cespitosus* – *Eriophorum vaginatum* blanket mire
- M18 *Erica tetralix* – *Sphagnum papillosum* raised and blanket mire
- M19 *Calluna vulgaris* – *Eriophorum vaginatum* blanket mire
- M20 *Eriophorum vaginatum* blanket and raised mire
- M25 *Molinia caerulea* – *Potentilla erecta* mire.

M15 *Scirpus cespitosus* – *Erica tetralix* wet heath may also occur on blanket peat, but stands of *Scirpus* – *Erica* wet heath on shallower peats (<0.5 m depth) are generally referable to Annex I type H4010 (Northern Atlantic wet heaths with *Erica tetralix*). Hollows within blanket bog often contain M1 *Sphagnum auriculatum*, M2 *Sphagnum cuspidatum/recurvum* or M3 *Eriophorum angustifolium* bog pool communities, and, particularly in Scotland, there may be H3160 Natural dystrophic lakes and ponds. H7150 (Depressions on peat substrates of the *Rhynchosporion*) occur locally around the margins of bog pools.

Heather *Calluna vulgaris*, cross-leaved heath *Erica tetralix*, cottongrasses *Eriophorum* spp., deergrass *Trichophorum cespitosum* and bog-mosses such as *S. papillosum*, *S. tenellum* and *S. capillifolium* are characteristic of blanket bog throughout its UK range. Other species are more characteristic of, or more abundant in, certain areas. For example, the higher, drier eastern bogs typically support a higher proportion of hare's-tail cottongrass *Eriophorum vaginatum* and bilberry *Vaccinium myrtillus* than those further west. Similarly, purple moor-grass *Molinia caerulea* and bog-myrtle *Myrica gale* are much more widespread and typical on western bogs. The distribution of some of the rarer bog-mosses, for example *Sphagnum imbricatum* and *S. fuscum*, is less readily associated with geography and may relate more to past management than to climate.

2. Range^{2.3}

2.1 Current range

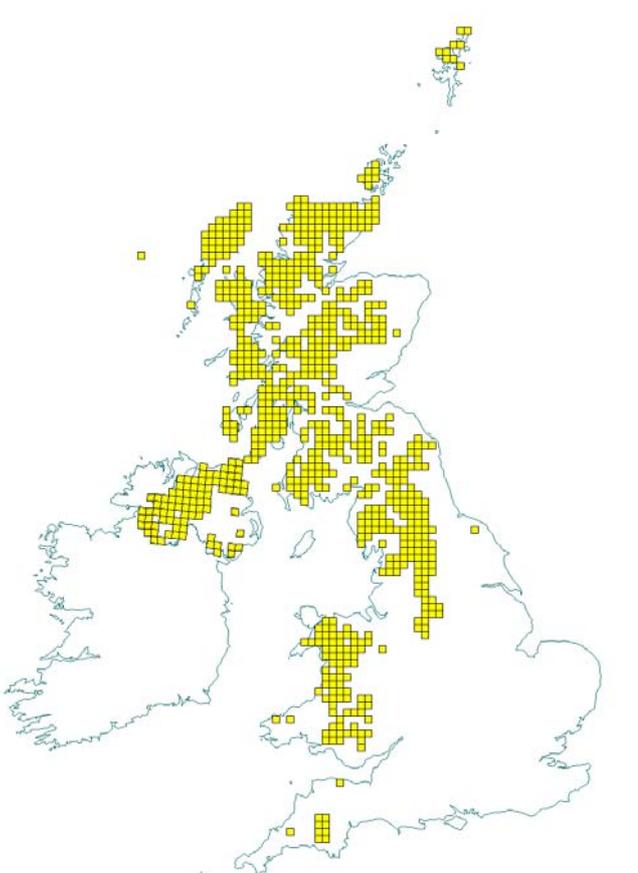
Range surface area^{2.3.1}: **115,930 km²**

Date calculated^{2.3.2}: **May 2007**

Quality of data^{2.3.3}: **Good**

The surface area estimate was calculated within alpha hull software, using extent of occurrence as a proxy measure for range (see Map 2.1.1). The value of alpha was set at 25 km; the alpha was clipped to include inland areas only.

Maps 2.1.1 and 2.1.2 show the range and distribution of H7130 in the UK. In the UK, H7130 is found in the north and west, extending from Devon in the south to Shetland in the north. *Scirpus* – *Eriophorum* mire predominates in the west, particularly at lower altitude, while *Calluna* – *Eriophorum* mire is particularly abundant in the east and at higher altitudes. *Erica* – *Sphagnum* mire is widely but patchily distributed.

Map 2.1.1 Habitat range map ^{1.1} for H7130	Map 2.1.2 Habitat distribution map ^{1.2} for H7130
	
<p>Range envelope shown in blue/grey shade in above map is a minimum convex polygon constructed using JNCC Alpha Shapes tool (see Technical Note I for details of methodology).</p>	<p>Each yellow square represents a 10x10km square of the National Grid and shows the known and/or predicted occurrence of this habitat. 10-km square count: 789</p>

See Section 7.1 for data sources

2.2 Trend in range since c.1994

Trend in range ^{2.3.4}: **Stable**
Trend magnitude ^{2.3.5}: **Not applicable**
Trend period ^{2.3.6}: **1994-2006**
Reasons for reported trend ^{2.3.7}: **Not applicable**

Local losses of habitat have occurred throughout the range, through conversion to forestry and agriculture, built development, peat cutting and the impacts of burning and grazing. However, these are considered more referable to changes in extent rather than area. Although there is no readily available evidence or information on any trend in range for H7130 since 1994, expert opinion is that the range of the habitat has remained stable since that time.

2.3 Favourable reference range

Favourable reference range ^{2.5.1}: **115,930km²**

Section 3.2.1.3 of 'Assessing Conservation Status: UK Approach' sets out how favourable reference range estimates for habitats have been determined in the UK. Based on this approach, the current surface area, 115,930km², has been set as the favourable reference area. Reasons for this are discussed below.

The potential natural range of H7130 is primarily determined by climate and topography, requiring cool, frequently wet conditions and predominantly gentle gradients. Lindsay *et al.* (1988) note the relationship between blanket bog and the 200 'rain days' isopleth in Great Britain, a rain day being a 24hr period with

at least 0.25 mm precipitation. Gradients up to 30° can support blanket bog in particularly wet areas. The underlying geology is less important; acid rocks are more widespread in areas supporting blanket bog, but in the north and west even limestone can underlie areas of bog.

There is no readily available accurate information on the historic distribution of H7130 across the UK before 1994. Peat soil maps can be used to demonstrate where peatland habitats occurred historically, whether or not they now support peatland vegetation. Topography and geographical location can then be used to determine whether that peatland was likely to be blanket bog, or other wetland types such as H4010, H7210 or H7220. However, particularly in the west of the UK, blanket bog vegetation can be supported by relatively shallow peat soils that may fall below the relevant threshold for classification as a peat soil.

Overall expert judgement is that the known distribution of H7130 shown in Map 2.1.2 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.

2.4 Conclusions on range

Conclusion^{2.6.i}:

Favourable

There is no empirical information on any changes in range for H7130 since 1994, nor any previous historical data which can be used reliably to inform on extent or changes of H7130. Losses in extent are mainly significant at the local level, but some regional losses are possibly significant, such as in Northern Ireland. However, expert opinion suggests that at the UK scale current range is considered to be close to potential range for the habitat and to its favourable reference range, and so the judgement on range for H7130 is Favourable.

3. Area^{2.4}

3.1 Current area

Total UK extent^{2.4.1}:

21,952 km²

Date of estimation^{2.4.2}:

May 2007

Method^{2.4.3}:

3 = ground based survey

Quality of data^{2.4.4}:

Moderate

Table 3.1.1 provides information on the area of H7130 in the UK. The sources quoted are the same as those used in the 2005 UK Biodiversity Action Plan (BAP) reporting for blanket bog priority habitat. For Scotland the extent is taken from an unpublished draft report to Scottish Natural Heritage (SNH), and is based upon field mapping carried out for the 1990 Countryside Survey of Great Britain. For England the figure is taken from Natural England's Priority Habitat Inventory for Blanket Bog. For Wales the figure given is taken from a 1997 report (Yeo 1997). The Northern Ireland figure is derived from Cruickshank (1988).

Table 3.1.1 Area of H7130 in the UK

	Area (ha)	Method^{2.4.3}	Quality of data^{2.4.4}
England	240,000	3	Moderate
Scotland	1,759,000	2	Moderate
Wales	56,200	3	Moderate
Northern Ireland	140,000	3	Moderate
Total UK extent^{2.4.1}	2,195,200	3	Moderate

Method used to estimate the habitat surface area: 1 = only or mostly based on expert opinion; 2 = based on remote sensing data; 3 = ground based survey. Only the most relevant class is given if more than one applies.

Quality of habitat surface area data: 'Good' e.g. based on extensive surveys; 'Moderate' e.g. based on partial data with some extrapolation; 'Poor' e.g. based on very incomplete data or on expert judgement.

Measuring the extent of H7130 is difficult due to the large areas they cover, particularly in Scotland, and due to the presence of mosaics with heath and grass habitats. The use of different methods for determining extent also produces different results. The figures given in Table 3.1.1 include degraded or poor quality examples of this habitat type, but afforested bog is excluded from the figures.

3.2 Trend in area since c.1994

Trend in area^{2.4.5}:	Decreasing
Trend magnitude^{2.4.6}:	<1% per annum
Trend period^{2.4.7}:	1990-1998
Reasons for reported trend^{2.4.8}:	3 – Direct human influence

The Countryside Survey 2000 (Haines-Young *et al.* 2000) indicated that within the UK there was a 1.3% loss in the Bog Broad BAP habitat between 1990 and 1998. The greatest losses were to coniferous woodland and were most extensive in Northern Ireland. Although this BAP broad habitat includes habitats other than H7130, H7130 is considered to represent the largest proportion of the broad habitat. This trend, which represents a decline of <1% per year, is therefore considered representative of changes to the Annex I type since 1994.

3.3 Favourable reference area

Favourable reference area^{2.5.2}: **24,150 km²**

Section 3.2.1.3 of 'Assessing Conservation Status: UK Approach' sets out how favourable reference range estimates for habitats have been determined in the UK. Based on this approach, the favourable reference area has been set at 10% above the current area, because there has been a <1% rate of decline in area since 1994.

There are a number of sources of information on historic extent and changes of H7130. In Scotland, where majority of the resource of H7130 is located, analysis of land cover change between the 1940s and 1980s indicates a 21% reduction in area of blanket bog (Mackey *et al.* 1998). The loss during that time period was considered to be mainly due to afforestation and through drainage to rough grassland and heather moorland. In Northern Ireland, the area of wet bog (which also include vegetation corresponding to H7210 and H7220) reduced by 8% between 1987 and 1992 (Cooper *et al.* 2002).

The development of blanket bog and hence its potential extent is more directly determined by the climate than is the case for many other habitats. However, it would be inappropriate to consider the potential area as that with suitable climate, even if such factors as topography were included in the analysis. For those areas that once supported blanket bog, the restoration potential also needs to be considered. Most, if not all, of the potential area, over and above that currently supporting blanket bog, lies within areas now afforested; some former peat cutting areas; areas which lost their vegetation through erosion but which still support a deep peat deposit; and those areas of deep peat which, through a history of drainage and burning, now support heath rather than bog communities.

In determining both 'current area' or 'potential area' there is the added difficulty of distinguishing between what is 'lost' habitat and what is habitat in unfavourable condition. For some losses, e.g. to forestry, this is relatively straightforward, but for others, such as conversion to wet or dry heath, both remote sensing and even field survey can struggle to make clear distinctions.

H7130 is still present as very extensive tracts in the core part of its range and there are no proposals as part of the UK Habitat Action Plan (HAP) or elsewhere to increase the overall UK extent of blanket bog. Expert opinion suggests that the major issue for H7130 is condition rather than extent and configuration. The current UK figure includes a large extent that is not in suitable condition, but still supports sufficient suitable vegetation and function to be considered as a degraded part of the Annex I type. Overall this suggests that the current UK extent and that which existed in 1994 can be considered as viable.

3.4 Conclusions on area covered by habitat

Conclusion^{2.6.ii}: **Unfavourable – Inadequate and deteriorating**

There have been losses in area of H7130 since 1994 of <1% per year. This necessitates a judgement of Unfavourable – Inadequate and deteriorating and that the favourable reference area is set at the 1994 level if this is considered viable. At a UK level the habitat is still present as very extensive tracts, particularly in Scotland which holds around 80% of the UK resource. Recently agreed targets for the UK HAP for blanket bog do not propose any significant increase in the total area, and conservation effort is focussed more on improvements in condition. This suggests that the current and 1994 UK extent can be considered viable.

4. Specific structures and functions ^(including typical species)

4.1 Main pressures ^{2.4.10}

The following list of main pressures for H7130 has been derived from the six year Common Standards Monitoring (CSM) results for Special Areas of Conservation (SACs) designated for their representation of H7130 and results from the 2005 UK BAP reporting (see <http://www.ukbap.org.uk/GenPageText.aspx?id=104> for further details).

The related EC codes are shown in brackets:

- **Grazing (140 Grazing)**

Over-grazing leads to loss of vegetation structure and the failure of more palatable or vulnerable species to reproduce and maintain themselves. It can also lead to the loss of plant species and associated fauna, and the spread of rank, unpalatable plant species. In extreme cases, very heavy grazing and trampling can lead to exposure of bare peat and erosion. Trampling damage is very often associated with over-grazing and can make recovery times longer.

- **Burning (180 Burning)**

Burning is used as part of agricultural and sporting management to modify moorland vegetation for the benefit of livestock, grouse and deer in particular. Poorly managed and/or accidental fires can be particularly damaging to blanket bog.

- **Water management (810 Drainage)**

Extensive tracts of blanket bog have been drained in the past in attempts to improve the quality of the grazing. There is a need to reinstate natural hydrology by blocking grips (lines cut through moorland for drainage purposes) on much of the resource of H7130. The problem of gripping on blanket bogs is a major cause of unfavourable condition that has not yet been fully reported on, particularly in England. New drains continue to be dug and old drains cleaned in some areas. Even without maintenance most drains continue to lower the adjacent water table and some initiate erosion.

- **Erosion (900 Erosion)**

High altitude blanket bogs in particular, especially those in the Pennines and south Wales, are losing habitat through constant erosion of the peat mass. Some of this may be due to natural processes.

- **Forestry (161 Planting)**

Although new planting may be relatively small scale, some existing plantations are having an impact on the hydrology and species composition of adjacent areas of blanket bog, notably as the trees mature.

- **Peat extraction (310 Peat extraction, 311 hand cutting of peat, 312 mechanical removal of peat)**

Commercial peat extraction, though relatively limited in extent can have important local effects. Domestic cutting, most of which occurs on common land, is locally extensive. Where mechanical

methods are employed, these can have a significant impact, especially in Northern Ireland where the distinction between commercial and domestic activity can be difficult to determine.

- **Agricultural improvement (120 Fertilisation, 190 Agriculture and forestry activities not referred to above)**

In addition to drainage, fertiliser application and conversion to pasture has occurred frequently in the past and can be of local significance.

- **Recreation (501 paths, tracks, cycling tracks, 622 walking, horseriding and non-motorised vehicles, 623 motorised vehicles)**

Many popular walking routes, some of which are also used by cyclists and horse-riders, traverse blanket bog areas which are very sensitive to such pressure. The increased use of all-terrain vehicles for recreational, agricultural and sporting activities can also result in local erosion.

- **Built development (500 Communication networks, 511 Electricity lines, 490 Other urbanisation, industrialisation and similar activities)**

Wind farms and communication masts, together with their associated infrastructure, are increasingly being proposed on areas of blanket bog, especially those at high altitude. There are also threats from hydro-electric schemes in Scotland.

- **Air pollution (702 Air pollution)**

Based on an assessment of the exceedence of relevant critical loads (Technical Note III), air pollution is considered to be a potentially significant pressure to the structure and function of this habitat.

4.2 Current condition

4.2.1 CSM condition assessments

Condition assessments based on CSM (see <http://www.jncc.gov.uk/page-2199>) provide a means to assess the structure and functioning of H7130 in the UK. The following attributes were examined for all CSM assessments relevant to the habitat:

- Feature (habitat) extent.
- Vegetation composition: frequency of taxa which are indicators of favourable condition; cover of taxa which are indicators of favourable condition, and others which are indicators of unfavourable condition.
- Vegetation structure: growth stages, burning, grazing, and disturbance.
- Physical structure: ground disturbance.

SAC condition assessments

SACs include 16% of the extent of H7130 in the UK in a well dispersed network across its range.

Table 4.2.1 CSM condition assessment results for UK SACs supporting H7130. See notes below table for details. Information on the coverage of these results is given in Section 7.2

Condition	Condition sub-categories	Area (ha)	Number of site features
Unfavourable	Declining	21,815	7
	No change	111,096	18
	Unclassified	15,643	6
	Recovering	65,927	13
	Total	214,481	44
	<i>% of all assessments</i>	62%	63%
	<i>% of total UK resource</i>	10%	unknown
Favourable	Maintained	131,991	25
	Recovered		
	Unclassified	156	1
	Total	132,146	26
	<i>% of all assessments</i>	38%	37%
	<i>% of total UK resource</i>	6%	unknown

Notes

1. Data on features that have been partly-destroyed have been excluded from this table because they are not relevant to the consideration of present condition.
2. The data included are from CSM assessments carried out between April 1998 and December 2006. NB: these include additional and some up-date data from those used in the six year report produced by JNCC. (Williams, J.M., ed. 2006. *Common Standards Monitoring for Designated Sites: First Six Year Report*. Peterborough, JNCC).
3. Only assessments made for qualifying interest features on SAC have been included in this analysis.
4. Area figures for CSM assessments have been calculated using the data presented on the standard Natura 2000 data forms submitted to the EU.

Table 4.2.1 and Map 4.2.1 summarise the CSM condition assessments for UK SACs supporting habitat H7130. These data were collated in January 2007. The maps give an impression of the overall spread of where unfavourable and favourable sites exist (summary statistics for the map are given in Section 7.2). The combined assessments show that of the SACs assessed:

- 62% of the area and 63% of the number of assessments was unfavourable; and
- at least 9% of the total UK habitat area was in unfavourable condition.

Site of Special Scientific Interest (SSSI)/Area of Special Scientific Interest (ASSI) condition assessments

Table 4.2.2 and Maps 4.2.2 and 4.2.3 summarise the Common Standards Monitoring condition assessments that were judged to be either strongly or weakly indicative of the condition of the Annex I habitat on SSSI/ASSIs (see Technical Note II for details of methodology behind this). These data were collated in January 2007. The maps give an impression of the overall spread of where unfavourable and favourable sites exist (summary statistics for the maps are given in Section 7.2). The combined condition assessments show that of the SSSI/ASSI assessments considered:

- 54% of strongly indicative assessments were unfavourable.

Table 4.2.2 CSM condition assessment results for UK SSSI/ASSIs that were judged to be either strongly or weakly indicative of the condition of H7130 on SSSI/ASSIs. See notes below table and Technical Note II for further details

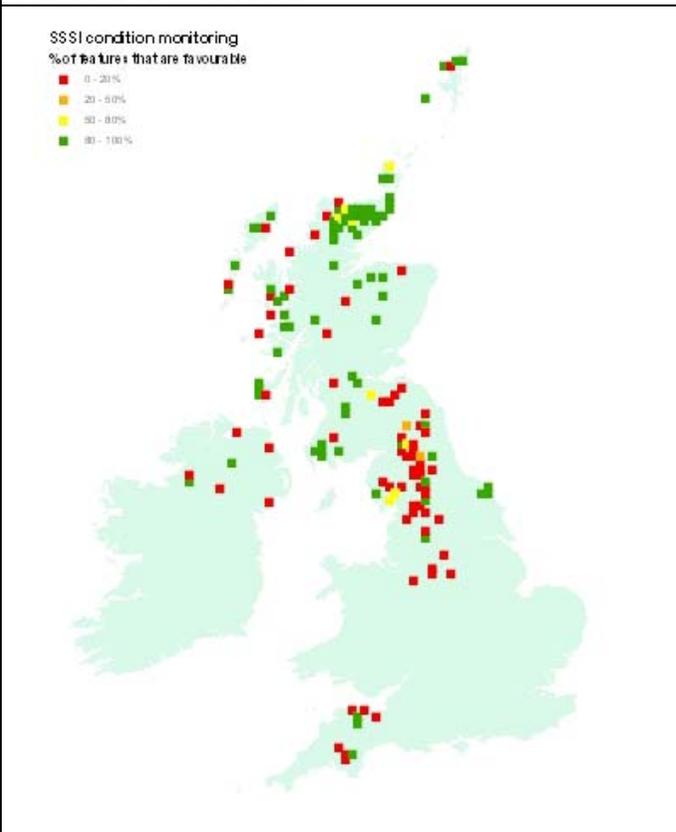
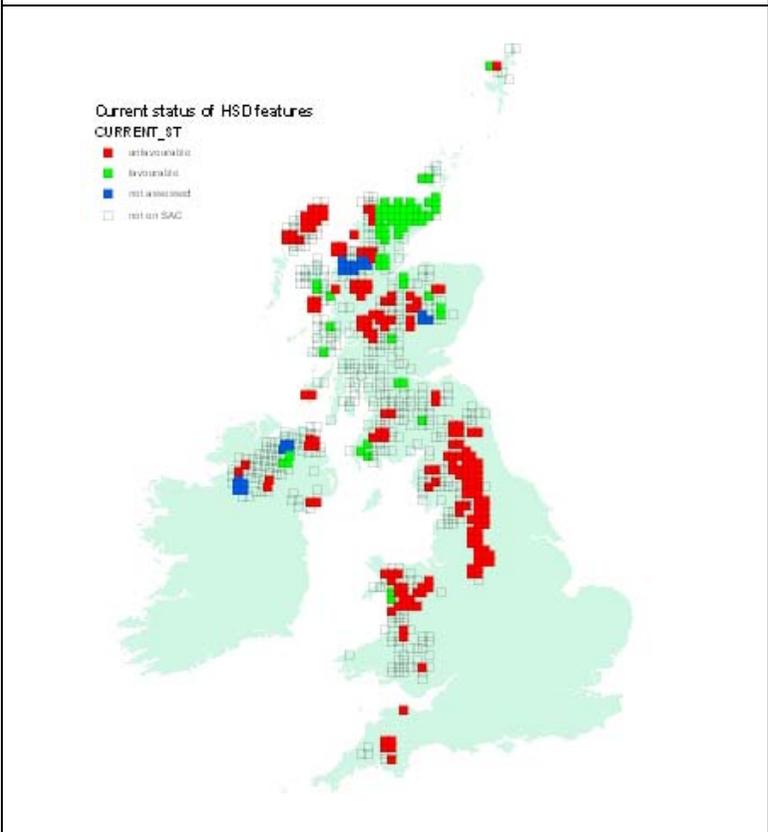
Condition	Condition sub-categories	Number of assessments	
		Strongly indicative assessments (Category 1)	Weakly indicative assessments (Category 2)
Unfavourable	Declining	16	
	No change	37	
	Unclassified	4	
	Recovering	52	
	Total	109	
	<i>% of all assessments</i>	54%	<i>%</i>
Favourable	Maintained	78	
	Recovered		
	Unclassified	16	
	Total	94	
	<i>% of all assessments</i>	46%	<i>%</i>

Notes

1. Data on features that have been partly-destroyed have been excluded from this table because they are not relevant to the consideration of present condition.
2. The data included are from CSM assessments carried out between April 1998 and December 2006.

Current Condition of H7130 based on CSM condition assessments (See Sections 4.2 and 7.2 for further information)

Map 4.2.1 SAC assessments	Map 4.2.2 Assessments strongly indicative of the condition on SSSI/ASSIs	Map 4.2.3 Assessments weakly indicative of the condition on SSSI/ASSIs
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Not applicable

Key
Red = unfavourable, i.e. the square contains at least one SAC where this habitat feature is present and has been judged to be unfavourable
Green = favourable, i.e. the square contains at least one SAC where this habitat feature is present and has been assessed as favourable but there are no unfavourable SAC features
Blue = SAC not assessed, i.e. the square contains at least one SAC supporting this habitat feature but no assessment has been reported
Transparent = SAC feature not present, i.e. the square does not contain any SAC features of this habitat type

Key*
Green – 80 – 100% of assessed features on 10km square are favourable
Yellow - 50 – 80% of assessed features on 10km square are favourable
Orange - 20 – 50% of assessed features on 10km square are favourable
Red - 0 – 20% of assessed features on 10km square are favourable
 *This is the same key as was used for JNCC CSM Report 2006

4.3 Typical species

Typical species^{2.5.3}:

None

Typical species assessment^{2.5.4}:

Not applicable

There are no species listed in the EU Interpretation Manual nor identified from analyses of the core NVC communities that have a particular faithfulness to H7130 in the UK; nor whose UK-level trends are considered to be indicative or informative on the structure and function of H7130.

4.4 Conclusions on specific structures and functions (including typical species)

Conclusion^{2.6.iii}:

Unfavourable – Bad but improving.

The EC Guidance states that where “more than 25% of the area of the habitat is unfavourable as regards its specific structures and functions”, the conclusion should be Unfavourable – Bad. In the UK this was generally taken to mean that more than 25% of the habitat area is in unfavourable condition.

CSM data for 2000-2006 for SACs suggest 63% of the number of assessed SACs supporting H7130, and 62% of the assessed SAC area (equivalent to 9% of the UK total area for H7130) were unfavourable. Around 19% of the assessed SAC area is recovering and only 6% is declining, suggesting a general improvement in the condition of H7130 in these sites. Around 54% of strongly indicative assessments for SSSI/ASSIs were unfavourable.

The majority of the resource of H7130 lies outside SACs: however in the absence of other data, extrapolating these trends to the wider resource of H7130 suggests that much more than 25% of the overall resource is likely to be in unfavourable condition. Overall the available information suggests a judgement of Unfavourable- Bad but improving for the structure and function parameter for H7130.

5. Future prospects

5.1 Main factors affecting the habitat

5.1.1 Conservation measures

- Protection within SACs

Around 16% of the UK resource of H7130 lies within SACs. Beneficial management regimes have been put in place in some/parts of some sites specifically aimed at maintaining and enhancing the features for which they are designated, and to address some of the pressures listed within Section 4.1 and the future threats listed in Section 5.1.2. An unknown but significant proportion of the resource of H7130 also lies within the SSSI/ASSI series where similar management measures are in place.

- Specific conservation programmes for the blanket bogs resource

There are a number of country-specific positive management programmes aimed at improvements to the condition of H7130, including Moors for the Future (focussed on the blanket bog resource of the English Peak District – see <http://www.moorsforthefuture.org.uk/mftf/main/Home.htm> for more details); and the Caithness and Sutherland Peatland Management Scheme concerning blanket bog in north Scotland - see <http://www.snh.org.uk/about/ab-pa09a.asp>.

- Agri-environment measures

A suite of agri-environment measures are now in place in the uplands which are addressing more appropriate management, particularly grazing levels and burning, for an unknown proportion of the resource of H7130 outside the statutory site series.

- UK BAP

The habitat is covered by the blanket bogs action plan under the UK BAP (see <http://www.ukbap.org.uk>), as well as under country and local biodiversity action plans and strategies, with targets to maintain,

improve, restore and expand the resource. More specifically, the UK habitat action plan includes targets to improve the condition of 431,000 ha of blanket bog within statutory sites and a further 62,000 ha outside statutory sites by 2015.

5.1.2 Main future threats^{2.4.11}

The most obvious major future threats to H7130 are listed below, several of which are referred to in Section 4.1. The related EC codes are shown in brackets. The measures identified in Section 5.1.1 are addressing some of these factors, with a greater proportion being addressed within the statutory site series:

- **Grazing (140 Grazing)**

Over-grazing leads to loss of vegetation structure and the failure of more palatable or vulnerable species to reproduce and maintain themselves. It can also lead to the loss of plant species and associated fauna, and the spread of rank, unpalatable plant species. In extreme cases, very heavy grazing and trampling can lead to exposure of bare peat and erosion. Trampling damage is very often associated with over-grazing and can make recovery times longer.

- **Burning (180 Burning)**

Burning is used as part of agricultural and sporting management to modify moorland vegetation for the benefit of livestock, grouse and deer in particular. Poorly managed and/or accidental fires can be particularly damaging to blanket bog.

- **Water management (810 Drainage)**

- **Erosion (900 Erosion)**

- **Forestry (161 Planting)**

- **Peat extraction (310 Peat extraction, 311 hand cutting of peat, 312 mechanical removal of peat)**

- **Agricultural improvement (120 Fertilisation, 190 Agriculture and forestry activities not referred to above)**

- **Recreation (501 paths, tracks, cycling tracks, 622 walking, horseriding and non-motorised vehicles, 623 motorised vehicles)**

- **Built development (500 Communication networks, 511 Electricity lines, 490 Other urbanisation, industrialisation and similar activities)**

- **Air pollution (702 Air pollution)**

Based on an assessment of the exceedence of relevant critical loads (see Technical Note III), air pollution is considered to be a potentially significant threat to the future condition of this habitat.

- **Climate change (750 Other pollution or human impacts/ activities)**

Based on the literature review (Technical Note IV) climate change is considered a major threat to the future condition of this habitat especially in the long term. In particular, there are concerns about predicted winter-time increases in rainfall encouraging further erosion, while increased incidence of summer drought may well switch many systems to net emitters of carbon. However, there is a high degree of uncertainty in defining future climate threats on habitats and species due to uncertainty in: future greenhouse gas emissions; the consequential changes in climatic features (for instance temperature, precipitation CO₂ concentrations); the responses of habitats and species to these changes (for instance location, phenology, community structure) and the role of other socio-economic drivers of environmental change. The scale of change in habitats and species as a result of climate change will vary across ecosystems. Small changes in the climate are more likely to have a substantial impact on habitats and species which exist within a narrow range of environmental conditions. The future impacts of climate change on UK biodiversity will be exacerbated when coupled with other drivers of environmental change.

5.2 Future condition (as regards range, area covered and specific structures and functions)

5.2.1 CSM condition assessments

The CSM condition assessments reported in Sections 4.2.1-2 provide a basis to predict the potential future condition of H7130 in the UK. This involved treating all assessments currently identified as either favourable or unfavourable recovering as future-favourable: remaining categories were treated as future-unfavourable – see Table 5.2.1. There are a number of caveats to this approach, which are set out beneath this table.

SAC condition assessments

Table 5.2.1 and Map 5.2.1 summarise the predicted potential future condition of H7130 on UK SACs. This is based on the approach described above. The maps give an impression of the overall spread of where future-unfavourable and future-favourable sites are predicted to occur (summary statistics for the map are given in Section 7.2). The combined assessments show that of the SACs assessed:

- 57% of the area and 56% of the number of assessments fall within the future-favourable category; and
- at least 9% of the total UK habitat area falls within the future-favourable category.

Table 5.2.1 Predicted future condition of UK SACs supporting H7130 based on current CSM condition assessments. See notes below table for details. Information on the coverage of these results is given in Section 7.2

Future condition	Present condition	Area (ha)	Number of site features
Future-unfavourable	Unfavourable declining	21,815	7
	Unfavourable no change	111,096	18
	Unfavourable unclassified	15,643	6
	Total	148,554	31
	% of assessments	43%	44%
	% of total UK extent	7%	Unknown
Future-favourable	Favourable maintained	131,991	25
	Favourable recovered		
	Unfavourable recovering	65,927	13
	Favourable unclassified	156	1
	Total	198,073	39
	% of assessments	57%	56%
	% of total extent	9%	Unknown

Note that the scenario presented above is based on the same information as used to construct the Table in section 4.1. It is based on the following premises:

- the unfavourable-recovering condition assessments will at some point in the future become favourable;
- all unfavourable-unclassified sites will remain unfavourable, which is probably overly pessimistic;
- sympathetic management will be sustained on sites already classified as favourable and these will not be seriously damaged by any unforeseen events.

IMPORTANT NOTE: We do not have information on the timescale of the predicted recovery, which may be influenced by many past, natural and human related factors. A sustained, sympathetic management regime is more likely to result in 'favourable' condition being attained.

Table 5.2.2 Predicted future condition of H7130 on SSSI/ASSIs based on CSM assessments that were judged to be either strongly or weakly indicative of the condition. See notes below table and Technical Note II for further details

Future condition	Present condition	Number of assessments	
		Strongly indicative assessments (Category 1)	Weakly indicative assessments (Category 2)
Future-unfavourable	Unfavourable declining	16	
	Unfavourable no change	37	
	Unfavourable unclassified	4	
	Total	57	
	<i>% of assessments</i>	28%	%
Future-favourable	Favourable maintained	78	
	Favourable recovered		
	Unfavourable recovering	52	
	Favourable unclassified	16	
	Total	146	
	<i>% of assessments</i>	72%	%

Note that the scenario presented above is based on the same information as used to construct the Table 4.2.2. It is based on the following premises:

- (i) the unfavourable-recovering condition assessments will at some point in the future become favourable;
- (ii) all unfavourable-unclassified sites will remain unfavourable, which is probably overly pessimistic;
- (iii) sympathetic management will be sustained on sites already classified as favourable and these will not be seriously damaged by any unforeseen events.

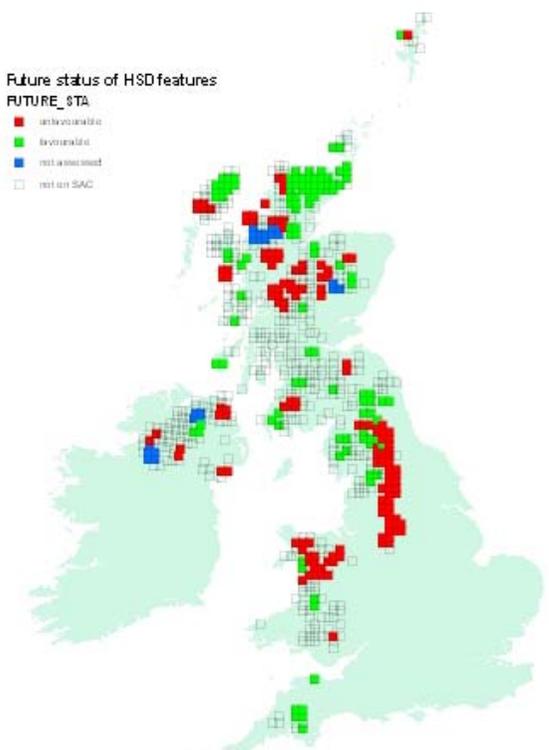
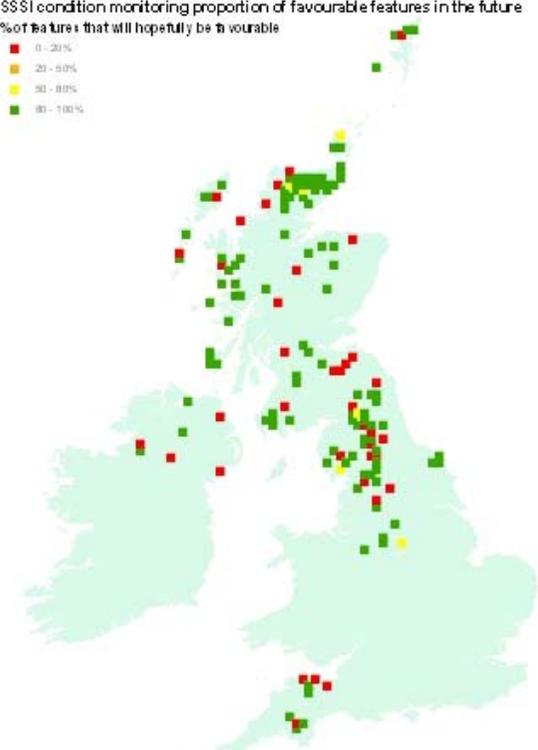
IMPORTANT NOTE: We do not have information on the timescale of the predicted recovery, which may be influenced by many past, natural and human related factors. A sustained, sympathetic management regime is more likely to result in 'favourable' condition being attained.

SSSI/ASSI condition assessments

Table 5.2.2 and Maps 5.2.2 and 5.2.3 summarise the predicted potential future condition of H7130 on UK SSSI/ASSIs. This is based on the approach described above and utilises condition assessments that were judged to be either strongly or weakly indicative of the condition of the Annex I habitat on SSSI/ASSIs (see Technical Note II for details of methodology behind this). The maps give an impression of the overall spread of where unfavourable and favourable sites exist (summary statistics for the maps are given in Section 7.2). The combined condition assessments show that of the SSSI/ASSI assessments considered:

- 72% of strongly indicative assessments fall within the future-favourable category.

Predicted Future Condition of H7130 based on CSM condition assessments (See Sections 5.2 and 7.2 for further information on these maps)

Map 5.2.1 SAC assessments	Map 5.2.2 Assessments strongly indicative of the condition on SSSI/ASSIs	Map 5.2.3 Assessments weakly indicative of the condition on SSSI/ASSIs
		<p>Not applicable</p>

Key
Red = future-unfavourable, i.e. the square contains one or more SACs where this habitat feature is present and has been predicted to be future-unfavourable
Green = future-favourable, i.e. the square contains at least one SAC where this habitat feature is present and has been predicted to be future-favourable
Blue = SAC not assessed, i.e. the square contains at least one SAC supporting this habitat feature but no assessment has been reported
Transparent = SAC feature not present, i.e. the square does not contain any SAC features of this habitat type

Key*
Green – 80 – 100% of assessed features on 10km square are favourable
Yellow - 50 – 80% of assessed features on 10km square are favourable
Orange - 20 – 50% of assessed features on 10km square are favourable
Red - 0 – 20% of assessed features on 10km square are favourable
 *This is the same key as was used for JNCC CSM Report 2006

5.3 Conclusions on future prospects (as regards range, area covered and specific structures and functions)

Conclusion^{2.6.iv}: Unfavourable – Bad but improving

The EC Guidance states that where “habitat prospects are bad, with severe impacts from threats expected and long-term viability not assured”, the judgement should be Unfavourable – Bad. In the UK, this was generally taken to mean that habitat range and/or area are in decline, and/or less than 75% of the habitat area is likely to be in favourable condition in 12-15 years.

A number of the threats to H7130 are being addressed, but there is uncertainty over the effective recovery time associated with positive management changes and possible impacts of climate change. Within the SAC series, 56-57% of features assessed by CSM fall within the future – favourable category. For strongly indicative SSSI/ASSI assessments, the figure is around 72% of features. These figures suggest an improving situation, but still with more than 25% of the total UK resource in unfavourable condition in the next 10-15 years. There is no evidence to suggest a future decline in the area or range of H7130 in the UK by more than 1% p.a. Thus, a judgement of unfavourable- bad but improving has been reached.

6. Overall conclusions and judgements on conservation status^{2.6}

Conclusion^{2.6}: Unfavourable – Bad but improving

On the basis of the Structure and Function and Future Prospects assessments, the overall conclusion for this habitat feature is Unfavourable – Bad but improving.

Table 6.1 Summary of overall conclusions and judgements

Parameter	Judgement	Grounds for Judgement	Confidence in judgement*
Range	Favourable	Range is stable and not less than the favourable reference range.	2
Area covered by habitat type within range	Unfavourable – Inadequate and deteriorating	Area has decreased since 1994 but by less than 1% p.a. Further measures are required to address threats to extent for the overall UK resource.	2
Specific structures and functions (including typical species)	Unfavourable – Bad but improving	More than 25% of the habitat area is considered to be unfavourable as regards its specific structures and functions. Significantly more of the resource in unfavourable condition is improving than declining.	3
Future prospects (as regards range, area covered and specific structures and functions)	Unfavourable – Bad but improving	Habitat prospects over next 12-15 years considered to be bad, with severe impact from threats expected and long term viability not assured. Measures are in place and planned to address threats to future range, extent and structure and function for the overall UK resource.	3
Overall assessment of conservation status	Unfavourable – Bad but improving	Two parameters assessed as Unfavourable – Bad; two trends judged as improving.	3

Key to confidence in judgement: 1 = High; 2 = Medium; 3 = Low

7. Annexed material (including information sources used 2.2)

7.1 References

COOPER, A., MCCANN, T. & MEHARG, M. 2002. Habitat change in the Northern Ireland countryside: summary report of the Northern Ireland Countryside Survey 2000. Environment and Heritage Service. Belfast.

CRUICKSHANK, M.M. & TOMLINSON, R.W. 1988. Peatland in Northern Ireland: inventory and prospect. *Irish Geography*, **23**, 17-30.

EUROPEAN COMMISSION. 2003. *Interpretation Manual of European Union Habitats - EUR25* European Commission DG-Environment, Brussels.

HAINES-YOUNG, R.H. *et al.* 2000. Accounting for nature: assessing habitats in the UK countryside. DETR, Rotherham.

JACKSON, D.L. 2000. Guidance on the interpretation of the Biodiversity Broad Habitat Classification (terrestrial and freshwater types): Definitions and the relationship with other habitat classifications. *JNCC Report No. 307* JNCC, Peterborough.

JACKSON, D.L. & MCLEOD, C.R. (eds.) 2002. Handbook on the UK status of EC Habitats Directive interest features: provisional data on the UK distribution and extent of Annex I habitats and the UK distribution and population size of Annex II species. *JNCC Report No. 312*. Version 2. www.jncc.gov.uk/page-2447

JOINT NATURE CONSERVATION COMMITTEE. 2005A. *Common Standards Monitoring (CSM)*. Joint Nature Conservation Committee, Peterborough. www.jncc.gov.uk/page-2217

JOINT NATURE CONSERVATION COMMITTEE. 2005B. *Common Standards Monitoring Guidance for Upland Habitats* Version May 2005. Peterborough. www.jncc.gov.uk/page-2237

MACKEY, E.C., SHEWRY, M.C. & TUDOR, G.J. 1998. Land cover change: Scotland from the 1940s to 1980s. Scottish Natural Heritage. The Stationary Office, Edinburgh.

UK BIODIVERSITY GROUP. 1999. *Tranche 2 Action Plans - Volume VI: Terrestrial and freshwater species and habitats*. English Nature. Peterborough.

WILLIAMS, J.M. (ed.) 2006. *Common Standards Monitoring for Designated Sites: First Six Year Report*. Peterborough, JNCC. www.jncc.gov.uk/page-3520

YEO, M. 1997. Blanket mire degradation in Wales. In: *Blanket mire degradation. Causes, consequences and challenges*. Proceedings of the British Ecological Society Mires Research Group meeting, held at the University of Manchester, 9-11 April 1997 (eds. JH Tallis, R Meade & PD Hulme), pp 101-115. Macaulay Land Use Research Institute, Aberdeen, for Mires Research Group.

Map Data Sources

JNCC International Designations Database. Joint Nature Conservation Committee.

Peatland Survey. 1988. Environmental Heritage Service & Queens University Belfast.

SNH Uplands Database, (18-12-98) 10KMVEG.XLS. Scottish Natural Heritage.

7.2 Further information on CSM data as presented in Sections 4.2 and 5.2

Table 7.2.1 Summary of the coverage of the data shown in Tables 4.2.1 and 5.2.1

Data	Value
Number of SACs supporting feature (a)	77
Number of SACs with CSM assessments (b)	70
% of SACs assessed (b/a)	91
Extent of feature in the UK – hectares (c)	2,195,200
Extent of feature on SACs – hectares (d)	356,703
Extent of features assessed – hectares (e)	346,627
% of total UK hectarage on SACs (d/c)	16
% of SAC total hectarage that has been assessed (e/d)	97
% of total UK hectarage that has been assessed (e/c)	15

Notes

1. Extent of features on SACs (d) includes only those features that have been submitted on the official Natura 2000 data form as qualifying features. This figure is based on the habitat extent figures presented on standard Natura 2000 data forms.
2. The data included are from CSM assessments carried out between April 1998 and December 2006. NB: these include additional and some up-date data from those used in the six year report produced by JNCC (Williams, J.M., ed. 2006. *Common Standards Monitoring for Designated Sites: First Six Year Report*. Peterborough, JNCC),

Table 7.2.2 Summary of grid square map data shown in Maps 4.2.1-3 and 5.2.1-3

Status	Number of squares	Proportion of all squares
Current – Unfavourable (red)	189	27%
Current – Favourable (green)	67	9%
On SAC but not assessed (blue)	23	3%
Not on SAC (transparent)	434	61%
Total Number of 10km squares (any colour)	713	
Future – Unfavourable (red)	142	20%
Future – Favourable (green)	114	16%