

**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 :  
H7220: Petrifying springs with tufa formation  
(*Cratoneurion*)**

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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# H7220 Petrifying springs with tufa formation (*Cratoneurion*)

*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 correspondance with NVC and other habitat types

Table 1.1.1 provides a summary description of H7220 and its relations with UK classifications.

Tufa formation is associated with hard-water springs, where groundwater rich in calcium bicarbonate comes to the surface. On contact with the air, carbon dioxide is lost from the water and a hard deposit of calcium carbonate (tufa) is formed. These conditions occur most often in areas underlain by limestone or other calcareous rocks, and particularly in the uplands of northern England and the Scottish Highlands.

Tufa-forming spring-heads are characterised by the swelling yellow-orange mats of the mosses *Cratoneuron commutatum* and *C. filicinum*. Many rare, lime-loving (calcicole) species live in the moss carpet, particularly arctic-alpine species, such as bird’s-eye primrose *Primula farinosa*, Scottish asphodel *Tofieldia pusilla*, alpine bartsia *Bartsia alpina* and false sedge *Kobresia simpliciuscula*.

There are two main NVC types associated with tufa formation:

M37 *Cratoneuron commutatum* – *Festuca rubra* spring

M38 *Cratoneuron commutatum* – *Carex nigra* spring

The former community is widely distributed, while the latter is found only at moderate to high altitudes and has a flora especially rich in rare arctic-alpine species, which is best-developed in upper Teesdale and the Scottish Highlands.

Tufa-forming springs are often associated with 7230 Alkaline fens, where they may form prominent upwelling masses of short open vegetation around the spring-heads that feed the fen system. There may also be transitions to a wide range of other habitats, particularly calcareous grassland, acid grassland, heath, H8240 Limestone pavements, and calcareous cliff and scree.

Tufa also forms in some highly-calcareous lowland alkaline fens in southern Britain, but these fens are not considered to fall within the *Cratoneurion* in terms of their detailed floristic composition; they generally conform to Annex I type H7230 Alkaline fens.

**Table 1.1.1** Summary description of habitat H7220 and its relations with UK vegetation/habitat classifications

| Classification  | Correspondence with Annex I type  | Comments  |
|---|---|---|
| <b>EU Interpretation Manual</b>   | PAL.CLASS 54.12<br>(European Commission 2003)   | Based on CORINE classifications.  |
| <b>NVC</b>  | M37 <i>Cratoneuron commutatum-Festuca rubra</i> spring;<br>M38 <i>Cratoneuron commutatum-Carex nigra</i> spring   | Forms the core of the Annex I type.   |
| <b>BAP broad habitat type</b>   | Fen, marsh and swamps<br>(Jackson 2000 / Web version<br><a href="http://www.jncc.gov.uk/page-2433">www.jncc.gov.uk/page-2433</a> )                                | Petrifying springs is included in this much broader category  |
| <b>BAP priority habitat type</b>  | Fens<br>(UK Biodiversity Group 1999 web version<br><a href="http://www.ukbap.org.uk/UKPlans.aspx?ID=18">www.ukbap.org.uk/UKPlans.aspx?ID=18</a> )                 | Petrifying springs is included in this much broader category  |
| <b>JNCC CSM reporting categories, for SAC feature and ASSI/SSSI feature types</b> | Fens and marshes – uplands<br>Fens and marshes - lowlands<br><br>(See Williams 2006<br><a href="http://www.jncc.gov.uk/page-3520">www.jncc.gov.uk/page-3520</a> ) | A broader category which covers the following Annex I feature types:<br>H6410 <i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils ( <i>Molinion caeruleae</i> )<br>H7230 Alkaline fens<br>H7240 Alpine pioneer formations of the <i>Caricion bicoloris-atrofuscae</i><br>H7210 Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i><br>H7220 Petrifying springs with tufa formation ( <i>Cratoneurion</i> )<br>H7150 Depressions on peat substrates of the <i>Rhynchosporion</i><br>H7140 Transition mires and quaking bogs |
| <b>JNCC CSM Guidance feature types</b>  | Spring-head, rill and flush (upland);<br>springs and flushes (lowland)  | Includes H7220 within a broader habitat definition of non-Natura 2000 features.   |

## 2. Range <sup>2.3</sup>

### 2.1 Current range

**Range surface area <sup>2.3.1</sup>:** 31,720 km<sup>2</sup>

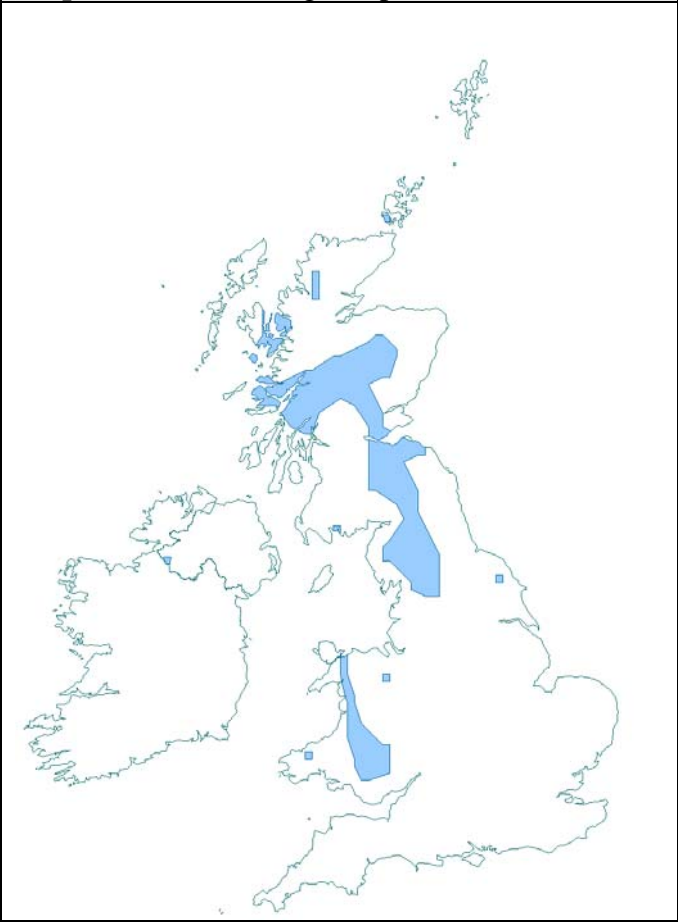
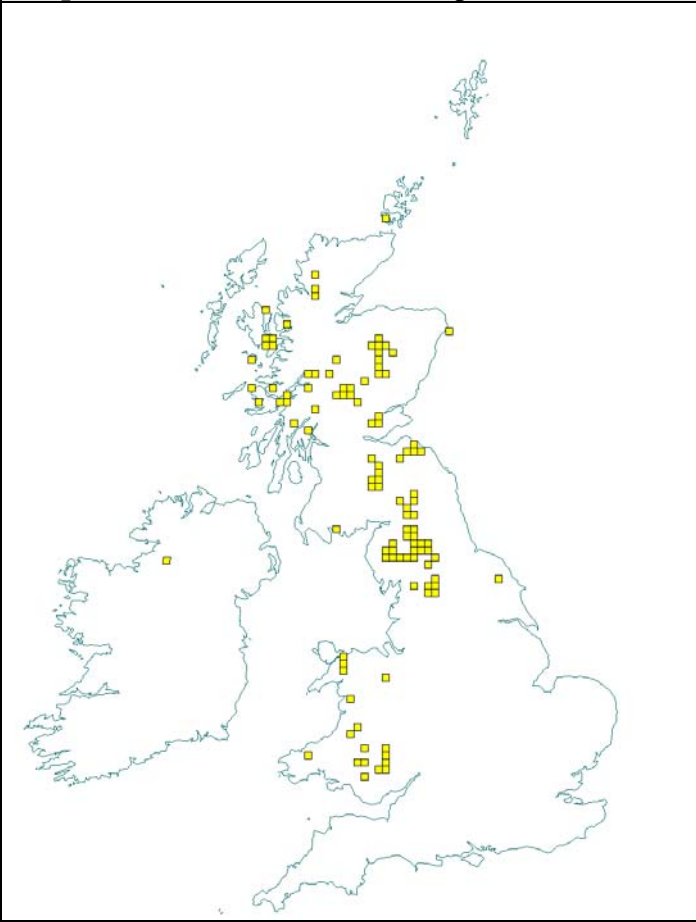
**Date calculated <sup>2.3.2</sup>:** May 2007

**Quality of data <sup>2.3.3</sup>:** Moderate

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 H7220 in the UK. In the UK, *Cratoneurion* tufa formation is a relatively rare phenomenon, and petrifying springs corresponding to H7220 occur as small, scattered flushes, restricted to those areas with highly calcareous rocks (Jackson and McLeod 2000). The combination of rainfall and rock chemistry required by these habitats is uncommon which the relatively few records illustrate. Although an uncommon habitat the maps show that it is distributed relatively widely across the uplands of the UK.

Tufa also forms in some highly-calcareous lowland alkaline fens in southern Britain, but these fens are not considered to fall within the *Cratoneurion* in terms of their detailed floristic composition; they generally conform to Annex I type H7230 Alkaline fens.

| Map 2.1.1 Habitat range map <sup>1.1</sup> for H7220  | Map 2.1.2 Habitat distribution map <sup>1.2</sup> for H7220   |
|---|---|
|   |    |
| <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.<br/>10-km square count: 110</p> |

See Section 7.1 for data sources

## 2.2 Trend in range since c.1994

**Trend in range<sup>2.3.4</sup>:** Stable  
**Trend magnitude<sup>2.3.5</sup>:** Not applicable  
**Trend period<sup>2.3.6</sup>:** 1994-2006  
**Reasons for reported trend<sup>2.3.7</sup>:** Not applicable

Although there is no readily available evidence or information on any trend in range for H7220 since 1994, expert opinion is that the range of the habitat has remained stable since that time and that the range shown in Map 2.1.1 is viable.

## 2.3 Favourable reference range

**Favourable reference range<sup>2.5.1</sup>:** 31,720 km<sup>2</sup>

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, 31,720 km<sup>2</sup>, has been set as the favourable reference area. Reasons for this are discussed below.

There is no readily available information on the historic range of H7220 before 1994. The current range of H7220 as shown on Map 2.1.2 is naturally limited by rainfall, altitude/temperature and rock chemistry and from survey data, there appears to be little scope for increase in range. These requirements also mean that the resource has a naturally fragmented distribution within its range.

Both the NVC types that make up this habitat occur where accumulated annual temperatures are relatively low which is unsurprising considering that many of the associated plants are Arctic/Alpine ones. It should be noted that one NVC type (M37) is absent from areas of extremely high levels of rain that can cause leaching of the weathered rocks.

Expert opinion are that there are a few unsurveyed places in both the English uplands and Scottish Highlands where the habitat could still be found or on surveyed sites where it has been missed because it is heavily grazed. However these are not thought likely to be numerous.

Consequently expert judgement is that the known distribution of H7220 shown in Map 2.1.2 is likely to be occupying most of its potential natural range. Furthermore the favourable reference range and distribution is likely to match closely the current range and distribution.

## 2.4 Conclusions on range

**Conclusion<sup>2.6.i</sup>:** **Favourable**

H7220 is a scarce but widespread habitat found across the uplands. There is no empirical information on any changes in range for H6430 since 1994, nor any previous historical data on extent or changes. However expert opinion suggests that the 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 H6430 is Favourable.

## 3. Area<sup>2.4</sup>

### 3.1 Current area

**Total UK extent<sup>2.4.1</sup>:** **>1.12km<sup>2</sup>**

**Date of estimation<sup>2.4.2</sup>:** **May 2007**

**Method<sup>2.4.3</sup>:** **1 = only or mostly based on expert opinion**

**Quality of data<sup>2.4.4</sup>:** **Poor**

Table 3.1.1 provides information on the area of H7220 in the UK. However there is no accurate information on the extent of H7220 beyond the SAC series; the figures given below are totals of the area of H7220 recorded on relevant SACs and so represent the minimum UK extent of H7220. The judgement of upland experts in the country conservation agencies as represented on the inter-agency uplands Lead Co-ordination Network is that examples outside SACs are likely to be small and highly dispersed in the UK uplands.

**Table 3.1.1** Area of H7220 in the UK. Date of estimation<sup>2.4.2</sup> = May 2007

|  | Area (ha) | Method <sup>2.4.3</sup> | Quality of data <sup>2.4.4</sup> |
|--|-----------|-------------------------|----------------------------------|
| <b>England</b>                         | present   | 1                       | Poor                             |
| <b>Scotland</b>                        | present   | 1                       | Poor                             |
| <b>Wales</b>                           | present   | 1                       | Poor                             |
| <b>Northern Ireland</b>                | 1ha       | 3                       | Moderate                         |
| <b>Total UK extent<sup>2.4.1</sup></b> | >112      | 1                       | Poor                             |

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.

### 3.2 Trend in area since c.1994

|  |                       |
|--|-----------------------|
| <b>Trend in area<sup>2.4.5</sup>:</b>              | <b>Unknown</b>        |
| <b>Trend magnitude<sup>2.4.6</sup>:</b>            | <b>Not applicable</b> |
| <b>Trend period<sup>2.4.7</sup>:</b>               | <b>1994-2006</b>      |
| <b>Reasons for reported trend<sup>2.4.8</sup>:</b> | <b>Not applicable</b> |

There is no readily available evidence or information on any trend in area for H7220 since 1994. Expert opinion is that in Scotland the extent of the habitat has remained stable since that time. In other parts of the UK there is no information on recent trends in extent.

### 3.3 Favourable reference area

|   |                |
|---|----------------|
| <b>Favourable reference area<sup>2.5.1</sup>:</b> | <b>Unknown</b> |
|---|----------------|

There is no available information on the area of H7220 in 1994 or beforehand. Expert opinion is that the area occupied has probably decreased in historic times due to grazing pressure and past burning practices. The potential area of H7220 is naturally limited by specific geological and hydrological conditions as described in section 1.1. It is likely therefore to have occurred only in small patches. The highly fragmented nature of the habitat and small populations of the rare species supported by H7220 might be considered to be at risk, however lack of information on its extent and trend and requirements mean that it is not possible to conclude on its viability.

### 3.4 Conclusions on area covered by habitat

|                                     |                |
|-------------------------------------|----------------|
| <b>Conclusion<sup>2.6.ii</sup>:</b> | <b>Unknown</b> |
|-------------------------------------|----------------|

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.

There is insufficient information to determine what the current area of this habitat is, the trend in area since 1994, and the extent of its favourable reference area.

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

### 4.1 Main pressures <sup>2.4.10</sup>

The following list of main pressures for H7220 has been derived from the six year Common Standards Monitoring results for SACs designated for their representation of H4010 and results from the 2005 UK BAP reporting for fens (see <http://www.ukbap.org.uk/GenPageText.aspx?id=104> for further details):

- **Grazing (140 Grazing)**

Over-grazing and associated trampling has been recorded as a reason for adverse condition of H7220 in the SAC series. This 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.

- **Fragmentation (990 Other natural processes)**

The habitat is naturally limited by geological and hydrological requirements leading to a scattered distribution and small extent of individual patches. Fragmentation has been exacerbated by past grazing pressure.

- **Absence of or inappropriate management (141 Abandonment of pastoral systems)**

Lack of or inappropriate management of existing stands of H7220 leading to drying and scrub encroachment.

- **Burning (180 Burning)**

Burning of adjoining associated habitats has led to damage to isolated patches of H7220 on some parts of the SAC series.

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

Based on an assessment of the exceedence of relevant critical loads (see Technical Note III), air pollution is not considered to be a potentially significant pressure to the structure and function of this habitat.

## 4.2 Current condition

### 4.2.1 Common Standards Monitoring condition assessments

Condition assessments based on Common Standards Monitoring (see <http://www.jncc.gov.uk/page-2199>) provide a means to assess the structure and functioning of H7220 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 most of the extent (112 ha) (see Technical Note II) of H7220 in the UK in a well dispersed network across its range.

Table 4.2.1 and Map 4.2.1 summarise the Common Standards Monitoring condition assessments for UK SACs supporting habitat H7220. 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:

- 95% of the area and 60% of the number of assessments was Unfavourable; and
- an unknown proportion of the total UK habitat area was in Unfavourable condition.

**Table 4.2.1** Common Standards Monitoring condition assessment results for UK SACs supporting H7220. 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                     | 00              | 1                       |
|              | No change                     | 79              | 5                       |
|              | Unclassified                  |                 |                         |
|              | Recovering                    | 27              | 3                       |
|              | Total                         | 106             | 9                       |
|              | <i>% of all assessments</i>   | <b>95%</b>      | <b>60%</b>              |
|              | <i>% of total UK resource</i> | <b>unknown%</b> | <b>unknown</b>          |
| Favourable   | Maintained                    | 06              | 6                       |
|              | Recovered                     |                 |                         |
|              | Unclassified                  |                 |                         |
|              | Total                         | 06              | 6                       |
|              | <i>% of all assessments</i>   | <b>5%</b>       | <b>40%</b>              |
|              | <i>% of total UK resource</i> | <b>unknown%</b> | <b>unknown</b>          |

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.

**SSSI/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:

- 67% of strongly indicative assessments and 78% weakly indicative assessments were Unfavourable.

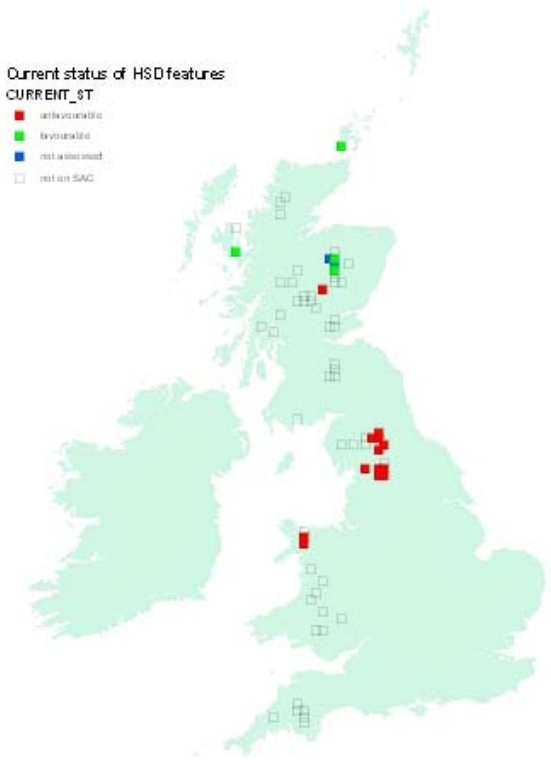


**Table 4.2.2** Common Standards Monitoring condition assessment results for UK SSSI/ASSIs that were judged to be either strongly or weakly indicative of the condition of H7220 on SSSI/ASSIs. See notes below table and Technical Note II for further details.

| Condition    | Condition sub-categories    | Number of assessments                        |  |
|--------------|-----------------------------|--|--|
|              |                             | Strongly indicative assessments (Category 1) | Weakly indicative assessments (Category 2) |
| Unfavourable | Declining                   |  | 2  |
|              | No change                   | 1  | 4  |
|              | Unclassified                |  |  |
|              | Recovering                  | 3  | 1  |
|              | Total                       | 4  | 7  |
|              | <i>% of all assessments</i> | <b>67%</b>                                   | <b>78%</b>                                 |
| Favourable   | Maintained                  |  |  |
|              | Recovered                   |  |  |
|              | Unclassified                | 2  | 2  |
|              | Total                       | 2  | 2  |
|              | <i>% of all assessments</i> | <b>33%</b>                                   | <b>22%</b>                                 |

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 H7220 based on Common Standard Monitoring 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               |
|--|--|--|
|    |   |  |
| <p><b>Key</b><br/> <u>Red</u> = unfavourable, i.e. the square contains at least one SAC where this habitat feature is present and has been judged to be unfavourable<br/> <u>Green</u> = 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<br/> <u>Blue</u> = SAC not assessed, i.e. the square contains at least one SAC supporting this habitat feature but no assessment has been reported<br/> <u>Transparent</u> = SAC feature not present, i.e. the square does not contain any SAC features of this habitat type</p> | <p><b>Key*</b><br/> <u>Green</u> – 80 – 100% of assessed features on 10km square are favourable<br/> <u>Yellow</u> - 50 – 80% of assessed features on 10km square are favourable<br/> <u>Orange</u> - 20 – 50% of assessed features on 10km square are favourable<br/> <u>Red</u> - 0 – 20% of assessed features on 10km square are favourable<br/>                     *This is the same key as was used for JNCC CSM Report 2006</p> |  |

### 4.3 Typical species

**Typical species<sup>2.5.3</sup>:** **None**

**Typical species assessment<sup>2.5.4</sup>:** **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 H7220 in the UK; nor whose UK-level trends are considered to be indicative or informative on the structure and function of H7220.

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

**Conclusion<sup>2.6.iii</sup>:** **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.

Common Standards Monitoring data for 2000-2006 for SACs suggest 95% of the area (and 60% of the features) of assessed SACs supporting H6430 are unfavourable. For SSSI/ASSIs, 67% of strongly indicative assessments for sites likely to support H7220 (and 78% of weakly indicative assessments) are unfavourable. For SACs, around 24% of the assessed SAC area is recovering and none was recorded as declining, suggesting a general improvement in the condition of H7220 in these sites.

Expert opinion suggests that the majority of the UK resource of H7220 lies within SACs. In the absence of data from sites outside the statutory site series, the figures from CSM data for SACs have been extrapolated as being representative of the UK resource overall and this suggests that much more than 25% of the UK area for H7220 is in unfavourable condition. With substantially more of the assessed SAC resource in the Unfavourable category improving as declining, this suggests a judgement of Unfavourable – Bad but improving for the structure and function parameter for H7220. However the absence of information on H7220 outside the site series means that there is a low confidence associated with this judgement.

## 5. Future prospects

### 5.1 Main factors affecting the habitat

#### 5.1.1 Conservation measures

- Protection within SACs

The majority of the known resource of H7220 is likely to lie within SACs with management measures 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.

- 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 much of the resource of H7220, particularly within the statutory site series.

- Water Framework Directive

In addition to the drive for improvement generated by the SAC and SSSI network, the Water Framework Directive (WFD) is adding considerable impetus for widespread action on issues affecting the resource of H7220 such as abstraction licences and pollution.

- UK BAP

The habitat is covered by the fens action plan under the UK Biodiversity Action plan (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.

### 5.1.2 Main future threats<sup>2.4.11</sup>

The most obvious major future threats to H7220 are listed below, several of which are referred to in Section 4.1.

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:

- Fragmentation (**990 Other natural processes**)
- Grazing (**140 Grazing**)
- Absence of or inappropriate management (**141 Abandonment of pastoral systems**)
- Burning (**180 Burning**)

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

Based on an assessment of the exceedence of relevant critical loads (see Technical Note III), air pollution is not 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. 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 CO<sub>2</sub> 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 Common Standards Monitoring condition assessments

The Common Standards Monitoring condition assessments reported in Sections 4.2.1-2. provide a basis to predict the potential future condition of H7220 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 5.2.1.1. 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 H7220 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:

- 29% of the area and 60% of the number of assessments fall within the future-favourable category; and
- an unknown proportion of the total UK habitat area falls within the future-favourable category.

### SSSI/ASSI condition assessments

Table 5.2.2 and Maps 5.2.2 and 5.2.3 summarise the predicted potential future condition of H7220 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:

- 83% of strongly indicative assessments and 33% weakly indicative assessments fall within the future-favourable category.

**Table 5.2.1** Predicted future condition of UK SACs supporting H7220 based on current Common Standards Monitoring condition assessments. See notes below table for details. Information on the coverage of these results is given in Section 7.2

| <b>Future condition</b>    | <b>Present condition</b>    | <b>Area (ha)</b> | <b>Number of site features</b> |
|----------------------------|-----------------------------|------------------|--------------------------------|
| <b>Future-unfavourable</b> | Unfavourable declining      | 00               | 1                              |
|                            | Unfavourable no change      | 79               | 5                              |
|                            | Unfavourable unclassified   |                  |                                |
|                            | Total                       | 79               | 6                              |
|                            | <i>% of assessments</i>     | <i>71%</i>       | <i>40%</i>                     |
|                            | <i>% of total UK extent</i> | <i>unknown%</i>  | <i>Unknown</i>                 |
| <b>Future-favourable</b>   | Favourable maintained       | 06               | 6                              |
|                            | Favourable recovered        |                  |                                |
|                            | Unfavourable recovering     | 27               | 3                              |
|                            | Favourable unclassified     |                  |                                |
|                            | Total                       | 32               | 9                              |
|                            | <i>% of assessments</i>     | <i>29%</i>       | <i>60%</i>                     |
|                            | <i>% of total extent</i>    | <i>unknown%</i>  | <i>Unknown</i>                 |

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 H7220 on SSSI/ASSIs based on Common Standards Monitoring 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) |
| <b>Future-unfavourable</b> | Unfavourable declining    |  | 2  |
|                            | Unfavourable no change    | 1  | 4  |
|                            | Unfavourable unclassified |  |  |
|                            | Total                     | <b>1</b>                                     | <b>6</b>                                   |
|                            | <i>% of assessments</i>   | <b>17%</b>                                   | <b>67%</b>                                 |
| <b>Future-favourable</b>   | Favourable maintained     |  |  |
|                            | Favourable recovered      |  |  |
|                            | Unfavourable recovering   | 3  | 1  |
|                            | Favourable unclassified   | 2  | 2  |
|                            | Total                     | 5  | 3  |
|                            | <i>% of assessments</i>   | <b>83%</b>                                   | <b>33%</b>                                 |

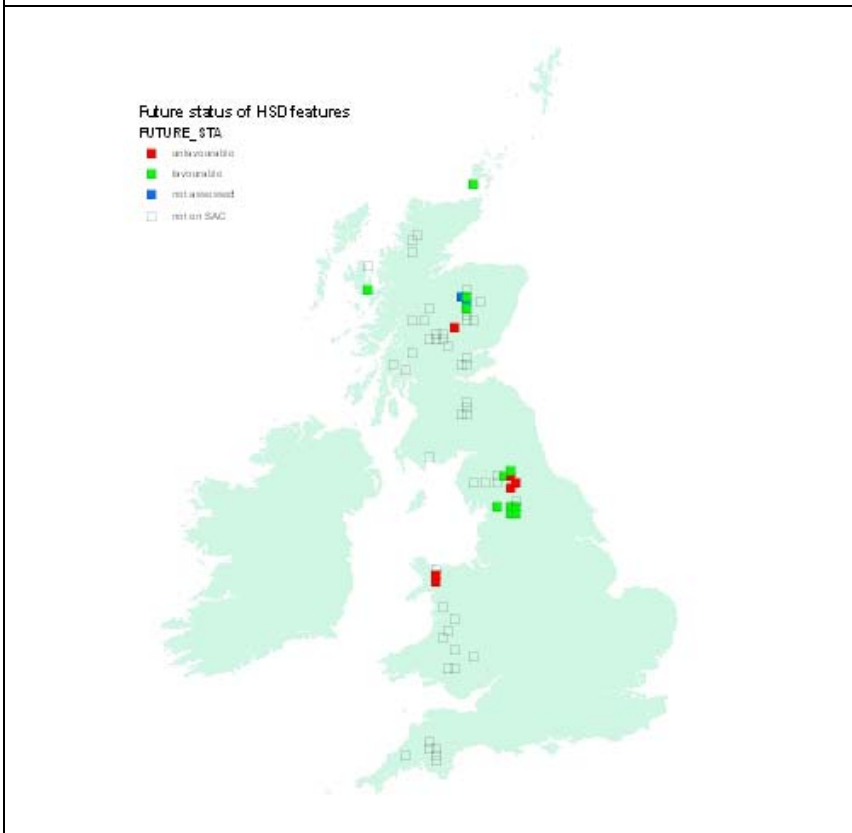
Note that the scenario presented above is based on the same information as used to construct the Table 4.2.2. It is based on the following premises:

- (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.

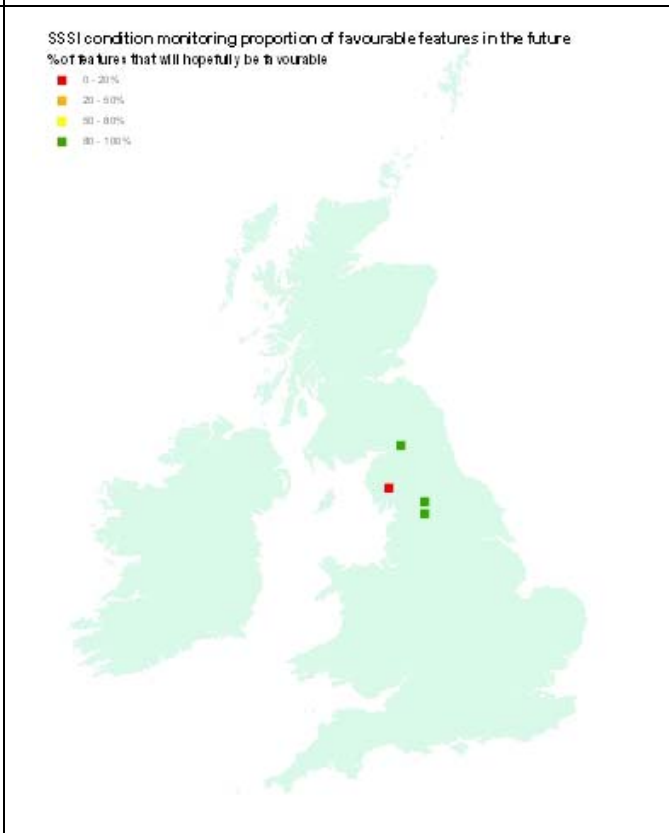
**Predicted Future Condition of H7220 based on Common Standard Monitoring condition assessments** (See Sections 5.2 and 7.2 for further information on these maps)

**Map 5.2.1** SAC assessments



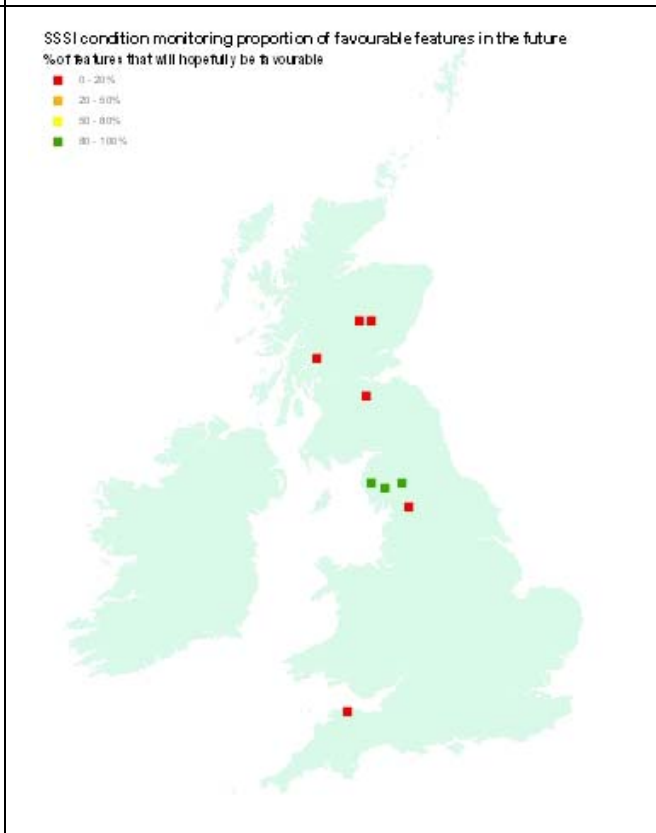
**Key**  
Red = future-unfavourable, i.e. the square contains one or more SACs where this habitat feature is present and has been predicted to be future-unfavourable  
Green = future-favourable, i.e. the square contains at least one SAC where this habitat feature is present and has been predicted to 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

**Map 5.2.2** Assessments strongly indicative of the condition on SSSI/ASSIs



**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

**Map 5.2.3** Assessments weakly indicative of the condition on SSSI/ASSIs



**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<sup>2.6.iv</sup>:** **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.

Many of the future threats and pressures (particularly grazing; lack of or inappropriate management; over-abstraction; and aquatic pollution) on H7220 are being addressed for the majority of the resource of H7220 that lies within the statutory site series; and (particularly through Water Framework Directive and agri-environment measures) for the smaller but unknown proportion of the resource of H7220 lying outside the statutory site series.

However even within the SAC series 71% of the total UK area (and in SSSIs/ ASSIs, between 83% and 33% of the strongly and weakly indicative assessed features) of H7220 is likely to remain unfavourable. Extrapolating beyond the statutory site series this suggests that more than 25% of the overall UK resource will be in unfavourable condition in the immediate future (the next 15-20 years).

There is no evidence to suggest a future decline in the area or range of H7220 in the UK by more than 1% per annum is some uncertainty however on the impact brought about by climate change.

Overall the above evidence suggests a judgement of Unfavourable – Bad but improving for the future prospects for H7220.

## **6. Overall conclusions and judgements on conservation status<sup>2.6</sup>**

**Conclusion<sup>2.6.iv</sup>:** **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.

**Table 6.1** Summary of overall conclusions and judgements

| Parameter   | Judgement                        | Grounds for Judgement  | Confidence in judgement* |
|---|----------------------------------|--|--------------------------|
| Range   | Favourable                       | Current range is stable and not less than the favourable reference range.  | 2                        |
| Area covered by habitat type within range   | Unknown                          | No or insufficient reliable information available to draw a conclusion on extent for the overall resource of the habitat.  | 3                        |
| 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.   | 2                        |
| 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. | 2                        |
| Overall assessment of conservation status   | Unfavourable - Bad but improving | Two parameters judged 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

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

HOLDEN, J. & ADAMSON, J.K. 2002. The Moor House long-term upland temperature record: new evidence of recent warming. *Weather*, **57**, 119-127.

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](http://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](http://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](http://www.jncc.gov.uk/page-2237)

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

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

## Map Data Sources

JNCC International Designations Database. Joint Nature Conservation Committee.

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

## 7.2 Further information on Common Standards Monitoring 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)                 | 17      |
| Number of SACs with CSM assessments (b)               | 15      |
| % of SACs assessed (b/a)                              | 88      |
| Extent of feature in the UK – hectares (c)            |         |
| Extent of feature on SACs – hectares (d)              | Unknown |
| Extent of features assessed – hectares (e)            | Unknown |
| % of total UK hectarage on SACs (d/c)                 |         |
| % of SAC total hectarage that has been assessed (e/d) | 100     |
| % of total UK hectarage that has been assessed (e/c)  | Unknown |

### 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 form 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)              | 13                | 19%                       |
| Current – Favourable (green)              | 4                 | 6%                        |
| On SAC but not assessed (blue)            | 2                 | 3%                        |
| Not on SAC (transparent)                  | 49                | 72%                       |
| Total Number of 10km squares (any colour) | 68                |                           |
| Future – Unfavourable (red)               | 6                 | 9%                        |
| Future – Favourable (green)               | 11                | 16%                       |