

**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 :
H4080: Sub-Arctic *Salix* spp. scrub**

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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H4080 Sub-Arctic *Salix* spp. Scrub

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 H4080 and its relations with UK classifications.

Sub-Arctic *Salix* spp. scrub is the UK’s highest-altitude shrubby vegetation, occurring on moist, relatively base-rich soils in rocky situations on mountains. It is predominantly a natural habitat, with succession prevented by the harsh climate at the high altitudes at which it is found. It tends to be associated with the more sheltered areas of the upper subalpine and low alpine zones of mountains, and there may be a positive association with moderately late snow-lie. Stands of *Salix* scrub survive on ungrazed ledges and, more rarely, on lightly grazed, steep rocky slopes or boulder fields, occurring only as small, discrete stands or more scattered bushes.

The Annex I habitat type consists of a mixture of willow species which have arctic-alpine and arctic-subarctic distributions in Europe. Sub-Arctic species include downy willow *Salix lapponum*, whortle-leaved willow *S. myrsinites*, mountain willow *S. arbuscula* and woolly willow *S. lanata*. Associated arctic-alpine and northern willows include net-leaved willow *S. reticulata*, dark-leaved willow *S. myrsinifolia* and tea-leaved willow *S. phylicifolia*. The willows grow among a rich mixture of dwarf shrubs, grasses, rushes and broad-leaved herbs, such as bilberry *Vaccinium myrtillus*, tufted hair-grass *Deschampsia cespitosa*, great wood-rush *Luzula sylvatica* and Alpine lady’s-mantle *Alchemilla alpina*, and the habitat supports many rare plants and animals of northern latitudes and high mountains. On the rock ledges H4080 commonly mixes and associates with stands of H6430.

Several willow species may be found on the same site, but the most abundant willow varies from patch to patch of the habitat both within and between sites. Some of this variation may be related to the base-richness of the underlying substrate, the altitude of the stands or, more locally, the effects of grazing. The habitat usually occurs on soils developed on schist, which vary from strongly to weakly calcareous, and also on limestone. Different species of willow demand greater or lesser amounts of lime in the rocks. *S. lapponum* is relatively undemanding and can grow on lime-poor schist. It is therefore the most widespread species because lime-poor rocks are widely distributed. *S. lanata*, *S. myrsinifolia* and *S. reticulata* are more lime-demanding and are rare because suitable lime-rich rocks are localised. *S. arbuscula* is more resistant to grazing than other willow species and is found very locally on slopes open to grazing. *S. lanata*, the rarest willow species, forms patches where there is marked base-rich flushing. *S. reticulata* is a very low growing shrub which rarely forms scrub and is found more frequently in H6170. *S. myrsinifolia* and *S. phylicifolia* occur only at the lower end of the altitudinal range of the habitat.

In the UK this vegetation corresponds partly to NVC type W20 *Salix lapponum* – *Luzula sylvatica* scrub, but other types of willow scrub also fall within the definition of the Annex I type. *S. lapponum* is not

necessarily the most frequent or abundant willow species in all stands of *Salix – Luzula* scrub, and other species such as *S. lanata* and *S. myrsinities* may be abundant. *S. myrsinities* scrub on limestone (a community which is not described in the NVC) is also included in this habitat. Stands of dominant *S. lapponum*, *S. myrsinities*, *S. lanata* and *S. arbuscula* are all included in the habitat.

The constituent willows of H4080 also occur occasionally in a range of other habitats, including several Annex I types. On slopes open to light grazing, H4080 gives way to H6170 (Alpine and subalpine calcareous grasslands), H6230 (Species-rich *Nardus* grasslands) and H4060 (Alpine and Boreal heaths).

Table 1.1.1 Summary description of habitat H4080 and its relations with UK vegetation/habitat classifications

Classification	Correspondence with Annex I type	Comments
EU Interpretation Manual	31.622 - Boreo-Alpine willow brush Subarctic willow formations of the Highlands of Scotland, of the mountains of Iceland and of the boreal mountains of Scandinavia.	These are the PAL.CLASS sub-types of H4080, found in the British Isles, based on CORINE classifications.
NVC	W20 <i>Salix lapponum – Luzula sylvatica</i> scrub.	This Annex I type also includes <i>Salix myrsinities</i> scrub, which is not described in the NVC, and stands of <i>Salix lapponum</i> , <i>S. myrsinities</i> , <i>S. lanata</i> and <i>S. arbuscula</i> in a variety of other vegetation types. It also includes associated stands of <i>S. reticulata</i> , <i>S. myrsinifolia</i> and <i>S. phyllicifolia</i> . (Jackson and McLeod 2000).
BAP priority habitat type	Proposed priority habitat – Mountain heaths and willow scrub.	Includes H4080 with other habitats, including several other Annex I habitats.
JNCC CSM reporting categories, for SAC feature and ASSI/SSSI feature types	Montane grasslands and heaths.	A broader category which covers the following Annex I feature types: H4060 Alpine and Boreal heaths H6170 Alpine and subalpine calcareous grasslands H6150 Siliceous alpine and boreal grasslands H4080 Sub-Arctic <i>Salix</i> spp. scrub
JNCC CSM Guidance feature types	Montane willow scrub.	Close correspondence to H4080 Sub-Arctic <i>Salix</i> spp. Scrub.

2. Range ^{2.3}

2.1 Current range

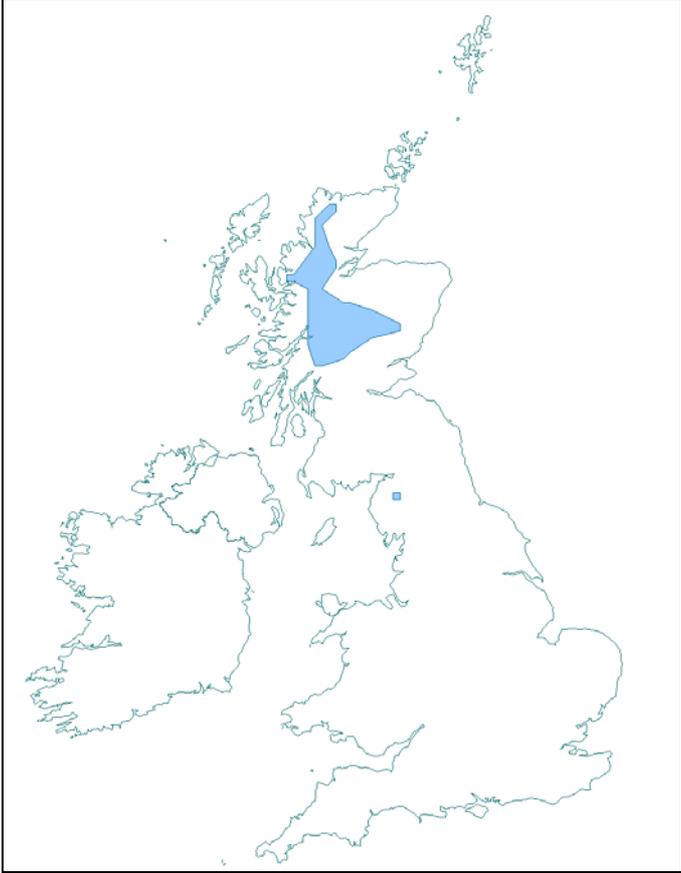
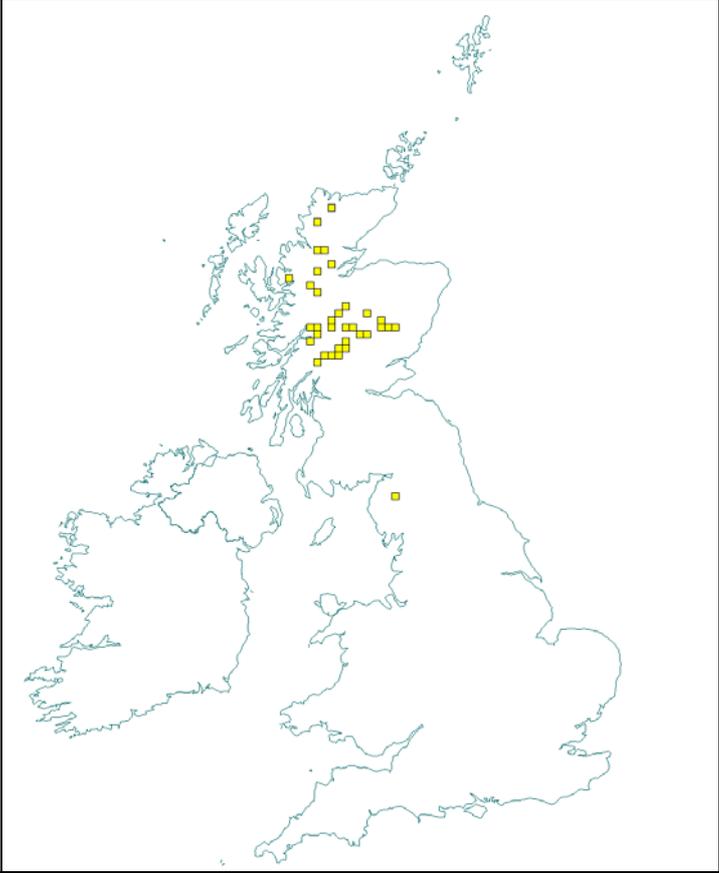
Range surface area ^{2.3.1}: **11,935 km²**

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

Quality of data ^{2.3.3}: **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 H4080 in the UK. Sub-Arctic *Salix* spp. scrub is one of the UK's most rare and endangered habitats, and is almost confined to the higher mountains of the Scottish Highlands where it is a relict of post-glacial vegetation. Fragmentary stands of the habitat occur in Cumbria.

Map 2.1.1 Habitat range map ^{1.1} for H4080	Map 2.1.2 Habitat distribution map ^{1.2} for H4080
	
<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: 34</p>

See Section 7.1 for data sources

2.2 Trend in range since c.1994

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

There is no empirical information on any changes or magnitude of changes in range for H4080 prior to or since 1994. However, given the trend since the 1950s for increasing numbers of sheep and deer in the uplands, expert judgement considers there may have been an on-going steady decline in the range of this habitat, as associated species are killed by browsing and stands cease to be referable to the Annex I type. Surviving stands of H4080 are afforded protection from grazing on rock ledges, in boulder fields and similar remote locations. However, the lack of empirical evidence means that the trend is recorded as unknown at present.

2.3 Favourable reference range

Favourable reference range^{2.5.1}: Unknown

The potential range of H4080 is restricted by the requirements for at least moderately base-rich and moist substrates and a good depth of soil. Information on the historic range of H4080 pre-1994 is not readily available. Historical loss of ecological variation within H4080 may have occurred, and the current ecological range may not represent that needed for H4080 to be viable at a UK scale. The paucity of information on what would constitute a large enough range to ensure long-term viability of the habitat means that the favourable reference range is unknown at present.

2.4 Conclusions on range

Conclusion^{2.6.i}: **Unknown**

The EC Guidance states that where there is “no or insufficient reliable information available” as regards range, the conclusion should be Unknown. In the UK this was generally taken to mean that no or insufficient reliable information on range exists to draw a conclusion on the overall UK resource of the particular habitat.

There is a current range estimate for this habitat, but no evidence of historical changes pre or post 1994. Expert judgement is that the range of this habitat may have declined since 1994, but the magnitude of decline is not known. There is a lack of information on the historic extent of H4080 and it is not possible to identify a favourable reference value for the surface area of the range; consequently the conclusion on range for H4080 is that it is Unknown at present.

3. Area ^{2.4}

3.1 Current area

Total UK extent ^{2.4.1}: **0.23 km²**

Date of estimation ^{2.4.2}: **May 2007**

Method ^{2.4.3}: **1 = only or mostly based on expert opinion**

Quality of data ^{2.4.4}: **Moderate**

Table 3.1.1 provides information on the area of H4080 in the UK.

There are no reliable area measurements for the total extent of H4080 in the UK.

The largest extent occurs in Scotland, where the largest known stands occurs in Coire Fee (Caenlochan Special Area of Conservation (SAC)) and is about 0.5 ha in extent. Ben Alder may have a stand of similar extent while stands on a few sites such as Drumochter may total about 0.5 ha. Stands of this habitat mostly consist of clumps of willows a few square metres in extent.

A total of 23 ha of H4080 has been identified on UK SACs, and this has been given below as the minimum extent of H4080 in the UK. Expert judgement by members of the inter-agency Uplands Lead Co-ordination Network is that a very high proportion of the total UK resource of the habitat is located in the statutory site series, primarily in the Scottish Highlands.

Table 3.1.1 Area of H4080 in the UK

	Area (ha)	Method ^{2.4.3}	Quality of data ^{2.4.4}
England	>0.5	1	Moderate
Scotland	c22.5	1	Moderate
Wales	not present	1	Moderate
Northern Ireland	not present	1	Moderate
Total UK extent ^{2.4.1}	c.23	1	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.

3.2 Trend in area since c.1994

Trend in area ^{2.4.5}: **Decreasing**

Trend magnitude ^{2.4.6}: **Unknown**

Trend period^{2.4.7}: **1994-2006**

Reasons for reported trend^{2.4.8}: **4 – Indirect anthropogenic or zoogenic influence**

There is no readily available quantitative evidence or information on any trend in area for H4080 since 1994. Expert judgement suggests that the extent of H4080 is likely, like other kinds of woodland and scrub in the uplands, to have declined historically due to increase in the numbers of sheep and deer in the uplands. This grazing pressure has continued to act since 1994 and is considered to have led to further losses in the extent of H4080. However, the magnitude of the decrease is unknown. The habitat naturally occurs as small isolated patches of *Salix* spp. scrub; since 1994 many of the smaller patches of the habitat have been reduced to single plants and so the habitat has been lost in these locations. There is some potential for restoration through grazing exclosures or similar controls in suitable base-rich parts of the Moffat Hills, Merrick Kells and the Lake District, but also on Skye (especially the Trotternish Ridge) and Hoy.

3.3 Favourable reference area^{2.5.2}

Favourable reference area: **Unknown**

The potential area of H4080 is naturally limited by the occurrence of base-rich substrates and moist or wet soils, often occurring on moist or damp ledges, in the UK uplands.

There is no readily available information on the historic area of H4080 before 1994. However expert opinion suggests that (perhaps since the introduction of higher grazing levels into the Scottish uplands in the 1800s) the area occupied by H4080 has probably reduced historically with the replacement of the Annex I habitat by other, usually more species-poor montane grassland communities. Both the total area and patch size of stands of H4080 are likely to have decreased (and fragmentation increased) due to increases in grazing intensity.

The current extent of H4080 is highly fragmented and restricted to isolated rock ledges where the few remaining populations of the core plant species find difficulty in cross-fertilising to set seed. The habitat has the potential to spread widely into other montane habitats given a reduction in grazing pressure, although the moist, base-rich, upland conditions required are relatively limited at a UK scale.

Overall the expert judgement is that the habitat has fallen below its favourable reference area as few stands of H4080 are able to regenerate naturally and will require special measures to encourage regeneration. The potential for expansion of H4080 as part of the tree-line woodland on more base-rich and moister soils, is unlikely to be more than a few hundred of hectares. However, there is no information available to suggest whether the favourable reference area required for viability at a UK scale of H4080 should be more or less than 110% of the current area.

3.4 Conclusions on area covered by habitat

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

The current extent of H4080 in the UK is very small, but there is no readily available quantitative data on either trends in area since 1994 or historically. Expert opinion is that high grazing levels in the uplands since the 1800s have led to historic declines in the extent of H4080 at a UK level, with relatively greater impacts due to the naturally small patch-size and scattered distribution of the resource.

The majority of the UK resource of H4080 lies in the Scottish uplands, where the extent since 1994 is judged to have decreased by an unknown amount. Current research suggests that the small, isolated populations of willows making up the majority of the habitat may not be producing seeds because of a lack of inter-fertility within populations coupled with an inability to crossbreed with remote populations. Fragmentation may have proceeded to such a point that the habitat at a UK scale is not viable. Consequently the UK favourable reference area is likely to be greater than either the current or 1994 extent, however it is not possible to identify a value for the favourable reference area and hence the judgement for the area of H4080 is that it is at least Unfavourable- Inadequate and deteriorating.

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

4.1 Main pressures ^{2.4.10}

The following list of main pressures for H4080 has been derived from the six year Common Standards Monitoring (CSM) results for SACs designated for their representation of H6170. The related EC codes are shown in brackets:

- **Grazing (140 Grazing)**

Overgrazing has the main impact on this feature, leading 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 soil and erosion. More specifically, grazing pressure confines the willows to inaccessible localities where populations are barely viable at even the best sites and are not viable more widely.

- **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 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 H4080 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 account for 23 ha and most of the known extent of H4080 in the UK in a well dispersed network across its range. Table 4.2.1 and Map 4.2.1 summarise the CSM condition assessments for UK SACs supporting habitat H4080. 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:

- 85% of the area and 85% of the number of assessments was unfavourable; and
- at least 82% of the total UK habitat area was in unfavourable condition.

Table 4.2.1 CSM condition assessment results for UK SACs supporting H4080. 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	07	2
	No change	05	7
	Unclassified		
	Recovering	06	2
	Total	19	11
	<i>% of all assessments</i>	85%	85%
	<i>% of total UK resource</i>	82%	unknown
Favourable	Maintained	03	2
	Recovered		
	Unclassified		
	Total	03	2
	<i>% of all assessments</i>	15%	15%
	<i>% of total UK resource</i>	14%	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.

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

Not applicable

Current Condition of H4080 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
	Not applicable	Not applicable
<p>Key</p> <p><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</p> <p><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</p> <p><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</p> <p><u>Transparent</u> = SAC feature not present, i.e. the square does not contain any SAC features of this habitat type</p>	<p>Key*</p> <p><u>Green</u> – 80 – 100% of assessed features on 10km square are favourable</p> <p><u>Yellow</u> - 50 – 80% of assessed features on 10km square are favourable</p> <p><u>Orange</u> - 20 – 50% of assessed features on 10km square are favourable</p> <p><u>Red</u> - 0 – 20% of assessed features on 10km square are favourable</p> <p>*This is the same key as was used for JNCC CSM Report 2006</p>	

4.3 Typical species^{2.5.3 and 3.5.4}

Typical species^{2.5.3}:

Salix myrsinites, *Salix lapponum*

Typical species assessment^{2.5.4}:

Change in 10 km square occupancy across UK over last 25 years

The UK trends of the following typical species are considered to indicative or informative on the structure and function of the UK resource of H4080:

Table 4.3.1 Trends and faithfulness of selected typical species for H4080

Typical species considered ^{2.5.3} :	Faithfulness to habitat H4080 (based on analysis of NVC synoptic tables)	Trend over last 25 years from BSBI atlas - based on change in 10 km square occupancy across UK (see < http://www.jncc.gov.uk/page-3254 >)
<i>Salix myrsinites</i>	High	No change - stable
<i>Salix lapponum</i>	Medium	No change - stable

None of the other species listed as characteristic of this habitat in the EU Interpretation Manual are particularly faithful to this habitat so available trend data at the UK-level is not particularly meaningful and has not been utilised here. Overall the trends for these species suggest that the condition of the wider resource of H4080 is stable; however there are no trends for the species specifically since 1994 and, particularly given changes in recording effort, the deterioration suggested by other evidence may not have been evident from trends over a longer time period.

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

Conclusion^{2.6.iii}:

Unfavourable – Bad and deteriorating

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 supporting H4080 suggests that 85% of the area of assessed SACs supporting H4080 (and 85% of the features) are unfavourable. This equates to around 82% of the total UK resource. The main reason for this decline in condition has been overgrazing and associated impacts of high numbers of grazing stock in the UK uplands. Around 26% of the assessed SAC area is recovering, 30% declining, and 20% is not changing suggesting a slight decline in the condition of H4080 in these sites.

Expert judgement is that perhaps 95% of the UK resource of H4080 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 at least 85% of the UK area for H4080 is in unfavourable condition. Extrapolating further, with slightly more of the assessed resource in the ‘unfavourable’ category is marked as declining compared to recovering or unchanged, this suggests a judgement of Unfavourable – Bad and deteriorating for the structure and function parameter for H4080.

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 H4080 lies 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.

An unknown but smaller proportion of the resource of H4080 also lies within the SSSI/ASSI series where similar management measures are in place.

- 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, for much of the resource of H4080, particularly within the statutory site series.

- UK BAP

H4080 has been put forward as part of a new priority habitat type - montane heath and willow scrub - but is not currently covered by any priority habitat action plan under the UK Biodiversity Action plan

5.1.2 Main future threats^{2.4.11}

The most obvious major future threats to H4080 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**)

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

Based on an assessment of the exceedance 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. 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 H4080 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 H4080 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:

- 42% of the area and 31% of the number of assessments fall within the future-favourable category; and
- at least 40% of the total UK habitat area falls within the future-favourable category.

Table 5.2.1 Predicted future condition of UK SACs supporting H4080 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

Future condition	Present condition	Area (ha)	Number of site features
Future-unfavourable	Unfavourable declining	07	2
	Unfavourable no change	05	7
	Unfavourable unclassified		
	Total	13	9
	<i>% of assessments</i>	58%	69%
	<i>% of total UK extent</i>	55%	Unknown
Future-favourable	Favourable maintained	03	2
	Favourable recovered		
	Unfavourable recovering	06	2
	Favourable unclassified		
	Total	09	4
	<i>% of assessments</i>	42%	31%
	<i>% of total extent</i>	40%	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.

SSSI/ASSI condition assessments

Not applicable.

Predicted Future Condition of H4080 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>Future status of HSD features FUTURE_STA ■ future-unfavourable ■ future-favourable ■ SAC not assessed SAC feature not present</p>	Not applicable	Not applicable
<p>Key <u>Red</u> = <u>future-unfavourable</u>, i.e. the square contains one or more SACs where this habitat feature is present and has been predicted to be future-unfavourable <u>Green</u> = <u>future-favourable</u>, i.e. the square contains at least one SAC where this habitat feature is present and has been predicted to be future-favourable <u>Blue</u> = <u>SAC not assessed</u>, i.e. the square contains at least one SAC supporting this habitat feature but no assessment has been reported <u>Transparent</u> = <u>SAC feature not present</u>, i.e. the square does not contain any SAC features of this habitat type</p>	<p>Key* <u>Green</u> – 80 – 100% of assessed features on 10km square are favourable <u>Yellow</u> - 50 – 80% of assessed features on 10km square are favourable <u>Orange</u> - 20 – 50% of assessed features on 10km square are favourable <u>Red</u> - 0 – 20% of assessed features on 10km square are favourable *This is the same key as was used for JNCC CSM Report 2006</p>	

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

Conclusion^{2.6.iv}: Unfavourable – Bad and deteriorating

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.

In the UK H4080 has become largely restricted to sites inaccessible to grazing. The small and generally isolated populations of the willows are largely not viable. Current grazing levels on the surrounding open slopes, which may be suitable for colonisation, are too high for the regeneration of the habitat. Management agreements need to be put in place to reduce grazing levels or fence off areas to allow populations of willows to spread and for the habitat to become viable in the long-term.

The principal future pressure (grazing) on H4080 is being addressed directly for the majority of the resource of H4080 that lies within the statutory site series; and (particularly through agri-environment measures) for the smaller but unknown proportion of the resource of H4080 lying outside the statutory site series. However, there are uncertainties over the effective extent of changes to grazing and whether they will be sufficient and timely enough to arrest further loss.

Within the SAC series, 58% of the area of SAC and 69% of the sites for the feature are assessed by CSM for H4080 as “future – unfavourable”. Given the high representation of H4080 on SACs, these figures can be extrapolated to suggest that at least 58% of the total UK resource of H4080 is unlikely to achieve favourable condition in the foreseeable future.

There are outstanding concerns over future declines in both area and range of H4080 in the UK by more than 1% p.a.; despite the evidence from conservation measures (particularly grazing management agreements) currently in place and predicted to operate over the next 15-20 years, the future prospects for H4080 must be judged as Unfavourable- Bad and deteriorating.

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

Conclusion^{2.6}: Unfavourable – Bad and deteriorating

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

Table 6.1 Summary of overall conclusions and judgements

Parameter	Judgement	Grounds for Judgement	Confidence in judgement*
Range	Unknown	No or insufficient reliable information available to draw a conclusion on range for the overall resource of the habitat.	2
Area covered by habitat type within range	Unfavourable – Inadequate and deteriorating	The current extent of H4080 in the UK is very small, but there is no readily available quantitative data on either trends in area since 1994 or historically. Expert opinion is that high grazing levels in the uplands since the 1800s have led to historic declines in the extent of H4080 at a UK level, with relatively greater impacts due to the naturally small patch-size and scattered distribution of the resource. The majority of the UK resource of H4080 lies in the Scottish uplands, where the extent since 1994 is judged to have decreased by an unknown amount. Current research suggests that the small,	3

		isolated populations of willows making up the majority of the habitat may not be producing seeds because of a lack of inter-fertility within populations coupled with an inability to crossbreed with remote populations. Fragmentation may have proceeded to such a point that the habitat at a UK scale is not viable. Consequently the UK favourable reference area is likely to be greater than either the current or 1994 extent, however it is not possible to identify a value for the favourable reference area and hence the judgement for the area of H4080 is that it is at least Unfavourable – Inadequate and deteriorating.	
Specific structures and functions (including typical species)	Unfavourable – Bad and deteriorating	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 declining than improving.	2
Future prospects (as regards range, area covered and specific structures and functions)	Unfavourable – Bad and deteriorating	Habitat prospects over next 12-15 years considered to be bad, with severe impact from threats expected and long term viability not assured. Further measures are required to address threats to future range, extent and structure and function for the overall UK resource.	2
Overall assessment of conservation status	Unfavourable – Bad and deteriorating	At least one Unfavourable – Bad conclusion.	2

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

7. Annexed material (including information sources used 2.2)

7.1 References

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

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 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)	15
Number of SACs with CSM assessments (b)	13
% of SACs assessed (b/a)	87
Extent of feature in the UK – hectares (c)	23
Extent of feature on SACs – hectares (d)	23
Extent of features assessed – hectares (e)	22
% of total UK hectarage on SACs (d/c)	100
% of SAC total hectarage that has been assessed (e/d)	95
% of total UK hectarage that has been assessed (e/c)	95

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)	13	42%
Current – Favourable (green)	2	6%
On SAC but not assessed (blue)	2	6%
Not on SAC (transparent)	14	45%
Total Number of 10km squares (any colour)	31	
Future – Unfavourable (red)	12	39%
Future – Favourable (green)	3	10%