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 :

H1230: Vegetated sea cliffs of the Atlantic and Baltic coasts

H1230 Vegetated sea cliffs of the Atlantic and Baltic coasts

Audit trail compiled and edited by JNCC and the UK statutory nature conservation agencies Coastal Lead Coordination Network.

This paper and accompanying appendices contain background information and data used to complete the standard EC reporting form (Annex D), following the methodology outlined in the commission document "Assessment, monitoring and reporting under Article 17 of the Habitats Directive, Explanatory Notes and 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 H1230 and its relations with UK classifications. Vegetated sea cliffs are steep slopes fringing hard or soft coasts, created by past or present marine erosion, and supporting a wide diversity of vegetation types with variable maritime influence. Exposure to the sea is a key determinant of the type of sea cliff vegetation. In the UK exposure is greatest on the south-west and northern coasts. The long fetch associated with these coasts generates high waves and swell, and the prevailing winds help deliver salt spray to the cliff face and cliff tops. However, the degree to which this affects the salinity of cliff-top vegetation also depends on the amount of rainfall, with high rainfall areas, such as north-west Scotland, being less saline or maritime than drier areas such as south-east England. Exposure is another important factor. The most exposed areas support maritime vegetation dominated by a range of salt-tolerant plants. More sheltered cliffs support communities closely related to those found on similar substrates inland, such as grassland and heath, with only a minor maritime element in the flora.

The vegetation of sea cliffs in the UK includes 12 maritime cliff NVC types, although the range of vegetation types present is much broader. There is considerable geographical variation. Southern types are rich in Atlantic-Mediterranean species, while northern sites support boreal species such as the endemic Scottish primrose *Primula scotica*.

Cliff-top heath vegetation is included in the Annex I definition, and comprises maritime heath communities referable to NVC types H7 *Calluna vulgaris – Scilla verna* heath and H8d *Calluna vulgaris – Ulex gallii* heath *S. verna* sub-community. Cliff-top heath vegetation may extend landward into non-maritime zones, where it is considered as part of Annex I type H4030 European dry heaths.

Cliff structure and geomorphological processes are major influences on cliff vegetation. 'Hard' cliffs with vertical or very steep faces are characteristic of hard igneous, metamorphic and sedimentary rocks and also of chalk, which, although a soft rock, nevertheless forms vertical cliffs. 'Soft' cliffs have a sloping or slumped profile, often with a distinct 'undercliff'; they occur on a range of soft rocks, or on hard rocks interspersed with softer deposits. The more mobile soft cliffs occur where there are unstable soft deposits such as mudstones or glacial drift deposits. They may be subject to mudslides or landslips, which create complexes of pioneer and more mature vegetation.

The profile and stability of the cliff face is one of the major determinants of cliff vegetation. Even near-vertical cliffs support specialist crevice communities, with rock samphire *Crithmum maritimum*, and in the north, Scots lovage *Ligusticum scoticum*, while ledges occupied by breeding seabirds may develop specialist nitrophilous communities comprising plant species which are able to cope with heavy guano deposition. On less extreme slopes, species tolerant of exposure to wind and salt spray and of thin soils

can find a foothold. The most characteristic maritime cliff communities occur in such situations. On relatively stable soft cliffs a wide range of progressively less-specialised communities can occur, including grassland, heath, scrub and even woodland. More mobile soft cliffs show a complex sequence of successional communities related to degrees of instability and the age of the slope. The vegetation of these sites forms a mosaic of pioneer, ruderal, grassland, scrub and woodland communities. Streams and flushes provide a freshwater wetland element, and seepage lines may be rich in orchids. The vegetation of mobile soft cliffs is inadequately described by the NVC at present. Soft cliffs are essential for the survival of many invertebrate species (see Howe 2002; Knight and Howe 2006).

Table 1.1.1 Summary description of habitat H1230 and its relations with UK vegetation/habitat classifications

Classification	Correspondence with Annex I type	Comments
NVC	The vegetation of sea cliffs in the UK includes all 12 maritime cliff NVC types: • MC1 *Crithmum maritimum – Spergularia rupicola* maritime rock-crevice community. • MC2 *Armeria maritima – Ligusticum scoticum* maritime rock-crevice community. • MC3 *Rhodiola rosea – Armeria maritima* maritime cliff-ledge community. • MC4 *Brassica oleracea* maritime cliff-ledge community. • MC5 *Armeria maritima – Cerastium diffusum* ssp. *diffusum* maritime therophyte community. • MC6 *Atriplex prostrata – Beta vulgaris* ssp. *maritima* sea-bird cliff community. • MC7 *Stellaria media – Rumex acetosa* sea-bird cliff community. • MC8 *Festuca rubra – Armeria maritima* maritime grassland. • MC9 *Festuca rubra – Holcus lanatus* maritime grassland. • MC10 *Festuca rubra – Plantago* spp. maritime grassland. • MC11 *Festuca rubra – Daucus carota* ssp. *gummifer* maritime grassland. • MC12 *Festuca rubra – Hyacinthoides non-scripta* maritime bluebell community. Cliff-top heath vegetation is included in the Annex I definition, and comprises maritime heath communities referable to NVC types H7 *Calluna vulgaris – Scilla verna* heath. H8d *Calluna vulgaris – Ulex gallii* heath *S. verna* sub-community.	H1230 covers all the MC NVC Types and all MC types are referable to H1230. All instance of H7 and H8d are coastal cliffs.
BAP priority habitat type	Maritime cliffs and slopes.	The BAP priority habitats is equivalent to the Annex I habitat.
Phase 1 type	H8 Maritime cliff.	

The second major influence on maritime cliff vegetation is the nature of the underlying rock or drift deposit, notably whether it is basic or acidic. In the most exposed situations this effect is masked by the saline influence of sea spray, but more sheltered cliffs support communities closely related to those found on similar substrates inland, with only a minor maritime element in the flora. Thus, chalk and limestone cliffs support calcareous grassland communities, while acidic hard rocks support heath communities. Base-rich hard rocks, such as the limestones of the south coast or the basic igneous rocks of the Lizard, support particularly rich assemblages of rare plants and plant communities.

The maritime influence on cliff communities is shown in both vertical and lateral zonation. The effects of salt spray are greatest close to the sea and least at the cliff top, especially where a sloping profile sets this back from the shoreline. Superimposed on this pattern is the effect of local topography. The most

maritime sites are those facing the prevailing winds or the longest 'fetch' of open sea, notably headlands projecting from the coastline and gullies or blowholes which funnel salt water up the cliff. On the sheltered side of headlands and in bays the maritime influence is progressively diminished and is replaced by a mild, humid climate in which plant species normally restricted to woodland are found in open situations, often associated with bracken *Pteridium aquilinum*.

Vegetated sea cliffs occur discontinuously along the west-facing coasts of Europe. On more sheltered coasts they are more local and show less expression of maritime features. In general, the east coast cliffs of north-west Europe are particularly associated with glacial drift deposits and as a result are more mobile. The UK supports a significant proportion of EU sea cliff vegetation. In particular, the coast of England holds a major proportion of the European coastal chalk exposures (113 km, compared with 85 km in France and shorter lengths in the Baltic).

In the UK, the exposed western and northern coasts have extensive cliffs composed of hard, mostly acidic, rocks; similar rock types also form prominent cliffs in parts of eastern Scotland. The sheltered south coast of England supports hard cliffs of chalk, limestones and sandstone and, more locally, mobile cliffs subject to landslips. The east coast of England has fewer cliffs, often formed in glacial drift deposits. There are also chalk cliffs in Northern Ireland.

2. Range [2.3]

2.1 Current range

Range surface area [2.3.1]: **3,275 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 hull software used to calculate the surface area of the range could only be clipped to a 10km strip width along the coast. The geomorphological and physical factors influencing the distribution of the habitats are likely to occur only within a far smaller distance of the coastline (at most 1km) and hence the area value has been reduced by a factor of 10 to give a more realistic value for the surface area of the range for these habitats.

Maps 2.1.1 and 2.1.2 show the range and distribution of H1230 in the UK. The map shows records for NVC types H7, H8d, MC1, MC2, MC3, MC4, MC5, MC6, MC8, MC9, MC10, MC11 and MC12, together with Special Areas of Conservation (SACs) supporting this Annex I type. In addition records for NVC community MC7 are also shown for Northern Ireland. Unprotected soft cliffs in England are also shown. Soft cliffs in Scotland, Wales and Northern Ireland are under-represented on the map.

The dot data for Wales is mostly based on available Phase 1 records for: (i) H8.1 hard cliff; (ii) H8.2 soft cliff; (iii) H8.4 coastal grassland; (iv) H8.5 coastal heathland; and (v) H8.6 coastal heath/coastal grassland mosaic. The map does not include any records of H8.3 and could therefore be somewhat incomplete. However, it is suspected that at the 10-km square dot level there will be few records of H8.3 that occur outside of the squares covered by the types included on the above map.

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**

Without the benefit of a national survey it is not possible to say with any certainty that part of the range of geographical variation of this habitat type has not been lost or disturbed in some way. If anything there

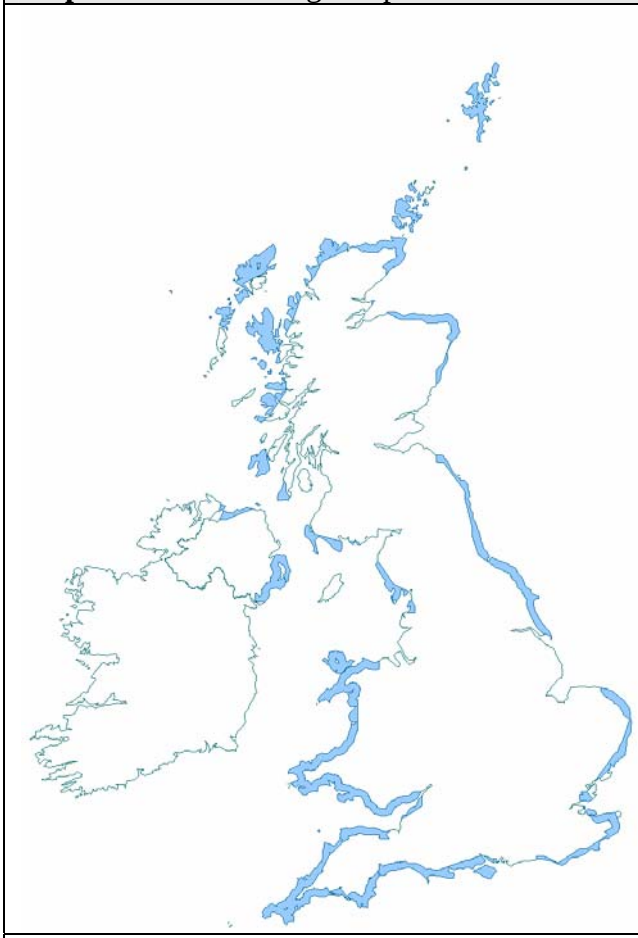
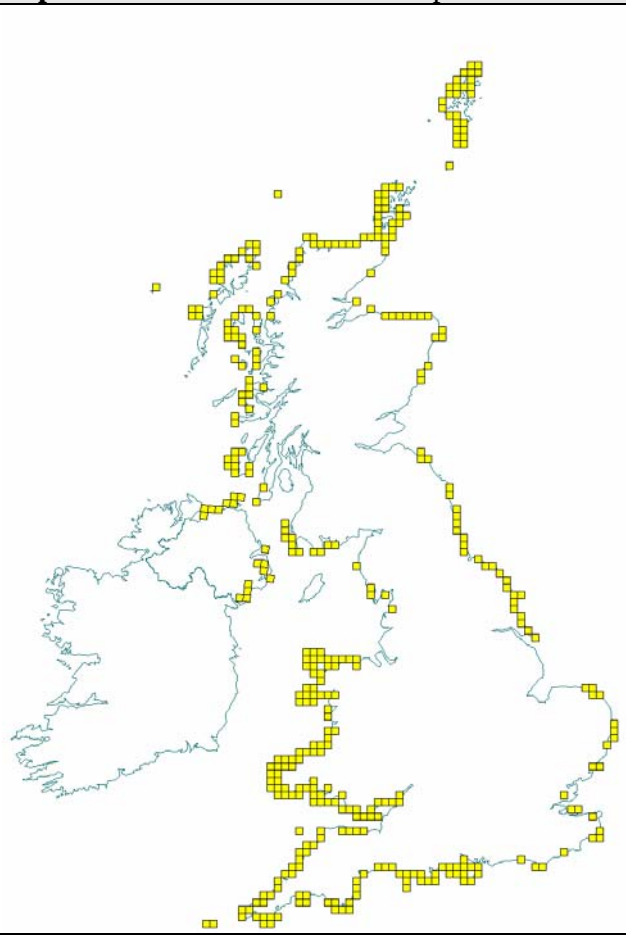
has probably been a loss of important landward community types where cliff tops areas have good agricultural potential, or have been used for holiday accommodation. In some parts of the country, such as Anglesey, prime cliff top habitat has also been lost to urban development. Despite these losses in area, the broad range of H1230 is considered to have been stable in recent or historical times.

2.3 Favourable reference range

Favourable reference range[2.5.1]: 3,275 km^2

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, 3,275 km^2, has been set as the favourable reference area. Reasons for this are discussed below.

Hard cliffs are widely distributed around the more exposed coasts of the UK, occurring principally in south-west and south-east England (the latter area having the bulk of the chalk cliffs), in north-west and south-west Wales, in western and northern Scotland and on the north coast of Northern Ireland. Soft cliffs are more restricted, occurring mainly on the east and central south coasts of England and in Cardigan Bay and north-west Wales. There are also examples on the coasts of Fife and Skye in Scotland and Antrim in Northern Ireland. The current range of natural or semi-natural vegetated sea cliffs in the UK is considered to broadly equate to their potential natural range but many stretches are now badly degraded.

Map 2.1.1 Habitat range map [1.1] for H1230	**Map 2.1.2** Habitat distribution map [1.2] for H1230
	
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).	Each yellow square represents a 10x10-km square of the National Grid and shows the known and/or predicted occurrence of this habitat. 10 km Square Count: 381

See section 7.1 for map data sources

2.4 Conclusions on range

Conclusion[2.6.i]: Favourable

Current range is stable and not less than the favourable reference range.

There are still good examples of this habitat at its geographical extremes in the UK with reasonably intact communities from the north coast of Scotland to the south coast of England. There is also reasonably good east-west representation. However, without the benefit of a national survey of sea cliffs in the UK, it is not possible to say categorically that we have not lost important intermediate types in a climatic sense, or types that may be associated with a particular geologies or soil type.

3. Area [2.4]

3.1 Current area

Total UK extent [2.4.1]: 220km^2
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 H1230 in the UK. The area figures quoted for England and Scotland are based on the lengths of sea cliffs along the coast of Great Britain (derived from the Coastal Resource Database, JNCC). Values for length have been multiplied by nominal average width of 50 m to obtained an area estimate. The length data include all cliffs, both vegetated and un-vegetated, so they are somewhat of an over-estimate for H1230. In total there is about 4066 km (+NI) of sea cliffs in the UK (Coastal Resources Database, JNCC 1993 and *pers.com.* Paul Corbett DoE NI). In total there is about 4066 km (+NI) of sea cliffs in the UK (Coastal Resources Database, JNCC 1993 and *pers.com.* Paul Corbett DoE NI).

Table 3.1.1 Area of H1230 in the UK.

	Area (ha)	Method [2.4.3]	Quality of data [2.4.4]
England	6000	3	Moderate
Scotland	12000	3	Moderate
Wales	3700	3	Moderate
Northern Ireland	300	1	Moderate
Total UK extent [2.4.1.]	22,000	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

3.2 Trend in area since c.1994

Trend in area[2.4.5]: Stable
Trend magnitude[2.4.6]: Not applicable
Trend period[2.4.7]: 1994-2006
Reasons for reported trend[2.4.8]: Not applicable

Despite some localised losses, the broad area of H1230 is considered to have been stable since 1994.

3.3 Favourable reference area

Favourable reference area[2.5.2]: 220 km^2

Section 3.2.2.3 of 'Assessing Conservation Status: UK Approach' sets out how favourable reference area estimates have been determined in the UK. Based on this approach, the current extent, 220 km^2, has been set as the favourable reference area. Reasons for this are discussed below.

Hard cliffs are widely distributed around the more exposed coasts of the UK, occurring principally in south-west and south-east England (the latter area having the bulk of the chalk cliffs), in north-west and south-west Wales, in western and northern Scotland and on the north coast of Northern Ireland. Soft cliffs are more restricted, occurring mainly on the east and central south coasts of England and in Cardigan Bay and north-west Wales. There are also examples on the coasts of Fife and Skye in Scotland and Antrim in Northern Ireland. Consequently, the habitat is not considered to be scarce. Although the area is fragmented, it is considered that there is sufficient connectivity between sites. One of the main concerns with vegetated sea cliffs is the loss of habitat along landward margins often as a result of agricultural encroachment. This has reduced the ecological variation of the habitat, but overall, the area of H1230 is considered viable. Another main concern is the degradation of individual sites (see section 4).

3.4 Conclusions on area covered by habitat

Conclusion[2.6.ii]: Favourable

The area of H2130 has remained broadly stable since 1994, and is not less than the favourable reference area. The habitat is well distributed around the UK and is considered to have sufficient connectivity. However, there is a concern that the loss of the landward component has reduced the ecological variation of the habitat.

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

4.1 Main pressures[2.4.10]

Factors affecting sea cliffs are identified in the *Habitat Action Plan for Vegetated sea cliffs*. The main pressures affecting H1230 are listed below. The related EC codes are shown in brackets.

- Erosion (**900 erosion**)

Erosion is a highly significant factor in soft cliffs. High rates of erosion do not imply a loss of the cliff resource, either in geological or biological terms. Cliff face communities are able to retreat with the cliff line, and erosion is vital for constantly renewing geological exposures and recycling the botanical succession on soft cliffs. However, cliff-top vegetation may be destroyed where it is squeezed between a receding cliff face and cultivated land. Cliff erosion in many places provides an essential supply of sediment to coasts lying down-drift of the cliffs.

- Coastal protection (**871 sea defence or coast protection works**)

Coastal protection systems have been built on many soft cliff coasts in order to slow or stop the rate of erosion and thus protect capital assets behind the cliff line. Cliff faces may also be re-profiled and sown with hardy grasses of little value for nature conservation. All such works have the effect of stabilising the cliff face, resulting in geological exposures being obscured, bare soil and early pioneer stages being progressively overgrown, and wet flushes drying out. Soft cliffs require a certain amount of natural erosion to maintain their interest, but unprotected soft cliff is now a relatively scarce habitat.

- Built development (**400 Urbanised areas, human habitation, 410 Industrial or commercial areas**)

There have been many instances in the UK of urban or industrial development and holiday accommodation being built too close to cliff-tops. Where the cliffs are subsequently discovered to be eroding, there is often political pressure to build the type of defensive works described above. Built development also prevents cliff-top biological communities from retreating in response to cliff erosion, subjecting them to a form of 'coastal squeeze'.

- Agriculture (**101 Modification of cultivation practices**, **141 abandonment of pastoral systems**)

In traditional low-intensity grazing systems, livestock were grazed on cliff grasslands where they maintained open maritime grassland vegetation. Post-war intensification of agriculture has led to

maritime grassland on more level terrain being ploughed out, while that on sloping ground has been abandoned and, where not maintained by exposure, is frequently overgrown by scrub. Localised eutrophication can be caused by fertiliser run-off from arable land above and this encourages coarse, vigorous 'weed' species at the expense of the maritime species. Agricultural land drains discharging on the cliff face may cause local acceleration of erosion.

- Recreational use (**622 walking, horseriding and non-motorised vehicules**)

The siting of holiday accommodation on cliff-tops not only reduces the landscape value of a site, but can also cause heavy localised erosion and disturbance to nesting birds. An increase in the number of walkers and dogs along some coastal footpaths has increased livestock worrying and even losses and forced a number of farmers to remove their stock from these sites. Consequently, some of the sites are now suffering from a lack of appropriate grazing, and scrub encroachment is likely to become a problem.

- Introduced species (**954 invasion by a species, 971 competition**)

Predators, such as cats and rats, can have a significant impact on populations of cliff or burrow nesting seabirds, particularly on island sites. Also the spread of certain alien, invasive plants, especially members of the flowering plant family *Aizoaceae* such as the Hottentot fig *Carpobrotus edulis*, can have a devastating impact on indigenous maritime plant communities.

- Grazing (**140 Grazing**)

Lack of grazing or use of inappropriate stock leading to encroachment of scrub/bracken onto maritime grassland is another factor. Overgrazing may be a problem in some places (including that by rabbits), leading to reduction in habitat diversity.

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

Based on an assessment of relevant literature, this habitat is potentially sensitive to air pollution, but it has not been possible to undertake an assessment of potential impact based on critical loads because of the poor equivalence between this habitat and those for which critical loads are set (see Technical note III).

4.2 Current condition

4.2.1 Common Standards Monitoring (CSM) condition assessments

Condition assessments based on CSM (see www.jncc.gov.uk/page-2199) provide a means to assess the structure and functioning of H1230 in the UK. The following attributes were examined for all CSM assessments relevant to the habitat:

- Extent (hard and soft cliffs).
- Vegetation composition (hard cliffs): rock-crevice/cliff-ledge vegetation, maritime therophyte vegetation, grassland, frequency of bracken and scrub.
- Vegetation structure
    - zones and transitions, maritime therophyte vegetation, grassland sward structure (hard cliffs);
    - zones and transitions, maritime slope pioneer communities, cliff top grassland (soft cliffs).
- Geomorphological naturalness (soft cliffs).

Table 4.2.1 CSM condition assessment results for UK SACs supporting H1230. 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	618	3
	No change	324	4
	Unclassified		
	Recovering	3,244	8
	Total	4,186	15
	% of all assessments	***50%***	***42%***
	% of total UK resource	***19%***	***unknown***
Favourable	Maintained	2,562	13
	Recovered	300	1
	Unclassified	1,345	7
	Total	4,207	21
	% of all assessments	***50%***	***58%***
	% of total UK resource	***19%***	***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 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)
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.

SAC condition assessments

Table 4.2.1 and Map 4.2.1 summarise the CSM condition assessments for UK SACs supporting habitat H1230. 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:

- 50% of the area and 42% of the number of assessments was unfavourable; and
- at least 19% of the total UK habitat area was in unfavourable condition.

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 H1230 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	21	
	No change	12	
	Unclassified	5	
	Recovering	34	
	Total	72	
	% of all assessments	***34%***	
Favourable	Maintained	56	
	Recovered	1	
	Unclassified	81	
	Total	138	
	% of all assessments	***66%***	

Notes

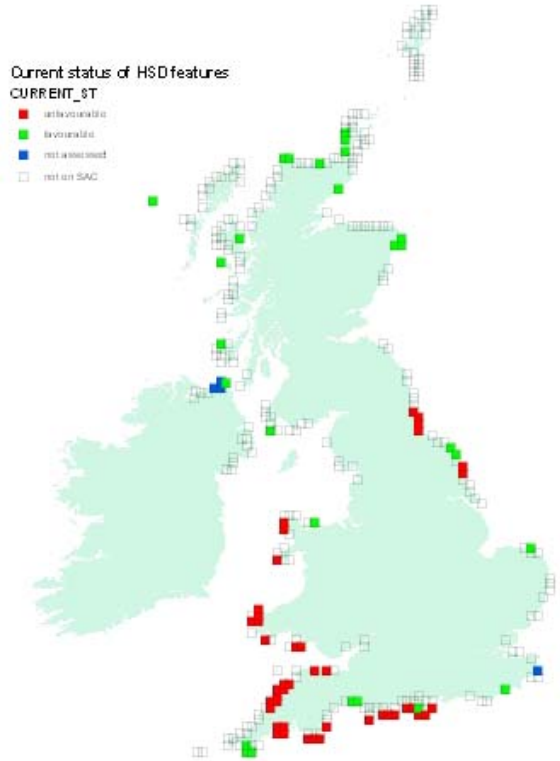
1. Data on features that have been partly-destroyed have been excluded from this table because they are not relevant to the consideration of present condition.
2. The data included are from CSM assessments carried out between April 1998 and December 2006.

SSSI/ASSI condition assessments

Table 4.2.2, and Maps 4.2.2 and 4.2.3 summarise the CSM 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:

- 34% of strongly indicative assessments were unfavourable.

Current Condition of H1230 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
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 10-km square are favourable Yellow - 50 – 80% of assessed features on 10-km square are favourable Orange - 20 – 50% of assessed features on 10-km square are favourable Red - 0 – 20% of assessed features on 10-km 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]: ***Brassica nigra, Parapholis incurve, Radiola linoides, Sedum telephium, Ligusticum scoticum, Crithmum maritimum, Spergularia rupicola, Cochlearia danica, Sagina maritima, Brassica oleracea, Scilla verna, Plantago coronopus, Genista tinctoria, Lavatera arboream, Trifolium scabrum, Armeria maritima, Echium vulgare, Cerastium diffusum***

Typical species assessment[2.5.4]: Change in 10 km square occupancy across UK over last 25 years

Several species show a medium to very high degree of faithfulness to this habitat or at least to the related maritime cliff community types (MC1, MC2, MC3, MC4, MC5, MC6, MC7, MC8, MC9, MC10, MC11 and MC12) within the NVC. Trends in the occurrence of these species across the UK during the last 25 years are set out in the table below. All but three showed significant increases, mostly of less than 25%. These data suggest that at least some species associated with H1230 have increased in occurrence, though not necessarily within this maritime cliff type.

Table 4.3.1 Trends and faithfulness of selected typical species for H1230

Typical species [2.5.3]	**Faithfulness to habitat H1230 (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)**
Asplenium marinum	Very high	No data
Brassica nigra	Very high	Significant increase, but <25% in 25 years
Parapholis incurva	Very high	Significant increase, but <25% in 25 years
Radiola linoides	Very high	Significant decline, but <25% in 25 years
Sedum telephium	Very high	Significant increase, but <25% in 25 years
Ligusticum scoticum	Very high	Significant increase, but <25% in 25 years
Crithmum maritimum	Very high	Significant increase, but <25% in 25 years
Spergularia rupicola	Very high	Significant increase, but <25% in 25 years
Cochlearia danica	High	Significant increase of >=25% in 25 years
Sagina maritima	High	Significant increase, but <25% in 25 years
Brassica oleracea	High	Significant increase, but <25% in 25 years
Scilla verna	Medium	Significant increase, but <25% in 25 years
Plantago coronopus	Medium	Significant increase, but <25% in 25 years
Genista tinctoria	Medium	Significant decline, but <25% in 25 years
Lavatera arborea	Medium	Significant increase of >=25% in 25 years
Trifolium scabrum	Medium	Significant decline, but <25% in 25 years
Armeria maritima	Medium	Significant increase, but <25% in 25 years
Echium vulgare	Medium	Significant increase, but <25% in 25 years
Cerastium diffusum	Medium	Significant increase, but <25% in 25 years

Much of the ungrazed vegetation on hard seacliffs is regulated by the natural environment of the area and can be regarded as a climatic climax community. In NVC terms this includes the rock crevice and cliff-ledge communities MC1, MC3 and MC4, the so-called seabird vegetation types MC6 and MC7, and the thin soil therophyte community MC5. This is a very short, open turf community in which *Armeria maritima* and *Cerastium diffusum* are usually dominant. These communities are often very susceptible to damage by grazing. Many but not all of these tend to be inaccessible to grazing stock. The maritime bluebell community MC12 is also susceptible to grazing damage.

Rock crevice communities are the most maritime of terrestrial plant communities in Britain, being restricted mainly to the highly maritime sea-cliffs of south and west coasts. In the south, *Aster tripolium*, *Crithmum maritimum*, *Inula crithmoides* and *Spergularia rupicola* are the dominant plant species (MC1), whereas north of Galloway, *Ligusticum scoticum* is usually the main species (MC2). Important cliff-ledge

communities include those in which *Rhodiola rosea* (MC3) or *Brassica oleracea* (MC4) occur. The former is restricted mainly to the northwest coast of Scotland, but there also stands in Northern Ireland (Rathlin Island and Carrickarade) and there is a small stand in Pembrokeshire, whilst the latter is confined to a few calcareous sea-cliffs in England and Wales.

Ungrazed coastal grassland of hard cliffs is usually synonymous with the typical sub-community of the *Festuca rubra-Armeria maritima* maritime grassland (MC8a). Moving landward this often gives way to a *Festuca rubra-Holcus lanatus* maritime grassland (MC9), and on under moderate maritime influence especially on north-facing gentle slopes the less common *Festuca-rubra-Hyacinthoides non-scripta* maritime blubell commmunity may be present. In the case of calcareous sites, a maritime version of calcicolous grassland (*Festuca rubra – Scilla verna* sub-community of the *Festuca ovina – Carlina vulgaris* grassland, CG1f) may be present. This includes the rare *Draba aizoides* on the Gower Peninsula in south Wales. Grazed coastal grassland of hard cliffs is typically composed of a short turf community that may be represented by the *Plantago coronopus* sub-community of the *Festuca rubra-Armeria maritima* maritime grassland (MC8e). But where there has been sustained grazing over many years the *Festuca rubra-Plantago* spp maritime grasslands (MC10) is likely to predominate.

Coastal vegetation of soft cliffs

On the basis of the few studies that have been carried out, much of the vegetation of soft cliffs may not fit any of the currently recognised NVC communities. The more unstable slopes are usually dominated by an *Agrostis stolonifera – Tussilago farfara* maritime mesotrophic grassland (Rodwell *et al.*1999) with a wide variety of other plant assemblages found.

Maritime scrub

Scrub found on coastal cliffs may be dominated by one of several species including hawthorn *Crataegus monogyna* (W21), blackthorn *Prunus spinosa* (W22), gorse *Ulex europaeus* (W23), privet *Ligustrum vulgare* or elder *Sambucus nigra*, but the species composition has often been influenced by human intervention. Hawthorn, for example, has often been introduced locally as a hedging plant, and gorse has been deliberately introduced to parts of the country as a fodder crop. It was also regularly taken from the wild either for fodder, domestic fuel or to produce dye (Mitcheley and Malloch 1991). Prior to human intervention coastal scrub was probably somewhat different, and may have mainly consisted of blackthorn and gorse with some elder and the odd plant of privet in the more sheltered situations (Gulliver 1992). In terms of NVC, it would have probably consisted mainly of the *Dactylis glomerata* sub-community of W22. Some of the rarer types of coastal scrub found around the coast of Britain include wild cotoneaster (*Cotoneaster cambricus*), confined to the Great Orme in North Wales, juniper scrub (as seen on the Gower Peninsula), and dogwood (*Thelycrania sanguinea*), recorded for the Craig ddu–Wharley Point Cliff SSSI in Carmarthenshire.

Coastal or maritime heath

This internationally endangered habitat has a requirement for highly oceanic conditions. Consequently it has a very restricted distribution in Europe. Typical plants communities include the *Calluna vulgaris - Scilla verna* maritime heath (NVC H7) and the *Calluna vulgaris - Ulex gallii* heath (NVC H8). Species-rich forms of H10 *Calluna vulgaris-Erica cinerea* heath are also important in Scotland.

4.4 Conclusions on specific structures and functions (including typical species) [2.6.iii]

The specific structures and functions (and typical species) of H1230 are judged to be 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 in unfavourable condition.

CSM site condition assessments for SACs and SSSI/ASSIs show that a large part (respectively 19% and 34%) of this habitat is deemed to be in unfavourable condition. In total 43% of all SACs and 30% of all SSSI/ASSI assessed were classed as unfavourable. The structure and function of this habitat in general is far from ideal, especially as the typical species associated with the landward fringes may be absent or greatly reduced because of the high incidence of landward truncation, which puts the functionality of the inland component at risk. However, a large part of the assessed SAC resource (nearly 40%) is classed as recovering.

5. Future prospects

5.1 Main factors affecting the habitat

5.1.1 Conservation measures

- Protection within designated sites

Around 38% of the resource of H1320 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. A significant proportion of the resource of this habitat also lies within the SSSI/ASSI series where similar management measures are in place.

- UK BAP

The habitat is covered by the *Maritime cliffs and slopes action plan* under the UK Biodiversity Action Plan (see 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[2.4.11]

The most obvious major future threats to H1230 are listed below, several of which are referred to in Section 4.1. The related EC codes are shown in brackets.

- Erosion (**900 erosion**)
- Coastal protection (**871 sea defence or coast protection works**)
- Built development (**400 Urbanised areas, human habitation, 410 Industrial or commercial areas**)
- Agriculture (**101 Modification of cultivation practices**, **141 abandonment of pastoral systems**)
- Recreational use (**622 walking, horseriding and non-motorised vehicules**)
- Introduced species (**954 invasion by a species, 971 competition**)
- Grazing (**140 Grazing**)
- Air pollution (**702 air pollution**)
- Climate change (**900 erosion, 950 Biocenotic evolution**)

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_2 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 H1230 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 H1230 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:

- 89% of the area and 81% of the number of assessments fall within the future-favourable category; and
- at least 34% of the total UK habitat area falls within the future-favourable category.

Table 5.2.1 Predicted future condition of UK SACs supporting H1230 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	618	3
	Unfavourable no change	324	4
	Unfavourable unclassified		
	Total	942	7
	% of assessments	***11%***	***19%***
	% of total UK extent	***4%***	***Unknown***
Future-favourable	Favourable maintained	2,562	13
	Favourable recovered	300	1
	Unfavourable recovering	3,244	8
	Favourable unclassified	1,345	7
	Total	7,450	29
	% of assessments	***89%***	***81%***
	% of total extent	***34%***	***Unknown***

Note that the scenario presented above is based on the same information as used to construct the Table 4.2.1. 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.

Table 5.2.2 Predicted future condition of H1230 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	21	
	Unfavourable no change	12	
	Unfavourable unclassified	5	
	Total	*38*	
	% of assessments	***18%***	
Future-favourable	Favourable maintained	56	
	Favourable recovered	1	
	Unfavourable recovering	34	
	Favourable unclassified	81	
	Total	172	
	% of assessments	***82%***	

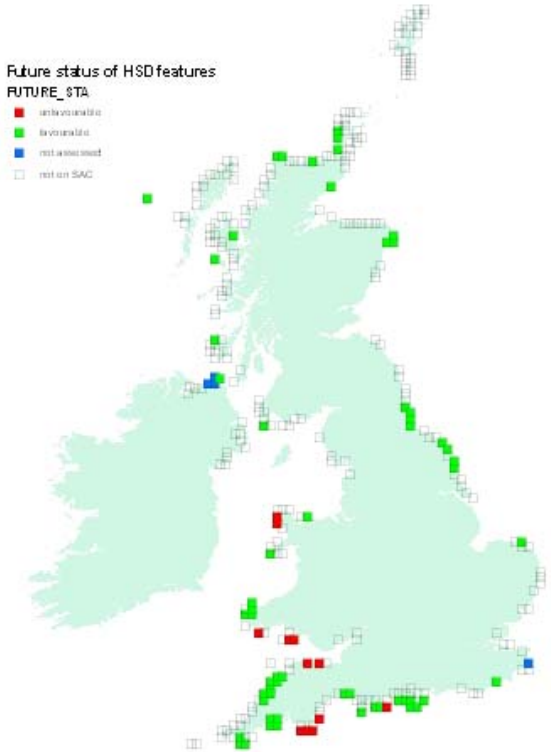
Note that the scenario presented above is based on the same information as used to construct the Table 4.2.2. It is based on the following premises:
(i) the unfavourable-recovering condition assessments will at some point in the future become favourable;
(ii) all unfavourable-unclassified sites will 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 H1230 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:

- 82% of strongly indicative assessments fall within the future-favourable category.

Predicted Future Condition of H1230 based on CSM condition assessments (See Sections 5.2 and 7.2 for further information)

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
		Not applicable
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 10-km square are favourable Yellow - 50 – 80% of assessed features on 10-km square are favourable Orange - 20 – 50% of assessed features on 10-km square are favourable Red - 0 – 20% of assessed features on 10-km 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]: Favourable

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.

CSM site condition assessments for SACs and SSSI/ASSIs show that a large part of this habitat is expected to be in favourable condition: 89% of all SACs and 82% of all SSSIs/ASSIs. Furthermore, over 700 km of cliff coastline in England, Wales and Northern Ireland are owned by the National Trust, who is actively reinstating grazing on many of these properties. Other non-governmental organisations, such as the Royal Society for the Protection of Birds (RSPB) and the Wildlife Trusts, own or manage a number of other important maritime cliff sites. A large proportion of the cliff coast of south-west England and western Wales is within designated Heritage Coasts, while three National Parks (North York Moors, Exmoor and Pembrokeshire Coast) include cliff coastlines. A number of cliff coasts in western Scotland are within National Scenic Areas. However, the UK BAP, working towards enhancing future viability, has targets to bring maritime cliffs and slopes into favourable or recovering condition by 2010 while maintaining the current extent. Given progress already made and some additional recovery once further conservation measures are put into place, the expectation is that less than 5% of the habitat will be in unfavourable condition in the next 10-15 years. However, one of the problems with vegetated sea cliffs is that we still don't have the full picture as far as their overall condition is concerned. There has never been a national survey, and the current CSM assessment covers less that half of the resource. Of the SAC assessed that support this Annex I habitat, 7% is still declining.

6. Overall conclusions and judgements on conservation status

Conclusion[2.6]: Unfavourable – Bad but improving

On the basis of structure and function, 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	Current range is stable and not less than the favourable reference range.	3
Area covered by habitat type within range	Favourable	Current extent is stable and not less than the favourable reference area.	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.	2

Future prospects (as regards range, area covered and specific structures and functions)	Favourable	Habitat prospects over the next 12-15 years considered to be good with no significant impacts from threats expected and long-term viability assured.	3
Overall assessment of conservation status	Unfavourable – Bad but improving	On the basis of Structure and Function, the overall conclusion for this habitat feature is Unfavourable – Bad but improving.	2

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

7. Annexed material **(including information sources used 2.2)**

7.1 References

AIR POLLUTION INFORMATION SYSTEM. 2004. www.apis.ceh.ac.uk

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

HOWE, M. A. 2002. *A review of the coastal soft cliff resource in Wales, with particular reference to its importance for invertebrates*. Countryside Council for Wales, Natural Science Report 02/5/1.

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

KNIGHT, G. T. & HOWE, M. A. 2006. *Conservation value for invertebrates of selected coastal soft cliff sites in Wales*. Countryside Council for Wales, Natural Science Report 02/5/1.

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

MCLEOD, C.R., YEO, M., BROWN, A.E., BURN, A.J., HOPKINS, J.J. & WAY, S.F. (eds.) 2007. *The Habitats Directive: selection of Special Areas of Conservation in the UK*. 2nd edn. Joint Nature Conservation Committee, Peterborough www.jncc.gov.uk/SACselection

Map data sources

British Plant Communities.1995. Volumes 1-5. Cambridge University Press, Cambridge.

CCW Contract Science Report. 1997. No. 159.

Coastal vegetation survey of Northern Ireland. 1992. University of Lancaster, Unit of Vegetation Science.

English Nature Science Report. 1993. No. 13.

JNCC International Designations Database. Joint Nature Conservation Committee.

Phase I Habitat Survey of Wales. 1979 - 1997. Countryside Council for Wales.

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

Vegetated sea cliffs data. 2000. English Nature.

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)	39
Number of SACs with CSM assessments b)	36
% of SACs assessed b/a)	92
Extent of feature in the UK – hectares c)	22,000
Extent of feature on SACs – hectares d)	8,482
Extent of features assessed – hectares e)	8,392
% of total UK hectarage on SACs d/c)	39
% of SAC total hectarage that has been assessed e/d)	99
% of total UK hectarage that has been assessed e/c)	38

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)	43	14%
Current – Favourable green)	27	9%
On SAC but not assessed blue)	4	1%
Not on SAC transparent)	233	76%
Total Number of 10-km squares any colour)	307	100%
Future – Unfavourable red)	12	4%
Future – Favourable green)	58	19%