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 :

H1420: Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*)

H1420 Mediterranean and thermo-Atlantic halophilous scrubs

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 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 NVC and other habitat types

Table 1.1.1 provides a summary description of H1420 and its relations with UK classifications.
This scrubby, halophilous (i.e. salt-tolerant) vegetation develops in the uppermost levels of saltmarshes, often where there is a transition from saltmarsh to dunes, or in some cases where dunes overlie shingle. The form that most closely resembles the scrub vegetation of the Mediterranean is restricted to south and south-east England and is formed predominantly of bushes of shrubby sea-blite *Suaeda vera* and sea purslane *Atriplex portulacoides* (NVC type SM25 *Suaeda vera* drift-line community). This most frequently occurs at the upper limit of tidal inundation and is found in association with transitions to sand dunes or shingle structures. In a few localities on the south and east coast of England a similar community develops, but with dense stands of perennial glasswort *Sarcocornia perennis* with a small number of herbaceous species (SM7 *Arthrocnemum perenne* stands). Another local variant has reduced evidence of the characteristic shrubs and a greater abundance of herbaceous species, such as sea-lavenders *Limonium* spp. and sea-heath *Frankenia laevis*, in a matrix with more common saltmarsh species, such as annual sea-blite *Suaeda maritima* or thrift *Armeria maritima* (SM21 *Suaeda vera – Limonium binervosum* salt-marsh community).

In the EU this habitat is restricted to France, Greece, Italy, Portugal, Spain and the UK. In the UK this habitat occurs on the south and east coasts of England, with fragmentary outliers in Wales. Only three areas are known to support extensive examples of the habitat type.

In addition, the habitat is typical of the transition zone of upper saltmarshes to other maritime communities. Where this transition is truncated by the presence of sea walls, it can often be found in abundance on the walls themselves within the splash zone, for example in Essex. It can also be found on the fringes of shingle structures holding saline lagoons, for example along Chesil Beach in Dorset and around saline lagoons on the Dungeness shingle structure.

Table 1.1.1 Summary description of habitat H1420 and its relations with UK vegetation/habitat classifications.

Classification	Correspondence with Annex I type	Comments
NVC	The form that most closely resembles the scrub vegetation of the Mediterranean is restricted to south and south-east England and is formed predominantly of bushes of shrubby sea-blite *Suaeda vera* and sea purslane *Atriplex portulacoides;* • NVC type SM25 *Suaeda vera* drift-line community In a few localities on the south and east coast of England a similar community develops, but with dense stands of perennial glasswort *Sarcocornia perennis* with a small number of herbaceous species; • SM7 *Arthrocnemum perenne* stands Another local variant has reduced evidence of the characteristic shrubs and a greater abundance of herbaceous species, such as sea-lavenders *Limonium* spp. and sea-heath *Frankenia laevis*, in a matrix with more common saltmarsh species, such as annual sea-blite *Suaeda maritima* or thrift *Armeria maritima;* • SM21 *Suaeda vera – Limonium binervosum* salt-marsh community	All stands of these communities represent this habitat. They are localised and generally restricted to the east and south of England. They are comprised of species which form a Mediterranean element in the British flora. SM21 is primarily found where there are upper marsh-dune transitions; SM25 is more typical of upper marsh-shingle transitions. Isolated stands derived from these communities can also occur on sea walls. Stands of SM21/25 can be found in extensive mosaics with upper saltmarsh where conditions are suitable. Changes between these types may be related to impacts of grazing (e.g. by rabbits) that favour the dominance of different species. SM21 is considered to be maintained by light rabbit grazing (Hemphill and Whittle 2003). If unmanaged, SM21 can revert to SM24/25. SM7 is found in smaller and more fragmentary stands or just as a few widely scattered bushes, typically in the low-mid marsh situations where there is a gravel or shell substrate. SM21 is considered to be endemic to Great Britain (Rodwell 2000). All the communities are found in mosaics with other coastal systems.
BAP priority habitat type	Coastal saltmarsh	Mediterranean and thermo-Atlantic halophilous scrubs form only part of this BAP priority habitat, which covers the whole range of saltmarsh types
EU Interpretation Manual	Perennial vegetation of marine saline muds (schorre) mainly composed of scrub, essentially with a Mediterranean-Atlantic distribution (*Salicornia*, *Limonium vulgare*, *Suaeda* and *Atriplex* communities) and belonging to the *Sarcocornetea fruticosi* class.	In the UK the corresponding NVC types are usually found in association with salt meadows with gravel or shell deposits, or at the upper marsh levels where there are transitions to dunes and/or shingle.

2. Range [2.3]

2.1 Current range

Range surface area [2.3.1]: **180 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.

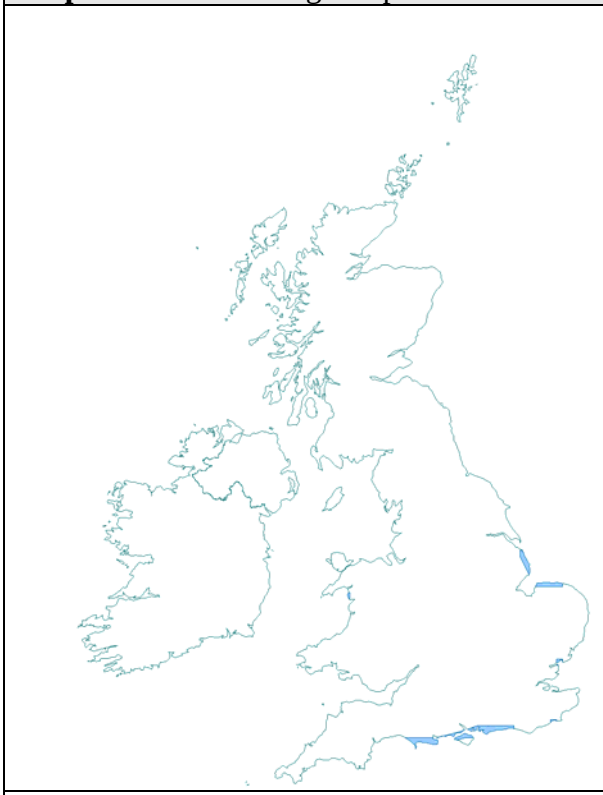
Maps 2.1.1 and 2.1.2 show the range and distribution of H1420 in the UK. These maps are based on SAC data; however, they do not include Dungeness where H1420 can be found.

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**

Data on the National Biodiversity Network indicates previous records the dominant species of SM21 and SM25, *Suaeda vera*, on Tynemouth (between 1830 and 1963) and Teeside (1983). However, the Atlas of the British Flora (Preston and others 2002) suggests that these northern records, and the ones from Anglesey, are introductions and may not form part of its natural range. If these are natural, this provides some evidence that range may have declined, although the presence of this species can only indicate part of the range of variation of the habitat.

However, the Biological Flora of the British Isles (Chapman 1947) indicates 'extinct' populations in Ayrshire and the North Yorkshire coast dating back to the 1800s. Similarly, the NBN data for *Arthrocnemum perenne*, the key species of SM7, also indicates that this species was recorded up to the 1930s in Teesmouth, but is no longer present. *Arthrocnemum perenne* is shown in the NBN as having an old record as far north as Aberlady Bay in Scotland.

Map 2.1.1 Habitat range map [1.1] for H1420	**Map 2.1.2** Habitat distribution map [1.2] for H1420
	
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: 18

See Section 7.1 for map data sources

Rodwell (2000) indicates that there is no evidence to suggest that the SM21 species assemblage has ever had a more widespread distribution. However, there has been a large-scale reduction in the distribution of

upper saltmarsh due to land reclamation, this may have affected the range of ecological variation by isolating areas from one another. In Essex, natural saltmarsh transitions have been truncated by the building of embankments for land reclamation and flood defence, although it is not clear how much this has affected the range of the habitat. For example, in 1998 there were only three areas within the Essex Estuaries European marine site where sea walls do not prevent the natural transition from high marsh to transitional grassland (English Nature 2000). Where they do occur, stands can be very fragmented or isolated.

2.3 Favourable reference range

Favourable reference range[2.5.1]: 180 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, 180 km^2, has been set as the favourable reference area. Reasons for this are discussed below.

One of the typical species, *Suaeda vera*, is at the northern climatic limit of its European range in the UK. Other species of the habitat are also part of a Mediterranean element of the British flora, and therefore are unlikely to have a more northerly range. Potential range will be restricted to mid-upper levels of saltmarsh or saltmarsh-dune or saltmarsh-shingle transitions within the range of the typical species. This habitat is considered to occupy all or most of its potential natural range. The current range is considered to equate the favourable reference range.

2.4 Conclusions on range

Conclusion[2.6.i]: Favourable

The broad geographical limits of the habitat have been maintained and there is still regional representation of the habitat type. However, there is a concern due to the occurrence of fragmentation within the natural range, and because the extensive areas of naturally functioning saltmarsh and transitions needed for this habitat have been compromised by extensive reductions in the upper saltmarsh zones in particular through human actions and associated indirect impacts.

3. Area [2.4]

3.1 Current area

Total UK extent [2.4.1]: 1.05 km^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 H1420 in the UK. Reasonably comprehensive extent data are available from the Saltmarsh Survey of Great Britain (1981-1989). The Saltmarsh Database holds information on community 5b Suaeda fruticosa which is synonymous with NVC community SM25. Stands of SM7 and SM21 are not recognised individually by the Saltmarsh Database and therefore this figure is an underestimate. The Regulation 33 advice for two of the SACs selected for this Annex I habitat indicates a total area of 118 ha, therefore 105 ha is likely to be an underestimate. For North Norfolk, a survey in 2002/01 indicates approximately 53.8 ha of this habitat within the SAC (Stark et al 2003) and other surveys at the same time reported 50.47 ha in Essex (Hemphill and Whittle 2003). The habitat occurs in mosaics with other habitats in the intertidal/coastal area and is difficult to map accurately.

Table 3.1.1 Area of H1420 in the UK.

	Area (ha)	Method [2.4.3]	Quality of data [2.4.4.]
England	100	3	Moderate
Scotland	Not present	-	-
Wales	5	3	Moderate
Northern Ireland	Not present	-	-
Total UK extent [2.4.1.]	105	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]: **Unknown**
Trend magnitude[2.4.6]: **Not applicable**
Trend period[2.4.7]: **1994-2006**
Reasons for reported trend[2.4.8]: **Not applicable**

Trends in area are not known as there is insufficient information for many of the sites where it occurs, and it can be dynamic in its response to sediment deposition. However, historic losses of upper saltmarsh as a result of building sea walls in south-east England have been extensive. For example in Essex, upper marshes are now extremely rare. In 1998 there were only three areas within the Essex Estuaries European marine site where sea walls do not prevent the natural transition from high marsh to transitional grassland (English Nature 2000), and only 23 ha of this habitat was reported at that time. More recent surveys recorded 50.47 ha of this habitat, only 1.36% of the total area of the overall saltmarsh habitat in the Essex Estuaries (Hemphill and Whittle 2003).

When coupled with the impacts of rising sea levels relative to the land, this can affect the saltmarsh zonation Although one of the major species (*Sueada vera*) can colonise artificial sea banks within the splash zone, this is not necessarily equivalent to the habitat expanding, as other component species are more restricted in their ability to colonise such locations (e.g. *Limonium* sp.) and the sediment processes will not be functioning. Changes in the area of this habitat will be related to changes in the area of other intertidal habitats, especially the upper and middle zones of Atlantic saltmeadow. Current pressures as outlined in section 4.1 are still present in many locations and the ability of the habitat to expand and evolve is limited.

3.3 Favourable reference area

Favourable reference area[2.5.2]: **Unknown**

Potential area is linked to the operation of coastal processes - see the section on structure and function. This habitat requires a particular combination of sediment type, deposition processes, tidal influence and water balance. In some cases other factors such as grazing can affect the ability of the habitat to establish or develop. Potential areas could be provided by reinstating tidal inundation of undeveloped land behind seawalls. Habitats can then roll landwards and upper saltmarsh transitions can develop. Where this takes place against naturally rising land, there is greater potential for Mediterranean saltmarsh scrub to develop. Potential area will always be restricted to the natural range of the main species and the geomorphological processes. It is important to consider this habitat as part of the sequence of habitats found in intertidal areas.

The habitat is scarce in the UK, with less than 200 ha overall distributed along the south coast of England, Essex and Norfolk. It is also found in Wales and Lincolnshire. Map 2.1.2 shows that all the areas are isolated form one another, leading to a poor connectivity between them. Within each of these, the habitat is distributed in patchy linear strands, making it extremely vulnerable to edge effect, catastrophic events,

coastal squeeze or human action. To colonise or re-colonise, it is dependant on tidal processes which will disperse seeds. Although this process is quite efficient and assures connectivity within a site, it remains hazardous. Given these considerations, the habitat viability is considered to be low, and the area is considered to be below the favourable reference area. However, due to lack of more precise information, and especially on trends, it is not possible to assess if the current area is more than 10% below the favourable reference range.

3.4 Conclusions on area covered by habitat

Conclusion[2.6.ii] **Unfavourable – Inadequate**

This habitat is restricted to a few locations in the UK and has a high degree of vulnerability to anthropogenic impacts. Despite the assessment of the favourable reference area as Unknown, for the reasons set out above, it is considered that the current habitat viability is low and the favourable reference area is greater than the current area, but possibly by no more than 10%.

4. Specific Structures and Functions **(including typical species)**

4.1 Main pressures [2.4.10]

Factors affecting coastal saltmarsh are covered in the *Habitat Action Plan for Coastal saltmarsh* (UKBAP website) and the Common Standards Monitoring for Designated Sites: First Six Year Report. The main pressures affecting H1240 are listed below. The related EC codes are shown in brackets.

- Land claim (**802 reclamation of land from sea, estuary or marsh**)

Large scale saltmarsh land claim schemes for agriculture are now rare. Piecemeal smaller scale land claim for industry, port facilities, transport infrastructure and waste disposal is still comparatively common, and marina development on saltmarsh sites occurs occasionally. Such developments usually affect the more botanically diverse upper marsh and landward transition zones.

- Erosion and 'coastal squeeze' (**900 erosion, 930 submersion**)

Erosion of the seaward edge of saltmarshes occurs widely in the high energy locations of the larger estuaries as a result of coastal processes. There is evidence that this process is exacerbated both by the isostatic tilting of Britain towards the south-east, and by climatic change leading to a relative rise in sea level and to increased storminess. Many saltmarshes are being 'squeezed' between an eroding seaward edge and fixed flood defence walls. The erosion process is exacerbated in some locations by a reduced supply of sediment. 'Coastal squeeze' is most pronounced in south-east England, where, for example, it is estimated that 20% of the saltmarsh resource in Kent and Essex was lost between 1973 and 1988, Essex being one of the core geographic areas for this habitat. The best available information suggests that saltmarshes in the UK are being lost to erosion at a rate of 100 ha a year. In more western and northern regions, there is recent evidence of a trend towards net sea level rise which may be causing saltmarsh erosion, although the rates of loss are not known.

Accretion and development of saltmarsh is occurring on parts of the British coastline, notably in north-west England where sediments are comparatively coarse and isostatic uplift largely negates sea level rise. However this accretion is not sufficient to offset the national net loss of saltmarsh, and in many cases the newly created habitats differ from those being lost due to the regional differences referred to in 1.1.4.

- Sediment dynamics (**851 modification of marine currents, 871 sea defence or coast protection works**)

Local sediment budgets may be affected by coast protection works, or by changes in estuary morphology caused by land claim, dredging of shipping channels and the cumulative impacts of flood defence works on sediment processes over the years.

- Other human influences (**420 Discharges, 701 water pollution, 703 soil pollution, 730 Military manoeuvres, 810 Drainage, 840 Flooding**)

Saltmarshes are affected by a range of other human influences including waste tipping, pollution, drowning by barrage construction, and military activity. Turf cutting is a traditional activity in some areas. Oil pollution can potentially destroy saltmarsh vegetation and whilst it usually recovers, sediment may be lost during the period of die-back. The effects of recreational pressure are not well understood but may be locally significant. Agricultural improvement (re-seeding and draining) has affected the upper edge and transition zones of some saltmarshes in the past and may still occur on a small scale. Eutrophication due to sewage effluent and agricultural fertiliser run-off has caused local problems of algal growth on saltmarshes.

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

Based on an assessment of relevant literature and exceedence of critical loads (see Technical note III), this habitat is not considered sensitive to air pollution or there is no relevant critical load available and the judgement is that it is unlikely to be at risk anyway.

4.2 Current condition

4.2.1 Common Standards Monitoring condition assessments

Condition assessments based on Common Standards Monitoring (see www.jncc.gov.uk/page-2199) provide a means to assess the structure and functioning of H1420 in the UK. The following attributes were examined for all CSM assessments relevant to the habitat:

- Habitat extent
- Physical structure: creeks and pans
- Vegetation structure: zonation; sward structure
- Vegetation composition: characteristic species; indicator of negative trend (*Spartina anglica*)
- Other negative indicators

SAC condition assessments

Table 4.2.1 and Map 4.2.1 summarise the Common Standards Monitoring condition assessments for UK SACs supporting habitat H1420. 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:

- 15% of the area and 25% of the number of assessments was Unfavourable;
- at least 15% of the total UK habitat area was in Unfavourable condition.

Table 4.2.1 Common Standards Monitoring condition assessment results for UK SACs supporting H1420. 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	23	1
	No change		
	Unclassified		
	Recovering		
	Total	23	1
	% of all assessments	***15%***	***25%***
	% of total UK resource	***15%***	***unknown***
Favourable	Maintained		
	Recovered		
	Unclassified	132	3
	Total	132	3
	% of all assessments	***85%***	***75%***
	% of total UK resource	***85%***	***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.

SSSI/ASSI condition assessments

SSSI/ASSIs Common Standards Monitoring condition assessments are not relevant as most or all the resource is on SACs.

<table>
<tr><th colspan="3">Current Condition of H1420 based on Common Standard Monitoring condition assessments (See Sections 4.2. and 7.2. for further information)</th></tr>
<tr><td>Map 4.2.1 SAC assessments</td><td>Map 4.2.2 Assessments strongly indicative of the condition on SSSI/ASSIs</td><td>Map 4.2.3 Assessments weakly indicative of the condition on SSSI/ASSIs</td></tr>
<tr><td> 
</td><td>Not applicable</td><td>Not applicable</td></tr>
<tr><td>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</td><td colspan="2">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</td></tr>
</table>

contain any SAC features of this habitat type	

4.3 Typical species

Typical species[2.5.3]: ***Limonium bellidifolium***

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

One species shows a very high degree of faithfulness to this habitat or at least to the main related sand dune community types (SM7, SM25 and SM21) 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. It showed no significant change.

Table 4.3.1 Trends and faithfulness of selected typical species for H1420

Typical species	Faithfulness to habitat H1420 (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)
Limonium bellidifolium	Very high	No significant change
Frankenia laevis	Low	Significant decline, but <25% in 25yrs
Cochlearia danica	Low	Significant increase of >25% in 25yrs
Sagina maritima	Low	Significant increase, but <25% in 25yrs

Suaeda vera is not present in the above table as there is little evidence of any recent change in its distribution (Preston *et al.* 2002).

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

Conclusion[2.6.iii]: **Unfavourable – Inadequate and deteriorating**

The EC Guidance states that where the specific structures and functions of a habitat are intermediate between "good with no significant pressures" and "bad with more than 25% of the area of the habitat area Unfavourable as regards its specific structures and functions", the conclusion should be Unfavourable – Inadequate. In the UK, this was generally taken to mean that 5-25% of the habitat area was in Unfavourable condition.

CSM SAC assessments indicate that 15% of the UK area is still Unfavourable, and that those 15% are in a declining condition. The impacts of past human activities have compromised the functioning of this habitat, and current pressures on H1420 and fragmentation are a concern in terms of long-term viability of the habitat.

5. Future Prospects

5.1 Main factors affecting the habitat

5.1.1 Conservation measures

- Protection within designated sites

All the resource of H1420 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.

- UK BAP

The habitat is covered by the *Coastal saltmarsh* 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 H1420 are listed below, several of which are referred to in Section 4.1. The related EC codes are shown in brackets.

- Land claim (**802 reclamation of land from sea, estuary or marsh**)
- Erosion and coastal squeeze (**900 erosion, 930 submersion**)
- Sediment dynamics (**851 modification of marine currents, 871 sea defence or coast protection works**)
- Grazing (**140 Grazing**, **141 abandonment of pastoral systems**)
- Other human influences (**420 Discharges, 701 water pollution, 703 soil pollution, 730 Military manoeuvres, 810 Drainage, 840 Flooding**)

- Climate change (**900 erosion, 930 submersion, 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 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.

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

Based on an assessment of relevant literature and exceedence of critical loads (see Technical note III), this habitat is not considered sensitive to air pollution or there is no relevant critical load available and the judgement is that it is unlikely to be at risk anyway.

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

5.2.1 Common Standards Monitoring condition assessments

The Common Standards Monitoring condition assessments reported in Sections 4.2.1-2. provide a basis to predict the potential future condition of H1420 in the UK. This involved treating all assessments currently identified as either Favourable or Unfavourable recovering as future-Favourable: remaining categories were treated as future-Unfavourable – see Table 5.2.1.1. There are a number of caveats to this approach, which are set out beneath this table.

Table 5.2.1 Predicted future condition of UK SACs supporting H1420 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	23	1
	Unfavourable no change		
	Unfavourable unclassified		
	Total	***23***	***1***
	% of assessments	***15%***	***25%***
	% of total UK extent	***15%***	***Unknown***
Future-Favourable	Favourable maintained		
	Favourable recovered		
	Unfavourable recovering		
	Favourable unclassified	132	3
	Total	132	3
	% of assessments	***85%***	***75%***
	% of total extent	***85%***	***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:
(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.

SAC condition assessments

Table 5.2.1 and Map 5.2.1 summarise the predicted potential future condition of H1420 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:

- 85% of the area and 75% of the number of assessments fall within the future-Favourable category;
- at least 85% of the total UK habitat area falls within the future-Favourable category.

SSSI/ASSI condition assessments

SSSI/ASSIs Common Standards Monitoring condition assessments are not relevant as most or all the resource is on SACs.

<table>
<tr><th colspan="3">Predicted Future Condition of H1420 based on Common Standard Monitoring condition assessments (See Sections 5.2 and 7.2 for further information on these maps)</th></tr>
<tr><td>Map 5.2.1 SAC assessments</td><td>Map 5.2.2 Assessments strongly indicative of the condition on SSSI/ASSIs</td><td>Map 5.2.3 Assessments weakly indicative of the condition on SSSI/ASSIs</td></tr>
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</td><td>Not applicable</td><td>Not applicable</td></tr>
<tr><td>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</td><td colspan="2">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</td></tr>
</table>

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 good with no significant impacts from threats expected and long-term viability assured", the judgement should be Favourable. In the UK, this was generally taken to mean that range and/or area are stable or increasing, and more than 95% of the habitat area is likely to be in Favourable condition in 12-15 years.

The CSM SAC assessments show that 15% of the UK resource is considered to be Unfavourable and declining. The long-term prospects for the habitat in its current range are not assured due to the potential impacts of sea-level rise leading to loss of suitable conditions in topography and sediment type. As this habitat is so restricted in its range and number of locations around the English coast, there is a higher degree of vulnerability to anthropogenic or natural impacts. The impact of warmer conditions is not known, but northward expansion of range would be dependent on other critical physical and biological factors being suitable. There are a number of factors such as climate change and sea level rise that may be beyond the ability to influence directly by management. The key issue is to ensure that H1420 has the ability to adapt to these changes. If this is not done, in many areas the habitat could decline to the point where changes are not reversible. Because H1420 has a strong link with saltmarsh habitat, there is also a concern because of the poor condition of H1330 Atlantic salt meadow habitat. It should be noted that a number of positive conservation measures – notably the agreed BAP target for creating of 350 ha of saltmarsh per annum – have been put into place to improve the status of this habitat, although the BAP habitat also includes H1310, H1320 and H1330. However, it is considered that recreation will take time for the new intertidal habitat to be colonised and for the habitat to reach maturity. Northerly realignments will not affect this habitat as they will be out of the constituent species' natural range. Given progress already made and some additional recovery once further conservation measures are put into place, the expectation is that c. 5% of the habitat will be in Unfavourable condition in the next 10-15 years.

6. Overall Conclusions and Judgements on Conservation Status [2.6]

Conclusion[2.6]: Unfavourable – Inadequate and deteriorating

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

Table 6.1. Summary of overall conclusions and judgements

Parameter	Judgement	Grounds for Judgement	Confidence in judgement*
Range	Favourable	Current range is stable and not less than the favourable reference range.	2
Area covered by habitat type within range	Unfavourable – Inadequate	Current extent is below the favourable reference area, but not by more than 10%.	2
Specific structures and functions (including typical species)	Unfavourable – Inadequate and deteriorating	Structures and functions considered to be intermediate between "good with no significant pressures" and "more than 25% of the habitat area 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)	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.	2
Overall assessment of conservation status	Unfavourable – Inadequate and deteriorating	Two assessments are Unfavourable – Inadequate.	2

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

7. Annexed Material (including information sources used 2.2)

7.1 References

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STARK, H., HEMPHILL, P. & WHITTLE, A. 2003. NVC survey of saltmarsh and other habitats in the North Norfolk Coast European Marine Site. Volume I. Report to English Nature by Posford Haskoning.

UKBAP WEBSITE; www.ukbap.org.uk

Map data sources

Habitat distribution data from Mcleod *et al.* 2007. JNCC report 312.

JNCC International Designations Database. Joint Nature Conservation Committee

7.2 Further information on Common Standards Monitoring data as presented in Sections 4.2 and 5.2

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

Data	Value
Number of SACs supporting feature (a)	4
Number of SACs with CSM assessments (b)	4
% of SACs assessed (b/a)	100
Extent of feature in the UK – hectares (c)	155
Extent of feature on SACs – hectares (d)	155
Extent of features assessed – hectares (e)	155
% of total UK hectarage on SACs (d/c)	100
% of SAC total hectarage that has been assessed (e/d)	100
% of total UK hectarage that has been assessed (e/c)	100

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)	1	6%
Current – Favourable (green)	8	47%
On SAC but not assessed (blue)	0	0%
Not on SAC (transparent)	8	47%
Total Number of 10-km squares (any colour)	17	100%
Future – Unfavourable (red)	1	6%
Future – Favourable (green)	8	47%