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 :

H21A0: Machairs

H21A0 Machairs

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 H21A0 and its relations with UK classifications.

Machair is a distinctive sand dune formation formed by a particular combination of physical factors, including climate and landform. Sand with a high shell content is blown onshore by the westerly winds that prevail in the north and west of Scotland, onto a low-lying coastal plain. Vegetation develops that is typical of calcareous to neutral sandy grassland. In these northern locations the machair grassland has a number of species extending their southern range on the west coast. The most extensive and floristically-rich formations occur as a mosaic of drift-line, foredune, machair plain and transitions to saline lagoons and saltmarsh, or to calcareous lochs, acidic grasslands, fens, or bog. These habitats occur within machair, but some may additionally be identified as Annex I types in their own right.

It is believed that machair grassland has been modified by man throughout its development. Traditionally, machair supports extensive grazing regimes and unique forms of cultivation that rely on low-intensity systems of rotational cropping. This traditional agriculture sustains a rich and varied arable weed flora. Some of the arable weed species are now largely restricted in the UK to these traditionally managed areas. The habitat type also supports large breeding bird populations and is particularly important for waders and corncrake *Crex crex*.

Machair is found nowhere else in the world but the north and west of Scotland and western Ireland. Machair is a priority habitat in Ireland but not in the UK. It is estimated that more than two-thirds of the global machair resource is found in Scotland. Machair complexes occur in the Outer and Inner Hebrides and to a smaller extent on the mainland and the Northern Isles. The Outer Hebrides support the largest and richest examples of cultivated machair and a variety of uncultivated machair types. The Inner Hebrides machair complexes are largely uncultivated, as are those in Ireland. The largest and best-developed area of machair on the mainland is Sheigra – Oldshoremore.

Table 1.1.1 Summary description of habitat H21A0 and its relations with UK vegetation/habitat classifications.

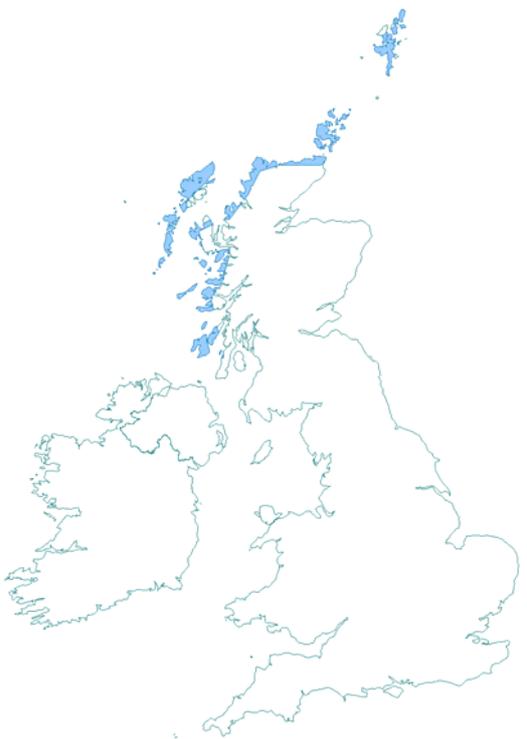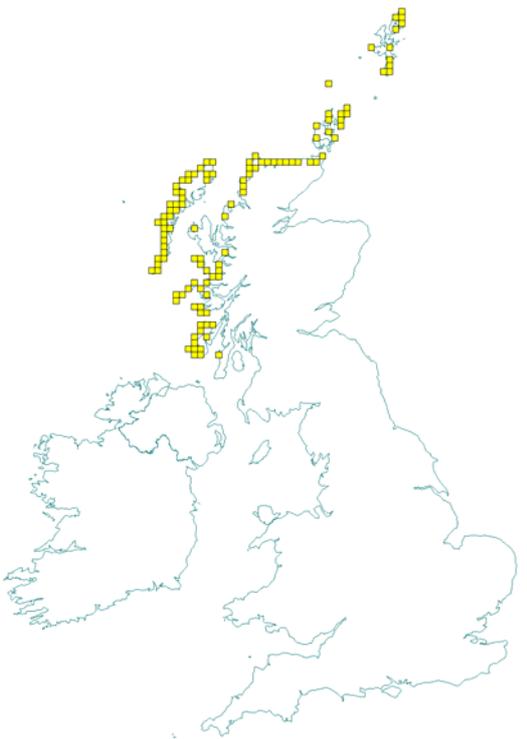| Classification	Correspondence with Annex I type	Comments
NVC	• SD8a *Festuca rubra-Galium verum* fixed dune community, typical subcommunity • SD8c *Tortula ruralis* ssp. *ruraliformis* sub-community • SD8d *Festuca rubra - Galium verum* fixed dune grassland, *Ranunculus acris - Bellis perennis* sub-community • SD8e *Festuca rubra - Galium verum* grassland, *Prunella vulgaris* sub-community • SD8x *Centaurea nigra – Daucus carota* sub-community • MG11 inundation grassland • SD17 *Potentilla anserina - Carex nigra* dune slack, *Agrostis stolonifera* sub-community (added later) • Arable and fallow	No NVC community or sub-community is restricted to machair, so no vegetation can be regarded as diagnostic. The Annex I habitat is best identified as part of an overall machair system, and then separated from the wider system. The former involves a wide range of criteria including geomorphology, composition of sand, and terrestrial transitions, while the latter relies primarily on the use of NVC types. This classification, developed by Angus (2004), supersedes any earlier versions, being more definitive in its coverage. The NVC listed here are those suggested by Angus for Annex I machair, except SD8x which is a new sub-community suggested by Dargie (2000).
BAP priority habitat type	Machair	
CSM reporting category	Machair grassland	

2. Range [2.3]

2.1 Current range

Range surface area [2.3.1]: **962 km²**
Date calculated [2.3.2.]: **May 2007**
Quality of data [2.3.3.]: **Poor**

Maps 2.1.1 and 2.1.2 show the range and distribution of H21A0 in the UK.

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.

Data was extracted from the Joint Nature Conservation Committee International Designations Database (2007) and Angus (1999). This data does not represent a complete inventory and is considered poor for the purpose of calculating current surface area.

Map 2.1.1 Habitat range map [1.1] for H21A0	**Map 2.1.2** Habitat distribution map [1.2] for H21A0
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 10x10km square of the National Grid and shows the known and/or predicted occurrence of this habitat. The number of occupied 10km-squares is 112.

See Section 7.1 for map data sources

2.2 Trend in range since c.1994

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

Despite some decline in area and some substantial localised losses (see Section 3.2), there is no evidence to suggest that there has been a decline in the broad range of H21A0 in recent or historical times.

2.3 Favourable reference range

Favourable reference range[2.5.1]:   **962 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, 962 km^2, has been set as the favourable reference area. Reasons for this are discussed below.

Suitable locations for H21A0 machairs are explained in Section 3.2. Essentially it occurs on low-lying coastal plain sands with high shell content in the north and west of Scotland. The habitat is reliant on extensive grazing and traditional low-intensity cropping regimes.

Despite some decline in area and some substantial localised losses (see Section 3.2), there is no evidence to suggest that there has been a significant decline in the broad range of H21A0 in recent or historical times. Although shell sand supply is believed by some to have diminished naturally, there is no evidence that this has had any impact on range. H21A0 therefore still broadly covers it former and potential natural range, which equate with its favourable reference range.

2.4 Conclusions on range

Conclusion[2.6.i]:   **Favourable**

Current range is stable and equivalent to the favourable reference range.

3. Area [2.4.]

3.1 Current area

Total UK extent [2.4.1]:   **133 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 H21A0 in the UK. This was estimated by Scottish Natural Heritage (SNH). It includes minor habitats that form part of the machair mosaic. Areas of improved grassland on areas formerly covered with semi-natural machair vegetation are excluded.

Table 3.1.1 Area of H21A0 in the UK.

	Area (ha)	Method [2.4.3]	Quality of data [2.4.4.]
England	Not present	-	-
Scotland	13,300	3	Moderate
Wales	Not present	-	-
Northern Ireland	Not present	-	-
Total UK extent [2.4.1.]	13,300	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**

There have been historical losses of machair, but all of these are believed to have occurred before 1994. Since that date the area has remained broadly stable. There is a concern about the losses in Orkney which have been disproportionate, with up to c.50% of local machair resource having been lost.

3.3 Favourable reference area

Favourable reference area[2.5.2]:   **133 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, 133 km^2, has been set as the favourable reference area. Reasons for this area discussed below.

The potential area of machair is defined by a product of climate, topography, shell sand supply, and land use. Sand with high shell content is blown onshore by the westerly winds that prevail in the north and west of Scotland, onto a low-lying coastal plain. Machair vegetation develops on this that is typical of calcareous to neutral sandy grassland. It is believed that such grassland has been modified by man throughout its development. Machair grassland is traditionally managed through extensive grazing regimes and unique forms of cultivation that rely on low-intensity systems of rotational cropping. This traditional agriculture sustains a rich and varied dune and arable weed flora.

Large areas of machair have been converted to improved grassland, mostly during the 20th century. This area is likely to be in the region of 1000 ha. In addition, there are two main airports built on machair sites (Benbecula and Tiree that account for c.400 ha), and around 150 ha of machair has been eroded to the mineral layer during the 20th century due to human activity (mainly at Barvas in Lewis). This amounts to around 1500 ha in all. A loss of 1500 ha to leave 13,300 ha today (see Table 1.1.1), represents an overall loss of c.10% and generates a decline rate of c.0.2% per annum over a 50 year time (1955-2005). However, in recent years, decline in machair appears to have been minimal.

The area of machair appears to have been reduced by about c.10% during the last century. Thus, although disproportionate losses have occurred in some places, the surviving area of machair is only slightly less than in former times. It is doubtful that these losses have reduced machair far below its maximum potential area. Moreover, they do not seem sufficient to have significantly affected the long-term viability of the habitat as a whole. Although some former areas of machair habitat could be restored, experience suggests that restoration to Favourable condition is extremely difficult and this is compounded by socio-economic factors. Almost all of the restoration would be on islands where there are particular difficulties in ensuring that agricultural changes aimed at conservation are agriculturally viable.

3.4 Conclusions on area covered by habitat
Conclusion[2.6.ii]:   **Favourable**
Current area is stable and equivalent the favourable reference area.

There have been some losses of machair habitat during the last century, including some disproportionate losses in particular areas. The area of machair has stabilised in recent years and the habitat appears to occupy much of the ground it potentially could. The losses that have occurred historically do not appear to have significantly affected the long-term viability of the habitat.

4. Specific Structures and Functions [(including typical species)]

4.1 Main pressures [2.4.10]
Factors affecting machairs are covered in the *Habitat Action Plan for Coastal sand dunes* (UKBAP website). The main pressures affecting H21A0 are:
- Earlier cutting of grass (**101 Modification of cultivation practices**)
This practice of cutting grass for silage rather than hay reduces seeding by flowering plants and destroys the nests of characteristic birds such as the corncrake.

- 'Improvement' of machair grassland (**100 Cultivation, 171 Stock feeding, 810 Drainage**)
Uusally done by re-seeding, drainage and stock feeding, this reduces sward species diversity as well as habitat diversity over a wider area.

- Social changes in crafting (**101 Modification of cultivation practices, 140 Grazing**)
This results in heavy all-year grazing of machair grasslands as part of a switch from arable to stock grazing, and from cattle to sheep as predominant stock, reduces sward species diversity and the ability of plants to flower, set seed and provide cover for breeding birds.

- Inadequate grazing (**101 Modification of cultivation practices, 140 Grazing**)
Under-grazing and more generally poor management of seasonal grazing allows rank, weedy and species-poor grassland to develop. Overgrazing is a problem on some machairs, preventing plants from setting seed, and four sites have disrupted geomorphological processes such as blowouts. Improved grassland is less of a problem on the notified site series than it is on the wider habitat, with only three sites reporting problems of this type. Small numbers of sites are adversely affected by rabbit activity, fencing, dumping, and arable weeds – on uncultivated machair.

- Predation (**965 Predation**)

Predation of breeding birds by introduced species (feral mink and feral ferret/polecat in Lewis and Harris, hedgehog and feral ferrets in the Uists).

- Stock-induced erosion (**900 erosion**)

Generally due to access to foredunes and beach, it creates blow-outs in outer dune crests, on steep slopes, and around areas used for shelter.

- Coastline retreat (**900 erosion, 930 submersion**)

Due to rising sea levels and possibly increasing storminess, it produces extensive slow erosion of the outer dune or machair grassland edge which can be accelerated by stock damage. Machair is also vulnerable to marine flooding during storms.

- Sand and shingle extraction (**300 Sand and gravel extraction**)

Sand extraction from internal dunes and machair disrupts habitat zonations and water-table relationships. Sand and shingle extraction from the beach zone increases the rate of coastal retreat of the dune edge and reduces available sand for blowing inland.

- Poor recreational management (**900 Erosion**)

Poor recreational management, especially in some areas used for caravanning and camping, initiates erosion and accelerates coastal edge retreat and grassland sward change.

- Agricultural intensification: use of herbicide on crops, use of modern ploughs, increase in arable patch area (**101 Modification of cultivation practices, 120 Fertilisation, 110 Use of pesticides**)

The most serious problems relate to arable machair, which has been a major feature of the finest machairs in the Uists, Outer Hebrides. Within the last ten years typical arable weed abundance and diversity have declined dramatically, while the size of the cultivation patch has increased significantly. This has resulted in an overall loss of arable biodiversity through loss of species number, abundance, and 'edge', with apparent similar declines in the associated fallows that are a feature of this rotational system. There are also fears that the apparent increase in the use of artificial fertilisers could mean a decline in the traditional use of storm-cast algae as fertiliser: this 'tangle' (mainly *Laminaria hyperborea*) not only gives valuable nutrients to the sandy soil but also provides a binding agent. The direct causes of species losses are believed to be a combination of herbicide use and a deeper ploughing depth. Seven sites had low biodiversity in the arable crop, and seven had low biodiversity in the associated fallows. Together the arable-fallow biodiversity issue affected eight sites out of a possible ten (eight out of nine supporting Special Areas of Conservation (SACs)). Six sites out of a possible ten were suffering a loss of 'edge' in crop and fallow due to greatly increased cultivation area. Only two arable machair sites are in Favourable condition, and one of these (Berneray) is not part of an SAC.

- 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 its potential future 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 http://www.jncc.gov.uk/page-2199) provide a means to assess the structure and functioning of H21A0 in the UK. The following attributes were examined for all CSM assessments relevant to the habitat:

- Habitat extent;
- Physical structure: functionality and sediment;
- Vegetation structure: range of zones of vegetation, sward height, flowering and fruiting, bare ground, cultivation pattern;
- Vegetation composition: typical species, bryophytes; and
- Other negative indicators (negative indicator species and signs of disturbance).

SAC condition assessments

Table 4.2.1 and Map 4.2.1 summarise the CSM condition assessments for UK SACs supporting habitat H21A0. 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:

- 70% of the area and 38% of the number of assessments was Unfavourable; and
- at least 21% of the total UK habitat area was in Unfavourable condition.

Table 4.2.1 CSM condition assessment results for UK SACs supporting H21A0. 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	2,742	2
	No change	22	1
	Unclassified	0	0
	Recovering	0	0
	Total	2,764	3
	% of all assessments	*70%*	*38%*
	% of total UK resource	*21%*	*unknown*
Favourable	Maintained	1,123	4
	Recovered	52	1
	Unclassified	0	0
	Total	1,175	5
	% of all assessments	*30%*	*63%*
	% of total UK resource	*9%*	*unknown*

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

Sites of Special Scientific Interest (SSSI)/Areas of Special Scientific Interest (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:

- 53% of strongly indicative assessments were Unfavourable.

Table 4.2.2 CSM condition assessment results for UK SSSI/ASSIs that were judged to be either strongly or weakly indicative of the condition of H21A0 on SSSI/ASSIs. See notes below table and Technical Note II for further details.
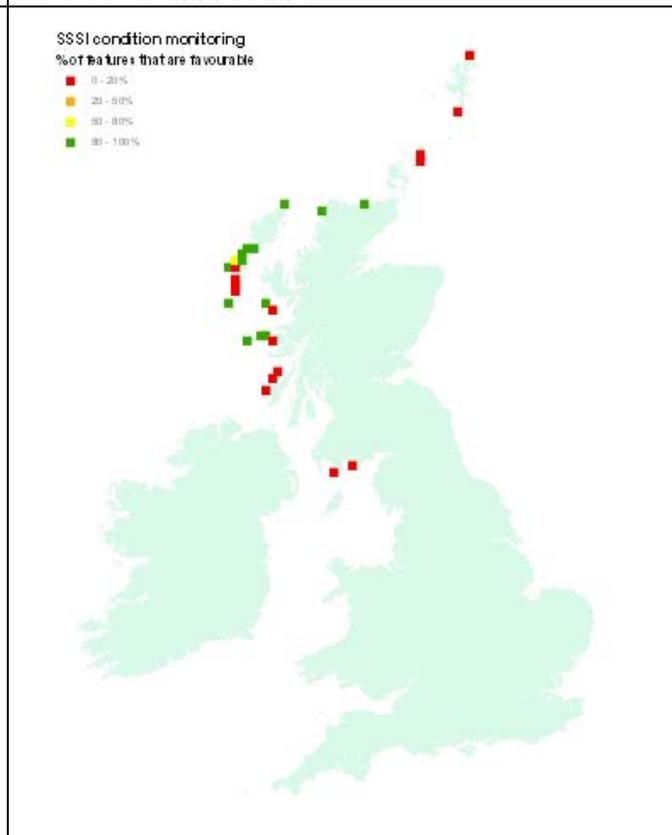
Condition	Condition sub-categories	Number of assessments	
		Strongly indicative assessments (Category 1)	**Weakly indicative assessments (Category 2)**
Unfavourable	Declining	11	-
	No change	8	-
	Unclassified	-	-
	Recovering	-	-
	Total	*19*	Not applicable
	% of all assessments	*53%*	Not applicable
Favourable	Maintained	16	-
	Recovered	1	-
	Unclassified	-	-
	Total	*17*	Not applicable
	% of all assessments	*47%*	Not applicable

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

Current Condition of H21A0 based on Common Standard Monitoring condition assessments (See Sections 4.2 and 7.2 for further information)		
Map 4.2.1 SAC assessments	**Map 4.2.2** Assessments strongly indicative of the condition on SSSI/ASSIs	**Map 4.2.3** Assessments weakly indicative of the condition on SSSI/ASSIs
		Not applicable
Key Red = Unfavourable, i.e. the square contains at least one SAC where this habitat feature is present and has been judged to be Unfavourable Green = Favourable, i.e. the square contains at least one SAC where this habitat feature is present and has been assessed as Favourable but there are no Unfavourable SAC features Blue = SAC not assessed, i.e. the square contains at least one SAC supporting this habitat feature but no assessment has been reported Transparent = SAC feature not present, i.e. the square does not contain any SAC features of this habitat type	Key* Green – 80 – 100% of assessed features on 10km square are Favourable Yellow - 50 – 80% of assessed features on 10km square are Favourable Orange - 20 – 50% of assessed features on 10km square are Favourable Red - 0 – 20% of assessed features on 10km square are Favourable *This is the same key as was used for JNCC CSM Report 2006	

4.3 Typical species

Typical species[2.5.3]:   **None used**
Typical species assessment[2.5.4]:   **Not applicable**

No NVC community or sub-community is restricted to machair, so no vegetation can be regarded as diagnostic. It is, therefore, not possible to isolate typical species for this habitat.

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

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

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

CSM site condition assessments, where available, show that a large part (70%) of SAC area is classed as in Unfavourable condition, of which a nearly 100% is considered to be 'declining'. As the SACs cover 30% of the UK resource, 21% of this is considered Unfavourable nearly all of which is declining. The CSM site condition assessments for SSSIs/ASSIs show that 53% of strongly indicative assessments were Unfavourable, half of which are considered in decline. Therefore, existing data shows that more than 25% of the habitat is Unfavourable, and that the necessary structures and functions for the habitat are not in place and that significant deteriorations and pressures exist. Hence, the conclusion is Unfavourable – Bad and deteriorating.

5. Future Prospects

5.1 Main factors affecting the habitat

5.1.1 Conservation measures

• Protection within designated sites

Around 30% of the resource of H21A0 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 *Machair* action plan under the UK Biodiversity Action Plan (BAP) (see http://www.ukbap.org.uk), as well as under country and local biodiversity action plans and strategies, with targets to maintain, improve, restore and expand the resource.

5.1.2 Main future threats[2.4.11.]

The most obvious major future threats to H21A0 are listed below, several of which are referred to in Section 4.1.

• Earlier cutting of grass (**101 Modification of cultivation practices**)
• 'Improvement' of machair grassland (**100 Cultivation, 171 Stock feeding, 810 Drainage**)
• Social changes in crafting (**101 Modification of cultivation practices, 140 Grazing**)
• Inadequate grazing (**101 Modification of cultivation practices, 140 Grazing**)
• Predation (**965 Predation**)
• Stock-induced erosion (**900 erosion**)
• Coastline retreat (**900 erosion, 930 submersion**)
• Sand and shingle extraction (**300 Sand and gravel extraction**)
• Poor recreational management (**900 Erosion**)

- Agricultural intensification: use of herbicide on crops, use of modern ploughs, increase in arable patch area (**101 Modification of cultivation practices, 120 Fertilisation, 110 Use of pesticides**)

- 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 its potential future 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).

- 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. Climate change scenarios for this habitat are particularly difficult to predict, but breaches in the dune cordon could result in rapid replacement of large areas of machair by saltmarsh, without any new machair being formed (Angus and Hansom 2005). This habitat is highly exposed to storms, on lowland or on coasts that show no sign of isostatic recovery.

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 H21A0 in the UK. This involved treating all assessments currently identified as either Favourable or Unfavourable recovering as future-Favourable: remaining categories were treated as future-Unfavourable – see Table 5.2.1.1 There are a number of caveats to this approach, which are set out beneath this table.

SAC condition assessments

Table 5.2.1 and Map 5.2.1 summarise the predicted potential future condition of H21A0 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:

- 70% of the area and 38% of the number of assessments fall within the future-Unfavourable category; and
- at least 21% of the total UK habitat area falls within the future-Unfavourable category.

Table 5.2.1 Predicted future condition of UK SACs supporting H21A0 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	2,742	2
	Unfavourable no change	22	1
	Unfavourable unclassified	-	-
	Total	2,764	3
	% of assessments	*70%*	*38%*
	% of total UK extent	*21%*	*Unknown*
Future-Favourable	Favourable maintained	1,123	4
	Favourable recovered	52	1
	Unfavourable recovering	-	-
	Favourable unclassified	-	-
	Total	1,175	5
	% of assessments	*30%*	*63%*
	% of total extent	*9%*	*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; and

(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 H21A0 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:

- 53% of strongly indicative assessments fall within the future-Unfavourable category.

Table 5.2.2 Predicted future condition of H21A0 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.

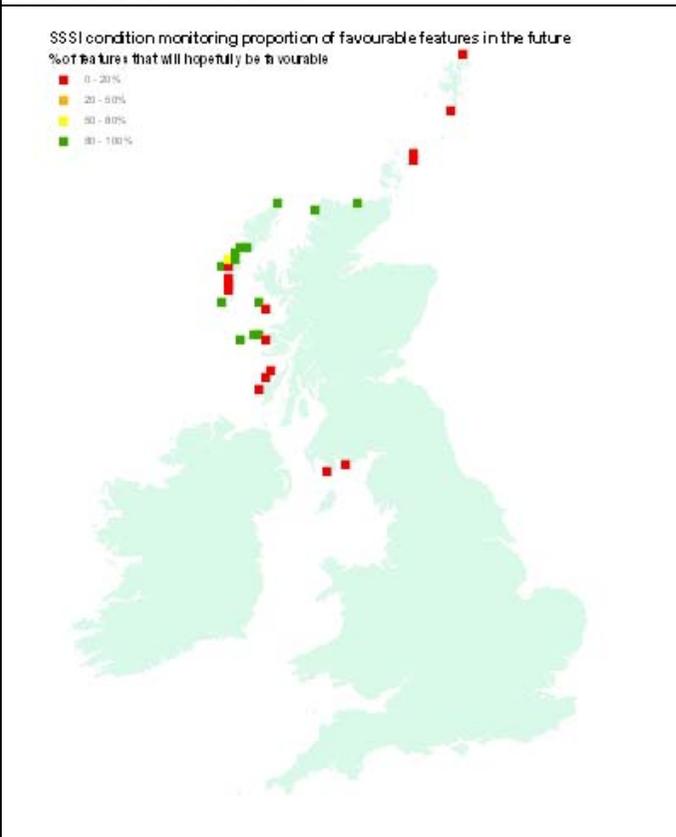| Future condition	Present condition	Number of assessments	
		Strongly indicative assessments (Category 1)	**Weakly indicative assessments (Category 2)**
Future-Unfavourable	Unfavourable declining	11	-
	Unfavourable no change	8	-
	Unfavourable unclassified	-	-
	Total	*19*	Not applicable
	% of assessments	*53%*	Not applicable
Future-Favourable	Favourable maintained	16	-
	Favourable recovered	1	-
	Unfavourable recovering	-	-
	Favourable unclassified	-	-
	Total	**17**	Not applicable
	% of assessments	*47%*	Not applicable

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

(i) the Unfavourable-recovering condition assessments will at some point in the future become Favourable;

(ii) all Unfavourable-unclassified sites will remain Unfavourable, which is probably overly pessimistic;

(iii) sympathetic management will be sustained on sites already classified as Favourable and these will not be seriously damaged by any unforeseen events.

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

Predicted Future Condition of H21A0 based on Common Standard Monitoring condition assessments (See Sections 5.2 and 7.2 for further information on these maps)		
Map 5.2.1 SAC assessments	**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 10km square are Favourable Yellow - 50 – 80% of assessed features on 10km square are Favourable Orange - 20 – 50% of assessed features on 10km square are Favourable Red - 0 – 20% of assessed features on 10km square are Favourable *This is the same key as was used for JNCC CSM Report 2006	

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

Conclusion[2.6.iv]: **Unfavourable – Bad and deteriorating**

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

CSM site assessment data predict that a large part (70%) of SAC area supporting habitat H21A0 is expected to remain Unfavourable in future. Nearly all of this area is expected to continue declining. As SACs cover 30% of the UK resource, at least 20% of this is expected to be in Unfavourable declining condition in the foreseeable future. The CSM site condition assessments for SSSIs/ASSIs show that 53% of strongly indicative assessments will remain Unfavourable, half of which are expected to decline. The judgement on the habitat's prospects is therefore considered to be bad, with expected severe impact from threats and long-term viability not assured. Though no monitoring was conducted on machair outside the notified sites, it is known that over much of its extent the machair is in rather poorer condition than on SSSI/SAC, with significant areas partly or fully improved for grazing. Some areas in the Uists approach the notified series in terms of conservation importance, and in parts of North Uist, where the arable is generally in better condition, it is possible that high machair arable diversity may persist. Site Condition Monitoring (compatible with CSM of sand dune and machair) is believed to be weakly indicative of the condition of the broader habitat. The most critical aspects of current management are those relating to arable cropping. It is important that this issue is addressed not only quickly, but sensitively: no supposed cure will work unless it has the support of local land managers. Changes in the age profile of the population, the way in which stock are managed in relation to winter feed, the skills base, and seed sources, mean that unless there is still access to the ingredients that contributed to former biodiversity the situation may become irretrievable. However, the UK BAP, working towards enhancing future viability, has targets to bring the machair into Favourable or recovering condition by 2010 while maintaining the current extent, mainly by preventing over-grazing on all sites. Despite progress already made and some additional recovery once further conservation measures are put into place, the expectation is that more than 50% of SAC area and more than 25% of the total UK habitat area will be in Unfavourable condition in the next 10-15 years.

6. Overall Conclusions and Judgements on Conservation Status

Conclusion[2.6]: **Unfavourable – Bad and deteriorating**

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

Table 6.1 Summary of overall conclusions and judgements

Parameter	Judgement	Grounds for Judgement	Confidence in judgement*
Range	Favourable	Current range is stable and equivalent to the favourable reference range.	2
Area covered by habitat type within range	Favourable	Current area is stable and equivalent the favourable reference area.	2
Specific structures and functions	Unfavourable – Bad and deteriorating	More than 25% of the habitat area is considered to be Unfavourable as regards its specific structures and functions. Significantly more of the resource in Unfavourable condition is declining than improving.	1
Future prospects	Unfavourable – Bad and deteriorating	Habitat prospects over next 12-15 years considered to be bad, with severe impact from threats expected and long term viability not assured. Further measures are required to address threats to future range, extent and structure and for the overall UK resource.	2
Overall assessment	Unfavourable – Bad and deteriorating	On the basis of the Structure and Function and Future Prospects assessments, the overall conclusion for this habitat feature is Unfavourable –Bad and deteriorating.	1

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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Map Data Sources

ANGUS, S. 1999. The state of the maritime natural heritage: machair in Scotland. Scottish Natural
Heritage. In: BAXTER, J.M., DUNCAN, K., ATKINS, S.M. & LEES, G. (eds). 1999. Scotland's living
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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)	8
Number of SACs with CSM assessments (b)	8
% of SACs assessed (b/a)	100
Extent of feature in the UK – hectares (c)	13,300
Extent of feature on SACs – hectares (d)	3,939
Extent of features assessed – hectares (e)	3,939
% of total UK hectarage on SACs (d/c)	30
% of SAC total hectarage that has been assessed (e/d)	100
% of total UK hectarage that has been assessed (e/c)	30

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)	8	17%
Current – Favourable (green)	6	13%
On SAC but not assessed (blue)	0	0%
Not on SAC (transparent)	32	70%
Total Number of 10km squares (any colour)	46	100%
Future – Unfavourable (red)	8	17%
Future – Favourable (green)	6	13%