

**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 :
H4040: Dry Atlantic coastal heaths with *Erica
vagans***

Please note that this is a section of the report. For the complete report visit <http://www.jncc.gov.uk/article17>

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H4040 Dry Atlantic coastal heaths with *Erica vagans*

Audit trail compiled and edited by JNCC and the UK statutory nature conservation agencies Lowland Heathland Lead Co-ordination 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.

1. National-biogeographic level information

1.1 General description and correspondance with National Vegetation Classification (NVC) and other habitat types

Table 1.1.1 provides a summary description of H4040 and its relations with UK classifications. This priority habitat type comprises coastal heaths on well-drained, moderately base-rich soils in areas with a warm oceanic climate. In the UK, Dry Atlantic coastal heaths with *Erica vagans* occur in one area, The Lizard, in the extreme south-west of England, where the habitat is strongly associated with the alkaline but base-poor free draining soils derived from sepeintinite bedrock.

In the UK examples of this habitat type correspond to the following NVC type:
H6 *Erica vagans* – *Ulex europaeus* heath.

The vegetation is typically dominated by mixtures of Cornish heath *Erica vagans* and gorse *Ulex europaeus*, with smaller amounts of western gorse *U. gallii* and bell heather *E. cinerea*. Associated species include mesophytic herbs, such as glaucous sedge *Carex flacca*, common milkwort *Polygala vulgaris*, betony *Stachys officinalis* and common dog-violet *Viola riviniana*. The heath varies in terms of the height and cover of the sub-shrub canopy, and the richness and composition of the associated flora. This variation is related to management treatments (especially grazing and burning) and soil conditions.

Stands of this distinctive form of dry heath often grade into forms of 4010 Northern Atlantic wet heaths with *Erica tetralix* in which *E. vagans* is abundant (NVC type H5 *Erica vagans* – *Schoenus nigricans* heath). They may also form mosaics with other forms of dry heath and with maritime heath.

Table 1.1.1 Summary description of habitat H4040 and its relations with UK vegetation/habitat classifications

Classification	Correspondence with Annex I type	Comments
EU Interpretation Manual	PAL.CLASS.: 31.234 Coastal heaths of temperate areas with <i>Erica vagans</i> and <i>Ulex europaeus</i> on well-drained soil, other than prostrate maritime formations.	
NVC	H6 <i>Erica vagans</i> – <i>Ulex europaeus</i> heath.	Restricted to The Lizard peninsula, Cornwall, England.
BAP priority habitat type	Lowland heathland.	Priority habitat include other Annex I heathland habitats.

BAP Broad habitat type	Dwarf shrub heath.	Both CS2000 and LCM200 reports using BAP broad habitat types. However there are inaccuracies of categorisation within LCM 2000. Broad habitat includes other Annex I type heathland types.
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2. Range ^{2.3}

2.1 Current range

Range surface area ^{2.3.1}: 41 km²
Date calculated ^{2.3.2}: May 2007
Quality of data ^{2.3.3}: Good

The surface area estimate was calculated within alpha hull software, using extent of occurrence as a proxy measure for range (see Map 2.1.1). The value of alpha was set at 25 km; the alpha was clipped to include inland areas only.

Maps 2.1.1 and 2.1.2 show the range and distribution of H4040 in the UK. The range of this habitat is restricted in the UK to the base-poor, alkaline, free-draining soils derived from serpentinite (also referred to as serpentine) on the warm oceanic climate of The Lizard peninsula in Cornwall, England.

Map 2.1.1 Habitat range map ^{1.1} for H4040	Map 2.1.2 Habitat distribution map ^{1.2} for H4040
	
<p>Range envelope shown in blue/grey shade in above map is a minimum convex polygon constructed using JNCC Alpha Shapes tool (see Technical note I for details of methodology).</p>	<p>Each yellow square represents a 10x10-km square of the National Grid and shows the known and/or predicted occurrence of this habitat. 10-km square count: 2</p>

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

H4040 is thought likely to have only ever occurred to any substantial degree on The Lizard peninsula. The current range is the same as past range at a 10-km scale; hence at a UK scale the range has remained stable.

2.3 Favourable reference range

Favourable reference range^{2.5.1}: 41 km²

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, 41 km², has been set as the favourable reference area. Reasons for this are discussed below.

The largest part of The Lizard peninsula – the sole location for H4040 in the UK – is underlain by the ultrabasic rock serpentinite, which gives rise to base-poor, alkaline (yet calcium-poor), free-draining soils. Hopkins (2003), commenting on the unusual combination of plant species found in The Lizard (including the heathlands corresponding to H4040) suggests that the acidic species here are only restricted from occurring on base-rich soils due to calcium intolerance. By contrast, the species normally found in lime-rich or circumneutral soils can tolerate the low levels of calcium due to the high alkalinity.

The combination of these edaphic conditions with the mild oceanic climate of The Lizard, plus Mediterranean tendencies (frequent summer droughts and a high rate of insolation), is not found elsewhere in the UK. Historically in the UK H4040 has only ever been recorded from The Lizard peninsula and is naturally limited there. This suggests that at a UK level the current range is equivalent to the favourable reference range.

2.4 Conclusions on range

Conclusion^{2.6.i}: Favourable

This vegetation community has restricted distribution in Britain, being associated with the edaphic conditions arising from the serpentine rocks and warm oceanic climate of The Lizard Peninsula in Cornwall. The current, historical, potential and favourable reference ranges are the same at a UK scale and hence the judgement on range is favourable.

3. Area^{2.4}

3.1 Current area

Total UK extent^{2.4.1}:	6km²
Date of estimation^{2.4.2}:	May 2007
Method^{2.4.3}:	1 = only or mostly based on expert opinion
Quality of data^{2.4.4}:	Moderate

Table 3.1.1 provides information on the area of H4040 in the UK. A complete vegetation map was produced for The Lizard district between 1976-1980 but areas for the individual habitat types such as H4040 or its equivalent were not calculated; consequently the figure provided is an estimate based on expert opinion.

Table 3.1.1 Area of H4040 in the UK

	Area (ha)	Method ^{2.4.3}	Quality of data ^{2.4.4}
England	599	1	Moderate
Scotland	not present	-	-
Wales	not present	-	-
Northern Ireland	not present	-	-
Total UK extent	599	1	Moderate

Method used to estimate the habitat surface area: 1 = only or mostly based on expert opinion; 2 = based on remote sensing data; 3 = ground based survey. Only the most relevant class is given if more than one applies.

Quality of habitat surface area data: 'Good' e.g. based on extensive surveys; 'Moderate' e.g. based on partial data with some extrapolation; 'Poor' e.g. based on very incomplete data or on expert judgement.

3.2 Trend in area since c.1994

Trend in area^{2.4.5}:	Unknown
Trend magnitude^{2.4.6}:	Not applicable
Trend period^{2.4.7}:	1994-2006
Reasons for reported trend^{2.4.8}:	Unknown

Although there have been substantial past losses in the area of heathland habitats recorded on The Lizard, which will include H4040 (see section 3.3), there is no information on any recorded trend in area of H4040 specifically since 1994.

3.3 Favourable reference area

Favourable reference area^{2.5.2}: **6km²**

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, 6 km², has been set as the favourable reference area. Reasons for this are discussed below.

Farrell (1993) shows a series of historic maps of heathland on The Lizard, which will include the total UK resource of H4040, derived from information provided by Hopkins (1980) where it is apparent that the area of heathland in The Lizard Peninsula has fluctuated over the centuries (see Table 3.2.1). Documentary evidence predating the map evidence suggests limited cultivation of heathland before reclamation during the Napoleonic Wars. The trend in the 20th century was towards the loss of area to agriculture (735 ha), military (150 ha), forestry (120 ha) and telecommunications (105 ha). Overall there was a 31% heathland loss between 1908 and 1980 and the last map (1980) in Farrell (1993) shows a greater number of heathland sites of smaller site size due to fragmentation.

Table 3.2.1 Trend for area of heathland (including H4040) in the UK on The Lizard peninsula

Date	Area (ha)	Rate of decline/ increase	Source of information	Cause of loss/ gain
1813	2270	-	1 st edition (1 inch: 1 mile) OS maps	Agricultural improvement
1880	3610	+59%	1 st edition OS maps (6 inches: 1 mile)	Agricultural decline
1908	3660	+1%	2 nd edition OS maps (6 inches: 1 mile)	
1963	3280	-10%	3 rd edition OS maps (6 inches: 1 mile)	Forestry; agricultural improvement; construction
1980	2520	-23%	Field survey	Agricultural improvement

(after Farrell 1993, derived from data from Hopkins 1980)

The edaphic and climatic restrictions on the range (see section 2.3) will also restrict the potential area of H4040 on The Lizard. The maximum historic area of H4040 is unlikely to have greatly exceeded the current area as given in section 3.1, although fragmentation of the overall heathland resource on The Lizard is known to have increased between 1908 and 1980. The overwhelming majority of this resource now lies within SACs where measures are in place to address fragmentation, patch size and other issues affecting viability. Given the known historical distribution and extent, and the restrictions on range it is likely that the favourable reference area for H4040 is equal to the current area at a UK 10-km² level.

3.4 Conclusions on area covered by habitat

Conclusion^{2.6.ii}:

Favourable

Despite difficulties in mapping the habitat there has been known substantive change in the areas of dwarf shrub heath historically. Although absolute area of the habitat is likely to be approximately equal to the current area, the main problem of recent decades has been the level of fragmentation and the reduction of the remaining sites' size. The majority of the resource is now safeguarded within SACs.

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

4.1 Main pressures ^{2.4.10}

This habitat is now entirely with Special Area of Conservation (SAC) designation and expert judgement suggest that there are no specific pressures affecting habitat structure and functioning that are not being addressed.

- Air pollution

Based on an assessment of relevant literature and exceedence of critical loads (see Technical note III), there is no relevant critical load available. Whilst this habitat is at risk of air pollution the geographic location is well removed from any pressure from air pollution and the judgement is that in the UK the resource of H4040 is unlikely to be at risk.

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 H4040 in the UK. The following attributes were examined for all CSM assessments relevant to the habitat:

- Habitat extent.
- Bare ground.
- Vegetation structure: cover of characteristic woody species, and cover of ericaceous species in different growth stages.
- Vegetation composition: frequency of characteristic species (dwarf shrubs, graminoids, forbs), and cover of bryophytes and lichens.
- Indicators of negative trends (percentage of alien or invasive species which may reduce the diversity of the habitat and affect its integrity; presence of artificial drains, soil erosion, trampling; uncontrolled burning; eutrophication).

SAC condition assessments

Table 4.2.1 and Map 4.2.1 summarise the CSM condition assessments for UK SACs supporting habitat H4040. 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:

- None of the area and none of the assessments was unfavourable; and
- None of the total UK habitat area was in unfavourable condition.

Table 4.2.1 CSM condition assessment results for UK SACs supporting H4040. 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		
	No change		
	Unclassified		
	Recovering		
	Total		0
	<i>% of all assessments</i>	<i>0%</i>	<i>00%</i>
	<i>% of total UK resource</i>	<i>0%</i>	<i>unknown</i>
Favourable	Maintained		
	Recovered		
	Unclassified	599	1
	Total	599	1
	<i>% of all assessments</i>	<i>100%</i>	<i>100%</i>
	<i>% of total UK resource</i>	<i>100%</i>	<i>unknown</i>

Notes

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

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

As the entire resource lies within SACs, SSSI/ASSI condition assessments are not required and have not been used.

Current Condition of H4040 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
<p>Current status of HSD features CURRENT_ST ■ unfavourable ■ favourable ■ not assessed ■ not on SAC</p>	Not applicable	Not applicable
<p>Key <u>Red</u> = unfavourable, i.e. the square contains at least one SAC where this habitat feature is present and has been judged to be unfavourable <u>Green</u> = favourable, i.e. the square contains at least one SAC where this habitat feature is present and has been assessed as favourable but there are no unfavourable SAC features <u>Blue</u> = SAC not assessed, i.e. the square contains at least one SAC supporting this habitat feature but no assessment has been reported <u>Transparent</u> = SAC feature not present, i.e. the square does not contain any SAC features of this habitat type</p>	<p>Key* <u>Green</u> – 80 – 100% of assessed features on 10-km square are favourable <u>Yellow</u> - 50 – 80% of assessed features on 10-km square are favourable <u>Orange</u> - 20 – 50% of assessed features on 10-km square are favourable <u>Red</u> - 0 – 20% of assessed features on 10-km square are favourable *This is the same key as was used for JNCC CSM Report 2006</p>	

4.3 Typical species

Typical species^{2.5.3}: **None**

Typical species assessment^{2.5.4}: **Not applicable**

As H4040 is restricted to one location in the UK, inference of structure and function from UK trends of strongly associated species is not appropriate.

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

Conclusion^{2.6.iii}: **Favourable**

The EC Guidance states that where “structures and functions are in good condition and no significant pressures exist”, the conclusion should be Favourable. In the UK, this was generally taken to mean that less than 5% the habitat area was in unfavourable condition.

EU Commission guidance advises that where structures and functions are considered to be in good condition, and where there are no significant pressures, the conclusion should be Favourable. All existing sites containing 4040 are in favourable condition, and 100% of the feature lies within SACs. Therefore this feature is reported as Favourable.

5. Future prospects

5.1 Main factors affecting the habitat

5.1.1 Conservation measures

- Protection within SACs

Almost 100% of the current resource lies within SACs with management measures specifically aimed at maintaining and enhancing the features for which they are designated, particularly to address fragmentation and patch size aspects (see section 3.3)

5.1.2 Main future threats^{2.4.11}

The habitat is now entirely within designated SACs and expert judgement suggest that there are no specific pressures affecting habitat structure and functioning that are not being addressed.

- Air pollution

Based on an assessment of relevant literature and exceedence of critical loads (see Technical note III), there is no relevant critical load available. Whilst this habitat is at risk of air pollution the geographic location is well removed from any threat from air pollution and the judgement is that in the UK H4040 is unlikely to be at risk.

- Climate change

Based on the literature review (Technical note IV) climate change is considered a major threat to the future condition of this habitat especially in the long term. However, there is a high degree of uncertainty in defining future climate threats on habitats and species due to uncertainty in: future greenhouse gas emissions; the consequential changes in climatic features (for instance temperature, precipitation CO₂ concentrations); the responses of habitats and species to these changes (for instance location, phenology, community structure) and the role of other socio-economic drivers of environmental change. The scale of change in habitats and species as a result of climate change will vary across ecosystems. Small changes in the climate are more likely to have a substantial impact on habitats and species which exist within a narrow range of environmental conditions. The future impacts of climate change on UK biodiversity will be exacerbated when coupled with other drivers of environmental change.

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

5.2.1 CSM condition assessments

The CSM condition assessments reported in Sections 4.2.1-2 provide a basis to predict the potential future condition of H4040 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 H4040 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:

- 100% of the area and 100% of the number of assessments fall within the future-favourable category; and
- at least 100% of the total UK habitat area falls within the future-favourable category.

Table 5.2.1 Predicted future condition of UK SACs supporting H4040 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		
	Unfavourable no change		
	Unfavourable unclassified		
	Total		
	<i>% of assessments</i>	00%	00%
	<i>% of total UK extent</i>	0%	Unknown
Future-favourable	Favourable maintained		
	Favourable recovered		
	Unfavourable recovering		
	Favourable unclassified	599	1
	Total	599	1
	<i>% of assessments</i>	100%	100%
	<i>% of total extent</i>	100%	Unknown


Note that the scenario presented above is based on the same information as used to construct the Table in section 4.1. It is based on the following premises:

- the unfavourable-recovering condition assessments will at some point in the future become favourable;
- all unfavourable-unclassified sites will remain unfavourable, which is probably overly pessimistic;
- sympathetic management will be sustained on sites already classified as favourable and these will not be seriously damaged by any unforeseen events.

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

SSSI/ASSI condition assessments

As the entire resource lies within SACs, SSSI/ ASSI condition assessments are not required and have not been used.

Predicted Future Condition of H4040 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
 <p>Future status of HSD features FUTURE_STA</p> <ul style="list-style-type: none"> ■ unfavourable ■ favourable ■ not assessed □ not on SAC 	Not applicable	Not applicable
<p>Key <u>Red</u> = 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 <u>Green</u> = 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 <u>Blue</u> = SAC not assessed, i.e. the square contains at least one SAC supporting this habitat feature but no assessment has been reported <u>Transparent</u> = SAC feature not present, i.e. the square does not contain any SAC features of this habitat type</p>	<p>Key* <u>Green</u> – 80 – 100% of assessed features on 10-km square are favourable <u>Yellow</u> - 50 – 80% of assessed features on 10-km square are favourable <u>Orange</u> - 20 – 50% of assessed features on 10-km square are favourable <u>Red</u> - 0 – 20% of assessed features on 10-km square are favourable *This is the same key as was used for JNCC CSM Report 2006</p>	

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

Conclusion^{2.6.iv}: **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.

Since all known sites have now statutory protection as SACs, are in good condition currently and with limited future threats that are beyond the controls given through their SAC designation this habitat should be maintained in favourable condition for the foreseeable future.

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

Conclusion^{2.6}: **Favourable**

All parameters have been assessed as Favourable.

Table 6.1 Summary of overall conclusions and judgements

Parameter	Judgement	Grounds for Judgement	Confidence in judgement*
Range	Favourable	The current range is stable and not less than the favourable reference range.	1
Area covered by habitat type within range	Favourable	The current extent is stable and not less than the favourable reference area.	1
Specific structures and functions (including typical species).	Favourable	Structures and functions considered to be in good condition with no significant pressures.	1
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.	1
Overall assessment of conservation status	Favourable	All parameters judged as favourable	1

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

7. Annexed material (including information sources used 2.2)

7.1 References

FARRELL, L. 1993. Lowland heathland: the extent of habitat change. *English Nature Science No. 12* English Nature, Peterborough.

HOPKINS, J.J. 1980. *The Lizard Peninsula* Nature Conservancy Council internal report.

HOPKINS, J. 2003. Some aspects of geology and the British flora *British Wildlife* **14** (3) 186-194.

Map data sources

JNCC International Designations Database. Joint Nature Conservation Committee.

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)	1
Number of SACs with CSM assessments (b)	1
% of SACs assessed (b/a)	100
Extent of feature in the UK – hectares (c)	600
Extent of feature on SACs – hectares (d)	599
Extent of features assessed – hectares (e)	599
% 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

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)		%
Current – Favourable (green)	2	67%
On SAC but not assessed (blue)		%
Not on SAC (transparent)	1	33%
Total Number of 10-km squares (any colour)	3	
Future – Unfavourable (red)		%
Future – Favourable (green)	2	67%