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 :

H9120: Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*)

H9120 Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion robori-petraeae or Ilici-Fagenion*)

Audit trail compiled and edited by JNCC and the JNCC Woodland 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 & correspondence with National Vegetation Classification (NVC) and other habitat types

Table 1.1.1 provides a summary description of H9120 acid beech forests and their relations with UK classifications. In the UK this habitat occurs on acid soils and falls within two NVC types (Rodwell 1991): W14 *Fagus sylvatica – Rubus fruticosus* woodland; and W15 *Fagus sylvatica – Deschampsia flexuosa* woodland.

Within its native range, this Annex I type is restricted and extensive stands on acid sites are rare outside south-east England. However, some notable outliers occur in south Wales. It typically comprises beech *Fagus sylvatica* forests with holly *Ilex*, growing on acid soils. Sites of this habitat type often are, or were, managed as wood-pasture systems, in which pollarding of beech and oak *Quercus* spp. was common. This can prolong the life of these trees. Characteristic species include holly *Ilex aquifolium*, bracken *Pteridium aquilinum* and bramble *Rubus fruticosus*, with wavy hair-grass *Deschampsia flexuosa* in the most acidic areas. Epiphyte richness is a key factor in defining hyper-Atlantic forms of this Annex I type, although stands less rich in epiphytes are also accommodated.

British stands of this woodland type tend to contain a higher proportion of veteran trees than examples found in other parts of Europe. The biodiversity of many sites is enriched by the presence of assemblages of epiphytic lichens or saproxylic invertebrates. Notable species include lichens such as *Agonimia octospra* and invertebrates such as the beetle *Diplocoelus fagi*. The moss *Zygodon forsteri* is also strongly associated with this habitat in the UK.

Rodwell and Dring (2001) reported on the European context of British H9120 beechwoods. Calcifuge beech forests of nutrient-poor, acid brown earths and podzols with moder or mor humus, derived from siliceous bedrocks and sandy superficials, are widespread across northern and central Europe. Throughout the range, calcifuge sub-shrubs such as *Vaccinium myrtillus* and (with less shade) *Calluna vulgaris*, herbs like *Deschampsia flexuosa, Melampyrum pratense, Holcus mollis, Solidago virgaurea, Galium saxatile* and a range of acidophilous bryophytes are characteristic.

A distinctive feature of the heartland of the range is the presence of *Luzula luzuloides*, the species which has given its name to the type alliance *Luzulo-Fagion* Lohmeyer & Tüxen. Towards and into the Atlantic zone of Europe, outwith the range of *Luzula luzuloides*, essentially similar beech-oak *Quercetalia* woodlands occur on the same kinds of nutrient poor, acidic substrates. These are extensive in the Armorican massifs of France and in northern Spain and locally represented across southern Britain. In this zone, with the shift towards the western seaboard of Europe, the climate becomes increasingly

Atlantic. The appearance of *Ilex aquifolium* as a subordinate tree beneath the beech canopy in these woodlands - a species that is also especially able to tolerate the denser shade of *Fagus* - is one particular indication of this climatic zone.

Table 1.1.1 Summary description of habitat H9120 and its relations with UK vegetation/habitat classifications.

Classification	Correspondence with Annex I type	Comments
EU Interpretation Manual	= H9120	This includes beech forests with *Ilex*, growing on acid soils, of the plain to montane levels under humid Atlantic climate. The acid substrate corresponds to alterations of acid rocks or to silt with flints more or less degraded or, to old alluvial deposits. The soils are of acid brown type, leaching or with an evolution towards podsol type. The humus is of moder to dysmoder type. Three sub-types are identified: a) subatlantic beech-oak forests of the plains and hill levels with *Ilex aquifolium*; b) hyper-Atlantic beech-oak forests of the plains and hill levels with *Ilex* and *Taxus*, rich in epiphytes; c) pure beech forests or acidophilous beech-fir forests of the montane level, with *Ilex aquifolium* in the field layer.
National Vegetation Classification (NVC) (see Rodwell 1991, Hall 1997)	H9120 includes all native stands of NVC type W15 *Fagus sylvatica – Deschampsia flexuosa* woodland, plus native stands on acid soils of type W14 *Fagus sylvatica – Rubus fruticosus* woodland	Some of the more base-rich examples of NVC type W14 fit better within the H9130 *Asperulo-Fagetum* Annex I type. Beech stands in the north of the UK are planted or derived from plantations and beyond the native range of beech forest. They are not included in H9120. The equivalence is based on mature stands. During regeneration phases beech may be a relatively minor part of the overall composition and hence, taken in isolation, stands may be allocated to the corresponding ash or oak woodland type. Some sites with a wood-pasture origin may similarly have a relatively high proportion of other species forming a matrix around old beech pollards.
BAP priority habitat type	H9120 acidic woodland accounts for a minor part of the lowland beech and yew woodland priority habitat type	The related BAP priority habitat type also covers lowland beech and yew woodland on neutral-slightly acidic and calcareous soils.

Other floristic features in these Atlantic beech-oak woodlands are the increased frequency of *Blechnum spicant, Ruscus aculeatus, Lonicera periclymenum* and *Hypericum pulchrum* and the greater prominence of an epiphytic flora where the climate is more consistently humid and unpolluted. However, the presence of *Taxus* in such woodlands is not a simple reflection of the climate. This tree is likely to have been more widespread - and present in more woodland types - in the past and tends to survive preferentially in inaccessible rocky situations and also to tolerate the dense shade of beech. In Britain, in fact, it is more common in calcicolous beech woodlands which are our equivalent of the *Cephalanthero-Fagion*. British beech-oak woodlands with holly placed in the W15 *Fagus-Deschampsia* community and some W14 *Fagus-Rubus* woodlands on less mesic soils can be readily accommodated within the *Ilici-Fagion*, being especially close to associations like the *Rusco-Fagetum* characterised from Brittany and western Normandy.

2. Range [2.3]

2.1 Current range

Range surface area [2.3.1]: 29,493 km²

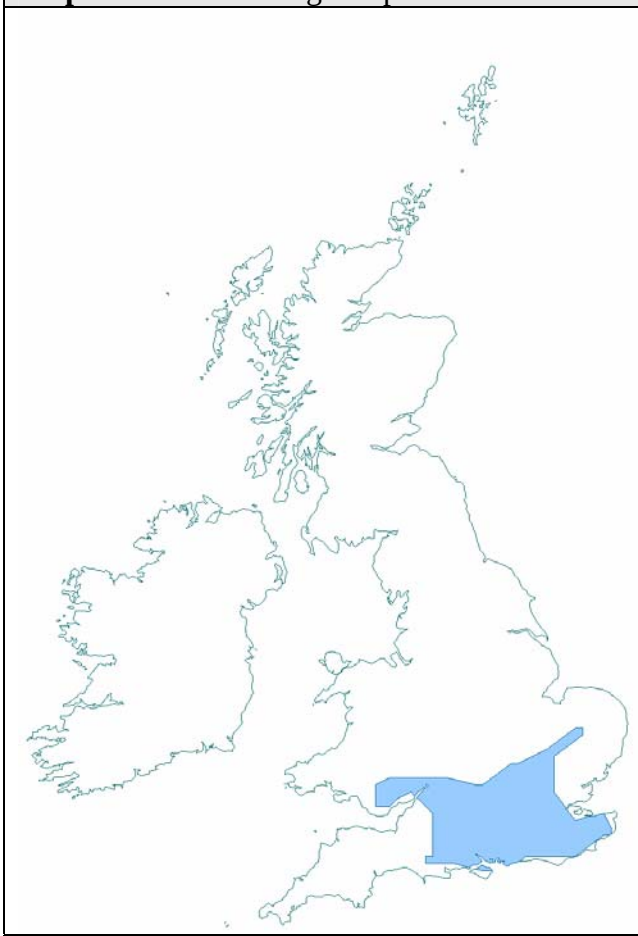
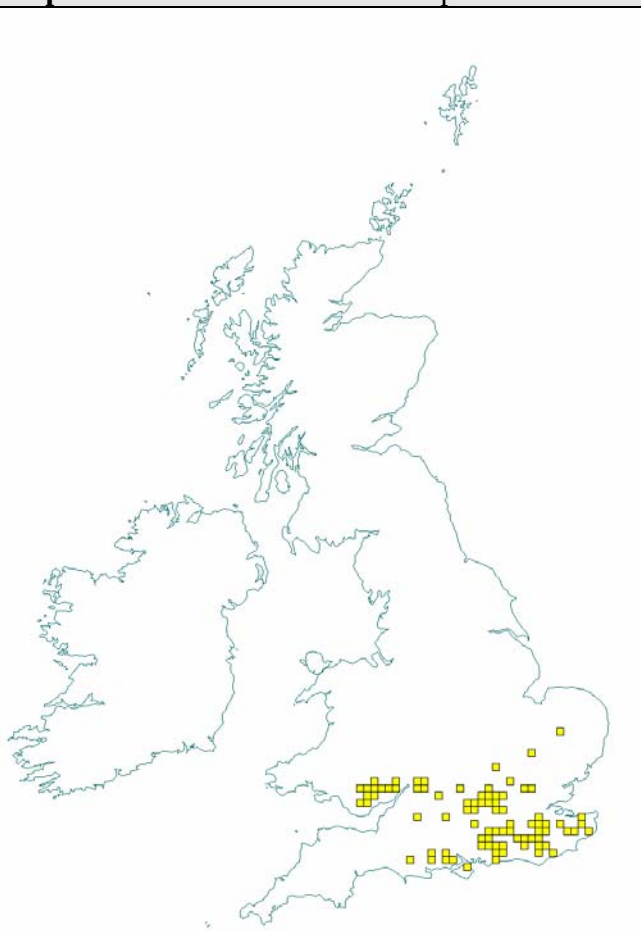
Date calculated [2.3.2.]: **May 2007**

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 H9120 acid beech forests in the UK. These are based on selected records of NVC communities W14 and W15, together with Special Areas of Conservation (SACs) supporting this Annex I type. The information was extracted from the JNCC Database of Woodland Community Types. Only sites within the range of native beechwoods were included, i.e. not beyond the counties of Dorset, Wiltshire, Avon, Glamorgan, Gwent, Gloucestershire, Herefordshire, Worcestershire, Oxfordshire, Buckinghamshire, Berkshire, Bedfordshire, Cambridgeshire and Norfolk. Stands of beech further north and west that are planted or derived from plantations were excluded.

The maps provide a good representation of the range of H9120. The main concentrations shown occur in the lowlands of southern Britain, along the Downs, in the Weald and the Chilterns, down the Hampshire Hangers and into the New Forest, and westward through the Cotswolds, Wye Valley and to the coalfields of south-east Wales. Much of the core range of native beechwoods is included.

Map 2.1.1 Habitat range map [1.1] for H9120	**Map 2.1.2** Habitat distribution map [1.2] for H9120
	
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. 10-km square count: 83

See Section 7.1 for 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**
The broad range of H9120 acid beech forests appears to have not changed since 1994.

2.3 Favourable reference range [2.5.1]

Favourable reference range: **Approx. 29,493 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 has been set as the favourable reference area. Reasons for this are discussed below.

Available evidence suggests that the current range of H9120 acid beech forests is both sufficiently large and compact not to raise any major concerns about the viability of the habitat on these accounts. The range does show some degree of fragmentation. This patchiness is, in part, a reflection of natural constraints imposed by the availability of suitable acidic substrates. Some of this ground is now occupied by open habitats (grass and heath) of high conservation value: any significant spread of beech woodland here could conflict with other conservation priorities. The thin scatter of sites in East Anglia and elsewhere appears to reflect a long-term scarcity of beech in these locations. In other places, notably the Chilterns and Cotswolds, beech has been deliberately favoured during the last 300 years for fuel and other purposes.

The current range includes most of the native range of British beechwoods (see Peterken 1993 and Rackham 2003 for details). For conservation purposes this is limited to southern England and Wales, even though some former outlying populations and recent naturally regenerating stands of beech exist further north and west. The core range of H9120 has remained reasonably stable for many centuries, albeit with local losses having led to some thinning out within the range limits.

The current range of H9120 is therefore taken to be viable and at least equal in area to that of the favourable reference range area.

2.4 Conclusions on range

Conclusion[2.6.i]: **Favourable**
The habitat range has remained stable since 1994 and is not less than the favourable reference range, i.e. range appears sufficiently large and compact not to raise any major concerns as regards viability. Fragmentation within the range partly reflects natural constraints imposed by the availability of suitable sites and an historical scarcity of beech in some locations. Some ground suitable for H9120 is now occupied by open habitats (grass and heath) of high conservation value, where spread of beech woodland could conflict with other conservation priorities. The range includes most of the native range of British beechwoods, which has remained reasonably stable for many centuries. The current range is therefore taken to be viable and approximately equal the favourable reference range.

3. Area [2.4]

3.1 Current area

Total UK extent [2.4.1]: **72.5 km^2**
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 H9120 acid beech forests in the UK. This is estimated to be around 7,250 ha, over 70% of which occurs in England. The area estimate is based on expert opinion as there is no comprehensive data available on the extent of this habitat in the UK. The total excludes more recent beech woodland and some plantations on ancient woodland sites that are not well-developed sites, but which are included in the related Biodiversity Action Plan (BAP) lowland beech and yew priority habitat.

Table 3.1.1 Area of H9120 in the UK

	Area (ha)	Method [2.4.3]	Quality of data [2.4.4]
England	6,000 (5,000-7,000)	1	Moderate
Scotland	Not present	-	-
Wales	1,250 (1,000-1,500)	1	Moderate
Northern Ireland	Not present	-	-
Total UK extent [2.4.1]	7,250	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]: **Stable**
Trend magnitude[2.4.6]: **Not applicable**
Trend period[2.4.7]: **1994-2006**
Reasons for reported trend[2.4.8]: **Not applicable**

The area of H9120 acid beech forests has probably remained more-or-less stable since 1994, albeit that restoration works have been carried out to remove conifer plantations on former beech wood sites. However, precise figures on this trend are not available.

3.3 Favourable reference area [2.5.2]

Favourable reference area: **Approx. 80 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 favourable reference area has been identified as greater than the current extent, but not by a factor of more than 10%. Reasons for this are discussed below.

The current area of H9120 (c.7,250ha) seems to be large enough to not raise any major concerns about the viability of this habitat on this account. For many centuries the habitat area has remained relatively stable (see Rackham 2003). There is little evidence to suggest beech woodland was substantially more extensive in historic times: it had already been much reduced prior to the Roman period and in certain core areas (Chilterns and Cotswolds) beech was deliberately favoured during past centuries for wood and timber.

A substantial number of ancient semi-natural beech stands were however cleared for agriculture and converted to coniferous plantations between 1935 and 1985. The decline for all types of ancient semi-natural woodland across the 21 counties that comprise the core range of H9120 (see Section 2.1.) amounted to nearly 104,000 ha or 50 % of the total (Spencer and Kirby 1992). This represents a rate of loss of around 1.3% per annum. Even so, the contribution of beech woodland in its broadest sense has probably increased in relative terms during the 20th century. Beech was commonly planted for timber on acid soils within ancient woods, replacing other broadleaved species particularly oak. Thus, Forestry Commission census data show that in absolute terms there has been an increase in the area of beech high forest during the last century, even though this has involved substituting young plantations on recent sites for semi-natural stands on ancient sites.

Available evidence does, nevertheless, suggest that H9120 is overly fragmented and isolated to ensure that the species community can fully perpetuate itself. This is apparent in the aims and actions specified in UK BAP Habitat Action Plan for lowland beech and yew woods (see http://www.ukbap.org.uk): the intention is to further restore and substantially increase the extent and connectivity of this habitat to mitigate the negative effects of fragmentation and isolation of individual sites. Concern about fragmentation is heightened by the scale of loss of ancient semi-natural beech woodland during previous decades (see above). This has left the habitat much more fragmented and isolated than in historical times, and even more so if the natural status of woodland is considered.

Some recognition needs to be given to the fact that much of the demise of native beechwoods took place long ago, i.e. the habitat has been rather fragmented for many centuries; that beech high forest has increased in area during the last century (see above); that some surviving beech stands are relatively extensive (e.g. Cotswold Commons Beechwoods); that some form part of major wood-pasture complexes (e.g. the New Forest, Epping Forest); and that a substantial number exist in areas where survival of ancient, semi-natural or other woodland is high (e.g. Lower Wye Valley) (see Peterken 1993 and Rackham 2003). The abundance of acid beech stands is also somewhat limited by the natural availability of suitable soils, and some suitable sites are currently occupied by other open or woodland habitat types of nature conservation value. Despite this, there is a general consensus in the conservation movement that the habitat is overly fragmented and isolated.

The current area of H9120 is therefore considered to be less than that necessary to ensure viability of the habitat. It is however judged that an increase of no more than 10% above the current area is necessary to remedy this situation. Fragmentation and isolation are most likely to impoverish rather than destroy the habitat and several mitigating factors need to be recognised (see above paragraph). Thus, the favourable reference area is taken as no more than 10% above the current area of 7,250ha.

3.4 Conclusions on area covered by habitat [2.6.ii]

Conclusion: Unfavourable – Inadequate but improving

Despite some recent restoration, this habitat still appears to be overly fragmented and therefore insufficient in extent to ensure viability. Ancient semi-natural beech woodland is much less extensive compared to the mid-20th century: within the core range of H9120 the area of (all types of) ancient semi-natural woodland halved during 1935-85 at a rate of c.1.3% per year. This substantially increased the level of fragmentation, which was already profound compared to natural conditions. Despite several extenuating factors, not least that some surviving beech stands are relatively extensive and/or exist within relatively wooded landscapes, the general consensus is that this habitat is still overly fragmented. It is, however, considered unlikely that the remedy to this situation requires an increase of more than 10% above the current habitat area. The favourable reference area is therefore taken to be no more than 10% above the current habitat area.

4. Specific Structures and Functions (including typical species)

4.1 Main pressures[2.4.10]

The main pressures affecting H9120 acid beech forests are listed below. These are derived mainly from the UK BAP Habitat Action Plan for lowland beech and yew woodland and the adverse features listed in Common Standards Monitoring (CSM) condition assessments (see Section 4.2.1). The related EC codes are shown in brackets.

- Deer browsing (**969 other forms or mixed forms of interspecific faunal competition**)

Several species of deer occur within the range of H9120. In many beechwoods, browsing by deer is severe enough to limit or prevent natural regeneration of trees and shrubs and reduce or eliminate palatable species in the ground flora. This problem has increased substantially in recent years.

- Grey squirrels and (in the Chilterns) edible dormouse (**954 invasion by a species, 966 antagonism arising from introduction of species**)

These small mammals strip bark particularly from small-medium sized beech trees. Debarking by grey squirrels has become so widespread that it now affects most native beechwoods. It can affect the growth of damaged trees, result in crown loss and branch snapping, and in some cases causes death: where debarking is extensive, the species composition of the wood can be altered (see Mountford 2006).

- Habitat fragmentation and isolation (**151 Removal of hedges and copses, 164 Forestry clearance, 990 Other natural processes**)

Many H9120 sites or blocks are fragmented and separated from each other by tracts of intensive farmland and urbanised areas. This limits exchange between sites and limits the capacity for the species community to perpetuate itself over time.

- Introduced plant species (**954 invasion by a species, 966 antagonism arising from introduction of species, 162 Artificial planting**)

A number of non-native plant species have been introduced or invaded beechwoods, replacing native species, altering their structure, and changing the environmental conditions. Most notable are sycamore *Acer pseudoplatanus*, rhododendron *Rhododendron ponticum*, Turkey oak *Quercus cerris*, and cherry laurel *Prunus laurocerasus*.

- Insufficient or inappropriate woodland management (**160 General Forestry management, 161 Planting, 162 Artificial planting, 163 Replanting, 164 Forestry clearance, 165 Removal of undergrowth, 166 Removal of dead and dying trees**)

A number of H9120 acidic beech forests have suffered from inappropriate management activities, e.g. large-scale felling and replanting with non-native species or inappropriate species mixtures. In addition, necessary management has often not been undertaken, so structural and species diversity is limited and natural regeneration is difficult to achieve. This is compounded because there is a lack of interest, expertise and incentives amongst some woodland owners to undertake management.

- Predominance of older age classes (**950 Biocenotic evolution**)

Although older stands of beech woodland are of special importance for wildlife, beech is particularly susceptibility to die-back and damage from droughts and storms. In some places old beech stands have rapidly collapsed and regeneration has proved difficult (see above).

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

Based on an assessment of the exceedence of relevant critical loads (see Technical Note III), air pollution is considered to be a potentially significant pressure to the structure and function of this habitat. Air pollution may cause 'decline' in beech trees (increasing their susceptibility to disease), encourage nitrophile species in the ground flora, and damage epiphytic lichen and bryophyte communities.

4.2 Current condition

4.2.1 CSM condition assessments

Condition assessments based on CSM (see http://www.jncc.gov.uk/page-2199) provide a means to assess the structure and functioning of H9120 in the UK. The following attributes were examined for all CSM assessments relevant to the habitat:

- Extent
- Structure and natural processes
- Regeneration potential
- Composition (trees and shrubs)
- Indicators of local distinctiveness

SAC condition assessments

Table 4.2.1 and Map 4.2.1 summarise the CSM condition assessments for UK SACs supporting habitat H9120. 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 96% of the area and 71% of the number of assessments was Unfavourable. The larger proportion by area is because the New Forest is a single large site in Unfavourable condition. This means that at least 47% of the total UK habitat area was in Unfavourable condition. This is not surprising given the pressures that woodland, even protected sites, have been under during the 20th century. Nevertheless, all of the currently Unfavourable habitat was classed as recovering as the adverse factors were being addressed.

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. Many of these showed signs of recovery. The pattern for this broader suite of SSSIs is somewhat less Favourable than that for the SACs.

Table 4.2.1 CSM condition assessment results for UK SACs supporting H9120. 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	0	0
	No change	0	0
	Unclassified	0	0
	Recovering	3,415	5
	Total	3,415	5
	% of all assessments	***96%***	***71%***
	% of total UK resource	***47%***	***unknown***
Favourable	Maintained	4	1
	Recovered	0	0
	Unclassified	142	1
	Total	146	2
	% of all assessments	***4%***	***29%***
	% of total UK resource	***2%***	***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.

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 H9120 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	3	
	No change	6	
	Unclassified	0	
	Recovering	19	
	Total	28	
	% of all assessments	***53%***	
Favourable	Maintained	0	
	Recovered	0	
	Unclassified	25	
	Total	25	
	% of all assessments	***47%***	

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).

Condition of non-designated sites

There is no formal condition assessment process for the resource outwith the SSSI series. However there is some qualitative information available as part of the BAP process for beech woodland generally. There is no reason to assume that the condition of woodland outside the SSSI/SAC series is likely to be any better than that for the designated sites.

4.3 Typical species

Typical species[2.5.3]: None used

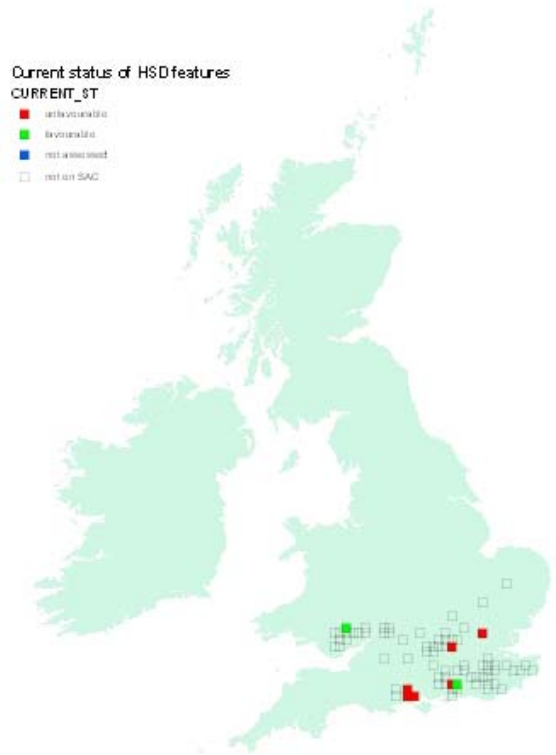
Typical species assessment[2.5.4]: Not applicable

Characteristic ground plants for this habitat listed in the EU Interpretation Manual (which are native to the UK beechwoods) or within the synoptic tables types for NVC types W14 and W15 include *Deschampsia flexuosa, Holcus mollis, Lonicera periclymenum, Melampyrum pratense, Mercurialis perennis, Pteridium aquilinum, Rubus fruticosus, Ruscus aculeatus, Teucrium scorodonia,* and *Vaccinium myrtillus*. Amongst these only *Ruscus aculeatus* shows a high degree of faithfulness to the two NVC communities (W14 and W15) related to this habitat. This species showed an increase in occurrence across the UK during the last 25 years, but of less than 25% (see table below). None of the remaining species are particularly faithful to the habitat, so available trend data at the UK-level or even the GB-woodland-level is not particularly meaningful and has not been utilised here. Without more specific information, no firm conclusions can be drawn about the status of typical species for this habitat.

Table 4.3.1 Trends and faithfulness of selected typical species for H9120

Typical species [2.5.3]	Faithfulness to habitat H9120 (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)	Woodland survey change based on change in 103 woodland sites across GB (1st column site level, 2nd column plot level) (see Kirby *et al.* 2006)	
Ruscus aculeatus	High	Significant increase but <25% in 25 years	Not recorded	Not recorded

Current Condition of H9120 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 contains some examples of the habitat type but none are SAC features	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	

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

Conclusion[2.6.iii]: Unfavourable – Bad but improving

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

The main pressures are deer browsing, grey squirrel debarking, habitat fragmentation and isolation, introduced plant species, insufficient or inappropriate woodland management, the predominance of older age classes, and air pollution. Condition assessments for SACs and SSSIs show that a large part of the habitat is in Unfavourable condition: 71-96% of assessed SACs are judged to be Unfavourable, whilst the level for relevant SSSIs is 53%. Much of that which is Unfavourable is recovering and little appears to be declining. There is no reason to expect the condition of the non-designated resource to be better.

5. Future Prospects

5.1 Main factors affecting the habitat

5.1.1 Conservation measures

This habitat forms part the UK BAP Habitat Action Plan for lowland beech and yew woodland (see http://www.ukbap.org.uk), which has targets to maintain existing areas of such woodland, restore some areas of replanted ancient woodland to native broadleaves, initiate measures to improve its condition, and expand the resource by colonisation or planting.

This habitat is subject to a number of legal instruments, national policy measures and grant-aid schemes. These prevent clear-felling for conversion to other land uses, and aim to maintain and restore their ecological diversity and expand remnant and new native woods. All woodland is expected to be managed according to the UK Forestry Standard, with ancient and semi-natural woodland receiving special provision. Felling of trees and grant aid are controlled by the Forestry Authority and are conditional upon management achieving these aims in accordance with published guidance. The Woodland Grant Scheme provides finance for regenerating, planting and other management activities.

Many beech woods are protected in whole or as part of SSSIs under the Wildlife and Countryside Act 1981. Some have been designated as SACs for H9120 in response to the EC Habitats Directive (see http://www.jncc.gov.uk/ProtectedSites/SACselection/habitat.asp?FeatureIntCode=H9120). Various other measures and initiatives have been put in place to help conserve such woodland. These include published guides on the management of lowland beechwoods and the creation of new native beech woodland, provision of management advice, and research on for example achieving natural regeneration.

Conservation of beech woodland in the UK has focused on its putative native range in southern Britain. Some beech woodland has however developed further west and north, and there is considerable potential for more to follow especially under predicted climate change scenarios (see Wesche 2006). While there is a case for considering at least the more mature and irregular stands in northern England, north Wales and Scotland as valuable habitat, often beech is moving into other important woodland types and may effectively displace them. There is therefore a tension between encouraging the development of a new type and increasing intervention to maintain an existing one.

5.1.2 Main future threats[2.4.11]

The most obvious major threats to H9120 over the next 12-15 years are listed below. The related EC codes are shown in brackets.

- Deer browsing (**969 other forms or mixed forms of interspecific faunal competition**)

Deer browsing is likely to remain a main threat to native beechwoods until the currently high number of deer is reduced. Although several actions have been put into place to help attain this, it will take many years of sustained effort before a substantial impact is made.

- Grey squirrels and (in the Chilterns) edible dormouse (**954 invasion by a species, 966 antagonism arising from introduction of species**)

Debarking by grey squirrels is likely to continue, despite the development of targeted approaches to limit their impacts.

- Habitat fragmentation and isolation (**151 Removal of hedges and copses, 164 Forestry clearance, 990 Other natural processes**)

Fragmentation of the habitat will remain a problem, though efforts are being made to improve connectivity and mitigate its effects.

- Insufficient or inappropriate woodland management (**160 General Forestry management, 161 Planting, 162 Artificial planting, 163 Replanting, 164 Forestry clearance, 165 Removal of undergrowth, 166 Removal of dead and dying trees**)

Activities and grant-aid to encourage restoration and appropriate management of beechwoods have increased, including necessary control of non-native plants. The next ten years should result in considerable improvements, though it will take longer for the vegetation and associated wildlife to respond positively.

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

Based on an assessment of the exceedence of relevant critical loads (see Technical Note III), air pollution is considered to be a potentially significant threat to the future condition of this habitat.

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 crudely predict the potential future condition of H9120 in the UK. This involved treating all assessments currently identified as either Favourable or Unfavourable recovering as future-Favourable: remaining categories were treated as future-Unfavourable – see Table 5.2.1. There are a number of caveats to this approach, which are set out beneath this table.

SAC condition assessments

Table 5.2.1 and Map 5.2.1 summarise the possible future condition of H9120 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 might occur (summary statistics for the map are given in Section 7.2). The combined assessments show that of the SACs assessed all fall within the future-Favourable category. This amounts to at least 49% of the total UK habitat area.

SSSI/ASSI condition assessments

Table 5.2.2, and Maps 5.2.2 and 5.2.3 summarise the predicted potential future condition of H9120 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 future-Unfavourable and future-Favourable sites might occur (summary statistics for the maps are given in Section 7.2). The combined condition assessments show that 83% of the strongly indicative assessments fall within the future-Favourable category.

Table 5.2.1 Predicted future condition of UK SACs supporting H9120 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	0	0
	Unfavourable no change	0	0
	Unfavourable unclassified	0	0
	Total	0	0
	% of assessments	***0%***	***0%***
	% of total UK extent	***0%***	***0%***
Future-Favourable	Favourable maintained	4	1
	Favourable recovered	0	0
	Unfavourable recovering	3,415	5
	Favourable unclassified	142	1
	Total	3,561	7
	% of assessments	***100%***	***100%***
	% of total extent	***49%***	***Unknown***

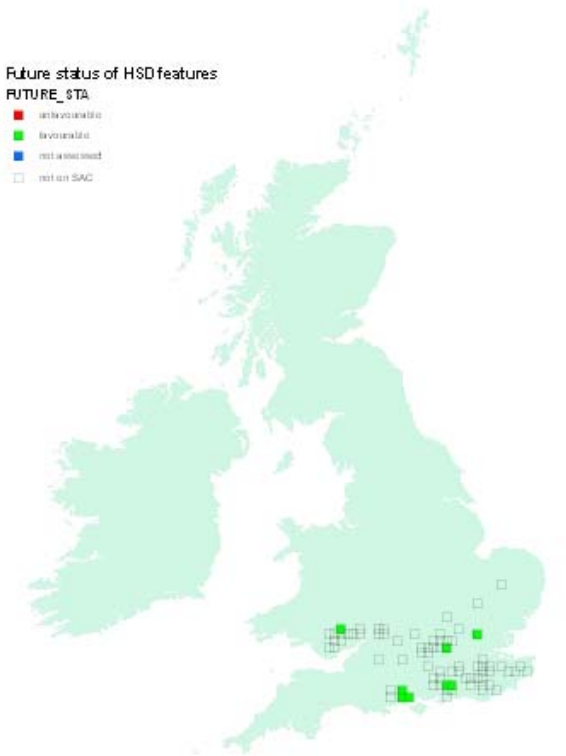
Note that the scenario presented above is based on the same information as used to construct the Table in section 4.1. It is based on the following premises:
(i) the Unfavourable-recovering condition assessments will at some point in the future become Favourable;
(ii) all Unfavourable-unclassified sites 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.

Table 5.2.2 Predicted future condition of H9120 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	3	
	Unfavourable no change	6	
	Unfavourable unclassified	0	
	Total	9	
	% of assessments	***17%***	
Future-Favourable	Favourable maintained	0	
	Favourable recovered	0	
	Unfavourable recovering	19	
	Favourable unclassified	25	
	Total	44	
	% of assessments	***83%***	

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 H9120 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 contains some	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	

examples of the habitat type but none are SAC features	

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.

A substantial number of positive conservation measures have been put into place to improve the status of this habitat. It is suggested that the range and area could be expanded by accepting that some additional stands beyond the current range should be included within this type. The main threats that remain are from deer browsing, grey squirrel debarking, habitat fragmentation and isolation, insufficient or inappropriate woodland management, and air pollution. Condition assessments for the relevant SACs indicate that all sites may become favourable in the foreseeable future. Relevant condition assessments for SSSIs put 83% of sites within this category. Given progress already made and some additional recovery once further conservation measures are put into place, the expectation is that most of the habitat will be in Favourable condition in the next 12-15 years.

6. Overall Conclusions and Judgements on Conservation Status

Conclusion[2.6]: Unfavourable – Bad but improving

On the basis of Structure and Function, the overall conclusion for this habitat feature is Unfavourable – Bad but improving.

Table 6.1 Summary of overall conclusions and judgements

Parameter	Judgement	Grounds for Judgement	Confidence in judgement*
Range	Favourable	Current range is stable and not less than the favourable reference range.	2
Area covered by habitat type within range	Unfavourable – Inadequate but improving	Favourable reference area is greater than the current extent, but not by more than 10%. The area appears to have improved somewhat since 1994, with earlier clearance and conversion having largely been stemmed and some recent small-scale expansion/restoration having taken place.	2
Specific structures and functions (including typical species)	Unfavourable – Bad but improving	More than 25% of the area of the habitat is unfavourable as regards to specific structures and functions. Much of that which is Unfavourable is recovering and little appears to be declining.	2
Future prospects (as regards range, area covered and specific structures and functions)	Favourable	Habitat prospects over the next 12-15 years considered to be good with no significant impacts from threats expected and long-term viability assured. Given progress already made and some additional recovery once further conservation measures are put into place, the expectation is that most of the habitat will be in Favourable condition in the next 12-15 years.	2
Overall assessment of conservation status [2.6.v]	Unfavourable – Bad but improving	On the basis of Structure and Function, the overall conclusion for this habitat feature is Unfavourable – Bad but improving.	2

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

7. Annexed Material (including information sources used 2.2)

7.1 References

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MOUNTFORD, E.P. 2006. Long-term patterns and impacts of grey squirrel debarking in Lady Park Wood young-growth stands (UK). Forest Ecology and Management **232**, 100-113.

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WESCHE, S., KIRBY, K.J. & GHAZOUL, J. 2006. Plant assemblages in British beech woodlands within and beyond native range: Implications of future climate change for their conservation, Forest Ecology and Management **236**, 385-392.

UK BAP Habitat Action Plan for lowland beech and yew woodland. Available via UKBAP website http://www.ukbap.org.uk/

Map Data Sources

JNCC International Designations Database. Joint Nature Conservation Committee.

NVC Woodland Community Access 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)	7
Number of SACs with CSM assessments (b)	7
% of SACs assessed (b/a)	100
Extent of feature in the UK – hectares (c)	7,250
Extent of feature on SACs – hectares (d)	3,561
Extent of features assessed – hectares (e)	3,561
% of total UK hectarage on SACs (d/c)	49
% of SAC total hectarage that has been assessed (e/d)	100
% of total UK hectarage that has been assessed (e/c)	49

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)	6	8%
Current – Favourable (green)	2	3%
On SAC but not assessed (blue)	0	0%
Not on SAC (transparent)	68	89%
Total Number of 10km squares (any colour)	76	100%
Future – Unfavourable (red)	0	0%
Future – Favourable (green)	8	11%