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 :

H9160: Sub-Atlantic and medio-European oak or oak-hornbeam forests of the *Carpinion betuli*

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

Please cite as: Joint Nature Conservation Committee. 2007. *Second Report by the UK under Article 17 on the implementation of the Habitats Directive from January 2001 to December 2006*. Peterborough: JNCC. Available from: www.jncc.gov.uk/article17

H9160 Sub-Atlantic and medio-European oak or oak-hornbeam forests of the *Carpinion betuli*

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 and correspondence with National Vegetation Classification (NVC) and other habitat types

Table 1.1.1 provides a summary description of H9160 oak-hornbeam forest and its relations with UK classifications. This type of woodland, the *Stellario–Carpinetum*, is a rare habitat type in the UK principally because bluebell (*Endymion non-scriptus* or *Hyacinthoides non-scripta*) is specified as a rare species in the Annex I type. In the Atlantic region, including the UK, bluebell is usually abundant and oak-hornbeam woods fall into the separate *Endymio–Carpinetum* type (which is not recognised in Annex I of the Habitats Directive).

H9160 forest occurs only in south-east England, where there are woodland stands of oak *Quercus* spp. with some hornbeam *Carpinus betulus* that are considered closer to this central European habitat type than its Atlantic counterpart (mainly mixed Atlantic bluebell-oak forests). As stated, British hornbeam stands are somewhat more widespread, but normally have abundant bluebell. Typical species include great wood-rush *Luzula sylvatica*, hairy wood-rush *Luzula pilosa* and, locally, southern wood-rush *Luzula forsteri*, with greater stitchwort *Stellaria holostea*, ivy *Hedera helix* and honeysuckle *Lonicera periclymenum*.

Within the NVC, H9160 stands fall under woodland type W10 *Quercus robur – Pteridium aquilinum – Rubus fruticosus* community (Rodwell 1991). They are, however, an infrequent component of this broad category of oakwoods. Although they are contained better within the ancient semi-natural hornbeam woodland types recognised by Peterken (1993) and Rackham (2003), even within these they are unusual because of the requirement for bluebell to be absent or rare.

Rodwell and Dring (2001) reported on the European context of H9160 oak-hornbeam forest. Variation within the oak-hornbeam woodlands of the *Carpinion* across north-central Europe is complex and tends to grade into various forms of mesic *Asperulo-Fagion* forest. The core of the alliance can be defined as a *Stellario-Carpinetum* type, which is centred on better quality brown earths in the relatively cool sub-Atlantic region of Europe that includes much of Germany, south Scandinavia, Austria, The Netherlands, Luxembourg, Belgium and western parts of France. Broadly oceanic plants such as *Stellaria holostea*, *Hedera helix* and *Lonicera periclymenum* are distinctive here, though much of the character of this central type is defined by the absence of species that are either more Continental or more Atlantic. Many descriptions from this part of Europe refer to a type association, the *Stellario-Carpinetum* Oberdorfer 1957. In eastern Denmark and southern Sweden, essentially similar woodland has been described as *Quercus robur-Fraxinus excelsior* woodland. The examples of this type in Britain are outliers of the European range.

Table 1.1.1 Summary description of habitat H9160 and its relations with UK vegetation/habitat classifications

Classification	Correspondence with Annex I type	Comments
EU Interpretation Manual	= H9160	Forests of *Quercus robur* (or *Quercus robur* and *Quercus petraea*) on hydromorphic soils or soils with high water table (bottoms of valleys, depressions or in the vicinity of riparian forests). The substrate corresponds to silts, clayey and silt-laden colluvions, as well as to silt-laden alterations or to siliceous rocks with a high degree of saturation. Forests of *Quercus robur* or natural mixed forests composed of *Quercus robur*, *Quercus petraea*, *Carpinus betulus* and *Tilia cordata*. NB: *Endymion non-scriptus* is absent or rare.
National Vegetation Classification (NVC) (see Rodwell 1991, Hall 1997)	H9160 covers part of NVC type W10 *Quercus robur – Pteridium aquilinum – Rubus fruticosus* woodland	H9160 is a minority component of this broader oak woodland type that occurs on mesotrophic brown earths of low base status. As W10 stands with abundant bluebell are specifically excluded, much of this type is a poor match.
Biodiversity Action Plan (BAP) priority habitat type	H9160 covers part of the Lowland Oak and Mixed Deciduous Woodland priority habitat type	Forms a minor component of this BAP priority habitat type.
Peterken (1993) ancient semi-natural stand types	H9160 covers part of the Group 9 Hornbeam stand types	Forms part of this ancient semi-natural woodland type, specifically excluding any site where bluebell predominates.
Rackham (2003) ancient woodland types	H9160 covers part of the Hornbeam ancient woodland type	As above.

2. Range [2.3]

2.1 Current range

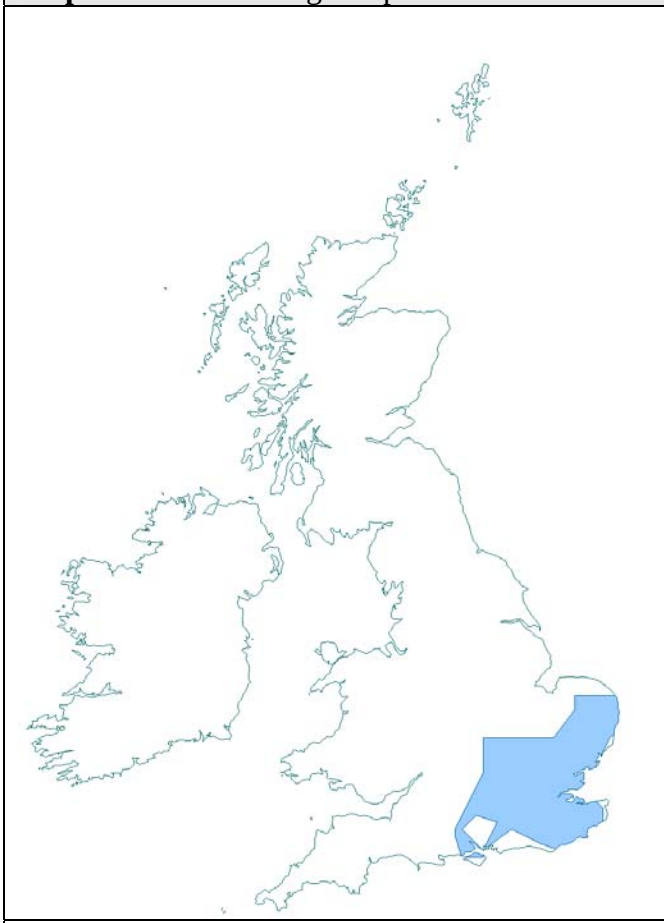
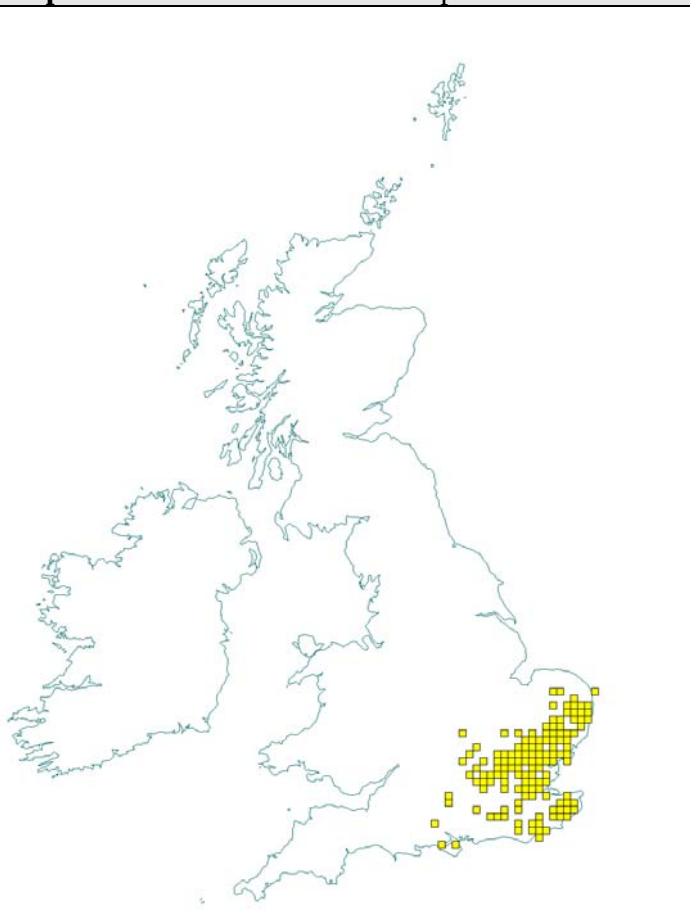
Range surface area [2.3.1]: **28,155 km²**
Date calculated [2.3.2]: **May 2007**
Quality of data [2.3.3]: **Poor**

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 2.1.1-2 give an indication of the range and distribution of H9160 oak-hornbeam forest in the UK. The information was extracted from the JNCC Database of Woodland Community Types. It includes Sites of Special Scientific Interest (SSSIs) with citations that have hornbeam woodland mentioned as a feature, combined with the ancient hornbeam woods shown in Figure 14.1/14.4 of Rackham (2003). Map records for the hornbeam stand types in Peterken (1993) were not used because this information was available only at the 20 km square level. Only sites within the core range of native hornbeam woods were included, i.e. not beyond the counties of Norfolk, Cambridgeshire, Northants, Oxfordshire, Berkshire and Hampshire.

The maps are only broadly indicative of the range of H9160. The main concentrations shown start in Norfolk, run in a belt down through the Chiltern counties, and around into the east of Kent and East Sussex. This includes only the core range of British semi-natural hornbeam woods in the south-east and

east, where most stands of H9160 are thought to occur (see Section 1 for details). In most cases such woodland has a closer fit to the *Endymio–Carpinetum*, a more Atlantic-variant of hornbeam woodland than H9160 (see Section 1). The habitat has not been distinguished in past surveys and is difficult to separate out from the classifications used in the UK (see Table 1.1.1). Thus, the actual range/distribution of H9160 is likely to be fragmentary within the areas shown in Maps 2.1.1 and 2.1.2.

Map 2.1.1 Habitat range map [1.1] for H9160	**Map 2.1.2** Habitat distribution map [1.2] for H9160
	
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**:** 134

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 H9160 oak-hornbeam forest appears to have not changed since 1994.

2.3 Favourable reference range

Favourable reference range[2.5.1]: **Approx. 28,000 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, which is approximately 28,000 km^2, has been set as the favourable reference area. Reasons for this are discussed below.

Available evidence suggests that the current range of H9160 is sufficiently large (c. 28,000 km^2) not to raise any major concerns about the viability of the habitat on this account. Its core range in the south and east of England covers most of the native range of hornbeam woods in the UK, where such forests are still relatively abundant and widespread. This range appears to have remained stable for at least 400 years (Rackham 2003). It is unclear just how fragmented the habitat distribution is without detailed information on which of the 10 km squares shown in Map 2.1.2 actually support H9160. The range would, nevertheless, be somewhat fragmented due to natural/historical limitations imposed by the availability of suitable site conditions and patchy occurrence of native hornbeam stands (see Peterken 1993 and Rackham 2003). The favourable reference range area is therefore as being approximately equal to the current range area.

2.4 Conclusions on range

Conclusion[2.6.i]: Favourable

The range of this habitat has remained stable since 1994 and appears sufficiently large. It includes most of the potential natural range of native hornbeam woods and has remained largely stable over the last 400 years. It is unclear just how fragmented the habitat distribution is within the range envelope, but some degree of fragmentation is expected due to natural/historical limitations. Nevertheless, the current range is considered to be viable and at least equal in area to that the favourable reference range.

3. Area [2.4]

3.1 Current area

Total UK extent [2.4.1]: 10km^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]: Poor

Table 3.1.1 provides information on the area of H9160 oak-hornbeam forest in the UK. This is estimated to be around 1,000 ha, based on expert opinion as there is no comprehensive data available on the extent of this habitat in the UK.

Table 3.1.1 Area of H9160 in the UK

	Area (ha)	Method [2.4.3]	Quality of data [2.4.4]
England	1000	1	Poor
Scotland	Not present	-	-
Wales	Not present	-	-
Northern Ireland	Not present	-	-
Total UK extent [2.4.1]	1000	1	Poor

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 H9160 oak-hornbeam forest has probably remained more-or-less stable since 1994, but precise figures on this trend are not available.

3.3 Favourable reference area

Favourable reference area[2.5.2]: Approx. 10 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, 10 km^2, has been set as the favourable reference area. Reasons for this are discussed below.

The current area of H9160 seems to be large enough not to raise any major concerns about the viability of the habitat. The total area is admittedly limited to only about 1,000 ha. However, this type of oak-hornbeam forest is naturally scarce and at the edge of its European range within southern Britain. Much of the oak-hornbeam forest in Britain falls outside the scope of H9160 simply because climatic conditions allow bluebell *Endymion non-scriptus* to predominate in the ground flora. Native hornbeam forests have a patchy occurrence within their native range anyway and are mostly constrained to poorly-drained, acidic soils with moderate clay content (see Peterken 1993 and Rackham 2003). Some of its potential area is also occupied by or has the potential to develop other open or woodland habitat types that are of nature conservation value.

There is some concern raised by the scale of habitat loss in previous decades and the resultant increase in fragmentation and isolation and effects on the viability of the species community. Rackham (2003) reported nearly a 50% loss in area (allowing for stands destroyed without recording) for hornbeam woodland in eastern England during 1945-1980. The decline for ancient semi-natural woodland as a whole between c.1930-1985 in the 15 counties that comprise the core range of H9160 (see Section 2.1) amounted to nearly 62,250 ha or 47% of the total (Spencer and Kirby 1992). Both were mainly due to grubbing or conversion to conifer plantation. These declines generate annual rates of loss of around 1.7% and 1.1% respectively. It seems reasonable to assume that oak-hornbeam forest suffered similar rates of decline. Even so, such losses have now been stemmed and much of the habitat occurs in areas where survival of ancient and semi-natural woodland is at its greatest. The degree of fragmentation and isolation are presumed therefore to be relatively limited.

Although efforts are being made to restore and expand H9160 as part of the UK BAP habitat action plan for Lowland Mixed Deciduous woodland (see http://www.ukbap.org.uk), the scope and case for expansion seem limited. The current habitat area is therefore considered to be viable and at least equal in area to that of the favourable reference range.

3.4 Conclusions on area covered by habitat

Conclusion[2.6.ii]: Favourable

Although the area of this habitat is limited to only about 1,000 ha, this type of oak-hornbeam forest is naturally scarce and at the edge of its European range within southern Britain. Some concerns are raised by the increase in fragmentation and isolation due to the loss of around half the habitat area during c.1930-1985. However, such losses have been stemmed and much of this habitat occurs in areas where survival of ancient and semi-natural woodland is at its greatest, so fragmentation and isolation are presumed to be relatively limited. The current habitat area is therefore considered to be viable and at least equal in area to that of the favourable reference range.

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

4.1 Main pressures [2.4.10]

The main pressures likely to be affecting H9160 oak-hornbeam forest are listed below. These are derived from the UK BAP Habitat Action Plan for lowland mixed deciduous woodland and via 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 in the lowland landscape of Britain. These have undergone substantial expansion in southern regions in recent times. Over-grazing by deer impoverishes the ground flora, creates difficulties for regeneration, and may lead to a change in woodland structure with impacts on many components of the woodland flora and fauna.

- Development (**300 Sand and gravel extraction, 400 Urbanised areas, human habitation, 410 Industrial or commercial areas, 601 golf course**)

Development, including urban growth, quarrying and golf-course creation, has destroyed and could threaten some sites, both directly and indirectly where it occurs next to sites, leading to increased trampling, disturbance, pollution, etc. H9160 is particularly under threat, as the habitat occurs in the south-east and east of England where development pressure it high.

- Impacts from intensive agriculture (**110 Use of pesticides, 120 Fertilisation, 151 Removal of hedges and copses, 190 Agriculture and forestry activities not referred to above, 702 air pollution, 703 soil pollution**)

H9160 is particularly under threat from agricultural intensification and associated practices as the habitat occurs in the south-east and east of England where intensification has been very widespread. Removal of hedgerows, hedgerow trees and small patches of scrub in fields can simplify the landscape and result in greater ecological isolation of woods. Agricultural intensification can also result in increased localised nutrient enrichment, from spray drift or runoff from adjacent agricultural land. This can change the soils and alter the ground flora composition.

- Inappropriate forestry operations (**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**)

Many semi-natural hornbeam woods were replaced with planted conifers during the twentieth century. This resulted in a loss of native trees and associated wildlife. Although this practice has ceased, many former sites still support inappropriate conifer trees.

- Cessation of traditional management (**190 Agriculture and forestry activities not referred to above**)

Cessation of traditional management practices, such as coppicing, has in some areas lead to a reduction in structural diversity within the woods and a paucity of early, young-growth stages and more permanent open space (e.g. along rides). This process has affected a number of plants and animals associated with coppicing.

- 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.

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 H9160 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.

Special Area of Conservation (SAC) condition assessments

Table 4.2.1 and Map 4.2.1 summarise the CSM condition assessments for the two UK SACs supporting habitat H9160. 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 both SACs were in unfavourable recovering condition (i.e. the reason for the sites being classed as unfavourable was being addressed). This means that at least 37% of the total UK habitat area was in unfavourable condition.

Table 4.2.1 CSM condition assessment results for UK SACs supporting H9160. 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	373	2
	Total	373	2
	% of all assessments	***100%***	***100%***
	% of total UK resource	***37%***	***unknown***
Favourable	Maintained	0	0
	Recovered	0	0
	Unclassified	0	0
	Total	0	0
	% of all assessments	***0%***	***0%***
	% of total UK resource	***0%***	***0%***

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, 63% weakly indicative assessments were unfavourable. This is not surprising given the pressures that woodland, even protected sites, have been under during the 20th century. Even so, over half the unfavourable assessments were recovering and only a minority was declining.

Current Condition of H9160 based on Common Standard Monitoring condition assessments (See Sections 4.2 and 7.2 for further information)

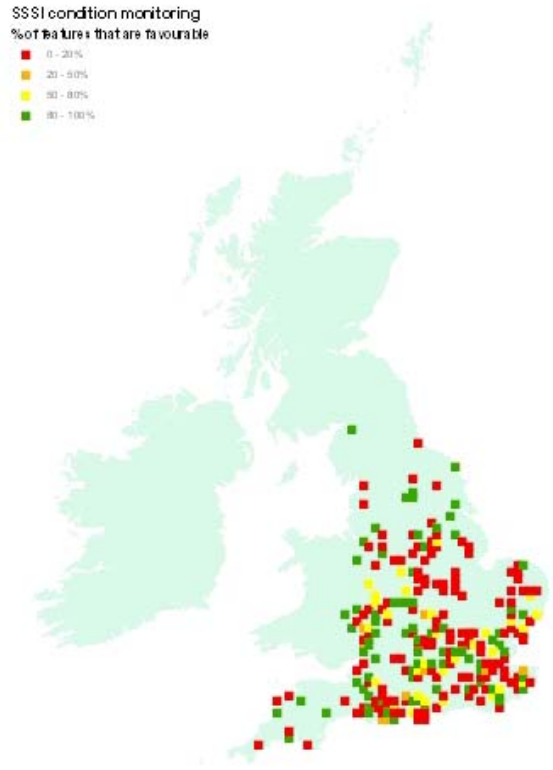
Map 4.2.1 SAC assessments	**Map 4.2.2** Assessments strongly indicative of the condition on SSSI/ASSIs	**Map 4.2.3** Assessments weakly indicative of the condition on SSSI/ASSIs
		
Key Red = unfavourable, i.e. the square contains at least one SAC where this habitat feature is present and has been judged 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	

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 H9160 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		29
	No change		75
	Unclassified		0
	Recovering		130
	Total		234
	% of all assessments		***63%***
Favourable	Maintained		0
	Recovered		0
	Unclassified		137
	Total		137
	% of all assessments		***37%***

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)

4.3 Typical species

Typical species[2.5.3]: None used

Typical species assessment[2.5.4]: Not applicable

Most of the characteristic plants for H9160 listed in EU Interpretation Manual are not native to the UK. The following could form characteristic species for the type in England: *Hedera helix, Lonicera periclymenum, Luzula pilosa, Luzula sylvatica,* and *Stellaria holostea*. However, none of these 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.

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, development, impacts from intensive agriculture, inappropriate forestry operations, cessation of traditional management, and air pollution. Condition assessments for SACs and SSSIs indicate that a large part of the habitat is in unfavourable condition. Both the SACs for H9160 were unfavourable, as were 63% of relevant SSSI assessments. There is no reason to expect the condition of any non-designated resource to be better. However, both the SACs and over half the unfavourable SSSIs assessments were recovering in condition. It is therefore clear that much more than the 25% of the habitat area is subject to significant deteriorations/pressures and in unfavourable condition. Evidence of recovery is, however, substantial and only a small part appears to be declining in condition.

5. Future prospects

5.1 Main factors affecting the habitat

5.1.1 Conservation measures

This habitat forms part of the UK BAP Habitat Action Plan for lowland mixed deciduous woodland (see http://www.ukbap.org.uk), which has targets to maintain existing areas of such woodland, restore a substantial area of replanted ancient woodland to native broadleaves, initiate measures to improve its condition, and expand the resource by colonisation or planting. Lowland mixed deciduous woodland 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 hornbeam woods are protected in whole or as part of SSSIs under the Wildlife and Countryside Act 1981. Two have been designated as SACs for H9160 in response to the EC Habitats Directive (see http://www.jncc.gov.uk/ProtectedSites/SACselection/habitat.asp?FeatureIntCode=H9160). Various other measures and initiatives have been put in place to help conserve such woodland, including published guides on their management and creation.

5.1.2 Main future threats[2.4.11]

The most obvious major threats to H9160 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 hornbeam woods until the currently high number of deer is reduced.

- Development (**300 Sand and gravel extraction, 400 Urbanised areas, human habitation, 410 Industrial or commercial areas, 601 golf course**)

H9160 is likely to remain under threat from development, as the habitat occurs in the south-east and east of England where development pressure is high.

- Impacts from intensive agriculture (**110 Use of pesticides, 120 Fertilisation, 151 Removal of hedges and copses, 190 Agriculture and forestry activities not referred to above, 702 air pollution, 703 soil pollution**)

The habitat is likely to remain under threat from agricultural intensification and associated practices as it occurs in the south-east and east of England where intensification has been very widespread.

- Inappropriate forestry operations (**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**)

Although the practice of converting semi-natural hornbeam woods to conifer plantations has ceased, many former sites still support inappropriate conifer trees. The next ten years, however, provide considerable opportunities to restore such stands.

- Lack of appropriate management (**190 Agriculture and forestry activities not referred to above**)

The wildlife value of many hornbeam woods is threatened because of a lack of coppicing and other appropriate management. Although a good number of woods now have some coppice management reinstated (Rackham 2003), further active management is desirable.

- 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 H9160 in the UK. This involved treating all assessments currently identified as either Favourable or Unfavourable recovering as future-Favourable: remaining categories were treated as future-Unfavourable – see Table 5.2.1. There are a number of caveats to this approach, which are set out beneath this table.

SAC condition assessments

Table 5.2.1 and Map 5.2.1 summarise the predicted potential future condition of the two UK SACs supporting H9160. 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 both of the SACs fall within the future-Favourable category, which means that at least 37% of the total UK habitat area falls within this category. If this is maintained, which is likely given that they are owned by conservation organisations, then the prospects for this type are relatively good.

Table 5.2.1 Predicted future condition of UK SACs supporting H9160 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	0	0
	Favourable recovered	0	0
	Unfavourable recovering	373	2
	Favourable unclassified	0	0
	Total	373	2
	% of assessments	***100%***	***100%***
	% of total extent	***37%***	***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.

SSSI/ASSI condition assessments

Table 5.2.2, and Maps 5.2.2 and 5.2.3 summarise the predicted potential future condition of H9160 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 are predicted to occur (summary statistics for the maps are given in Section 7.2). The combined condition assessments show that 72% of weakly indicative assessments fell within the future-favourable category.

Table 5.2.2 Predicted future condition of H9160 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		29
	Unfavourable no change		75
	Unfavourable unclassified		0
	Total		104
	% of assessments		***28%***
Future-favourable	Favourable maintained		0
	Favourable recovered		0
	Unfavourable recovering		130
	Favourable unclassified		137
	Total		267
	% of assessments		***72%***

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 H9160 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
		
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 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	

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

Conclusion[2.6.iv]: Unfavourable – Inadequate but improving

The EC Guidance states that where habitat prospects are intermediate between "good with no significant impacts from threats expected and long-term viability assured" and "bad with severe impacts from threats expected and long-term viability not assured", the judgement should be Unfavourable – Inadequate. In the UK, this was generally taken to mean that range and/or area are stable or decreasing, and between 75-95% 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. The main threats are deer browsing, development, agricultural practices, inappropriate forestry operations, lack of appropriate management, and air pollution. Condition assessments for the relevant SACs indicate that both sites may be favourable in the foreseeable future. Relevant condition assessments for SSSIs put 72% of sites within this category. Given the good progress already made and some additional recovery once further conservation measures are put into place, the expectation is that a significant part of the habitat will be in unfavourable condition in the next 12-15 years, but less than 25%.

6. Overall conclusions and judgements on conservation status [2.6]

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	Favourable	Current extent is stable and not less than the favourable reference area.	2
Specific structures and functions (including typical species)	Unfavourable – Bad but improving	More than 25% of the area of the habitat is Unfavourable as regards to specific structures and functions. Evidence of recovery is substantial and only a small part appears to be declining in condition.	2
Future prospects (as regards range, area covered and specific structures and functions)	Unfavourable – Inadequate but improving	Habitat prospects considered to be intermediate between "good with no significant impacts from threats expected and long-term viability assured" and "bad with severe impacts from threats expected and long-term viability not assured. Given the good progress already made and some additional recovery once further conservation measures are put into place, the expectation is that a significant part of the habitat will be in unfavourable condition in the next 12-15 years, but less than 25%.	2
Overall assessment of conservation status	Unfavourable – Bad but improving	On the basis of Structure and Function, the overall conclusion for this habitat feature is Unfavourable –Bad but improving.	2

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

7. Annexed material (including information sources used 2.2)

7.1 References

HALL, J. 1997. An analysis of National Vegetation Classification survey data. *JNCC Report* No. 272, Peterborough.

PETERKEN, G.F. 1993. Woodland Conservation and Management (2nd Edition). Chapman and Hall, London.

RACKHAM, O. 2003. ANCIENT Woodland: its History, Vegetation and Uses in England (New Edition). Castlepoint Press, Dalbeattie.

RODWELL, J.S. (ed.) 1991. British Plant Communities Volume 1: Woodlands and Scrub. Cambridge University Press, Cambridge.

RODWELL, J. & DRING, J. 2001. European significance of British woodland types. English Nature Research Report No. 460 (**Volumes 1-2**). English Nature, Peterborough.

SPENCER, J.W. & KIRBY, K.J. 1992. An inventory of ancient woodland for England and Wales. Biological Conservation **62**, 77-93.

UK BAP. Habitat Action Plan for lowland mixed deciduous woodland. Available from JNCC.

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)	2
Number of SACs with CSM assessments (b)	2
% of SACs assessed (b/a)	100
Extent of feature in the UK – hectares (c)	1,000
Extent of feature on SACs – hectares (d)	373
Extent of features assessed – hectares (e)	373
% of total UK hectarage on SACs (d/c)	37
% of SAC total hectarage that has been assessed (e/d)	100
% of total UK hectarage that has been assessed (e/c)	37

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 4.2.1-2 and 5.2.1-2

Status	Number of squares	Proportion of all squares
Current – Unfavourable (red)	2	100%
Current – Favourable (green)	0	0%
On SAC but not assessed (blue)	0	0%
Not on SAC (transparent)	0	0%
Total Number of 10km squares (any colour)	2	100%
Future – Unfavourable (red)	0	0%
Future – Favourable (green)	2	100%