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 :

H9190: Old acidophilous oak woods with *Quercus robur* on sandy plains

H9190 Old acidophilous oak woods with *Quercus robur* on sandy plains

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 H9190 lowland acid oak woods and its relations with UK classifications. The habitat is limited to the lowland south-eastern quarter of Britain. Most stands conform to one of two woodland types in the NVC (see Rodwell 1991): W10a *Quercus robur – Pteridium aquilinum – Rubus fruticosus,* Typical sub-community, or W16a *Quercus* spp. – *Betula* spp. – *Deschampsia flexuosa, Quercus robur* sub-community. Remaining stands fall within other sub-communities of W10 and W16.

This habitat type comprises ancient lowland oak woodland on acidic, sandy or gravelly substrates. The ground flora is generally species-poor, and comprises calcifuge sub-shrubs such as bilberry *Vaccinium myrtillus* and heather *Calluna vulgaris*, grasses such as wavy hair-grass *Deschampsia flexuosa* and creeping soft-grass *Holcus mollis*, and herbs such as heath bedstraw *Galium saxatile* and common cow-wheat *Melampyrum pratense*, together with acidophilous bryophytes. Bracken *Pteridium aquilinum* can become dense where the sands are deep and loose.

Despite examples of this type in Britain being outliers of the main European range, their floristics are typical for the type, apart from the absence of a few more continental species such as May lily *Maianthemum bifolium*. Veteran trees are however relatively abundant in UK stands compared to examples in continental Europe, and are often associated with assemblages of notable lichens, fungi and invertebrates. The type is limited to the south and east of Britain because to the west the oakwoods start to acquire a more oceanic character that places them within H91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles. Many examples are secondary in origin, having developed on former heathland. Some such sites are developing valuable characteristics and might eventually develop into good examples of H9190. In some cases it has been decided that the conservation priority for secondary stands is to restore them to former heathland.

Rodwell and Dring (2001) reported on the European context of British H9190 lowland acid oak woods. Increasingly, on highly acidic and very impoverished soils at the northern and western edge of its range, beech is rivalled by *Quercus robur*. Such substrates are especially extensive across the Baltic and North Sea plain, from Poland through Germany into the Netherlands, with more local areas in the Ardennes, middle Rhine, northern France, the Paris Basin and south-east England. Here, there is little difference between the flora of the Luzulo-Fagion and its oak-dominated counterparts in the *Quercion*. Calcifuge sub-shrubs like *Vaccinium myrtillus* and *Calluna vulgaris,* herbs such as *Deschampsia flexuosa, Holcus mollis, Galium saxatile* and *Melampyrum pratense,* together with acidophilous bryophytes, prevail in field and ground layers that are generally species-poor. In addition, extraction of oak timber, coppicing

for tan-bark and fuel, combined with grazing of sheep and cattle, pasturing of pigs for the acorn crop and collection of litter for bedding of animals has exhausted and fragmented the *Quercion* woodlands.

Table 1.1.1 Summary description of habitat H9190 and its relations with UK vegetation/habitat classifications

Classification	Correspondence with Annex I type	Comments
EU Interpretation Manual	= H9190	Includes acidophilous forests of the Baltic-North Sea plain, composed of *Quercus robur*, *Betula pendula* and *Betula pubescens*, often mixed with *Sorbus aucuparia* and *Populus tremula*, on very oligotrophic, often sandy (or moraine) and podsolized or hydromorphic soils. The bush layer, poorly developed, includes *Frangula alnus.* The herb layer is formed by *Deschampsia flexuosa* and other grasses and herbs of acid soils (sometimes includes *Molinia caerulea*), and is often invaded by bracken. Forests of this type often prevail in the northern European plain and occupy more limited edaphic enclaves. Also included are forests of *Quercus robur* and, sporadically *Quercus pyrenaica* or hybrids, on podzols, with a herb layer formed by the group of *Deschampsia flexuosa*, with *Molinia caerulea* and *Peucedanum gallicum.*
National Vegetation Classification (NVC) (see Rodwell 1991, Hall 1997)	Most H9190 stands fall within W10a *Quercus robur – Pteridium aquilinum – Rubus fruticosus,* Typical sub-community or W16a *Quercus* spp. – *Betula* spp. – *Deschampsia flexuosa, Quercus robur* sub-community. Remaining stands fall within other sub-communities of W10 and W16.	Only lowland stands in the south-eastern quarter of Britain are included. Many of these are secondary in origin, having developed on former heathland.
BAP priority habitat type	H91A0 forms part of two BAP priority habitat types: (i) lowland mixed deciduous woodland; and (ii) lowland wood-pasture and parkland.	Allocation to these depends on their treatment as woodland or grazed wood-pasture. H9190 is a minor component of the lowland mixed deciduous woodland type. It is a more significant component of the lowland wood-pasture and parkland type.

In such stretches as remain, *Quercus robur* is the leading oak, with *Quercus petraea* making a minority contribution in locally humid places, and *Betula pendula* often prominent, especially in pioneer situations where fire or disturbance gives it an opportunity to spread. Other woody companions are few: *Sorbus aucuparia, Ilex aquifolium* and, often with local abundance, *Frangula alnus* and *Populus tremula.* With the frequently open or patchy canopy, *Calluna* is often the leading sub-shrub, thriving on soils which have become even more impoverished and strongly podzolised with long exploitation. Where there has been grazing, grasses often predominate or *Pteridium aquilinum* can become dense where the sands are deep and loose. In open, windy situations blown free of litter, bryophytes can be abundant.

Woodland of this type has been described from Germany, Denmark, south Sweden and south Norway, The Netherlands, Belgium and France, often as the type association *Betulo-Quercetum roboris* Tüxen 1937. Among the flora of these woodlands, it is frequently only the absence from our British examples of *Maianthemum bifolium* that distinguishes them.

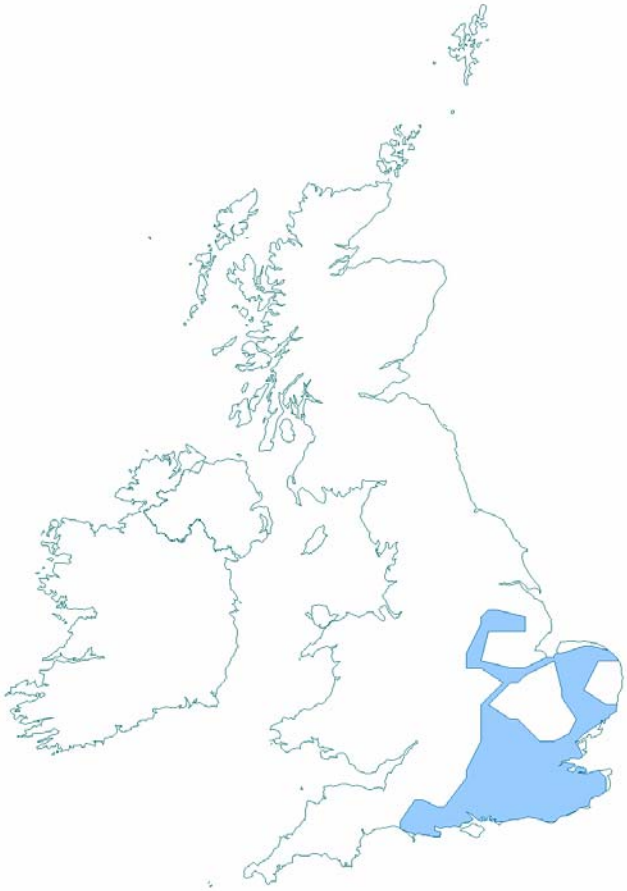
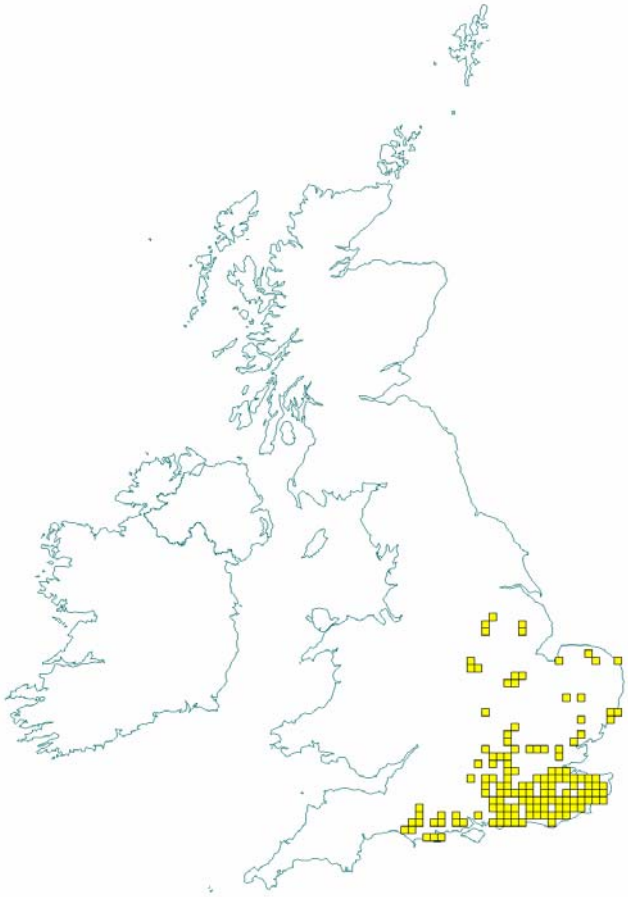
2. Range [2.3]

2.1 Current range

Range surface area [2.3.1]: 33,329 km²

Date calculated [2.3.2]: **May 2007**
Quality of data [2.3.3]: **Moderate**

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

Map 2.1.1 Habitat range map [1.1] for H9190	**Map 2.1.2** Habitat distribution map [1.2] for H9190
	
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: 139

See Section 7.1 for data sources

Maps 2.1.1 and 2.1.2 show the range and distribution of H9190 lowland acid oak woods in the UK. They are based on comprehensive records extracted from the JNCC Database of Woodland Community Types. Included are all Special Areas of Conservation (SACs) for H9190 plus all stands that conform to NVC types W10a or W16a within or to the south/east of the following counties: Dorset, Wilts, Oxfordshire, Northamptonshire, Leicestershire, and Nottinghamshire, i.e. the core NVC types related to and within the geographic limits of the habitat (see Table 1.1.1 for details).

Map 2.1.1 provides a good representation of the broad range to H9190, i.e. across much of the south-eastern part of the UK. Even though Map 2.1.2 is limited to the core related NVC types, the distribution shown is also a good portrayal. Stands of H9190 are most commonplace across the south-eastern counties between Kent, Buckinghamshire and Dorset. Occurrences further north in East Anglia and up into Lincolnshire and Nottinghamshire are more patchy.

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 H9190 lowland acid oak woods appears to have remained more-or-less stable since 1994.

2.3 Favourable reference range

Favourable reference range[2.5.1]: **Approx. 33,300 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, 33,300 km^2, has been set as the favourable reference area. Reasons for this are discussed below.

Available evidence suggests that the current range of H9190 lowland acid oak woods is both sufficiently large (c.33,300 km^2) and compact not to raise any major concerns about the viability of the habitat on these accounts. It includes most of the native range of such woodland, i.e. eastward of a line drawn from the Humber to Isle of Purbeck, which is delimited by climatic factors and constrained by the presence of suitable acidic, sandy or gravelly substrates (see Rodwell 1991, Peterken 1993, Rackham 2003).

Despite some declines in area during the last century and beforehand, and some subsequent development of secondary oak stands (e.g. Moseley and Moore 1988), the broad range of H9190 has probably remained reasonably stable for many centuries. It mostly coincides with areas of early (Neolithic and Bronze Age) forest clearance, upon which heathland developed and little ancient woodland survives.

Some of the fragmentation apparent in Map 2.1.2 is also explained by natural constraints imposed by the availability of suitable acidic substrates and probable limited extent of such woodland. These factors are reflected in the patchy distribution of the type north of the Chilterns and in East Anglia. Another consideration is that a sizeable area of suitable ground is now occupied by heathland or acid beech-dominated woodland, which are themselves of high conservation importance. Any significant spread of oak woodland is therefore likely to conflict with other conservation priorities.

The current range of H9190 lowland acid oak woods 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**

It appears sufficiently large and compact not to raise any major concerns as regards viability of the habitat on these accounts. The range has remained stable since 1994 and probably so for many centuries before. It includes most of the native range of lowland acid oak woodland. Some suitable ground is now occupied by heath habitats and acid beech woodland, so any spread of oak woodland could conflict with other conservation priorities. Fragmentation within the range partly reflects early and extensive clearance of the original forest and natural constraints imposed by the availability of suitable sites and probable limited extent of such woodland. The current range area of H9190 is therefore taken to be viable and approximately equal to that of the favourable reference range.

3. Area [2.4]

3.1 Current area

Total UK extent [2.4.1]: **45km^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 H9190 lowland acid oak woods in the UK. This is estimated at around 4,500 ha, all of which is located within England. The figure is based mainly on expert opinion, as there is no comprehensive data available on the habitat extent.

Table 3.1.1 Area of H9190 in the UK

	Area (ha)	Method [2.4.3]	Quality of data [2.4.4]
England	4,500 (4,000-5,000)	1	Poor
Scotland	not present	-	-
Wales	not present	-	-
Northern Ireland	not present	-	-
Total UK extent [2.4.1]	4,500 (4,000-5,000)	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**

Trends in the area of H9190 since 1994 are not precisely documented. It is likely that any changes have been small and losses have been balanced by increases elsewhere, i.e. the area has remained more-or-less stable. Clearance and conversion of ancient semi-natural sites, which was prevalent in earlier decades, was largely stemmed around 1990. Some secondary stands have been cleared to restore former heathland, whilst some stands replanted with conifers (such as at Sherwood, in the New Forest and at Windsor) have undergone restoration to native broad-leaves.

3.3 Favourable reference area

Favourable reference area[2.5.2]: **Approx. 45 km^2**

Section 3.2.2.3 of 'Assessing Conservation Status: UK Approach' sets out how favourable reference area estimates have been determined in the UK. Based on this approach, the current extent, 45 km^2, has been set as the favourable reference area. Reasons for this are discussed below.

The current area of H9190 seems to be large enough to not raise any major concerns about the viability of the habitat. The total area is admittedly estimated at only 4,500 ha. This habitat is, however, somewhat constrained by the availability of suitable acidic substrates and suggestion that lowland acid oakwoods are probably a minority element within the boundaries of its natural range (the potential natural vegetation of some suitable sites would comprise beech-dominated woodland within type H9120).

More importantly, this habitat has been at low levels for many centuries. Much of its original area was cleared and converted to heathland during the pre-historic wave of forest clearance, with little ancient woodland surviving on acidic, sandy or gravelly substrates. There is some evidence that about two hundred years ago there was some transformation of heath back into oak woodland when commons were enclosed (Moseley and Moore 1988). Similarly, in recent decades the habitat has increased due to declines in grazing and other forms of heathland management, which have resulted in the spread of precursor birch-oak woodland. Some of this secondary woodland conflicts with other conservation priorities and has or is being cleared to restore heathland habitats.

Some concern is raised by the loss of ancient semi-natural stands of H9190 during the 20th century (see Spencer and Kirby 1992) and the resultant effects on habitat fragmentation and isolation. Such soils were often preferred for conifer plantations, for example areas at Sherwood, in the New Forest and at Windsor, though there are now programmes for restoring such stands to native broadleaves. However, net losses have probably been less than for other types because: (i) the general trend has been for increases in woodland cover on acid soils; and (ii) the survival of ancient and semi-natural woodland is relatively high within the core range of H9190. Thus, despite some decline in high quality stands, the degree of fragmentation and isolation are presumed to be relatively limited. Although efforts are being made to restore and expand the habitat as part of the UK BAP habitat action plans for lowland mixed deciduous woodland and lowland wood-pasture and parkland (see http://www.ukbap.org.uk), the case for expansion seems 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 c.4,500 ha, it is naturally constrained by the availability of suitable acidic substrates and probably accounts for a minority of potential natural vegetation. More importantly, it has been at low levels for many centuries and has actually increased in recent and recent historic times, spreading onto former heathland. In some cases, the conservation priority is to remove to such woodland. Some concerns are raised by the loss of ancient semi-natural H9190 stands during the 20th century and resulting increase in fragmentation and isolation. However, this habitat occurs on acid soils where there has been an increase in the general cover of woodland. In addition, survival of ancient and semi-natural woodland is at its greatest within the core range of H9190. Thus, fragmentation and isolation are presumed to be relatively limited and the current habitat area is 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 H9190 lowland acid oak are listed below. These are derived mainly from the UK BAP habitat action plans for lowland mixed deciduous woodland (allowing for factors that are most likely to affect acidic sites) and lowland wood-pasture and parkland, plus the adverse features listed in Common Standards Monitoring (CSM) condition assessments (see Section 4.2.1). The related EC codes are shown in brackets.

- Inappropriate grazing (**140 Grazing**)

Over-grazing is a problem for many H9190 woodlands, especially within the recent expansion of deer populations across southern Britain. Excessive grazing can impoverish the ground flora, inhibit regeneration of trees and shrubs, and cause changes in the woodland structure. Although some grazing is necessary to conserve H9190 wood-pasture sites, these can suffer from under-grazing and excessive grazing. Without adequate grazing such sites convert to scrub and eventually form closed woodland. Over-grazing of wood-pasture can eliminate scrub, prevent tree regeneration, and reduce nectar-feeding sources.

- Unsympathetic and insufficient 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**)

Replacement of native trees with planted conifers was a major threat until the 1980s. While this threat has receded, its legacy remains, though some steps have been taken to restore conifer plantations on former lowland oak wood sites. Inappropriate treatment, e.g. excessive felling or removal of minor trees, of native species stands has also been a problem, though this has also lessened with improved management

guidelines and better appreciation and promotion of the importance and appropriate treatment of semi-natural woodland. H9190 wood-pasture sites face problems with the loss of associated semi-natural grassland or heath due to ploughing, reseeding, fertilisation, inappropriate grazing and other treatments. Scrub clearance and deadwood are also often cleared away.

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

The cessation of traditional management practices, such as coppicing and wood-pasturage, has led to a loss of associated habitats, particularly open space and young-growth. Butterflies and other insects and various plants have been particularly badly affected by this process. Ensuring that necessary woodland management is carried out is therefore a particular pressure. The problem is compounded because there is a lack of interest, expertise and incentives amongst some woodland owners to undertake management.

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

Many H9190 woods and wood-pastures are fragmented and isolated. This limits exchange between sites and limits the capacity for the species community to perpetuate itself over time. Many of the species dependent on veteran trees are unable to move between these sites due to their poor powers of dispersal and the increasing distances they need to travel. Much of the landscape that H9190 woods now occupy has seen extensive removal of hedges, hedge trees and small patches of scrub in fields, which has reduced woodland connectivity to low levels. Although some expansion of secondary stands has occurred, some of these have/are to be removed to restore other wildlife habitats, notably heathland.

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

Development, including urban growth, quarrying, road building and golf-course creation, has destroyed and continues to threaten some H9190 sites. Apart from obvious direct impacts, indirectly it can damage sites through increased trampling, disturbance, pollution, etc. It also increases woodland fragmentation and isolation.

- Agricultural practices (**110 Use of pesticides, 120 Fertilisation, 702 air pollution, 703 soil pollution**)

Many H9190 woods adjoin agricultural land and, in places, suffer from nutrient enrichment from spray drift or run off.

- Loss of veteran trees (**950 Biocenotic evolution)**

This is a particular problem for H9190 wood-pasture sites, which support important veteran tree populations. Because of their age, veteran trees are more susceptible to decline and death. This can be accelerated by disease (e.g. oak dieback), physiological stresses (from drought, storm damage, ploughing of tree roots, soil compaction and erosion as caused by trampling by livestock, people, car parking or agricultural machinery, damaged from vandalism), and/or competition from surrounding trees. The issue is compounded because of neglect and loss of expertise in traditional tree management techniques (e.g. pollarding): uncut pollard trees become increasingly top-heavy and susceptible to collapse. Removal of veteran trees and dead wood can occur because of perceptions of safety and tidiness where sites have high amenity use. The situation in some wood-pasture sites is made worse because of a lack of suitable replacement trees, causing a break in the continuity of dead wood habitat and loss of specialised species.

- Invasion by non-native species (**954 invasion by a species, 966 antagonism arising from introduction of species**)

Some lowland oakwoods have been affected by the invasion of non-native species, particularly rhododendron *Rhododendron ponticum.* This shrub was planted into woods in the past and has since spread vigorously, sometimes producing extensive dense thickets that shade out the native ground flora.

- Inappropriate expansion of woodland (**141 Abandonment of pastoral systems**)

Declines in grazing and other forms of management have led to the spread of birch-oak woodland over the last 50 years. In some cases this has displaced heathland habitat that is a conservation priority, which justifies the removal of the birch-oak woodland cover.

- 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. Pollution derived either remotely from industry and traffic, or locally from agro-chemical application and nitrogen enrichment from pasture overstocking, causes damage to epiphyte communities and changes to woodland soils.

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 H9190 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 H9190. 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 94% of the area and 83% of the number of assessments was Unfavourable. This means that at least 27% 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. All the Unfavourable assessments were however classed as recovering, because the adverse factors were being addressed.

Table 4.2.1 CSM condition assessment results for UK SACs supporting H9190. 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	1,213	5
	Total	1,213	5
	% of all assessments	***94%***	***83%***
	% of total UK resource	***27%***	***unknown***
Favourable	Maintained	0	0
	Recovered	0	0
	Unclassified	81	1
	Total	81	1
	% of all assessments	***6%***	***17%***
	% 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.

SSSI/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% of strongly indicative assessments were unfavourable. Most of these were recovering.

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 H9190 on SSSI/ASSIs. See notes below table and technical note II for further details

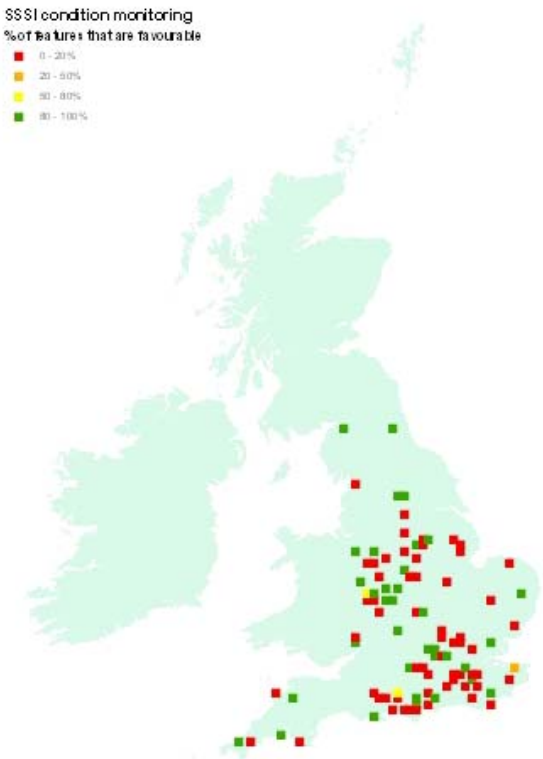
Condition	Condition sub-categories	Number of assessments	
		Strongly indicative assessments (Category 1)	Weakly indicative assessments (Category 2)
Unfavourable	Declining	9	
	No change	15	
	Unclassified	0	
	Recovering	48	
	Total	72	
	% of all assessments	***63%***	
Favourable	Maintained	0	
	Recovered	0	
	Unclassified	42	
	Total	42	
	% 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 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 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.

Current Condition of H9190 based on Common Standard Monitoring condition assessments (See Sections 4.2 and 7.2 for further information)

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

4.3 Typical species

Typical species[2.5.3]: None used

Typical species assessment[2.5.4]: Not applicable

Characteristic ground plants for this habitat listed in the EU Interpretation Manual (and native to the UK) or frequent within the synoptic tables types for related NVC type are not particularly faithful to H9190. Therefore, available trend data on these species at the UK-level or even the GB-woodland-level is not particularly meaningful and has not been utilised here.

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 inappropriate grazing, unsympathetic and insufficient management, fragmentation and isolation, development, agricultural practices, loss of veteran trees, invasion by non-native species, inappropriate expansion of woodland, and air pollution. Condition assessments for SACs and SSSIs show that a large part of the habitat is in Unfavourable condition: 83-94% of assessed SACs are judged Unfavourable, whilst the level for relevant SSSI/ASSIs is 63%. Most of that which is Unfavourable is recovering. There is no reason to expect the condition of the non-designated resource to be substantially better.

5. Future Prospects

5.1 Main factors affecting the habitat

5.1.1 Conservation measures

Considerable work has recently gone into improving the condition and expanding the area of H9190 lowland acid oak woods. The habitat is part of the UK BAP Habitat Action Plans for lowland mixed deciduous woodland and lowland wood-pasture and parkland. These have targets to: (i) maintain the current extent and distribution of these habitats; (ii) improve their condition; (iii) expand their area by natural regeneration or planting; and (iv) restore some former sites that have been converted to non-native plantations or become derelict. Although the new and restored habitat areas will take to mature, it is expected that they will make an increasing contribution to the H9190 resource over the coming decades.

These habitats are subject to a number of legal instruments, national policy measures and grant-aid schemes. These prevent clear-felling of woodland for conversion to other land uses, and aim to maintain and restore their ecological interest 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. Individual trees and groups in wood-pasture and parkland may be afforded protection under the Town and Country Planning Act 1990 and the Forestry Act 1967.

About 20-30% of the more important areas of lowland mixed deciduous woodland is estimated to have been notified as SSSIs under the Wildlife and Countryside Act 1981, as have most larger areas of wood-pasture and parkland and most of the better-known sites of significance for invertebrates and lichens. Some sites have been designated as SACs for H9190 in response to the EC Habitats Directive (see http://www.jncc.gov.uk/ProtectedSites/SACselection/habitat.asp?FeatureIntCode=H9190). Various other measures and initiatives have been put in place to help conserve such woodland. Part of the action

undertaken for The New Forest Life Project focused on restoring and developing a management plan for the outstanding H9190 acid oak wood-pastures found in this locality (http://www.newforestlife.org.uk/). The Veteran Trees Initiative aimed to promote veteran trees and their management, partly through the publication of the Veteran Trees Management Handbook.
(see http://www.english-nature.org.uk/pubs/handbooks/)

5.1.2 Main future threats[2.4.11]

The most obvious major threats to H9190 over the next 12-15 years are listed below. The related EC codes are shown in brackets.

- Inappropriate grazing (**140 Grazing**)

Over-grazing is likely to remain a major threat to H9190 woodlands, at least until deer numbers and impacts can be substantially reduced. Under-grazing is likely to remain a problem in H9190 wood-pasture sites, albeit that measures have been put in place at some sites to rectify this problem. Excessive grazing is an issue in the New Forest, where combined levels of grazing are generally very high (see Mountford and Peterken 2003).

- Unsympathetic and insufficient 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**)

With improved management guidelines and better appreciation and promotion of the importance and appropriate treatment of semi-natural woodland and wood-pasture, the threat from unsympathetic management continues to diminish. The next ten years provide considerable opportunities to restore damaged stands, particularly woodland planted with conifers during the 20th century and derelict wood-pasture. This will be encouraged by targeted grant-aid and projects, though it will take longer for the vegetation and associated wildlife to respond positively.

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

Fragmentation and isolation are likely to remain as significant threats to the conservation of H9190 oak woodland, though expansion and restoration of the habitat will help reduce their impact.

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

H9190 is likely to remain under threat from development, as the habitat occurs in the south-east and east of England where pressure from development is high.

- Agricultural practices (**110 Use of pesticides, 120 Fertilisation, 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.

- Loss of veteran trees (**950 Biocenotic evolution)**

Loss of veteran trees will remain a problem for H9190 wood-pastures, especially where there is a shortage of replacement trees. Recent development in expertise, knowledge and interest in veteran trees and wood-pasture conservation will help lessen the impacts.

- Invasion by non-native species (**954 invasion by a species, 966 antagonism arising from introduction of species**)

Invasion by rhododendron will remain as a threat to such woodland growing on acidic sites, although increasingly efforts are being made to control and eradicate it.

- 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 possible future condition of H9190 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 H9190 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 all of the SACs assessed fall within the future-favourable category. This means that at least 29% of the total UK habitat area falls within this category.

Table 5.2.1 Predicted future condition of UK SACs supporting H9190 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	1,213	5
	Favourable unclassified	81	1
	Total	1,294	6
	% of assessments	***100%***	***100%***
	% of total extent	***29%***	***Unknown***

Note that the scenario presented above is based on the same information as used to construct the Table 4.2.1. It is based on the following premises:

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

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

(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 H9190 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 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	

SSSI/ASSI condition assessments

Table 5.2.2 and Maps 5.2.2 and 5.2.3 summarise the possible potential future condition of H9190 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 79% of strongly indicative SSSI/ASSI assessments fall within the future-favourable category.

Table 5.2.2 Predicted future condition of H9190 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	9	
	Unfavourable no change	15	
	Unfavourable unclassified	0	
	Total	24	
	% of assessments	***21%***	
Future-Favourable	Favourable maintained	0	
	Favourable recovered	0	
	Unfavourable recovering	48	
	Favourable unclassified	42	
	Total	90	
	% of assessments	***79%***	

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.

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. The main threats are inappropriate grazing, unsympathetic and insufficient management, fragmentation and isolation, development, agricultural practices, loss of veteran trees, invasion by non-native species, and air pollution. Condition assessments for relevant SACs indicate that all of the habitat therein might become Favourable. Relevant condition assessments for SSSIs put 79% of site 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 most of the habitat will be in Favourable condition in the next 12-15 years.

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. Most of that which is Unfavourable is recovering.	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. Range and area could be expanded by accepting that some additional stands beyond the current range are included within this type. Given the good 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	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.

MOSELEY, S.P. & MOORE, P.D. 1988. The development of forest in south-east England in the last two centuries: evidence from pollen analysis. In: Salbitano (ed.) Human Influence on Forest Ecosystems Development in Europe. Pitagora, Bologna. 90-94.

MOUNTFORD, E.P. & PETERKEN, G.F. 2003. Long-term change and implications for the management of wood-pastures: experience over 40 years from Denny Wood, New Forest. Forestry **76**, 19-43.

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

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

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.

UKBAP. Habitat Action Plan for lowland mixed deciduous woodland (2003). Available from JNCC.

UKBAP. Habitat Action Plan for lowland wood-pasture and parkland. Available from: 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)	6
% of SACs assessed (b/a)	86
Extent of feature in the UK – hectares (c)	4,500
Extent of feature on SACs – hectares (d)	1,301
Extent of features assessed – hectares (e)	1,294
% of total UK hectarage on SACs (d/c)	29
% of SAC total hectarage that has been assessed (e/d)	99
% of total UK hectarage that has been assessed (e/c)	29

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)	5	71%
Current – Favourable (green)	1	14%
On SAC but not assessed (blue)	1	14%
Not on SAC (transparent)	0	0%
Total Number of 10km squares (any colour)	7	100%
Future – Unfavourable (red)	0	0%
Future – Favourable (green)	6	86