

# Hedgerow Survey 2006 and 2007

**280 hedgerows in 47 one kilometre squares were surveyed**

**42% of hedgerows were in good condition**

**4,045km (2528 miles) is the estimated length of hedgerow in the Chilterns**

## Background to the survey

This document summarises the results of a Hedgerow Survey carried out in 2006 and 2007 by the Chilterns Conservation Board, the body responsible for protecting and enhancing the Chilterns Area of Outstanding Natural Beauty (AONB).



*Radnage Valley, Buckinghamshire.*

The Chilterns is a beautiful area of rolling chalk hills, woodlands, streams and quiet valleys with brick and flint cottages. In 1965, 324 square miles of the Chilterns were designated by the Government as an AONB in recognition of it being amongst the finest landscapes in the country. The main aim of the AONB is to conserve and enhance the natural beauty of the area, which means that the Chilterns is protected for future generations to enjoy.

## Why are hedgerows important?

Hedgerows are a highly valued feature in the Chilterns, knitting together the patchwork quilt of woodland, arable land and pasture. Many are more ancient by centuries than our castles, cathedrals and abbeys, and, in the words of W.G Hoskins, author of 'The Making of the English Landscape', 'they represent the physical evidence of decisions made long ago and fixed solidly on the ground'. They are important for landscape, archaeological, cultural and agricultural reasons and are a major wildlife habitat. Over 600 plant species, 1500 insects, 65 birds and 20 mammals have been recorded at some time living in British hedgerows. They also act as wildlife corridors, linking other habitats and aiding the dispersal of species.



*John Morris*

*The brimstone butterfly uses buckthorn found in hedgerows to lay its eggs.*

## Hedgerows and the landscape

Hedgerows are important in forming the character of the landscape and how we perceive it. Variations in size and species composition of individual hedgerows will often be the main feature of a landscape. The patterns that hedgerows form in the countryside will define landscape character. For example, the flush of white blackthorn in spring and the reds of dogwood in autumn. Hedgerows are very important in how much of the wider landscape can be seen, or how enclosed it feels, and how we experience and enjoy the countryside.

## Hedgerows and biodiversity

Hedgerows have been identified as a priority habitat in the UK Biodiversity Action Plan. Of particular interest are ancient hedgerows, defined as those which were in existence before the Enclosure Acts, passed mainly between 1720 and 1840. Also of merit are species-rich hedgerows, those which contain five or more woody species on average in a 30m length.

Thirty eight of the species associated with hedgerows are UK Biodiversity Action Plan priority species. These include song thrush, linnet, tree sparrow, brown hare, dormouse, stag beetle and six species of bat.

## Hedgerows and history

Historically, hedgerows served two main purposes: to delineate a political or territorial boundary, (for example a parish boundary) and to provide a stock-proof barrier. The first documentary references to hedgerows are to be found in Anglo-Saxon charters. In the Chilterns, the Black Hedge of Monks Risborough, is over a 1000 years old and is even mentioned in a 10th century charter.

## What is a hedgerow?

For the purpose of this survey, Defra defines a hedgerow as a boundary line of trees or shrubs over 20m long and less than 5m wide at the base, provided that at one time the trees or shrubs were more or less continuous.



*Parish and former county boundary hedgerow between Radnage and Stokenchurch*

## Description of the survey

### Why survey?

Despite the importance of hedgerows in the Chilterns, no comprehensive survey of their stock and condition has been carried out across the AONB. Hedgerow surveys are very useful - for building up a detailed knowledge base on the local character and condition of the hedgerow network and the mix of species they contain.

### Hedgerow survey method

Using funding from Defra, a hedgerow survey was carried out in 47 of the 105 one kilometre squares used in the Chilterns Land Use Survey between August and October 2006 and 2007. Permission was obtained from landowners before surveying was carried out. The boundaries surveyed within each 1km square were randomly selected. The survey was carried out using the methodology in the latest Hedgerow Survey Handbook (Defra 2006).

### Data recorded

One of the major components of the survey was assessing whether or not hedgerows were in 'favourable' condition. This is done by measuring characteristics of the hedgerow referred to as 'condition attributes'.

- Size, including height and width
- Amount of undisturbed ground and perennial vegetation next to the hedgerow
- Abundance of recently introduced non-native species (i.e. snowberry, laurel, leylandii)
- Abundance of certain plant species, such as nettles, docks and cleavers (goose-grass), which indicate nutrient enrichment.
- The occurrence and size of gaps in the hedgerow

Each attribute has a threshold, for example a hedgerow must be at least 1m tall and 1.5m wide and have a cross sectional area of 3m<sup>2</sup> to be classified in good condition.

Other data recorded included

- Management of adjoining land ( i.e. agriculture, golf course, equestrian)
- Type and amount of woody species (i.e. hawthorn, blackthorn)
- Type and amount of species below the hedgerow, also known as ground flora (i.e. bluebell, ground ivy)
- Number and size of ancient or 'veteran' trees

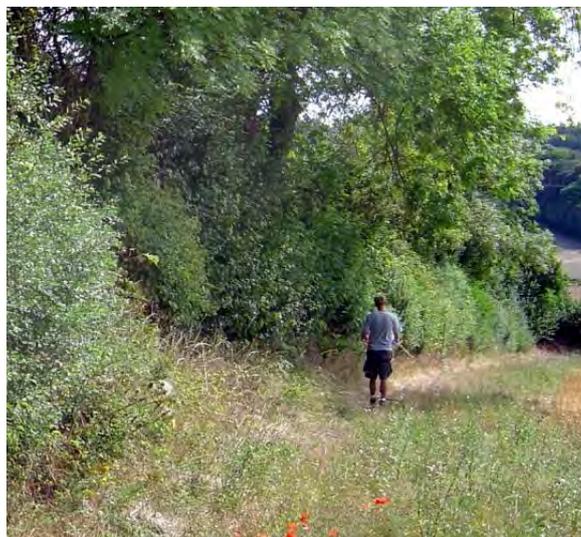
### What will the information be used for?

The data gathered will be used

- To set a baseline of condition for future surveys.
- To help set priorities in the AONB Management Plan 2008-2013.
- To measure progress in achieving local Biodiversity Action Plan (BAP) targets for hedgerows in the Chilterns AONB.
- To assist in the appropriate management of Chilterns hedgerows.
- To increase awareness and understanding of hedgerows in the Chilterns landscape.
- To ascertain if there is a link between hedgerow condition and adjacent land management.



*Hedgerows are a great source of free food in autumn*



*Surveying a hedgerow in good condition*

Martina Stranska



*Stonor Valley Buckinghamshire/Oxfordshire Border*

## Survey findings

A total of 280 hedgerow sections in 47 squares were surveyed.

Data suggests that there is 4,010km (2,500 miles) of hedgerow in the AONB (833 km<sup>2</sup>).

In total, 124 sections (44%) passed all condition assessment criteria (5 attributes) and can therefore be said to be in good condition. (see diagram right)

- 106 (38%) passed on 4 out of 5 attributes
- 36 (13%) passed on 3 out of 5 attributes
- 12 (4%) passed on 2 out of 5 attributes
- 2 (1%) passed on 1 out of 5 attributes

## Hedgerow trees

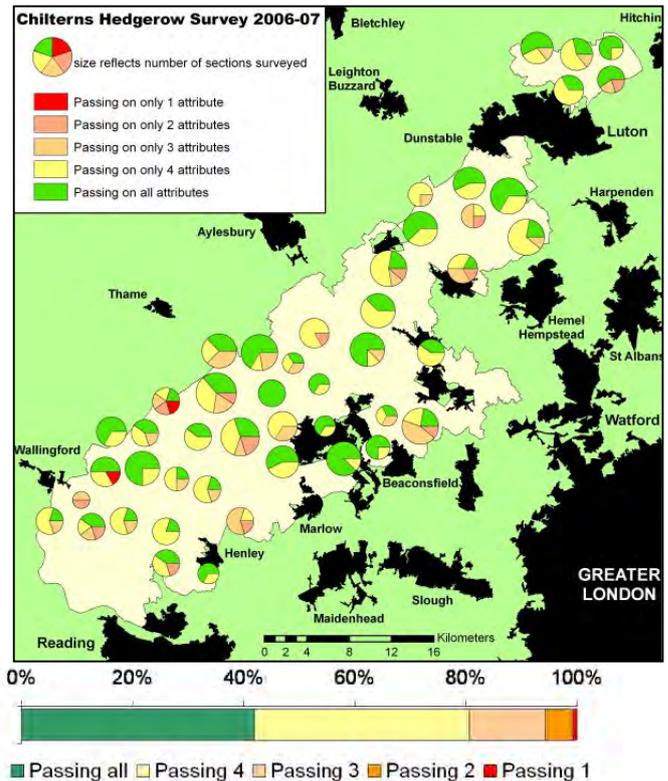
Isolated hedgerow trees are very important components of the landscape and provide a valuable wildlife habitat. A total of 92 isolated hedgerow trees were recorded in the sampled hedgerow sections. This equates to approximately 11 trees per kilometre, or about one every 90m. Using the survey data to estimate hedgerow length, gives a figure of 44,000 hedgerow trees within the AONB. Only 2% of the isolated hedgerow trees surveyed were young, with a trunk diameter of less than 5cm at breast height. This is a cause for concern because without regular replacement, the number of hedgerow trees in the AONB will decline over time.

Ash, pedunculate oak and beech were the most frequent species encountered. About 9% of the trees sampled had a trunk diameter in excess of 100 cm. These were mainly oak, although large specimens of ash and hornbeam were also found.

## Condition assessment

The following table explains in more detail each of the condition attributes and the implication for failure in each category.

Attribute	Thresholds for favourable condition (all thresholds need to be passed)	Sections failing each threshold	Sections failing attribute overall	Conservation issue
Size	<ul style="list-style-type: none"> <li>● At least 1m height</li> <li>● At least 1.5m width</li> <li>● At least 3m<sup>2</sup> cross-sectional area</li> </ul>	1% 8% 9%	11%	Loss of shelter for fauna and, in particular, unsuitable nesting habitat for most birds.
Integrity/continuity	<ul style="list-style-type: none"> <li>● Gaps less than 10% of section length</li> <li>● No gap greater than 5m wide</li> <li>● Base of canopy less than 0.5m above ground for shrubby hedgerows</li> </ul>	14% 11% 17%	29%	Gaps at the base of the hedgerow mean that shelter for invertebrates, small mammals, amphibians and reptiles is lost, while gaps along the hedgerow reduce habitat continuity.
Width of undisturbed ground and perennial herbaceous vegetation cover	<ul style="list-style-type: none"> <li>● Width of undisturbed ground at least 2m</li> <li>● Width of perennial herbaceous vegetation at least 1m</li> </ul>	15% 3%	15%	Management close to the hedgerow is likely to damage woody species, e.g. by harming their roots. Herbaceous vegetation is important as many animals rely on it for shelter, foraging and nesting.
Recently introduced, non-native species	<ul style="list-style-type: none"> <li>● Non-native herbaceous species less than 10% cover</li> <li>● Non-native woody species less than 10% cover</li> </ul>	0% 1%	1%	Relatively recently introduced, non-native species can be very detrimental to the structure, diversity, ecological and landscape value of a hedgerow.
Nutrient enrichment	<ul style="list-style-type: none"> <li>● Combined cover of nettles, cleavers and docks should be less than 20%</li> </ul>	23%	23%	A broad indication that there is likely to be a species-poor ground flora, probably resulting from nutrient enrichment, e.g. from agricultural fertilisers being spread beyond the edge of the crop into the hedgerow base.



*Clematis and dog rose, 2 of the hedgerow species recorded.*

## Reasons for poor condition

Five common reasons for failing to meet the threshold for favourable condition were identified.

**1** The most common reason for a hedgerow to be classified in poor condition was the abundance of plant species indicative of nutrient enrichment in the hedgerow base. In grassland, nettles were particularly abundant, and in arable fields it was cleavers.

**2** In many cases the base of the woody canopy was too high above the ground, in other words, the base of the hedgerow was thin and leggy. This can be caused by livestock grazing the base or the use of spiral rabbit guards in newly planted hedgerows, causing a 'lollipop' effect on individual shrubs.

**3** In a number of hedgerows the width of undisturbed ground between the hedgerow and the edge of ploughed or cultivated land was too small. This is caused by cultivation taking place too close or the effects of herbicide drift from the field.

**4** The fourth most common reason for poor condition was the 'gappiness' of the hedgerow, with the result that it is no longer stock proof and valuable wildlife habitat has been lost. Gaps can be caused by overgrazing such as annual flailing to the same height.

**5** Finally another reason for a hedgerow to be classed in poor condition relates to its size. Only one of the surveyed hedgerows was too short, but 8% were too narrow to be classified in good condition. This is the result of the volume of the hedgerow being limited by the surrounding land management.



Tall, leggy hedge; ideal for laying or height reduction using a circular saw

Nigel Adams



Over-managed hedgerow in poor condition which would benefit from coppicing

Nigel Adams

## Opportunities for improvement

Hedgerows require appropriate management to be kept in good condition and to prevent them from becoming lines of trees. The most appropriate management will depend on condition but over management, for example annual cutting to the same height, will ultimately damage the hedgerow and may even kill it. Reducing an annual cutting cycle to every two or three years can have significant wildlife and landscape benefits. Decreased cutting frequency increases hedgerow size and suitability as bird habitat although some species such as yellowhammer and linnet prefer short thick hedgerows around 1.5m high.

Hedgerows that are in poor condition as a result of over management or neglect can be restored with appropriate management. (see photographs above). Heavily over-trimmed and gappy hedges under 1m tall, can be coppiced (stems cut to ground) with gaps being replanted. This will encourage new bushy growth. Tall, leggy hedges (over 3m) with thin stems would benefit from laying or a substantial reduction in height using a circular saw. Grant aid for such works may be available through Defra's Environmental Stewardship Scheme or from the Chilterns Conservation Board, who can also give you some advice.

## Conclusions and next steps

The fact that half the hedgerows surveyed (44%) passed all 5 attributes in the UK Biodiversity Action Plan condition assessment is encouraging. Whilst the survey gives us some useful data, it is merely a snapshot in the long life-cycle of a hedgerow, a living habitat.

It is unclear why so many sections were found to have insufficient undisturbed ground next to them. One contributory factor may be that the requirements that farmers have to adhere to in order to receive their Single Farm Payments are less exacting in this regard than the criteria used for this survey.

Over the next few years it is likely that there will be benefits to hedgerow condition through uptake of Defra's grant scheme for farmers, Environmental Stewardship – in particular the Entry Level Scheme (ELS). Under ELS, farmers can get a grant towards managing their hedgerows more sympathetically.

More work needs to be done to assess hedgerow condition in land managed outside of agriculture, which was not covered in depth during this survey.

A repeat of the 2006/7 survey will be carried out in five years (subject to funding) to monitor any changes.

Further work and training is needed including awareness raising about the importance of good hedgerow management to all landowners and also ensure good hedgerow management outside of Defra grant schemes.

Community groups may also like to consider using the method employed in this survey to look at the condition and wildlife value of hedgerows in their area and to add to existing data.

A more detailed report is available from the Chilterns Conservation Board on the hedgerow survey and on a survey of Land Use Change in the Chilterns 2005-2007.

## Acknowledgments

We thank Defra for funding the survey work and the landowners who allowed access to hedgerows on their land. We are also indebted to everyone who helped in tracing landowners in order to gain their permission to survey.



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