Hedgerow Survey in the parish of Overton Hampshire

Preliminary Report

Overton Biodiversity Society

March 2004

Summary

In the summer 2003 the Overton Biodiversity Society carried out a survey of hedgerows based on the protocol developed by the Steering Group for the UK Biodiversity Action Plan for Ancient and/or Species-rich Hedgerows. Twenty one hedgerows were surveyed throughout the parish of Overton.

Although most hedgerows surveyed appeared to be managed regularly, only half of them were in sound physical shape (stockproof) which suggested an overall need to improve hedgerow management.

Trees were not frequent in hedges, the most common species being oak and ash (62%). In the shrub layer, most hedgerows (20 out of 21) contained 5 or more species and thus may be called 'species-rich'. The most common species were hawthorn (found in 95% of hedgerows), dog rose (86%) and blackthorn, bramble and hazel (73%). Meanwhile, the body of these hedgerows was made for the most part of hawthorn (24% of the volume of hedgerows), blackthorn (20%) and hazel (16%) with climbers (bramble, black and white bryony, honeysuckle, ivy, old man's beard and roses) making up about one third of the shrub layer. Surveying the ground flora proved very difficult and unproductive and would need to be repeated to obtain informative data.

Most of the hedgerows surveyed grew on chalk, the predominant soil type in the parish. Indeed, the results in most aspects presented a typical image of hedgerows of chalk downlands. The most notable departure from regional average results was the very high number of species-rich hedgerows. This may be explained in part by the large number of old hedgerows surveyed as species richness is known to increase with age. However, it is likely other factors contributed too, and further work would help to better understand our hedgerows.

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1 INTRODUCTION

A hedgerow is defined as 'a line of one or more woody species, which may contain gaps, and includes associated vegetation of adjacent banks, ditches and/or field margins'. (Hampshire Biodiversity Partnership, 2000). Hedgerows are one of the most characteristic features of the British countryside. Of great importance visually, culturally and historically, they provide a rich habitat for many of our native species of plants and animals.

Over the years hedgerows have suffered as farming and land use practices have changed. Between 1984 and 1990 there was a net loss of 23% of hedges (about 130,000 km) in Great Britain and between 1978 and 1990, on average one plant species was lost from each 10 metres of hedge, an 8% loss of plant species diversity (Department of Environment, 1994). Hence, ancient and species-rich hedgerows have now been identified as 'priority habitats' (The UK Biodiversity Steering Group, 1995). Research and action to protect these features of great importance is now a national priority. Many of the wildlife organisations are at present actively involved in species recording and drawing up action plans for the protection and preservation of hedgerows. It was with all these considerations in mind that Overton Biodiversity Society began to study the hedgerows of the Parish of Overton in 2003.

Part of the historical context of Overton's hedgerows was already known in that the Harrow Way – an ancient pre-historic roadway – runs east to west across the parish. This and its associated roads and pathways are lined by some of the oldest hedgerows in the parish. Boundary hedgerows along the eastern and western boundaries of the parish also appear on the O.S. Map of 1872. Many hedgerows nearer the village itself are somewhat younger, due to relatively late enclosures. During the second half of the twentieth century Overton parish, like many others, saw the removal or neglect of hedgerows. This is nothing new for it seems that the first recorded hedgerow removal in the parish took place along the Harrow Way in the eighteenth century. There is hope that the recent relaying and replanting is now reversing this trend.

2 CONTEXT

2.1 GEOLOGY AND LAND USE

Overton parish covers an area of approximately 35 km^2, lying in the western side of the Hampshire downs and including the upper Test valley. The upper soil is made for the most part of chalk with scattered areas of clay-with-flint and some river and valley gravel deposit in the river valley (British Geological Survey, 1975, 1980). The village of Overton lies at the centre of the parish and is surrounded by agricultural land dedicated to arable crops and grazing.

2.2 HEDGEROWS

Prior to carrying out a detailed hedgerow survey it was necessary to establish the location of hedgerows within the parish. Information on hedgerow distribution was available from the Geographical Information System database held by Basingstoke and Deane Borough Council. A 1/18000 scale map was produced from the GIS data and volunteers went in the field to verify the information, and when necessary to amend it. All boundary lines of trees and/or shrubs less than 5m wide were treated as hedgerows (Bickmore 2002). Although not all locations where accessible, almost all were visible from a distance and only rarely were the sites impossible to verify. Figure 1 present a map, showing the network of hedgerows thus identified in the parish.

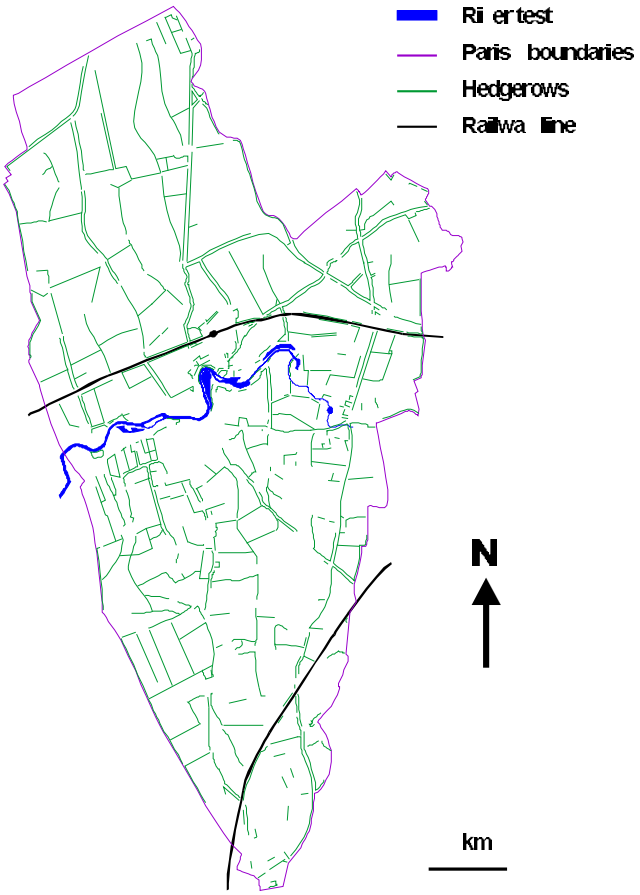

Fig.1: Network of hedgerows in Overton Parish.

Hedgerows where found along the parish boundaries, along roads and tracks, and as field boundaries. The total length of hedgerows in the parish was estimated at 150 km. This estimate was obtained by measuring the length of hedgerows reported on the 1/18000 map. The corresponding density of hedges for the parish is approximately 4 km/km^2. This density is identical to the average hedgerow density estimated for Hampshire (Hampshire Biodiversity Partnership, 2000).

3 METHOD

3.1 PREPARATION

The protocol chosen for the hedgerow survey in the parish was that developed by the Steering Group for the UK Biodiversity Action Plan for Ancient and/or Species-rich Hedgerows. Thus, the first preparation was reading the Survey Handbook distributed by Department for Environment, Food and Rural Affairs (Bickmore, 2002). Then, the Biodiversity Projects Officer from the Hampshire and Isle of Wight Wildlife Trust, Naomi Ewald, kindly assisted us by leading a training session in Overton for a group of volunteers. Training focused on reviewing the survey protocol (including health and safety issues), filling in the survey field sheet and identifying local woody species. The session was organised on a Saturday morning in May 2003 and was carried out both indoors and out of doors. People present at the training session later passed their knowledge on to others who could not attend.

3.2 SAMPLING

The abundance of hedgerows in the parish precluded surveying all the hedgerows and thus we focused on a selection of hedgerows. Because of limited access it was not possible to select hedgerows at random (as recommended), and instead we chose which hedgerows to survey.

With the hope to identify hedgerows of high biodiversity we primarily targeted older hedgerows. Two of them were possibly very old as their location was already reported on a 1615 map, 4 were

possibly old as they were along old roads and/or on the parish boundary, and a further 2 hedges were visible on a 1909 map. As a contrast, 3 hedges were selected because they were known to be recent (less than 15 years). A further eleven hedges of interest were chosen throughout the parish, including one hedgerow on a bio-site. A total of 21 hedgerows were surveyed for this study.

3.3 SURVEYING

Hedgerows were surveyed from June through August 2003 by groups of 2 to 4 volunteers. In the field, volunteers followed the protocol detailed in the Survey Handbook (Bickmore, 2002) and summarized here.

At the site, volunteers first located the two extremities of the hedgerow (marked by a hedge end, a connecting hedgerow, a track, etc…) and recorded on the field sheet all the information regarding the hedge context (location, adjoining land type use, etc…). Then, volunteers located the 30-metre long sample section and recorded the physical and botanical attributes of that hedge sample. Finally, two areas measuring 1m x 2m were defined (quadrats), 10 metres apart, at the foot of the hedge sample and were surveyed for their ground flora.

3.4 DATA HANDLING

An access database to record the field hedgerow data was obtained from the Countryside Council for Wales (2004). This database has been agreed as the standard in Wales and is likely to be adopted as the standard in England. In the winter 2003-2004 data from all the field sheets were entered in the database. Because the database requires all mandatory fields to be completed only from a set of pre-specified options, data checking on entry was rigorous. Errors or missing data were identified at this stage and were rectified by reference back to the survey team or by direct observation on site.

Then, in order to share the information gathered, our data was sent back to the CCW. Meanwhile, for the purpose of this report, data was extracted from the database as spreadsheets from which simple calculations were carried out. The results of this analysis are presented below.

4 RESULTS AND DISCUSSION

4.1 DATA COLLECTION

As the field recording sheets were checked for completeness as part of data entry into the CCW database we found that 90% of data sets contained minor errors (*e.g.* missing details of quadrat position or hedge bank features) and about 10% had major errors (*e.g.* mapping co-ordinates switched or trees counted in whole hedge rather than in sample). Errors of both these types were corrected and records were completed in most cases. Thus, 21 hedgerow surveys were submitted to analysis.

4.2 HEDGE CONTEXT

Most of the hedgerows surveyed stood alongside a byway which provided access: 13 stood near a metalled road and 5 near a track or footpath (2 were between two fields, and 1 unreported). These hedgerows were surveyed predominantly from the lane side (13 out of 18). On the other side the land belonged to one of two types only, arable land (12 hedgerows) or grassland (6 hedgerows). The hedgerows that did not skirt a byway also stood alongside either arable land or grassland.

4.3 PHYSICAL CONDITION OF HEDGEROWS

Table 1 presents the data collected on the physical condition of hedgerows. Hedgerows were sorted by dimensions (height and width at base) and by structural condition (integrity). A gradation of blue colour indicates size, and traffic-light colours indicate structural condition and aspect of cross-section as follows:

- Green indicates sound physical condition
- Yellow/Amber in the Integrity column indicates some lack of integrity and Red indicates significant gaps
- Purple and Red in the Cross-Section column indicate hedges that are overgrown.

Table 1: Physical condition of hedgerows

Height (m)	Base Width (m)	Integrity	Cross-Section	Notes
1.1 - 2	1.1 - 2	Stockproof	Clipped & Dense	
1.1 - 2	1.1 - 2	Gaps (Minor)	Unclipped	- Remnant piece of hedge peters out at both ends
1.1 - 2	1.1 - 2	Gaps (Sig)	Unclipped	
2.1 - 4	1.1 - 2	Stockproof	Clipped & Dense	- New diverse hedge
2.1 - 4	1.1 - 2	Stockproof	Clipped & Dense	
2.1 - 4	1.1 - 2	Stockproof	Clipped & Dense	
2.1 - 4	1.1 - 2	Gaps (Minor)	Clipped & Dense	
2.1 - 4	1.1 - 2	Gaps (Minor)	Unclipped	
2.1 - 4	1.1 - 2	Gaps (Sig)	Clipped & Dense	
2.1 - 4	2.1 - 4	Stockproof	Clipped & Dense	
2.1 - 4	2.1 - 4	Stockproof	Unclipped	
2.1 - 4	2.1 - 4	Leggy (minor)	Overgrown & Outgrowth	
2.1 - 4	2.1 - 4	Gaps (Minor)	Unclipped	
4.1+	2.1 - 4	Stockproof	Unclipped	
4.1+	2.1 - 4	Stockproof	Clipped & Dense	
4.1+	2.1 - 4	Gaps (Minor)	Overgrown & Outgrowth	
4.1+	2.1 - 4	Gaps (Minor)	Overgrown & Outgrowth	
4.1+	2.1 - 4	Gaps (Minor)	Clipped & Dense	
4.1+	2.1 - 4	Gaps (Sig)	Overgrown & Leggy	- Bio-Site, deteriorating state.
4.1+	4.1+	Stockproof	Overgrown & Outgrowth	
4.1+	4.1+	Gaps (Minor)	Unclipped	

Results indicate that under half of the hedges surveyed were recorded as “stockproof” (9) whilst 3 contained significant gaps. Four hedges were overgrown. However, all hedges, except one, appeared to have been managed within the last 10 years, apparently by flailing/trimming (rather than coppicing or laying). These results suggest that maintenance in recent years was generally inadequate on a significant number of hedges. Lack of trimming, excessive trimming, or trimming with poor equipment may all result in leggy, patchy or overgrown hedgerows.

4.4 BOTANICAL COMPOSITION OF HEDGEROWS

4.4.1 Hedgerow trees

Hedgerow trees were defined as those with a clear stem or twice the height of the hedge (Bickmore, 2002). For each hedgerow surveyed, the number of trees was recorded both for the whole edge and the 30m section sampled in that hedge. Results are presented in figure 2.

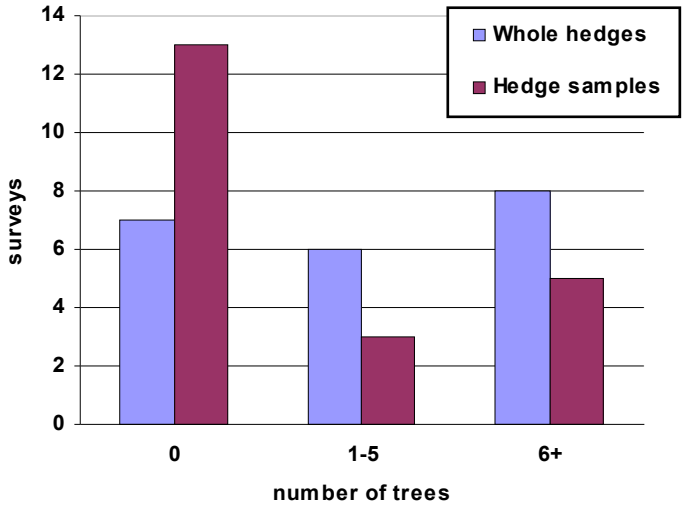

Fig. 2: Number of hedgerow trees in whole hedges and in hedge samples.

A third of the hedges (7) contained no trees at all, approximately a third contained 1 to 5 trees and a third contained more than six trees. Consequently, because trees were relatively rare in hedgerows, most hedge samples did not contain any tree (13), although five contained more than 5 trees in the 30m sample. The maximum number of trees in a sample was 14.

The seven hedge samples with trees together contained 48 trees belonging to 11 different species: ash (*Fraxinus excelsior*), blackthorn (*Prunus spinosa*), elder (*Sambuscus nigra*), field maple (*Acer campestre*), hawthorn (*Crataegus monogina*), hazel (*Corylus avellana*), holly (*Ilex aquifolium*), oak (*Quercus robur*), purging buckthorn (*Rhamnus cathartica*), willow (*Salix spp*.) and yew (*Taxus baccata*). The relative frequency of each species is presented in figure 3.

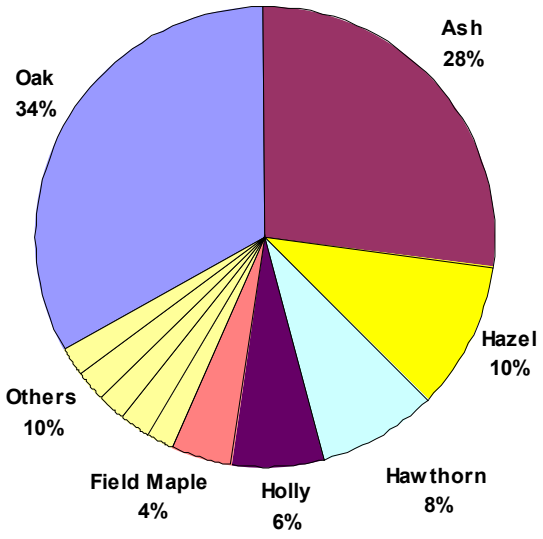

Fig. 3: Relative frequency of tree species found in hedge samples (48 trees in total)

By far, the most common species were oak and ash trees (16 and 13 trees, respectively). Other species were represented by 5 or fewer specimens each. All these species are indigenous and are common on chalky soils (Hampshire County Council Environment, 2000). Nationally, oak and ash trees represent together 65% of hedgerow trees in England (Barr *et al*., 2002).

4.4.2 Shrub layer

Species frequency

Within the 21 hedge samples surveyed, 29 species of plants were recorded in the shrub layer (Table 2). All species are native and common in the area.

Table 2: List of all species of the shrub layer recorded in our survey

Alder, *Alnus glutinosa*	Ivy, *Hedera helix*
Ash, *Fraxinus excelsior*	Oak, *Quercus robur*
Bittersweet, *Solanum dulcamara*	Old Man's Beard, *Clematis vitalba*
Black Bryony, *Tamus communis*	Privet, *Ligustrum vulgare*
Blackthorn, *Prunus spinosa*	Purging Buckthorn, *Rhamnus catharticus*
Bramble, *Rubus fruticosus*	Rose (Dog), *Rosa canina*
Crab Apple, *Malus sylvestris*	Rose (Field), *Rosa arvensis*
Dogwood, *Cornus sanguinea*	Spindle, *Euonymus europaeus*
Elder, *Sambuscus nigra*	Sycamore, *Acer pseudoplatanus*
Elm (Wych), *Ulmus glabra*	Wayfaring Tree, *Viburnum lantana*
Field Maple, *Acer campestre*	White Bryony, *Bryonia dioica*
Hawthorn, *Crataegus monogina*	Whitebeam, *Sorbus aria*
Hazel, *Corylus avellana*	Wild Cherry, *Prunus avium*
Holly, *Ilex aquifolium*	Willow, *Salix spp.*
Honeysuckle, *Lonicera periclymenum*	

The number of different species found in any one hedge sample ranged from 3 to 15 (median 10). Figure 4 shows the number of hedge samples with different numbers of species in the shrub layer.

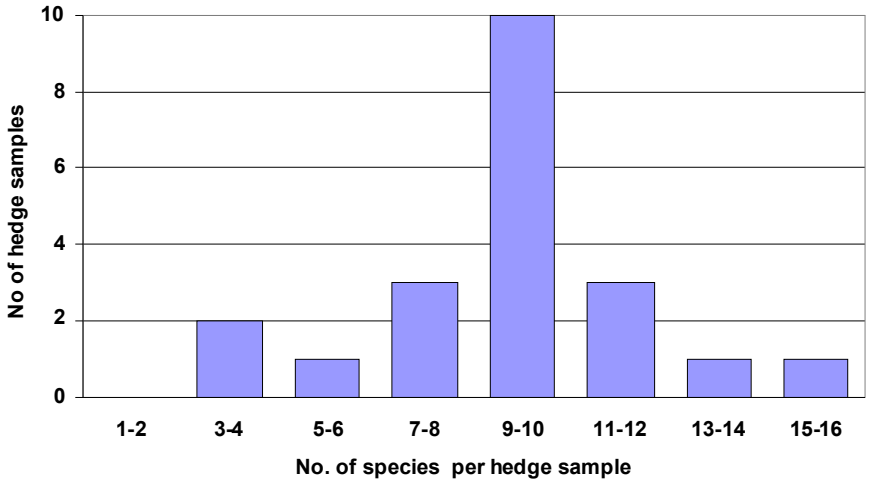

Fig. 4: Frequency distribution of the number of species per hedge sample.

The most frequently occurring number of different species was 10. Furthermore, 19 of the hedges sampled (out of 21) contained five or more woody species and thus may be qualified as species-rich (Bickmore, 2002). These results are remarkably different from recent national results, which indicated that only 26% of hedges sampled in Great Britain for the Countryside Survey 2000 were considered species-rich hedges (Haynes-Young *et al*., 2000), and approximately a third of hedges contained only one or two woody species per 30m. Clearly, our sampling strategy was successful in its aim to identify hedges of high biodiversity value. However it would be inappropriate at this stage to claim that hedgerows in the parish are more species-rich than average since our sampling strategy favoured this kind of hedges.

An often quoted rule states that one may expect to find one woody species in 30 yards for each 100 years the hedge has been planted (Rackham, 1997). This rule suffers many exceptions and can only been used as an approximation. Yet, it illustrates why the hedges we surveyed were so rich as they were predominantly old, although 2 of the 3 young hedgerows were also species-rich. Thus, other factors beside age may contribute to species-richness of a hedgerow, for example local traditions in planting, soil fertility or management practices. Further work would be necessary to establish their impact on our local hedgerows.

Figure 5 presents the frequency of occurrence of all 29 species observed in the field by representing the percentage of hedges in which they were found. Note that frequency of occurrence relates to the number of hedges in which a species was found but does not imply anything about the extent of that species.

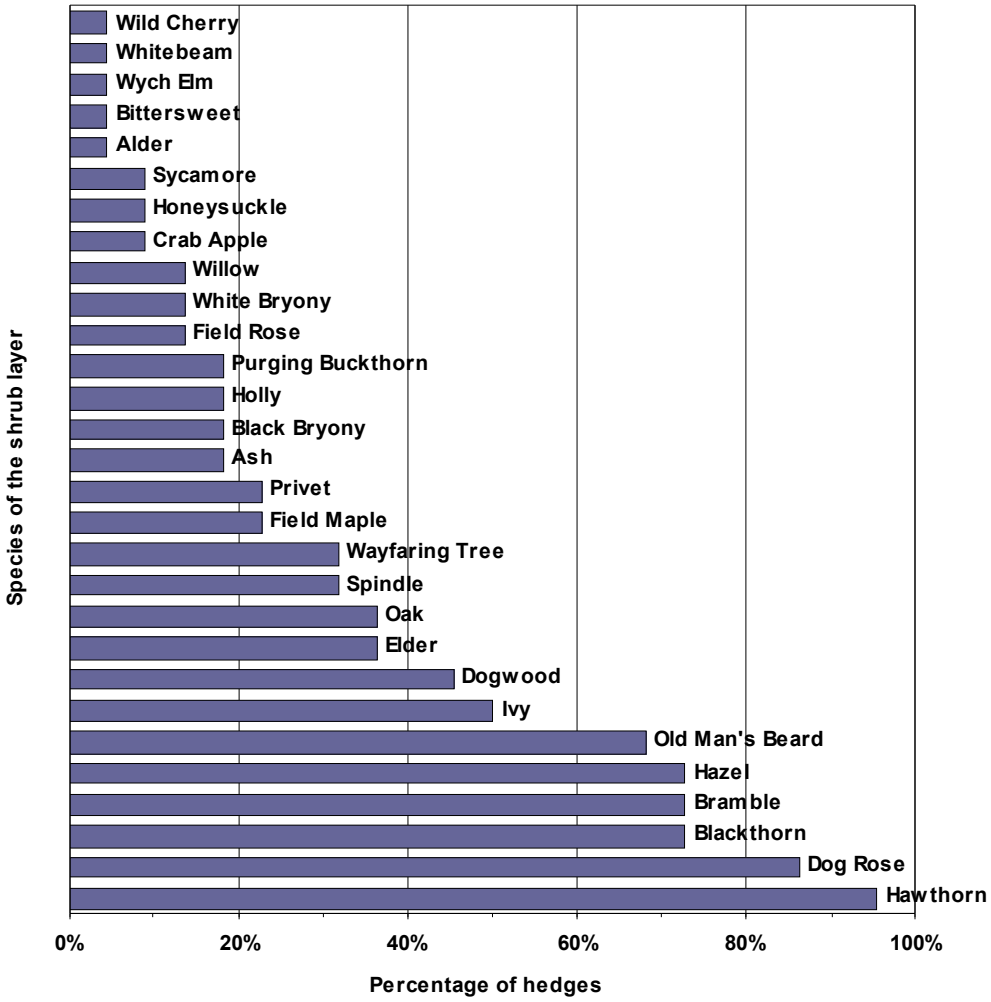

Fig. 5: Percentage of hedges in which each species was found (21 hedges in total).

Unsurprisingly, the most frequently occurring species was hawthorn (in 95% of all hedgerows). Hawthorn is the most frequent woody species in hedgerows in the lowlands of South and East England (and in Great Britain) where it is found in 90% of hedgerows (Barr *et al*., 2002). Dog rose was the second most frequent species (in 86% of hedgerows) although overall in the lowlands of South and East England it is found only in 35% of hedgerows. Blackthorn, bramble and hazel were present each in 73% of hedgerows well above regional figures: blackthorn is present in 48% and hazel in 16% of hedgerows in the lowlands of South and East England (no data for bramble). The next most common species was old man's beard, present in 68% of hedgerows in the parish but present in only 4% of hedgerows in the region. Overall, most species were more frequent in the parish than in the lowlands of South East England.

Species abundance

In the field, the extent of a species present in a given hedge was appreciated by estimating the area covered by that species, expressed as a percentage of the 30-metre sample and recorded as a dominance value (DOMIN). The results recorded in that manner in our survey are detailed in appendix 8.1. Figure 5 presents the abundance of each species expressed as the average percentage hedge area covered (see appendix 8.1 for calculation details).

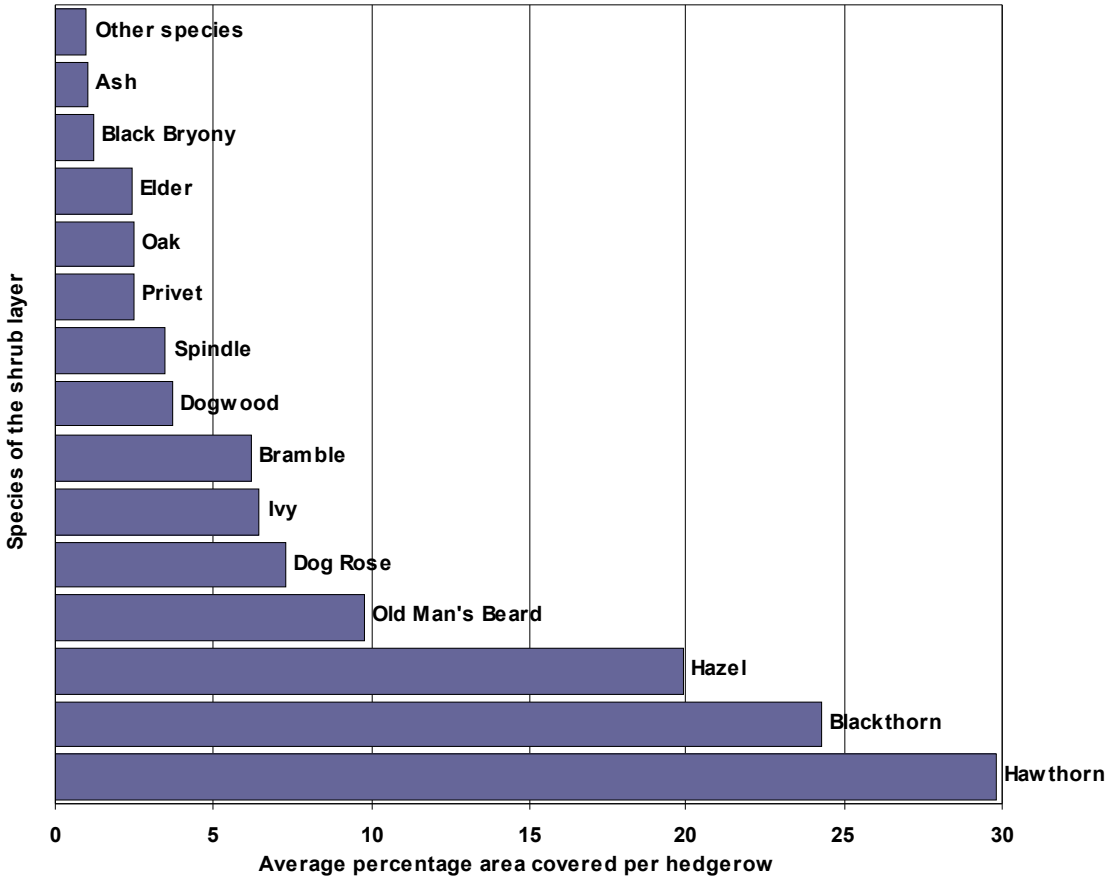

Fig. 6: Average area covered by each species in the shrub layer (in 21 hedge samples).

The most abundant species in the shrub layer were hawthorn (covering on average 30% of each hedge), blackthorn (24%), hazel (20%) and old man's beard (10%).

Climbing species (bramble, black and white bryony, honeysuckle, ivy, old man's beard and roses) altogether covered on average 32% of the hedge area. Thus, approximately a third of the shrub layer was actually made of climbers intertwined with primary woody species.

Comparison of figures 5 and 6 demonstrates differences between abundance and frequency of occurrence. For example, whilst hawthorn was the most frequently found and the most abundant, bramble was found in 73% of the hedge samples but contributed, only 6% of their cover. Similarly, dog rose was represented in 86% of the hedges and contributed only 7% of their cover.

Influence of geology

Hedgerows surveyed in this study grew on three types of soil chalk (18 hedges), river & valley gravel (1 hedge), and clay with flint (2 hedges). Presumably, different soil types may lead to differences in both the shrub layer and the ground flora. Some indications of this may be seen in our data, although the small number of hedges sampled on soil other than chalk preclude definitive conclusions. For example, willow and honeysuckle were present in the one hedge on river & valley gravel whilst willow was found only in two and honeysuckle in one of the 18 hedges on chalk. Also, hawthorn was more predominant over other species in terms of length covered in the hedges on clay-with flint (56%) than in the hedges on chalk (19%).

4.4.3 Ground flora

In 20 of the 21 field surveys some record was made of the ground flora, in the two quadrats (1m x 2m) placed at the bottom of the hedges surveyed. Because the botanical knowledge of the surveyors varied, species were counted but not always identified thus, only species numbers are reported here.

On average, 9 different species were recorded per quadrat. The minimum number of species recorded per quadrat was 4 and the maximum number was 19. No correlation was identified between the number of species in the ground flora and either the number of species in the shrub layer or the type of hedge management.

4.5 EVALUATION

4.5.1 Field survey

The field recording sheets provided in the Hedgerow Survey Handbook (Bickmore, 2002) proved to be very useful to guide surveyors through the process of surveying in the field. A few minor errors were discovered, nevertheless, at the time of data entry (and were usually remedied then.)

The two principal areas of difficulty for volunteers in the field were recording the ground flora and estimating species dominance in the shrub layer (DOMIN). Recording the ground flora required a level of botanical knowledge beyond that of many surveyors and was time consuming. Estimating the percentage of hedge length covered by a species seemed to be a source of variability between surveyors, although the magnitude of this variability is difficult to estimate as this study did not include surveying hedges by different surveyors.

Additional training of the surveyors and some duplicate surveys of the same hedge with different surveying teams to obtain an indication of the variability in data quality should improve the quality of our results in the future.

4.5.2 CCW Database

Data entry into the CCW database was found to be extremely useful as the rigorous database checking assisted with quality assurance in terms of record completeness. Practical experience of data recording has identified a number of small discrepancies between the field recording sheets and the CCW database. These were not significant, but need to be considered before further surveys:

Issue 1: In practice, a hedge could be both “stockproof” and “windblown” but the database requires “integrity” to be recorded as one or the other. Logically, “windblown” should be an attribute of shape rather than integrity.

Issue 2: If a species was not on the field sheet list but was found by the survey team, they invariably recorded the common or local name. However, to enter this in the CCW database the scientific name has to be selected from a look-up database of 200,000 possibilities. For example, several survey teams noted “old man’s beard” (*Clematis*) in a hedge. A botanical reference book (flora) had to be consulted to find the scientific name so that this could be entered appropriately in the database using genus and species, with the common name added where this was not already present.

Issue 3: Experience of using the first release of the CCW database has identified some areas for possible improvement. Recording whether the survey was carried out in wet or dry conditions by means of an on-screen button leaves some doubt as to whether wet or dry was selected; the number of trees check-item should read “ 1 to 5” rather than “0 to 5”; the means of saving and exiting using a “STOP” button did not seem immediately obvious. Also, the database is of considerable size and complexity; even unpopulated it occupies 65Mbytes, and the overall speed of processing seemed slow on a modern home PC.

5 CONCLUSION

Overall, surveying Overton's hedgerows was successful as this report demonstrates. The survey protocol developed by the Steering Group for the UK Biodiversity Action Plan for Ancient and/or Species-rich Hedgerows together with the database developed by the CCW (which the O.B.S. was first to use) led us efficiently through the process. Contribution by the volunteers demonstrated the interest of the community in the project.

Carrying out the survey was a very productive experiment as it has provided a picture of the hedgerows in the parish. In most respects this picture was very typical of English hedgerows on chalky downs: trimmed mixed hawthorn and blackthorn hedgerows, yet in others some anomalies appeared. The apparent extreme 'species-richness' of hedgerows and the over-abundance of old man's beard, for example, will require further investigation to understand.

In order to refine the picture drawn here, additional survey work seems to be necessary. Surveying more hedgerows will provide more information, and give the opportunity to explore the ground flora which was missed in this first survey. Sound information regarding the current status of hedgerows in the parish is an important step towards producing a local Biodiversity Action Plan, a stated objective of the O.B.S.

6 ACKNOWLEDGEMENTS

The Overton Biodiversity Society would like to acknowledge the support provided by: Basingstoke and Deane Borough Council and particularly Mike Bird, the Countryside Council for Wales, the Hampshire Biodiversity Information Centre, the Hampshire and Isle of Wight Wildlife Trust and particularly Naomi Ewald, the Overton Parish Council, the land owners in Overton and particularly Richard Gibbins, Richard Oram for historical information, and the volunteers who carried out the survey.

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8 APPENDICES

8.1 SOURCE DATA FOR THE BOTANICAL COMPOSITION OF HEDGEROWS

The table below presents the results recorded for each of the 21 hedges surveyed (30m samples).

The hedgerow coding scheme is explained in appendix 8.2.

DOMIN represents the abundance of a species expressed as the percentage of the hedge area covered by that species and measured on a 10 point scale: 10= 91-100%, 9= 76-90%, 8= 51-75%, 7= 34-50%, 6= 26-33%, 5= 11-25, 4= 4-10%, 3, 2, 1= <4%).

Q1 and Q2 indicate the two quadrats placed at the foot of each hedge sample to record the existing ground flora.

Soil types: 1= chalk, 2= Clay-with-flint and 3= River and valley gravel.

Ref	RX E1	GX W1	YX W1	TX E1	LX N1	UX X1	XX W1	TX W1	NX W1	NX E1	VX X1	WX X1	KX E1	KX W1	PX N1	PX S1	ZX X1	ZZ X1	AB W1	AA N1	JX X1
OS Grid Ref SU	524 498	516 474	518 533	511 502	546 524	517 457	501 528	512 501	506 512	505 515	529 471	533 470	536 527	535 527	533 479	532 479	532 524	536 526	533 453	527 441	505 490
Shrub layer																					
DOMIN																					
Alder																					1
Ash										1						5				1	1
Bittersweet																1					
Black Bryony							5						3		3	1					
Blackthorn	5		2	8	8	7		6	9	5			8	8	5		1		2	2	7
Bramble	1	4	2	2		4		2	3	1			5	6	5	5	1	5		1	2
Crab Apple																			1		1
Dogwood	1		5	2				3	1						4	4	5		5	2	
Elder				1		2	5		2						4	5	1				1
Elm (Wych)																			2		
Field Maple	1			2				2		3											
Hawthorn	8	6	10	4	5	6	8	2		4	9	7	6	5	3	2	7	5	2	6	7
Hazel	1	4		4		4				8	5	7	4	8	3	4	7	8	5	8	4
Holly	1					1								1							
Honeysuckle			5											2							
Ivy			5	1		1	6	7					4		5	3	4	4			2
Oak	1	7	2							2	2	1		2							
Old Man's Beard	1			3	1		6	2	4	2			4	2	5	6	9	5		2	
Privet			4				4						6			4			2		
Purging Buckthorn		2								3	1						1				
Rose (dog)	1	4	5	4	1	2	5	2	4	2	3		2	6	5	6	1		3	1	1
Rose (Field)																1	1				
Spindle		1					7		1							3	1		5	4	
Sycamore								1												1	
Wayfaring Tree				2		1	2						2		3				3	1	
White Bryony																1	2	1			
Whitebeam															2						
Wild Cherry											1										
Willow		1	4								1										
NUMBER OF SPECIES	10	8	10	11	4	9	9	9	7	10	7	3	10	9	12	15	13	6	10	11	10
Ground flora																					
NUMBER OF SPECIES Q1	6	6	4	10	10		7	8	8	10	11	9	10	7	6	11	9	8	10	11	8
Q2	7	13	5	10	13		8	12	8	10	7	7	8	7	11	19	9	13	10	12	9
Geology																					
SOIL TYPE	3	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3

To calculate the average percentage hedge area covered by a species the DOMIN score in each hedgerow was replaced by the middle value of the percentage class it represents, *e.g.* 10 was replaced by 95.5 % and the mean was calculated across all hedgerows.

8.2 HEDGEROW CODING SCHEME

The Hedgerow Survey Database from CCW allows designation of hedges by OS Grid Reference and by additional characters as follows:

Grid Reference: consisting of a two letter prefix (*e.g.* SU) and a six digit suffix (*e.g.* 524498)

Hedge Prefix: 3 characters

Further Characters: up to 10 additional characters

In the absence of any suggested coding scheme, OBS used the Grid Reference in the conventional way to refer to "end C", and chose a fixed Hedge Prefix of "OBS".

As some hedged had already been given one or two letter identifiers by OBS, these were supplemented to use four characters of the Further Characters to generate unique hedge identifiers as follows:

Character Position		Permitted Values
1	Hedge letter	A…Z
2	Second hedge letter if required, or an "X" if not	A…W, Y…Z or X
3	North, South, East or West side of track/path Or an "X" if not required for uniqueness	N, S, E, W Or X
4	Number of side surveyed (Normally, 1 but 2 if second side surveyed)	1 or 2

Thus, the first two characters allow for 650 (26 x 25) hedges which is anticipated to be sufficient for the Parish of Overton.

The third character is required as the six figure OS grid reference is not sufficiently fine (and the mapping not available) to distinguish between hedges along either side of a narrow track. The additional four compass cardinal directions allow for this.

The fourth character was introduced for occasions where results are obtained for both sides of the same hedge (although this is not strictly part of the surveying procedure, it may be appropriate for particularly long hedge sections when side 1 is surveyed 30m from end C and side 2 is surveyed 30m from end D). Character 4 can also be incremented to designate re-surveying of the same hedge at a different time.