Knepp Estate Hedgerow Surveys 2009 - 2010

RGB Aerial Photography – ©GeoPerspectives, 2007. (WSCC).

The Knepp Estate - Fields South of Countryman Lane

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Knepp Wildland Project - Hedgerows survey 2009-2010

The Project

The Knepp Estate (www.knepp.co.uk) in Shipley, West Sussex has been owned by the Burrell family for more than 200 years. In the re-wilding project, started in 2001, up to 1,500 ha are being allowed to revert to their pre-intensification state through regeneration and restoration projects. Re-wilding started in earnest in Spring 2004. The area of land in Countryside and then Environmental Stewardship has gradually increased from more than 200 ha - now all the Estate's schemes are in Higher Level Stewardship. Sustainable grazing and cessation of the use of fertilizers and chemicals are contributing to the promotion of biodiversity.

Following baseline surveys in 2005, more detailed surveys, south of Countryman Lane, were initiated in 2006 - later extended to 2009. The area south of Countryman Lane was divided into 4 survey areas A, B, C and D. This area consists of smaller fields with recognisable boundaries.

Map showing survey areas A, B, C and D

The Area and its Hedgerows

There are some 100 - 120 km of hedgerows on the Estate. The re-wilding project presented an opportunity to monitor changes in hedgerow structure from the early stages. The effect of grazing and browsing on vegetation structure, species composition and abundances could be measured.

The data resulting from a baseline hedgerow survey could provide a basis for monitoring change, contributing towards hedgerow management policy, measuring changes in connectivity across the landscape and the potential for wildlife. Records from the tythe maps, 1845 Ordnance Survey Epoch 1 maps and 1947 aerial photography would provide information on earlier changes to boundary features. Field names recorded in the Shipley tythe maps and apportionments provide useful information on the recent history of the area. This area covers some 400 ha within the Low Weald Natural Area and is mainly on heavy Wealden Clay. It lies in Horsham District and is within Shipley parish except for area C, which is largely in West Grinstead parish.

Following consultation with the landowner, Charlie Burrell, it was agreed that Sussex Biodiversity Record Centre (SxBRC) at Sussex Wildlife Trust (SWT) might initiate a survey of all the hedgerows in survey areas A, B, C and D to the south of Countryman Lane.

The Surveys

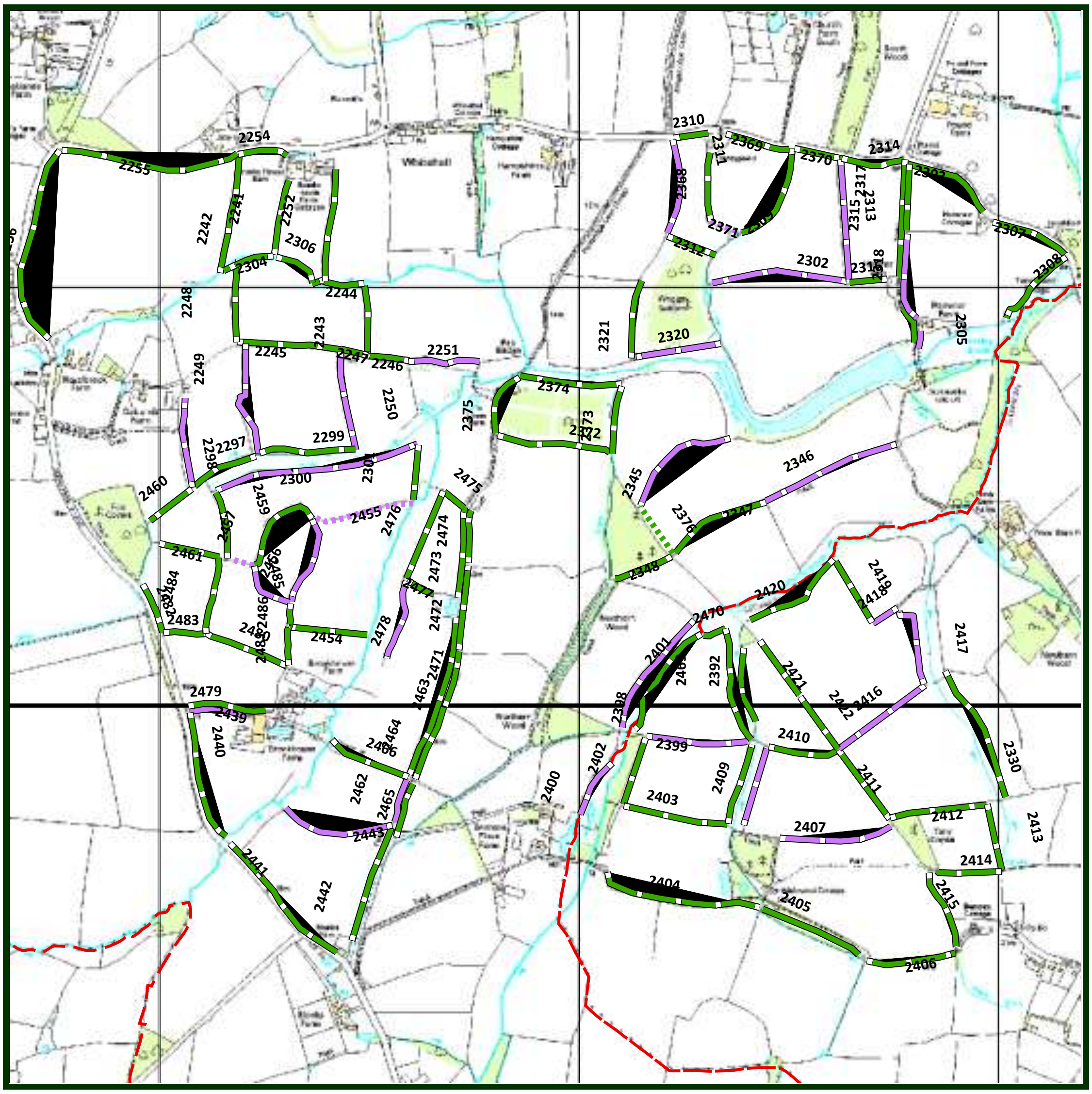
The surveys were to start in spring 2009 and were expected to be completed by autumn 2010. Surveys would be conducted by known and trained volunteers from SxBRC and all data gathered would be made available to the Knepp Estate.

SxBRC has access to trained and experienced hedge survey volunteers already involved in the Sussex Hedgerow Inventory Project (SHIP). They would use the standard SHIP methodology (survey sheet attached as annex A). It should be noted that, using this methodology, abundances of woody and woodland species are not recorded; nor are data identifying hedgerows in 'favourable condition', as defined by Defra. Hedgerows within, or forming a boundary with, domestic curtilage were not surveyed.

Area A was started in June 2009; area B in September 2009; area C in May 2010 and area D in October 2010. All surveys were completed by November 2010. For various reasons, usually lack of accessibility or not deemed to be hedgerows, one boundary feature in Area A and ten boundary features in Area B were not surveyed.

Every hedge surveyed was given a unique number and all data are recorded in a Microsoft Access hedgerows database at SxBRC; basic data are also digitized on the Sussex hedgerow layer in Arcview, Geographic Information System (GIS), which also shows the hedgerow unique number. Digital copies of the MS Access database data have been made available to all the recipients of this report.

The Results



Hedgerow classification (EN Phase 1 Habitat Survey)

HIP hedgerow survey

HEDGE_TYPE

- Intact spp. rich with tre
- Intact spp. rich
- Defunct spp. rich
- Intact spp. poor with tre
- Intact spp. poor
- Defunct spp. poor

A total of 116 hedges were surveyed - more than 23km of hedges.

The Results (continued)

72% of the hedgerows (83 hedges) were species-rich (i.e. with an average of 5 or more native woody species per 30m length); this is higher than the averages for a) Sussex Low Weald at 54%, b) All Sussex at 47% and c) England at 42%. Although several hedgerows contained up to 10 woody species in total, none averaged more than 7 per 30m length. Fewer hedgerows in Area B were species-rich (65% as opposed to above 70% in other areas).

80% of the hedgerows were unmanaged and 20% were trimmed; nearly all the latter were adjacent to a public highway or track.

87% were associated with a ditch and 78% with a bank.

94% were connected with another hedgerow and 20% with broadleaf woodland.

Standard Trees

92% (107) of the hedgerows contained standard trees. Of these hedgerows, only three did not include pedunculate oak, *Quercus robur*.

After pedunculate oak, the next most common standard tree recorded was field maple, *Acer campestre* (28), closely followed by ash , *Fraxinus excelsior* (27). There were many fine examples of old, standard field maples, some of which had previously been coppiced.

One hedgerow, at TQ13091983, in area D contained sessile oak, *Quercus petraea,* and also rowan, *Sorbus aucuparia.*

Three hedgerows, all in area C, contained alder, *Alnus glutinosa.*

One hedgerow, at TQ14131984, contained what was believed to be large leaved lime, *Tilia platyphyllos,* but this is as yet unconfirmed. If confirmed, it is likely to have been planted.

Frequency of native woody species occurrence (within 30m lengths)

Species	Number of hedges containing	% (rounded) of hedges containing
Common hawthorn, *Crataegus monogyna*	113	97
Blackthorn, *Prunus spinosa*	112	97
Rose, *Rosa*	108	93
Pedunculate oak, *Quercus robur*	106	91
Field maple, *Acer campestre*	95	82
Hazel, *Corylus avellana*	58	50
Elder, *Sambucus nigra*	55	47
Willow, *Salix*	40	34
Spindle, *Euonymous europaeus*	33	28
Ash, *Fraxinus excelsior*	23	20
Holly, *Ilex aquifolium*	21	18
Dogwood, *Cornus sanguinea*	18	16
Crab apple, *Malus sylvestris*	11	9
Elm, *Ulmus*	7	6
*Midland hawthorn, *Crataegus laevigata*	6	5
Wild privet, *Ligustrum vulgaris*	5	4
Gorse, *Ulex europaeus*	3	3
Broom, *Cytisus scoparius*	2	2
Wild service, *Sorbus torminalis*	2	2
Alder, *Alnus glutinosa*	2	2
Butchers' broom, *Ruscus aculeatus*	1	1
Yew, *Taxus baccata*	1	1
Beech, *Fagus sylvatica*	0	0
Hornbeam, *Carpinus betulus*	0	0

N. B. Species distribution was broadly similar across all four survey areas.

Notes on woody species

*Midland hawthorn, *Crataegus laevigata*, was found in six hedgerows but, due to its proclivity to hybridise with common hawthorn, *Crataegus monogyna*, it is difficult to be fully certain of its identification.

A wild service, *Sorbus torminalis,* shrub was found at TQ13372056 but was thought to have been planted; the hedgerow at TQ13062037 was believed also to contain *Sorbus torminalis* but this has not yet been verified.

One hedgerow, at TQ14931960, contained butchers' broom, *Ruscus aculeatus*.

Two hedgerows in area D contained broom, *Cytisus scoparius*.

Compare 2007 and 1947 Hedgerows

RGB Aerial Photography – ©GeoPerspectives, 2007. (WSCC).

1947 RAF Aerial Photographic Survey reproduced with kind permission of West Sussex County Council.

Changes since 1947

Within the survey areas only, the following losses due to hedgerow removal are estimated to have occurred:

Area A - 7 hedges totalling 1,108m
Area B - 1 hedge of 134m
Area C - 5 hedges totalling 1,014m
Area D - 11 hedges totalling 1,386m

Most losses due to removal (11 hedges) were concentrated within TQ1320. Hedgerow percentage loss in the survey areas (about 15%) has been considerably less than that of England and Wales (about 45%) for the same period.

Tythe maps and Apportionments (1847)

The Shipley tythe map, whilst recording field boundaries, was not drawn in sufficient detail to record the existence of hedgerows. The West Grinstead tythe map shows that, in area C, very little hedgerow loss took place between 1847 and 1947.

Other than around Middle Hammer Pond at TQ14632076, surrounded by Hammer Farm, Hammer Barn, Hammer Cottages and Hammer Field, earlier field names in the land south of Countryman Lane gave no strong indications of historical iron or glass working. The field to the north of Hammer Middle Pond and west of Hammer Farm was known as Hovel Field, as was the field to the south of Hammer Middle Pond.

Further west, Wiltshire's Farm was situated in the fields now known as Hampshires 1 and 2 and the field to the immediate west was called Limekiln Field. The field to the south of Clayland Farm, now Oakland Farm, was Carthorse Plat; to its south, and east of Lackey's Farm, was Old Woman's Field, now Oaklands 1. South of Upper Lag was Saw Pit Field at TQ13202045

Acknowledgements

Our thanks go to Charlie Burrell, Jason Emrich and Teresa Greenaway for their keenness to grant free access to the Estate and for providing advice and guidance throughout.

I would particularly like to thank our band of willing and able hedgerow survey volunteers, without whom none of this would have come to fruition. They include Finella Blair, Donald Blanks, Helena Carter, Louisa Collis, Christine Craig, Alison Hogg, Sarah Holman, Peter and Jean Huggett, Yvonne McDermott, David Mortimer, Amy Nightingale, Jane Watkins and Jojo Way.

Annex A

ID NO: ....[leave blank]

Hedgerow Survey Form [Important - Please read attached guidance before starting survey]

SURVEYOR DETAILS [tick box if you do not wish these to be recorded on our computer ☐]

NAME: ……

ADDRESS: …….

………

TELEPHONE and/or E-MAIL:.………………………………………………………………………………………………………

SITE DETAILS

DATE: ……………….. GRID REF: …………………………….. PARISH: ……………………………………………….

SITE NAME or ADDRESS [if possible, please also draw overleaf a sketch of site]: …………………………..……

………

OWNER'S ADDRESS: ………

ADVICE ON ACCESS: ………..

HEDGEROW DETAILS

LENGTH: ………… HEIGHT [av.]: ………… WIDTH [av.]: ………… [all in m.] TOTAL % GAPS: ………....

BANK or DITCH ALONG 50% OF HEDGE [tick box]: 1) bank ☐ 2) ditch ☐.

MANAGEMENT [tick box]: defunct ☐ , unmanaged ☐ , tree-line ☐ , trimmed ☐ . See also diagram p. 2

ADJACENT LAND [tick box]:

side 1: arable ☐ right of way ☐ pasture ☐ grassland - improved ☐ semi-improved ☐ unimproved ☐

side 2: arable ☐ right of way ☐ pasture ☐ grassland - improved ☐ semi-improved ☐ unimproved ☐

FIELD MARGIN [comments & size (m)]: side 1: ……………………………… side 2: …………………………………..

PARALLEL HEDGEROW WITHIN 15 METRES: yes/no

CONNECTED TO OR WITHIN 10 METRES IN A STRAIGHT LINE OF [tick box]:

1) pond ☐ 2) broad-leaved woodland ☐ 3) another hedgerow ☐

COMMENTS ON HEDGEROW: ……………………………………………………………………………………………………….

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NUMBER AND SPECIES OF STANDARD TREES: ……………………………………………………………………………

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………

[PLEASE SEE OVERLEAF FOR SKETCH PLAN AND SITE NOTES]

Sketch plan of site

N↑

Notes on site

What shape is the hedgerow? – Circle diagram of cross-section that most closely resembles hedgerow.			
			
a) Trimmed & dense	b) Intensively managed	c) Untrimmed	d) Tall & leggy
			
e) Untrimmed, with outgrowth	f) Recently coppiced (facing view)	g) Recently laid (facing view)	h) Other – Sketch

Hedgerow Woody Species (per 30m length) [tick box if present]

COMMON NAME	SCIENTIFIC NAME	LENGTH 1	LENGTH 2	LENGTH 3
Alder	*Alnus glutinosa*			
Apple, Crab *	*Malus sylvestris*			
Ash	*Fraxinus excelsior*			
Aspen *	*Populus tremula*			
Beech	*Fagus sylvatica*			
Birch, Downy/White	*Betula pubescens*			
Birch, Silver	*Betula pendula*			
Black Poplar	*Populus nigra*			
Blackthorn	*Prunus spinosa*			
Box	*Buxus sempervirens*			
Broom	*Cytisus scoparius*			
Buckthorn	*Rhamnus cathartica*			
Buckthorn, Alder *	*Frangula alnus*			
Butchers-broom *	*Ruscus aculeatus*			
Cherry, Bird	*Prunus padus*			
Cherry, Wild *	*Prunus avium*			
Cotoneaster, Wild	*Cotoneaster integerrimus*			
Currant, Downy	*Ribes spicatum*			
Currant, Mountain	*Ribes alpinum*			
Dogwood	*Cornus sanguinea*			
Elder	*Sambucus nigra*			
Elm * (Wych elm only awi)	*Ulmus spp.*			
Gooseberry	*Ribes uva-crispa*			
Gorse	*Ulex europaeus*			
Gorse, Dwarf	*Ulex minor*			
Gorse, Western	*Ulex gallii*			
Guelder-rose *	*Viburnum opulus*			
Hawthorn	*Crataegus monogyna*			
Hawthorn, Midland *	*Crataegus laevigata*			
Hazel	*Corylus avellana*			
Holly *	*Ilex aquifolium*			
Hornbeam *	*Carpinus betulus*			
Juniper, Common	*Juniperus communis*			
Lime, Large/Broad-leaved	*Tilia platyphyllos*			
Lime, Small-leaved *	*Tilia cordata*			
Maple, Field *	*Acer campestre*			
Mezereon	*Daphne mezereum*			
Oak, Pedunculate	*Quercus robur*			
Oak, Sessile *	*Quercus petraea*			
Osier	*Salix viminalis*			
Pear, Plymouth	*Pyrus cordata*			
Pear, Wild	*Pyrus pyraster*			
Poplar, Grey	*Populus canescens*			
Poplar, White	*Populus alba*			
Privet, Wild	*Ligustrum vulgare*			
Rose * *	*Rosa spp.*			
Rowan	*Sorbus aucuparia*			
Sea-buckthorn	*Hippophae rhamnoides*			
Service Tree, Wild *	*Sorbus torminalis*			
Spindle	*Euonymus europaeus*			
Spurge-laurel	*Daphne laureola*			
Walnut	*Juglans regia*			
Wayfaring-tree	*Viburnum lantana*			
Whitebeam	*Sorbus spp.*			
Willow	*Salix spp.*			
Yew	*Taxus baccata*			
Chestnut, Sweet (Archaeophyte)	*Castanea sativa*			
Pine, Scots (Archaeophyte)	*Pinus sylvestris*			
Sycamore (Neophyte)	*Acer pseudoplatanus*			
Total number of species				

- = ancient woodland indicator species (SE only); ** only field rose = ancient woodland indicator species

Hedgerow Climbing Species (in full hedgerow length) [tick box if present]

COMMON NAME	SCIENTIFIC NAME		COMMON NAME	SCIENTIFIC NAME	
Bittersweet *	*Solanum dulcamara*		Honeysuckle	*Lonicera periclymenum*	
Bramble	*Rubus fruticosus*		Hop	*Humulus lupulus*	
Bryony, Black	*Tamus communis*		Ivy	*Hedera helix*	
Bryony, White	*Bryonia dioica*		Travellers Joy	*Clematis vitalba*	
Hedge Bindweed	*Calystegia sepium*		Total number of species		

* = ancient woodland indicator species (SE only)

Hedgerow Woodland Species (in full hedgerow length) [tick box if present]

COMMON NAME	SCIENTIFIC NAME		COMMON NAME	SCIENTIFIC NAME	
Barren strawberry *	*Potentilla sterilis*		Oxlip	*Primula elatior*	
Bluebell *	*Hyacinthoides non-scripta*		Pignut *	*Conopodium majus*	
Broad buckler fern	*Dryopteris dilatata*		Primrose *	*Primula vulgaris*	
Broad-leaved helleborine *	*Epipactis helleborine*		Ramsons *	*Allium ursinum*	
Bugle	*Ajuga reptans*		Sanicle *	*Sanicula europaea*	
Common cow-wheat *	*Melampyrum pratense*		Scaly male fern *	*Dryopteris affinis*	
Common dog violet	*Viola riviniana*		Small cow-wheat	*Melampyrum sylvaticum*	
Common polypody *	*Polypodium vulgare*		Soft shield fern *	*Polystichum setiferum*	
Dog's mercury	*Mercurialis perennis*		Sweet violet	*Viola odorata*	
Early dog violet *	*Viola reichenbachiana*		Toothwort *	*Lathraea squamaria*	
Early purple orchid *	*Orchis mascula*		Tormentil	*Potentilla erecta*	
Enchanter's nightshade	*Circaea lutetiana*		Wild strawberry	*Fragaria vesca*	
Giant fescue *	*Festuca gigantea*		Wood anemone *	*Anemone nemorosa*	
Goldilocks buttercup *	*Ranunculus auricomus*		Wood avens/Herb bennet	*Geum urbanum*	
Great bell-flower	*Campanula latifolia*		Wood false-brome	*Brachypodium sylvaticum*	
Greater wood-rush *	*Luzula sylvatica*		Wood horsetail *	*Equisetum sylvaticum*	
Hairy brome *	*Bromus ramosus*		Wood meadow-grass *	*Poa nemoralis*	
Hairy wood-rush *	*Luzula pilosa*		Wood melick *	*Melica uniflora*	
Hard fern *	*Blechnum spicant*		Wood millet *	*Milium effusum*	
Hard shield fern *	*Polystichum aculeatum*		Wood sage	*Teucrium scorodonia*	
Harts tongue *	*Asplenium scolopendrium*		Wood sedge *	*Carex sylvatica*	
Heath bedstraw	*Galium saxatile*		Wood sorrel *	*Oxalis acetosella*	
Herb-Paris *	*Paris quadrifolia*		Wood speedwell *	*Veronica montana*	
Herb-Robert	*Geranium robertianum*		Wood spurge *	*Euphorbia amygdaloides*	
Lady fern	*Athyrium filix-femina*		Woodruff *	*Galium odoratum*	
Lords-and-ladies	*Arum maculatum*		Yellow archangel *	*Lamiastrum galeobdolon*	
Male fern	*Dryopteris filix-mas*		Yellow pimpernel *	*Lysimachia nemorum*	
Moschatel *	*Adoxa moschatellina*				
Narrow buckler fern *	*Dryopteris carthusiana*				
Nettle-leaved bell-flower *	*Campanula trachelium*		Total number of species		

* = ancient woodland indicator species (SE only)

Other Species of Ecological Interest [list any such species identified, with comments]:

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Please return form to: Sussex Biodiversity Record Centre, SWT Woods Mill, Henfield, West Sussex, BN5 9SD.

[Survey form last modified 06.04.11]