IDENTIFYING & ASSESSING SIGNIFICANT DORSET HEDGEROWS

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For

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1. WHY ARE HEDGEROWS IMPORTANT?

Hedgerows are very important features of the British countryside from ecological, archaeological, cultural and landscape points of view. As a predominantly rural and agricultural county they are found over most of Dorset only being absent from the open heaths and the coastal limestone, in the latter they are replaced by stone walls. The history of hedgerows is complex and has not been studied in great detail in the county, but in general the Northern and Western Vales and the clay belt fringing the heaths supports the most hedges many of which can be termed as ancient dating from at least the Anglo-Saxon period until the end of the Mediaeval period (c. 1500 AD). The chalk uplands through the centre of the county was enclosed late from the 18th to mid-19th Centuries and apart from parish and manor boundaries, many hedges are of more recent planted origin appearing on the map as straight lines and encompassing large rectangular fields. These regions broadly delimit the areas of Ancient and Planned Countryside as defined by Rackham (1986).

From an ecological perspective hedgerows can be extremely diverse supporting elements of grasslands, scrub and woodland, plus occasionally wetlands where ditches are present. As well as supporting many species they can act as corridors for species moving across the landscape, bats being a good example. At present there is little accurate data on how many species that hedgerows support in the county.

While the importance of hedgerows has been well documented (e.g. Pollard *et al*, 1974) efforts have only been made in the last 30 years to assess them and protect those that are deemed to be of most important resulting in the Hedgerow Regulations in 1997.

2. EXISTING HEDGEROW DESIGNATIONS AND ASSESSMENTS

In an attempt to halt the loss of hedgerows there have been several methods of assessing them based on the number of woody species present and associated features. Under the UK Biodiversity Action and Section 41 of the NERC Act 2006 any hedgerow with 80% cover of one or more native woody species would qualify. The Countryside Survey recorded a mean of 3.7 native woody species per 30m length in England (NERC, 2009), therefore the vast majority of non-urban hedges in Dorset would meet this criterion.

The Hedgerow Regulations were brought in in 1997 meaning that any landowner wanting to remove any length of hedge over 10 metres would need to apply to the local authority who would issue a Hedgerow Removal Notice and an assessment would be made of the hedge against the Criteria listed in the Regulations. The criteria is much stricter than the UK BAP with the hedge needing to have 7 woody species per 30 metre section, or 6 or 5 woody species plus 3 or 4 associated features respectively.

A third category, Species-rich Hedgerows, are defined in the DEFRA Hedgerow Survey Handbook (2005) as those having 5 or more woody species per 30 metre section. Hedges with fewer than 5 woody species but with a species-rich ground flora including 'woodland species' would also qualify but no thresholds are given and would need to be set on a local basis.

BOX 1. UK Priority Habitat definition:

A hedgerow is defined as any boundary line of trees or shrubs over 20m long and less than 5m wide, and where any gaps between the trees or shrub species are less that 20m wide. Any bank, wall, ditch or tree within 2m of the centre of the hedgerow is considered to be part of the hedgerow habitat, as is the herbaceous vegetation within 2m of the centre of the hedgerow. **All hedgerows consisting predominantly (i.e. 80% or more cover) of at least one woody UK native species are covered by this priority habitat**, where each UK country can define the list of woody species native to their respective country. Climbers such as honeysuckle and bramble are recognised as integral to many hedgerows, however they require other woody plants to be present to form a distinct woody boundary feature, as such they are not included in the definition of woody species. The definition is limited to boundary lines of trees or shrubs, and excludes banks or walls without woody shrubs on top of them.

Based on an analysis of Countryside Survey data, using the threshold of at least 80% cover of any UK native woody species, it is estimated that 84% of countryside hedgerows in GB would be included.

BOX 2. Hedgerow Regulations (1997 and amendments)

A hedgerow qualifies as an Important Hedgerow if it meets the following criteria:

(a) at least **7** woody species

(b) at least **6** woody species, and has associated with it at least **3** of the features specified in sub-paragraph (4) of the regulations

(c) at least **6** woody species, including one of the following: black-poplar *(Populus nigra* ssp *betulifolia)*, large-leaved lime *(Tilia platyphyllos)*, small-leaved lime *(Tilia cordata)*, wild service-tree *(Sorbus torminalis)*

(d) at least **5** woody species, and has associated with it at least **4** of the features specified in sub-paragraph (4) of the regulations

BOX 3. Species-rich Hedgerows – DEFRA Hedgerow Survey Handbook (2005)

Where the structural species making up the 30m section of hedgerow include at least **five** (or at least four in northern and eastern England, upland Wales and Scotland) woody species that are either native somewhere in the UK, or which are archaeophytes, the hedgerow is defined as **species-rich**. Climbers and bramble do not count towards the total except for roses. Hedgerows that contain fewer woody species but have a rich basal herbaceous flora may also be defined as species-rich, but the criteria to define these have to be set on a local basis as there is no national definition.

3. DEVELOPING CRITERIA FOR SELECTING SIGNIFICANT DORSET HEDGEROWS

The criteria proposed below for selecting significant hedgerows in Dorset will include elements of the three criteria described above but should include local features that make hedges in the county special.

For this purpose a hedgerow is defined as:

'*any boundary line of trees or shrubs over 20m long and less than 5m wide, and where any gaps between the trees or shrub species are less that 20m in width. Any bank, wall, ditch or tree within 2m of the centre of the hedgerow is considered to be part of the hedgerow habitat, as is the herbaceous vegetation within 2m of the centre of the hedgerow.*'

BOX 4. Criteria for selecting Significant Dorset Hedgerows

A hedgerow needs to meet one of the following criteria to qualify:

1. Average of **5 or more woody species**[1] native to Dorset per **30 metre** section[2]

2. Having **8 or more woody species**[1] native to Dorset along the **entire length** of the hedge

3. Having 5 or fewer native woody species per 30m section or 8 or in the whole hedge, but **7 or more ground layer 'woodland' indicator species**

4. Supporting **1 or more Red Listed species** within the IUCN categories CR, EN, VU, NT

5. Supporting **1 or more Section 41 species** of Principal Conservation Importance under the NERC Act 2006

6. **Features of local distinctiveness** such as double-hedged green lanes, droves and Holloways, and the presence of veteran and ancient trees including coppiced stools and layered boles

[1] see Box 5 for the list of woody species in Dorset

[2] 30 m section:

- for hedgerows up to 100 metres in length take the middle 30 metre section
- for hedgerows 100 - 200 metres in length divide the hedgerow into two and measure the two mid 30 metre sections
- for hedgerows more than 200 metres divide into three and measure the three mid 30 metre sections

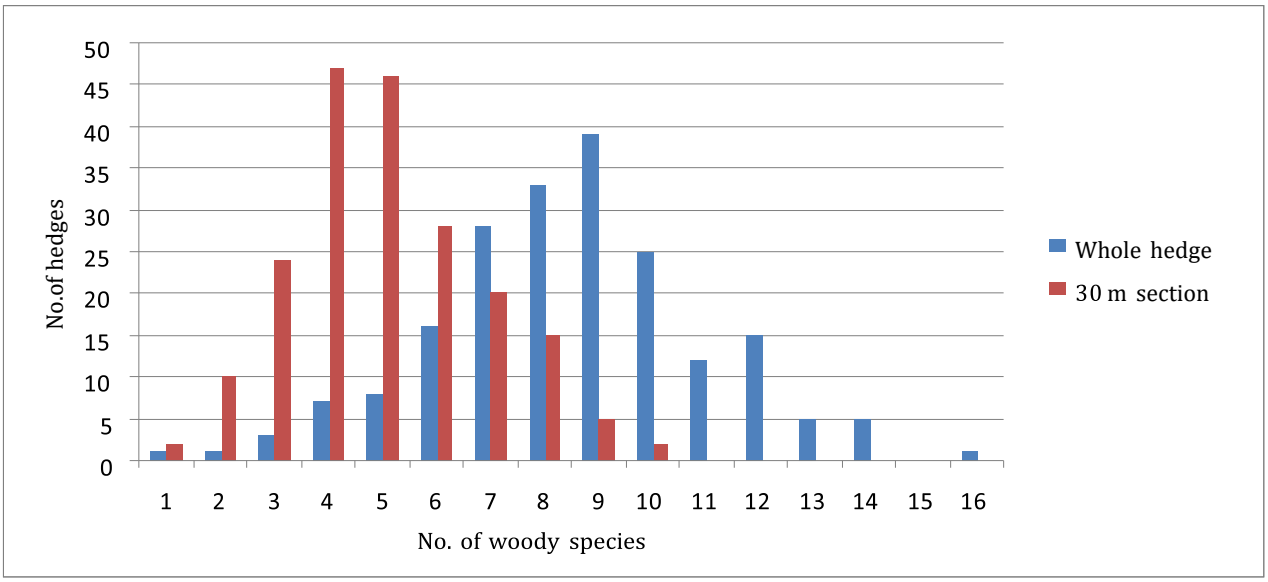


FIG 1. Graph comparing the number of woody species found in 30-metre sections and the whole hedge from DERC survey of 200 hedges in the Kingcombe & Powerstock Vales

In hedgerow survey one of the methods of determining the number of species is to count the number of woody species from a measured 30 metres section. This section should be chosen by selecting the middle 30 metres for a hedge of 100 metres or less or for hedges more than 100m split the hedge into two or three sections and then record the middle 30m of each and average out the total. By using this method it cuts out recorder bias as it is tempting to record the most species-rich section. However, there are caveats as woody species do not grow evenly throughout the hedge and species such as Hazel and suckering Elm can completely dominate a 30 metre section which gives a false impression of the hedge as a whole. Therefore it is also important to record the total number of woody from the hedge and use the DAFOR scale to give an indication of their frequency.

BOX 5. Woody species in Dorset used in the Criteria

Acer campestre	Field Maple	Native
Acer pseudoplatanus	Sycamore	Archaeophyte
Alnus glutinosa	Alder	Native
Berberis vulgaris	Barberry	Archaeophyte
Betula pendula	Silver Birch	Native
Betula pubescens	Downy Birch	Native
Carpinus betulus	Hornbeam	Native?
Castanea sativa	Sweet Chestnut	Archaeophyte
Cornus sanguinea	Dogwood	Native
Corylus avellana	Hazel	Native
Crataegus monogyna	Hawthorn	Native
Cytisus scoparius	Broom	Native
Euonymus europaeus	Spindle	Native
Fagus sylvatica	Beech	Planted
Frangula alnus	Alder Buckthorn	Native
Fraxinus excelsior	Ash	Native
Ilex aquifolium	Holly	Native
Ligustrum vulgare	Wild Privet	Native
Malus sylvestris	Crab Apple	Native
Populus tremula	Aspen	Native
Prunus avium	Wild Cherry	Native
Prunus domestica	Wild Plum	Archaeophyte
Prunus spinosa	Blackthorn	Native
Quercus robur	Pedunculate Oak	Native
Rhamnus cathartica	Buckthorn	Native
Rosa canina	Dog-rose	Native
Rosa micrantha	Small-flowered Sweet-briar	Native
Rosa rubiginosa	Sweet-briar	Native
Rosa sherardii	Sherard's Downy-rose	Native
Rosa stylosa	Short-styled Field-rose	Native
Rosa tomentosa	Harsh Downy-rose	Native
Salix alba	White Willow	Archaeophyte
Salix aurita	Eared Willow	Native
Salix caprea	Goat Willow	Native
Salix cinerea	Rusty Willow	Native
Salix fragilis	Crack-willow	Archaeophyte
Sambucus nigra	Elder	Native
Sorbus aria	Common Whitebeam	Native
Sorbus aucuparia	Rowan	Native
Sorbus torminalis	Wild Service-tree	Native
Taxus baccata	Yew	Native
Tilia cordata	Small-leaved Lime	Native
Ulex europaeus	Gorse	Native
Ulmus glabra	Wych Elm	Native
Ulmus minor	Small-leaved Elm	Native
Ulmus procera	English Elm	Archaeophyte?
Ulmus x vegetata	Huntingdon Elm	Native
Viburnum lantana	Wayfaring-tree	Native
Viburnum opulus	Guelder-rose	Native

BOX 6. Ancient Woodland Vascular Plants[1] used in the Criteria

Adoxa moschatellina	Moschatel	*Luzula pilosa*	Hairy Wood-rush
Allium ursinum	Ramsons	*Lysimachia nemorum*	Yellow Pimpernel
Anemone nemorosa	Wood Anemone	*Melampyrum pratense*	Common Cow-wheat
Asplenium scolopendrium	Hart's-tongue	*Melica uniflora*	Wood Melick
Blechnum spicant	Hard-fern	*Narcissus pseudonarcissus*	Daffodil
Bromopsis ramosa	Hairy-brome	*Orchis mascula*	Early-purple Orchid
Carex pendula	Pendulous Sedge	*Oxalis acetosella*	Wood-sorrel
Carex remota	Remote Sedge	*Polypodium interjectum*	Intermediate Polypody
Carex sylvatica	Wood-sedge	*Polypodium vulgare*	Common Polypody
Ceratocapnos claviculata	Climbing Corydalis	*Polystichum aculeatum*	Hard Shield-fern
Chrysosplenium oppositifolium	Opposite-leaved Golden-saxifrage	*Polystichum setiferum*	Soft Shield-fern
Conopodium majus	Pignut	*Potentilla sterilis*	Barren Strawberry
Daphne laureola	Spurge-laurel	*Primula vulgaris*	Primrose
Dryopteris affinis	Scaly Male-fern	*Pulmonaria longifolia*	Narrow-leaved Lungwort
Festuca gigantea	Giant Fescue	*Ranunculus auricomus*	Goldilocks Buttercup
Galium odoratum	Woodruff	*Ribes rubrum*	Red Currant
Hyacinthoides non-scripta	Bluebell	*Ruscus aculeatus*	Butcher's-broom
Hypericum androsaemum	Tutsan	*Sanicula europaea*	Sanicle
Hypericum hirsutum	Hairy St John's-wort	*Stachys officinalis*	Betony
Hypericum pulchrum	Slender St John's-wort	*Stellaria holostea*	Greater Stitchwort
Iris foetidissima	Stinking Iris	*Stellaria neglecta*	Greater Chickweed
Lamiastrum galeobdolon	Yellow Archangel	*Veronica montana*	Wood Speedwell
Lathraea squamaria	Toothwort	*Vicia sepium*	Bush Vetch
Lathyrus linifolius	Bitter-vetch	*Viola reichenbachiana*	Early Dog-violet

[1] based on Hornby & Rose (1986)

BOX 7. Other vascular plants to be classed as 'hedgerow notables' potentially found in the ground flora

Ajuga reptans	Bugle	*Hieracium trichocaulon*	Hairy-stemmed Hawkweed
Angelica sylvestris	Wild Angelica	*Hieracium umbellatum*	Umbellate Hawkweed
Asplenium adiantum-nigrum	Black Spleenwort	*Hypericum tetrapterum*	Square-stalked St John's-wort
Athyrium filix-femina	Lady-fern	*Knautia arvensis*	Field Scabious
Campanula trachelium	Nettle-leaved Bellflower	*Lysimachia nummularia*	Creeping-Jenny
Clinopodium vulgare	Wild Basil	*Mentha aquatica*	Water Mint
Cruciata laevipes	Crosswort	*Mentha arvensis*	Corn Mint
Dryopteris dilatata	Broad Buckler-fern	*Mercurialis perennis*	Dog's Mercury
Dryopteris filix-mas	Male-fern	*Origanum vulgare*	Wild Marjoram
Filipendula ulmaria	Meadowsweet	*Serratula tinctoria*	Saw-wort
Fragaria vesca	Wild Strawberry	*Teucrium scorodonia*	Wood Sage
Galium verum	Lady's Bedstraw	*Umbilicus rupestris*	Navelwort
Geranium lucidum	Shining Crane's-bill	*Vaccinium myrtillus*	Bilberry
Glechoma hederacea	Ground Ivy	*Valeriana officinalis*	Common Valerian
Hieracium sabaudum	Autumn Hawkweed	*Viola riviniana*	Common Dog-violet

4. DEFINING AND ASSESSING HEDGEROWS IN DORSET

Woody species

The woody species are those that form the hedge structure, which is usually formed by shrubs such as Blackthorn *Prunus spinosa*, Hawthorn *Crataegus monogyna* and Hazel *Corylus avellana*. Trees may be present in the form of old layered stools, especially Ash *Fraxinus excelsior* and Field Maple *Acer campestre.* Hedgerow trees are not always present, especially in the late enclosure hedges on the chalk, but locally are an important landscape feature of the clay vales. Ash and Pedunculate Oak *Quercus robur* are the most frequent hedge trees over most of the county. Elm *Ulmus* species were once frequent but virtually all the mature trees have been lost through Dutch Elm disease, but the species survive as suckering growth maintained by cutting. Small trees survive for a short time before succumbing to the disease. Non-native species such as Sycamore *Acer pseudoplatanus*, Beech *Fagus sylvatica*, Horse Chestnut *Aesculus hippocastanum* and Common Lime *Tilia x vulgaris* have been planted into hedges in some areas especially around villages and old manor houses.

Hedges are often assessed by counting the number of different species found over a given length. This is a rather crude method but does produce standardised results if applied over a county or region. The type of species present can give a clue to the origins of a hedge. Later enclosure hedgerows are characterised by abundant to dominant Hawthorn *Crataegus monogyna* with Blackthorn *Prunus spinosa* and Elder *Sambucus nigra* but few other species. Old and ancient hedges are more likely to support species such as Maple *Acer campestre*, Hazel *Corylus avellana*, Holly *Ilex aquifolium*, Spindle *Euonymus europaeus* and Wayfaring Tree *Viburnum lantana*, although geology and drainage can influence diversity, those of dry acid soils on the Greensand and Poole Formation generally support fewer species.

However, it must be stressed that an assessment of age should use a range of data including old maps and documents combined with the number of woody species and the type of ground flora present.

Climbers

Climbing and rambling species is a small group including semi-woody species such as Traveller's Joy *Clematis vitalba*, Honeysuckle *Lonicera periclymenum* and Bramble *Rubus fruticosus* agg. The last of these is a complex of over 300 apomictic microspecies of which 105 occur in Dorset, many of which will occur in hedgerows. Brambles are a very important component in hedgerows and scrub generally providing a valuable resource of pollen and nectar through the summer months and fruit during late summer and early autumn. The rarest climbing species is Copse Bindweed *Fallopia dumetorum* which is rare nationally with the northeast Dorset at the southwest limit of its distribution. There are several very rare Bramble micro-species in Dorset but it is not known whether they occur specifically in hedgerows. Climbers do not count as woody species in surveys.

The ground flora

The flora of ground layer of hedges is very diverse and is influenced by geology and soils, drainage, adjacent land use and the age of the hedge. The ground flora can be split into the three following zones:

- Shade tolerant species found directly under the woody shrubs
- Species found on the hedgebank which can be open to more and sometimes grazed
- Species of verges and field margins within 2 metres of the centre of the hedge

Around 200 plant species have been recorded from the ground flora of hedges which is approximately 18% of the Dorset flora. This will include species associated with woodland, scrub and grassland plus, where a ditch is present, wetland plants. The number and type of species will depend on many factors including soils, hedge age, drainage and adjacent land use. It is generally accepted that older hedges have a richer flora although old, shaded examples may have more woodland indicators, but the overall number of species may be less than in a more open managed one.

Where hedges adjoin intensively managed farmland, arable or grassland, the flora of the field margin and hedgebank is dominated by species that indicate high nutrient levels such as False Oat-grass *Arrhenatherum elatius*, Cock's-foot *Dactylis glomerata*, Cow Parsley *Anthriscus sylvestris*, Hogweed *Heracleum sphondylium* and Goosegrass *Galium aparine*, with Ivy *Hedera helix* often dominating beneath the woody shrubs. This change in vegetation can also be seen on road verges in some areas of the county. These ad hoc observations are backed up the UK Countryside Survey which found a decrease in plant diversity along linear features between 1978 and 2007 (NERC, 2009).

The DERC survey of 200 hedges in the Kingcombe & Powerstock Vales found 163 species in the ground flora but only four species were recorded in 50% or more of the hedges and 110 were present in less than 10%. 43 indicator species listed Boxes 6 & 7 were recorded but 4 were found in 25% or more of the hedges with Dog's Mercury the most frequent found in 48%.

ASSOCIATED FEATURES

Hedgerow trees

The number and density of mature hedgerow trees varies greatly from area to area in Dorset, but generally they are rare or absent from the late Inclosure Act hedges on the Dorset chalk and are much more typical of the clay vales, particularly parts of the Blackmore and Marshwood Vales. Pedunculate Oak and Ash are by far the most frequent species with Maple often present on calcareous soils. Formerly Elm spp. were widespread but Dutch Elm disease eliminated the vast majority of mature trees from the landscape. Other trees such as Alder, Beech, Crab Apple, Grey Willow, Goat Willow and Sycamore are sometimes present but not particularly widespread.

Trees add structural diversity to hedges as well as providing extra for species such as hole-nesting birds and bats, both will forage from the tree canopy, especially Oak. Open grown trees with light coming to the branches and twigs will be favourable for many epiphytic lichens including in West Dorset the uncommon S41 beard-lichen *Usnea articulata*. The lower trunks of the majority of hedgerow trees are now covered in Ivy which eliminates the lichen interest, grazing can control the Ivy and in the past when hedges were cut by hand the Ivy would have been cut from the trees.

Layered tree boles

Prior to the invention of mechanical flails and barbed wire the vast majority of hedges were laid (or plashed) by hand to create a stock proof barrier between fields. Shrubs such as Blackthorn, Hawthorn and Hazel were cut in this as they have quick growing, thin stems that are very pliable. In parts of Dorset non-timber hedgerow trees such as Ash and Maple were also laid, and the large boles which may be several hundred years old are still visible. These often support bryophytes and bracket fungi, and have sap runs, water-filled hollow and rot holes which are important for wide range saproxylic invertebrates. These are essentially veteran or ancient trees and may be a lot older than neighbouring as their life has been prolonged by repeated cutting.

Coppiced stools

Traditionally layering or plashing was the traditional management type, but in places, particularly thick hedges or in double-hedged lanes species such as Ash, Hazel and Maple were coppiced, sometimes high than normal producing a large bole which is often rich in bryophytes. The older boles can be very old with hollows, rot holes and bracket fungi providing valuable habitat for invertebrates. These features should be considered veteran or ancient trees.

Hedgebank

Many hedges are on a distinct bank which vary greatly in width and height, and are often accompanied by a ditch on one or both sides. Older hedges tend to have a large and higher bank, which in Dorset is mainly formed of soil, replenished from any ditches, with some stone rubble cleared from the adjacent sometimes forming a base. Where the bank is not shaded by the shrubs in can support a varied flora including some grassland species. Bare ground can be exploited by ground-nesting invertebrates and bryophytes.

Ditch

On clayey soils in particular hedges are often accompanied by a ditch, and traditionally the ditch would have been cleaned out when the hedge was laid, the debris from the ditch put on the hedgebank. A few ditches may hold water all year sound but many are only seasonally wet, but are damp enough to have a flora that includes some wetland plants, and invertebrates that require damp or wet conditions.

Field margins

Hedges as defined in this report includes land within 2 metres of the central line of the hedge. This will include a narrow width of the adjacent field which will vary according to the intensity of the land use. In the more intensively farmed areas there will often be a band of enriched vegetation with Cow Parsley, Cleavers, False Oat-grass and Stinging Nettle.

Verge

Hedges along roads and green lanes will have verge of variable width supporting perennial vegetation that is usually ungrazed and only cut once or twice a year. The flora will vary according to the land use history but can be species-rich and comparable to some semi-natural habitats. In areas of very intensive agriculture verges have become enriched and plant diversity has decreased with robust nitrogen-tolerant perennials now dominating.

Double hedged lanes, droves and Holloways

These very special features of the countryside and frequent in some parts of Dorset, more especially in the on the clays, sand and limestones of the northern and western Vales. Some are undoubtedly ancient in origin although many are very difficult to date. They vary greatly in structure some have mature hedges with scattered trees on both sides and act as ‘linear woodlands’. Other where the hedges are trimmed are more open and the central vegetation and verges can support grassland species. The shelter given by the structure of these lanes is favourable for many invertebrates.

5. WHERE ARE THE IMPORTANT AREAS FOR HEDGEROWS IN DORSET?

The landscapes of Dorset have evolved at different rates and the type of agriculture influence the type and date of enclosure, this is revealed in the field patterns that can be seen from aerial photography. The clay vales vary small irregular shaped fields which may be assarts which were taken out of woodland or waste in the early Mediaeval period. These areas also had common grazing land which has been enclosed at various stages from the 16th to the 19th centuries. Many of the hedges in these areas will be old or ancient which may be reflected in their flora.

The chalk areas were managed mainly as open 'sheep walk' and enclosed late resulting from the Inclosure Acts of the 19th Century (*c*. 1845 – 1882). Many of the hedges in these areas are straight, composed of thorn species, lack hedgerow trees and enclose large square and rectangular fields. There are older hedges on the chalk, these are usually manor or parish boundaries of droves that lead from settlements to common grazing land. In the Poole Basin the fringing London and Reading Clay band had better soils and is largely agricultural with numerous hedgerows of various dates. The open heaths, now much fragmented, were mainly open with hedges largely absent.

In the south of the county where there are outcrops of limestone, dry stone walls often replace hedgerows as the boundary feature and are not included in this assessment, but should be recognised as important landscape features and can support important species.

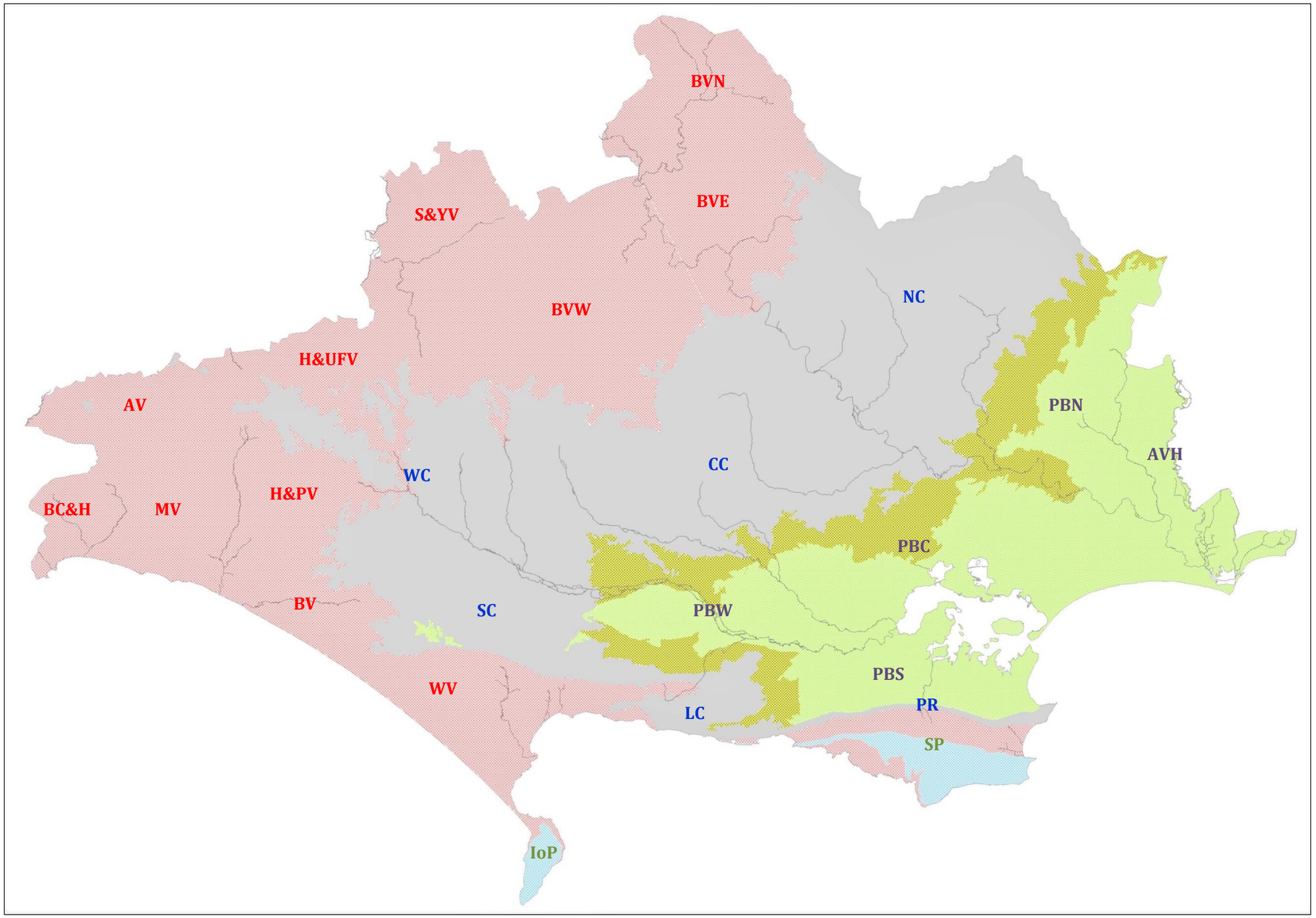
Key areas:

Blackmoor Vale North
Blackmoor Vale East
Blackmoor Vales
Halstock & Upper Frome Vales
Hooke & Powerstock Vales
Marshwood Vales

These areas fall within the areas defined as Ancient Countryside (Rackham, 1986). While these areas are likely to support the densest concentration of species-rich hedges, other areas of county will support important hedges particularly Parish boundaries and old lanes and droves.

Throughout the county hedges are very important landscape features and need to be considered in developments of all sizes.

MAP 1. Key areas for hedgerows in Dorset



BVN = Blackmore Vale North
BVC = Blackmore Vale Central
BVW = Blackmore Vale West
S&YW = Sherborne & Yeovil Vales

BC&H = Border Commons & Hills
H&UFW = Halstock & Upper Frome Vales
AV = Axe Vales
MV = Marshwood Vale

H&PV = Hooke & Powerstock Vales
BV = Bride Valley
WV = Weymouth Vales
IoP = Isle of Portland

NC = Northern Chalk
CC = Central Chalk
WC = Western Chalk
SC = Southern Chalk

LC = Lulworth Chalk
PR = Purbeck Ridge
SP = South Purbeck
PBN = Poole Basin North

PBC = Poole Basin Central
PBC = Poole Basin West
PBS = Poole Basin South
AVH = Avon Valley Heaths

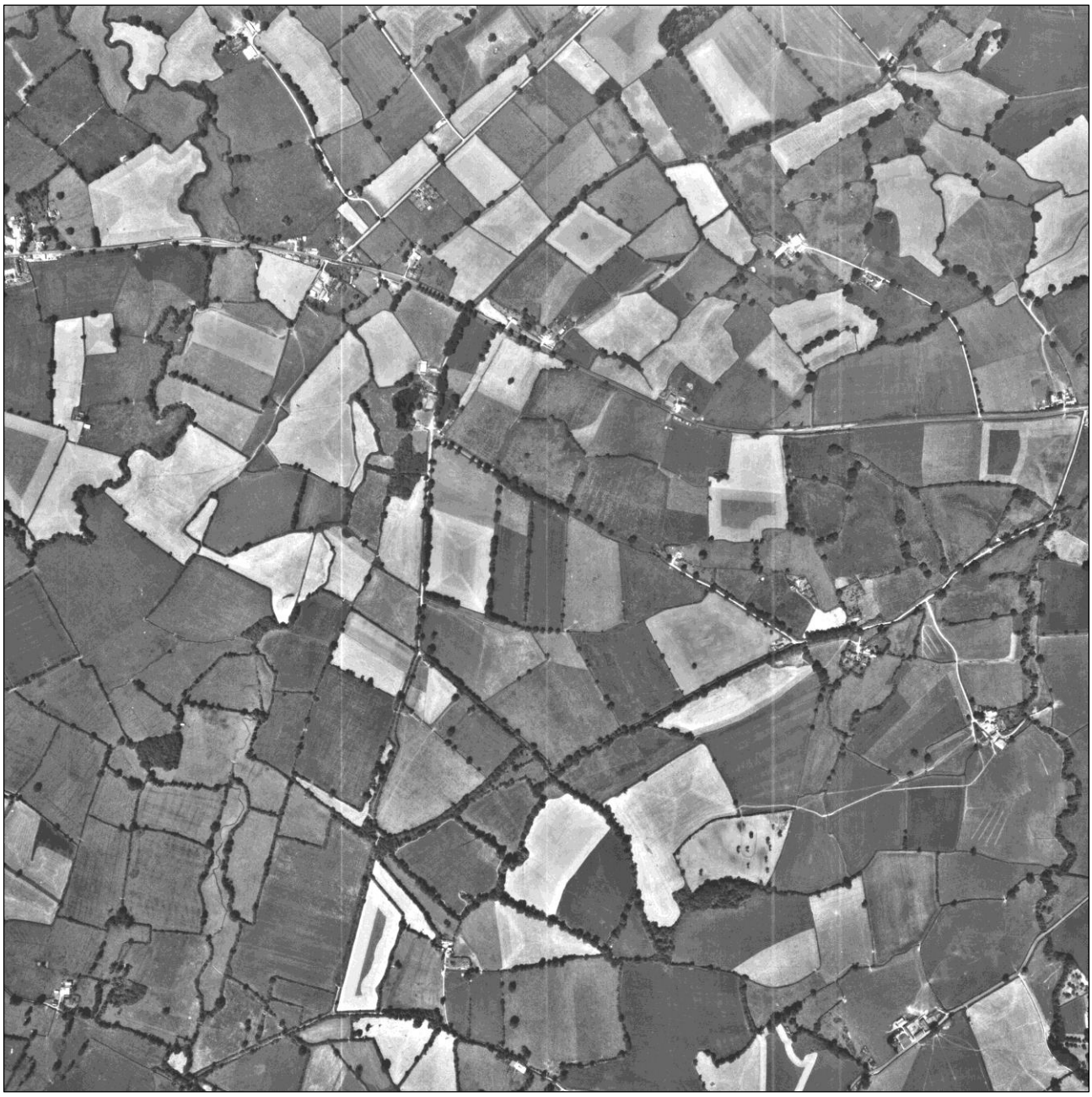
MAP 2. 1805 surveyors drawing of the chalk between Crichel and Pentridge

The map shows different rates of enclosure across the northeast chalk. Those areas shown as open downland are mostly enclosed by the 2nd OS map at the end of the 19th Century.

MAP 3. 1805 surveyors drawing of the western Blackmoor Vale

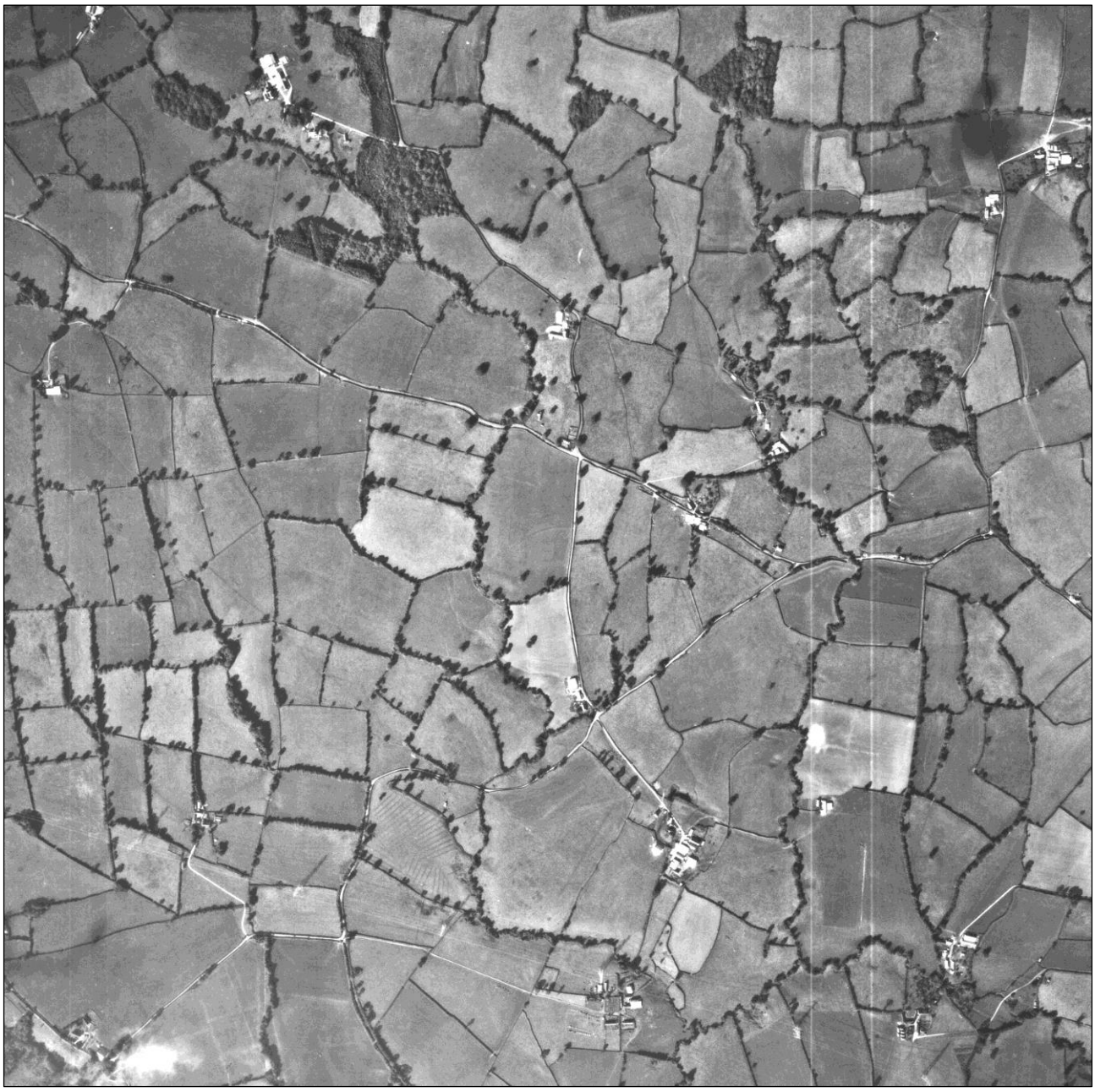
This 1805 map shows a very wide range of enclosure patterns through the Vale

FIG 2. Hedgerow patterns in the Blackmore Vale near Lydlinch (1972)



The photograph shows a very varied field pattern probably reflecting different stages of enclosure over the centuries. The area in the centre surrounded by double-hedged droves was mapped as open common land (Puxey Common) on the 1805 surveyors drawings meaning the straight-lined hedges in the area are somewhere between 150 and 200 years old.

FIG 3. Hedgerow patterns in centre of the Marshwood Vale (1972)



The centre of the Marshwood Vale shows a very irregular field pattern with relatively few straight lines. Many of the settlements within the Vale end in '*hay*' meaning an enclosure, these date for the 12th -14th Centuries, but some may be Domesday settlements (Taylor, 1979). The photograph shows that many of the hedges have trees within them most of which are Oak, these are very important local features of the Vale both in terms of the landscape and for biodiversity.

FIG 4. Hedgerow patterns in the Powerstock Vales near Toller Porcorum (1972)

The area around Toller Porcorum, Kingcombe and Powerstock is known for its hedgerow and double-hedged lanes and Holloways. The aerial photograph shows a diverse range of field patterns pointing to different stages of settlement and enclosure over many centuries.

FIG 5. Hedgerow patterns on the Central Chalk at Cheselbourne West Down (1972)

The photo shows a field pattern that is typical of much of the Dorset chalk with a few long sinuous hedgerows that are old or ancient boundary features or droves. The majority of hedges are straight and enclose large rectangular or square fields. These date from the Inclosure Acts of the late 18th to mid 19th Centuries and were planted with thorns, particularly Hawthorn *Crataegus monogyna*.

Interestingly the ploughed areas in the photo show the 'footprint' of a much earlier field system possibly dating from the Bronze Age and often referred to as 'Celtic Field's'.

6. ASSESSING THE CONDITION OF HEDGEROWS

Over recent years it has become apparent that the condition of hedgerows is affecting their biodiversity and integrity and may contribute to their eventual loss. The lack of management may lead to a shrubby hedge becoming effectively a line of trees, over-management, particularly repeating hard flailing, reduces the height and causes the shrubs to lose lower branches and twigs creating a 'lollipop' type structure. This form of management can also reduce dramatically the flowering and fruiting ability of woody species and climbers which reduces the resources available to invertebrates, birds and mammals.

The Countryside Survey 2007 showed a decrease in management resulting in hedges having more gaps or turning into lines of trees, this was mainly in arable-dominated areas of lowland England (NERC, 2009). This survey also showed a shift towards plants associated with shaded, fertile and less acidic conditions, plus a decrease in species of open habitats.

The management of adjacent land can have a detrimental impact on hedges particularly the drift of artificial fertilizers resulting in over-enrichment of the ground layer indicated the dominance of plants tolerant of enriched soils such as Cleavers *Galium aparine*, Cow Parsley *Anthriscus sylvestris* and Stinging Nettle *Urtica dioica*. There is evidence that drift of pesticides from adjacent arable land may affect invertebrate populations (Botias *et al* in Dover 2019).

The following attributes should be assessed by looking at the whole hedgerow. If a hedgerow fails to meet the target for any attribute it will be in unfavourable condition. Significant Dorset Hedgerows can be assessed as in favourable or unfavourable condition.

Attribute	Target	Comments
Undisturbed ground & perennial herbaceous vegetation cover	Undisturbed ground (At least 2m).	Estimate average width of undisturbed (uncultivated) ground from the centre-line of the hedgerow. Automatically favourable if borders permanent grassland.
	Herbaceous vegetation (At least 1m).	Estimate average width of perennial herbaceous vegetation between the centre-line of the hedgerow and adjacent disturbed ground.
Nutrient enrichment	No suitable thresholds have been developed, but should be less than 20% combined cover of nettles, cleavers and docks.	Estimate percentage cover of nettles, cleavers and docks within a 2m wide band alongside the hedgerow.
Recently introduced, non-native species	Non-native herbaceous species. (Maximum 10%).	Estimate cover of all non-native herbaceous species as percentage of area of 2m band extending from centre-line of hedgerow.

Attribute	Target	Comments
	Non-native woody species. (Maximum 10%).	Estimate cover of all non-native woody species as percentage of area of vertical face of hedgerow.
Size	Height: (At least 1m).	Measure 'average' height excluding bank.
	Width: (At least 1.5m).	Measure 'average' width at widest point of hedgerow canopy, shoot tip to shoot tip.
	Cross-sectional area: Minimum $3m^2$.	Take the 'average' height and width for the hedgerow, and multiply to give the cross-sectional area.
Integrity/ continuity	<10% gaps.	Estimate total length of gaps present as a percentage of total hedgerow length or 30m section (as appropriate).
	No gaps >5m wide.	Record if any gaps > 5m wide excluding access points.
	Base of canopy less than 0.5m above ground for shrubby hedgerows.	Estimate 'average' height from the base of the hedgerow to the lowest leafy growth.
Management – over-management	Several species of woody species and climbers flowering over spring and summer.	Are hedgerow shrubs and climbers such as blackthorn, hawthorn, rose species and bramble flowering and providing nectar and forage resource.
	Several species of woody species and climbers producing fruits in late summer and autumn.	Are hedgerow shrubs and climbers such as blackthorn, hawthorn, rose species and bramble fruiting which provide a food source.

7. HEDGEROW BIODIVERSITY

7.1 Section 41, Red Listed & Scarce species

Hedges support Priority and S41 species from a wide range of groups and is the main habitat for several, Dormouse and Yellowhammer being good examples in Dorset.

Examples of Section 41 and Red Listed species recorded from Dorset hedgerows:

Linnet *Carduelis cannabina*	S41; Red
Corn Bunting *Emberiza calandra*	S41; Red
Yellowhammer *Emberiza citrinella*	S41; Red
Dunnock *Prunella modularis*	S41; Red
Bullfinch *Pyrrhula pyrrhula*	S41; Red
Song Thrush *Turdus philomelos*	S41; Red
Dormouse *Muscardinus avellanarius*	S41; VU
Harvest Mouse *Micromys minutus*	S41; NT
Hedgehog *Erinaceus europaeus*	S41
Usnea articulata	S41
Cryptolechia carneolutea	S41; EN
Teloschistes chrysophthalmus	CR
Copse Bindweed *Fallopia dumetorum*	S41; VU
Narrow-leaved Lungwort *Pulmonaria longifolia*	NS
Sanicle *Sanicula europaea*	NT
Crosswort *Cruciata laevipes*	NT
Bitter Vetch *Lathyrus linifolius*	NT
Common Cow-wheat *Melampyrum pratense*	NT
Brown Hairstreak *Thecla betulae*	S41; VU
White-letter Hairstreak *Satyrium w-album*	S41; EN
Small Eggar *Eriogaster lanestris*	VU

7.2 SPECIES GROUP SUMMARIES

7.2.1 Birds

Birds use hedges for nesting, roosting and feeding making hedges very important features for this group especially in the wider countryside where other semi-natural habitats are scarce. The assemblage of birds varies with the structure of, some preferring regularly trimmed hedges others those that are tall, wide and overgrown. Mature and veteran hedgerow trees add diversity providing habitat for tree-canopy and hole nesting species.

7.2.2 Mammals

Similar to birds, mammals utilise hedges for nesting, resting and feeding as well as moving through the countryside. A significant number of British mammals have been recorded using hedges (Feber *et al*, in Dover 2019) and for some it will be their major habitat. As well as those species feeding and breeding within the hedge, bats will forage along them and use them to navigate through the landscape, especially those species which forage widely over the wider countryside from maternity roosts, and they may occasionally use suitable hedgerow trees for roosting.

7.2.3 Reptiles & Amphibians

Not a major habitat for reptiles, with Common Lizard and Slow Worm the most likely species to be found especially where there are warm south facing hedgebanks which can be used for basking.

7.2.4 Plants

We probably know more about the plants that occur in hedges in Dorset than any other group, but even within this group the main focus has been on the woody component, the trees and shrubs, and the ground flora is only recorded as a short section and only once during the season.

Appendix I is a provisional list of plants found in hedges in Dorset.

7.2.5 Bryophytes

Bryophytes, liverworts and mosses, can occur directly on soil on the hedgebank and more obviously as epiphytes growing on the trees and shrubs. Older, mature, uncut hedges tend to support more species, but regularly flailed hedges can support a variety of species particularly on the old boles of layered trees such as Ash, Elm and Maple. The majority of species are widespread in the general countryside, but one species of importance is the local moss *Leptodon smithii* for which Dorset is the UK stronghold, it is found on trees and tree boles.

7.2.6 Fungi & Lichens

These groups are best represented in older and overgrown hedgerows with a range of shrubs and trees species. Lichens are found mainly as epiphytes on the trunks, branches and twigs, with open-grown mature hedgerow trees such as Ash, Maple and Oak being particularly important. Most of the species found will be widespread in the wider countryside, but a number of rare species occur including the spectacular beard-lichen *Usnea articulata* which is found in the canopy of mature shrubs and trees and the very rare *Teloschistes chrysophthalmus* which occurs on the twigs of old Blackthorn and Hawthorn bushes.

Many species of fungi can potentially be found in hedgerows and divided into the following groups:

- Ecto-mycorrhizal species associated with particular tree and shrub species
- Saprotrophs found on rooting leaf litter and small woody debris on the ground
- Brackets and epiphytes found on stems and tree boles
- Plant pathogens such as rusts found on leaves and stems of particular plants

Fungi play an important rose in the decay of the trees and shrubs producing rots hole and dead wood features that can be exploited by invertebrates, birds and bats. There are also a significant number of beetles and flies that feed on decaying fungi particularly the larger brackets.

7.2.7 Invertebrates

There have been very few studies of invertebrates found hedgerows in Dorset and research is needed to fill this gap. The abundance of invertebrates depends on the structure and diversity of niches within a hedgerow. Overgrown hedges with mature flowering shrubs and open grown trees and a diverse range of woody species will support more species. Box 6 summarises the importance of the main trees and shrubs species for invertebrates. Many of the species will be found in woodland situations but hedgerows, particularly mature ones, in sheltered, open and warm situations will be very favourable for many species.

BOX 8. Summary of importance of woody trees and shrubs for invertebrates

	No. of insect species feeding on shrubs[1]	Value for deadwood invertebrates[2]	Blossom for pollen and nectar[2]
Willows	752	+++	+++++
Birch	521	++++	+
Blackthorn & Plums	384	+++	++++
Hawthorns	356	+++	+++++
Alder	283	++	+
Hazel	253	+++	+
Brambles	237		
Roses	215		
Maple & Sycamore	193	++	++++
Gorse	71		
Privet	66		
Dogwood	55		
Buckthorn	44		
Wayfaring Tree	44		
Holly	36	+	+++++
Elder	36		
Spindle	33		
Oak	423[3]	+++++	+
Aspen & Poplar	189[3]	+++	+
Crab Apple	118[3]	+++	++++
Beech	98[3]	+++++	+
Ash	68[3]	+++++	+

[1] based on Mortimer *et al*, 2000
[2] based on Alexander *et al*, 2006
[3] based on Kennedy & Southwood 1984

BOX 9. Nectar Sources for pollinators found in Dorset hedgerows

February – April	Willow species *Salix caprea*, *Salix cinerea*
	Blackthorn *Prunus spinosa*
	Lesser Celandine *Ficaria verna*
	Dandelion *Taraxacum officinale* agg.
	Primrose *Primula vulgaris*
	Bluebell *Hyacinthoides non-scripta*
	Ground Ivy *Glechoma hederacea*
	Bugle *Ajuga reptans*
	Yellow Archangel *Lamiastrum galeobdolon*
	Violet species *Viola odorata*, *Viola riviniana*
	Greater Stitchwort *Stellaria holostea*
	White Dead-nettle *Lamium album*
	Cow Parsley *Anthriscus sylvestris*
May – July	Hawthorn *Crataegus monogyna*
	Field Maple *Acer campestre*
	Holly *Ilex aquifolium*
	Rose species *Rosa arvensis*, *Rosa canina*, *Rosa stylosa*
	Bramble *Rubus fruticosus* agg.
	Raspberry *Rubus idaeus*
	Dewberry *Rubus caesius*
	Rough Chervil *Chaerophyllum temulentum*
	Hogweed *Heracleum sphondylium*
	Hemlock Water-dropwort *Oenanthe crocata*
	Bush Vetch *Vicia sepium*
	Germander Speedwell *Veronica chamaedrys*
	Hedge Woundwort *Stachys sylvatica*
	Lesser Burdock *Arctium minus*
September - October	Ivy *Hedera helix*

8. SURVEY & RESEARCH

At present there have been relatively few studies of hedgerows in Dorset and these have largely focussed on the vegetation and features of hedgerows in line with the DEFRA survey handbook, and which would qualify as species-rich hedges.

Powerstock Vales, 200 hedges	DERC, 2009
Blackmore Vale, 135 hedges	FWAG, 2010
Golden Cap Estate	John Newbould, for the National Trust
Sutton Poyntz	John Newbould,

The FWAG survey covered 135 hedges in six parishes in the south and centre of the Blackmore Vale (Phillips, 2010). The survey found that a large number (61%) qualified as species-rich hedgerows using the DEFRA criteria, but only 19% were in favourable condition. The DERC survey (Edwards & Newbould, 2009) looked at 200 hedges in the Kingcombe and Powerstock Vales which is a key area in Dorset. This areas is less intensively farmed than the Blackmore Vale but 26% of the hedges had >25% coverage of nutrient indicators such as Cleavers and Stinging Nettle, and 27% had gaps of more than 5 metres in length.

8.1 FUTURE SURVEY

More survey work and research are needed into the biodiversity of different types of hedgerow in different regions of the county and with differing land management adjoining the hedge. This should include surveying a wide a range of species-groups as possible, particularly invertebrates as we have very little hard information on the diversity of invertebrates groups and species that are utilising hedgerows. This document does not provide a full methodology, but sample recording forms are included in the appendices.

8.2 SIGNIFICANT DORSET HEDGEROWS AND SNCI CRITERIA

Sites of Nature Conservation Interest (SNCI) are selected for their wildlife interest. Hedgerows often form an important component of sites selected for other habitats, particularly grasslands. They would not usually be selected in their own right without an adjacent SNCI-quality habitat. Consequently, hedgerows may be of SNCI quality but not selected as SNCI.

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APPENDIX I: Provisional list of plants recorded from hedgerows in Dorset

Species	Common Name	Native status[1]	Notable status[2]	Woodland species[3]	Negative species[4]	Pollinator species[5]
WOODY SHRUBS & TREES						
Acer campestre	**Field Maple**	**Native**	**HN**	**AWVP**		**P**
Acer pseudoplatanus	Sycamore	Archaeophyte				
Aesculus hippocastanum	Horse Chestnut	Neophyte				
Alnus glutinosa	Alder	Native				
Berberis vulgaris	Barberry	Archaeophyte				
Betula pendula	Silver Birch	Native				
Betula pubescens	Downy Birch	Native				
Carpinus betulus	Hornbeam	Native?				
Castanea sativa	Sweet Chestnut	Archaeophyte				
Cornus sanguinea	Dogwood	Native				
Corylus avellana	Hazel	Native				
Crataegus monogyna	Hawthorn	Native				**P**
Cytisus scoparius	Broom	Native				
Euonymus europaeus	**Spindle**	**Native**	**HN**	**AWVP**		
Fagus sylvatica	Beech	Native				
Frangula alnus	Alder Buckthorn	Native				**P**
Fraxinus excelsior	Ash	Native				
Ilex aquifolium	**Holly**	**Native**	**HN**	**AWVP**		**P**
Ligustrum vulgare	Wild Privet	Native				
Malus sylvestris	**Crab Apple**	**Native**	**HN**	**AWVP**		**P**
Populus tremula	**Aspen**	**Native**	**HN**	**AWVP**		
Prunus avium	Wild Cherry	Native				**P**
Prunus domestica	Wild Plum	Archaeophyte				
Prunus spinosa	Blackthorn	Native				**P**
Quercus cerris	Turkey Oak	Neophyte				
Quercus robur	Pedunculate Oak	Native				
Rhamnus cathartica	Buckthorn	Native	HN			
Rosa canina	Dog-rose	Native				**P**

Species	Common Name	Native status[1]	Notable status[2]	Woodland species[3]	Negative species[4]	Pollinator species[5]
Rosa micrantha	Small-flowered Sweet-briar	Native				
Rosa rubiginosa	Sweet-briar	Native				
Rosa sherardii	Sherard's Downy-rose	Native				
Rosa stylosa	Short-styled Field-rose	Native				**P**
Rosa tomentosa	Harsh Downy-rose	Native				
Salix alba	White Willow	Archaeophyte				
Salix aurita	Eared Willow	Native				
Salix caprea	Goat Willow	Native				**P**
Salix cinerea	Rusty Willow	Native				**P**
Salix fragilis	Crack-willow	Archaeophyte				
Sambucus nigra	Elder	Native				
Sorbus aria	Common Whitebeam	Native				
Sorbus aucuparia	Rowan	Native				
Sorbus torminalis	**Wild Service-tree**	**Native**	**DN**	**AWVP**		
Taxus baccata	Yew	Native				
Tilia cordata	**Small-leaved Lime**	**Native**	**DN**	**AWVP**		
Ulex europaeus	Gorse	Native				**P**
Ulmus glabra	**Wych Elm**	**Native**	**HN**	**AWVP**		
Ulmus minor	Small-leaved Elm	Native	HN			
Ulmus procera	English Elm	Archaeophyte?				
Ulmus x vegetata	Huntingdon Elm	Native	HN			
Viburnum lantana	Wayfaring-tree	Native	HN			
Viburnum opulus	**Guelder-rose**	**Native**	**HN**	**AWVP**		

[1] **Native status** = Native species arrived by natural means after the last ice age. Archaeophytes are species introduced by man and established before 1500.

[2] **Notable status** = DN = Dorset Notable; N = Dorset Hedgerow Notable; NT = IUCN threat status Near Threatened; VU = IUCN Vulnerable

[3] **Woodland species** = AWVP – Ancient Woodland Vascular Plants (Hornby & Rose 1986)

[4] **Negative species** = species characteristic of excessively nutrient-enriched ground

[5] **Pollinator species** = species particularly favoured as a source of nectar or pollen by insects, especially bees, wasps and hoverflies

Species	Common Name	Native status[1]	Notable status[2]	Woodland species[3]	Negative species[4]	Pollinator species[5]
CLIMBERS						
Bryonia dioica	White Bryony	Native				**P**
Clematis vitalba	Traveller's-joy	Native				
Fallopia dumetorum	**Copse-bindweed**	**Native**	**VU**			
Humulus lupulus	Hop	Native				
Lonicera periclymenum	Honeysuckle	Native				
Rosa arvensis	**Field-rose**	**Native**	**HN**	**AWVP**		
Rubus caesius	Dewberry	Native				**P**
Rubus fruticosus agg.	Bramble agg.	Native				**P**
Rubus idaeus	Raspberry	Native				**P**
Solanum dulcamara	Bittersweet	Native				
Tamus communis	**Black Bryony**	**Native**	**HN**	**AWVP**		

[1] **Native status** = Native species arrived by natural means after the last ice age. Archaeophytes are species introduced by man and established before 1500.

[2] **Notable status** = DN = Dorset Notable; HN =

[3] **Woodland species** = AWVP – Ancient Woodland Vascular Plants (Hornby & Rose 1986)

[4] **Negative species** = species characteristic of excessively nutrient-enriched ground

[5] **Pollinator species** = species particularly favoured as a source of nectar or pollen by insects, especially bees, wasps and hoverflies

Species	Common Name	Native status[1]	Position[6]	Notable status[2]	Woodland species[3]	Negative species[4]	Pollinator species[5]
FIELD & GROUND LAYER							
Adoxa moschatellina	**Moschatel**	**Native**	**HB**	**DN**	**AWVP**		
Aegopodium podagraria	Ground-elder	Archaeophyte	V				
Agrimonia eupatoria	Agrimony	Native	V; FM				
Agrimonia procera	Fragrant Agrimony	Native	V; FM				
Agrostis capillaris	Common Bent	Native	V; FM				
Agrostis stolonifera	Creeping Bent	Native	V; FM				
Ajuga reptans	Bugle	Native	HB	HN			**P**
Allium ursinum	**Ramsons**	**Native**	**HB**	**DN**	**AWVP**		
Allium vineale	Wild Onion	Native	V; FM				
Alopecurus pratensis	Meadow Foxtail	Native	V; FM				
Anemone nemorosa	**Wood Anemone**	**Native**	**HB**	**DN**	**AWVP**		
Angelica sylvestris	Wild Angelica	Native	V; FM	HN			**P**
Anisantha sterilis	Barren Brome	Archaeophyte	V; FM				
Anthoxanthum odoratum	Sweet Vernal-grass	Native	V; FM				
Anthriscus sylvestris	Cow Parsley	Native	V; FM			**NI**	**P**
Apium nodiflorum	Fool's-water-cress	Native	D				
Arctium lappa	Greater Burdock	Archaeophyte	V				
Arctium minus	Lesser Burdock	Native	V				**P**
Arrhenatherum elatius	False Oat-grass	Native	V; FM				
Arum maculatum	Lords-and-Ladies	Native	HB				
Asplenium adiantum-nigrum	Black Spleenwort	Native	HB	HN			
Asplenium scolopendrium	Hart's-tongue	Native	HB		AWVP		
Athyrium filix-femina	Lady-fern	Native	D	HN			
Ballota nigra	Black Horehound	Archaeophyte	HB				
Barbarea vulgaris	Winter-cress	Native	D				
Blechnum spicant	Hard-fern	Native	HB	HN	AWVP		
Brachypodium pinnatum	Heath False-brome	Native	V				
Brachypodium sylvaticum	False-brome	Native	HB				

Species	Common Name	Native status[1]	Position[6]	Notable status[2]	Woodland species[3]	Negative species[4]	Pollinator species[5]
Bromopsis ramosa	Hairy-brome	Native	HB	HN	AWVP		
Bromus hordeaceus	Common Soft-brome	Native	V; FM				
Calamagrostis epigejos	Wood Small-reed	Native	V				
Campanula trachelium	**Nettle-leaved Bellflower**	**Native**	**HB**	**DN**			
Cardamine flexuosa	Wavy Bitter-cress	Native	D				
Cardamine pratensis	Cuckooflower	Native	V				
Carex divulsa subsp. divulsa	Grey Sedge	Native	HB				
Carex flacca	Glaucous Sedge	Native	V				
Carex otrubae	False Fox-sedge	Native	D				
Carex pendula	Pendulous Sedge	Native	HB		AWVP		
Carex pilulifera	Pill Sedge	Native	HB				
Carex remota	Remote Sedge	Native	D	HN	AWVP		
Carex spicata	Spiked Sedge	Native	V				
Carex sylvatica	Wood-sedge	Native	HB	HN	AWVP		
Cerastium fontanum	Common Mouse-ear	Native	V; FM				
Ceratocapnos claviculata	Climbing Corydalis	Native	V	HN	AWVP		
Chaerophyllum temulum	Rough Chervil	Native	V				**P**
Chamerion angustifolium	Rosebay Willowherb	Native	V				
Chrysosplenium oppositifolium	**Opposite-leaved Golden-saxifrage**	**Native**	**D**	**DN**	**AWVP**		
Circaea lutetiana	Enchanter's-nightshade	Native	HB				
Cirsium arvense	Creeping Thistle	Native	V; FM			**NI**	**P**
Cirsium palustre	Marsh Thistle	Native	D				**P**
Cirsium vulgare	Spear Thistle	Native	V; FM				**P**
Clinopodium vulgare	Wild Basil	Native	V	HN			
Conium maculatum	Hemlock	Archaeophyte	V				
Conopodium majus	**Pignut**	**Native**	**HB**	**DN**	**AWVP**		
Convolvulus arvensis	Field Bindweed	Native	V; FM				
Cruciata laevipes	**Crosswort**	**Native**	**V**	**DN; NT**			
Dactylis glomerata	Cock's-foot	Native	V; FM				
Daphne laureola	**Spurge-laurel**	**Native**	**HB**	**DN**	**AWVP**		
Deschampsia cespitosa	Tufted Hair-grass	Native	V; FM				

Species	Common Name	Native status[1]	Position[6]	Notable status[2]	Woodland species[3]	Negative species[4]	Pollinator species[5]
Digitalis purpurea	Foxglove	Native	HB				
Dipsacus fullonum	Wild Teasel	Native	V; FM				
Dryopteris affinis	Scaly Male-fern	Native	HB	HN	AWVP		
Dryopteris dilatata	Broad Buckler-fern	Native	HB	HN			
Dryopteris filix-mas	Male-fern	Native	HB	HN			
Elymus caninus	Bearded Couch	Native	HB				
Elytrigia repens	Common Couch	Native	V; FM				
Epilobium hirsutum	Great Willowherb	Native	D				
Epilobium montanum	Broad-leaved Willowherb	Native	V				
Epilobium parviflorum	Hoary Willowherb	Native	D				
Equisetum arvense	Field Horsetail	Native	V; FM				
Equisetum telmateia	Great Horsetail	Native	D				
Festuca arundinacea	Tall Fescue	Native	V; FM				
Festuca gigantea	**Giant Fescue**	**Native**	**HB**	**DN**	**AWVP**		
Festuca pratensis	Meadow Fescue	Native	V; FM				
Festuca rubra	Red Fescue	Native	V; FM				
Ficaria verna	Lesser Celandine	Native	HB				
Filipendula ulmaria	**Meadowsweet**	**Native**	**D**	**DN**			
Fragaria vesca	Wild Strawberry	Native	HB	HN; NT			
Galeopsis tetrahit	Common Hemp-nettle	Native	HB				
Galium aparine	Cleavers	Native	HB; V			**NI**	
Galium mollugo	Hedge Bedstraw	Native	HB; V				
Galium odoratum	**Woodruff**	**Native**	**HB**	**DN**	**AWVP**		
Galium palustre	Common Marsh-bedstraw	Native	D				
Galium verum	**Lady's Bedstraw**	**Native**	**V; FM**	**DN**			
Geranium lucidum	Shining Crane's-bill	Native	HB	HN			
Geranium pyrenaicum	Hedgerow Crane's-bill	Neophyte	V; FM				
Geranium robertianum	Herb-Robert	Native	HB				
Geum urbanum	Wood Avens	Native	HB				
Glechoma hederacea	Ground-ivy	Native	HB				**P**
Glyceria fluitans	Floating Sweet-grass	Native	D				

Species	Common Name	Native status[1]	Position[6]	Notable status[2]	Woodland species[3]	Negative species[4]	Pollinator species[5]
Hedera helix	Ivy	Native	HB				**P**
Heracleum sphondylium	Hogweed	Native	V; FM			**NI**	**P**
Hieracium sect. sabauda		Native	HB	HN			
Hieracium sect. tridentata		Native	HB	HN			
Hieracium sect. umbellata		Native	HB	HN			
Holcus lanatus	Yorkshire-fog	Native	HB; V; FM				
Holcus mollis	Creeping Soft-grass	Native	HB				
Hyacinthoides non-scripta	**Bluebell**	**Native**	**HB**	**DN**	**AWVP**		**P**
Hypericum androsaemum	**Tutsan**	**Native**	**HB**	**DN**	**AWVP**		
Hypericum hirsutum	**Hairy St John's-wort**	**Native**	**HB; V**	**DN**	**AWVP**		
Hypericum perforatum	Perforate St John's-wort	Native	V; FM				
Hypericum pulchrum	**Slender St John's-wort**	**Native**	**V; FM**	**DN**	**AWVP**		
Hypericum tetrapterum	Square-stalked St John's-wort	Native	D	HN			
Hypochaeris radicata	Cat's-ear	Native	HB; V				**P**
Iris foetidissima	Stinking Iris	Native	HB	HN			
Juncus bufonius	Toad Rush	Native	D				
Juncus effusus	Soft-rush	Native	D				
Knautia arvensis	Field Scabious	Native	V; FM	HN; NT		**NT**	**P**
Lamiastrum galeobdolon	**Yellow Archangel**	**Native**	**HB**	**DN**	**AWVP**		
Lamium album	White Dead-nettle	Archaeophyte	HB				**P**
Lamium purpureum	Red Dead-nettle	Archaeophyte	V; FM				
Lapsana communis	Nipplewort	Native	HB				
Lathraea squamaria	**Toothwort**	**Native**	**HB**	**DN**	**AWVP**		
Lathyrus linifolius	**Bitter-vetch**	**Native**	**HB**	**DN; NT**	**AWVP**	**NT**	
Lathyrus pratensis	Meadow Vetchling	Native	V; FM				
Leontodon hispidus	Rough Hawkbit	Native	V; FM				**P**
Linaria vulgaris	Common Toadflax	Native	HB; V				
Lotus pedunculatus	Greater Bird's-foot-trefoil	Native	D; V				
Luzula pilosa	**Hairy Wood-rush**	**Native**	**HB**	**DN**	**AWVP**		
Lycopus europaeus	Gipsywort	Native	D				
Lysimachia nemorum	**Yellow Pimpernel**	**Native**	**HB**	**DN**	**AWVP**		

Species	Common Name	Native status[1]	Position[6]	Notable status[2]	Woodland species[3]	Negative species[4]	Pollinator species[5]
Lysimachia nummularia	**Creeping-Jenny**	**Native**	**V; D**	**DN**			
Lythrum salicaria	Purple-loosestrife	Native	D				
Melampyrum pratense	**Common Cow-wheat**	**Native**	**HB**	**DN; NT**	**AWVP**		
Melica uniflora	**Wood Melick**	**Native**	**HB**	**DN**	**AWVP**		
Mentha aquatica	Water Mint	Native	D	HN			**P**
Mentha arvensis	**Corn Mint**	**Native**	**FM**	**N; NT**			
Mercurialis perennis	Dog's Mercury	Native	HB	HN			
Moehringia trinervia	Three-nerved Sandwort	Native	HB				
Mycelis muralis	Wall Lettuce	Native	HB				
Myosotis arvensis	Field Forget-me-not	Archaeophyte	V; FM				
Myosoton aquaticum	Water Chickweed	Native	D				
Narcissus pseudonarcissus	**Daffodil**	**Native**	**HB**	**DN**	**AWVP**		
Oenanthe crocata	Hemlock Water-dropwort	Native	D				**P**
Orchis mascula	**Early-purple Orchid**	**Native**	**HB**	**DN**	**AWVP**		
Origanum vulgare	Wild Marjoram	Native	V	HN			**P**
Oxalis acetosella	**Wood-sorrel**	**Native**	**HB**	**DN; NT**	**AWVP**		
Pastinaca sativa	Wild Parsnip	Native	FM				**P**
Phalaris arundinacea	Reed Canary-grass	Native	D				
Phragmites australis	Common Reed	Native	D				
Poa nemoralis	Wood Meadow-grass	Native	HB				
Poa trivialis	Rough Meadow-grass	Native	HB; V; FM				
Polypodium interjectum	Intermediate Polypody	Native	HB	HN	AWVP		
Polypodium vulgare	Polypody	Native	HB	HN			
Polystichum aculeatum	Hard Shield-fern	Native	HB	HN	AWVP		
Polystichum setiferum	Soft Shield-fern	Native	HB	HN	AWVP		
Potentilla sterilis	Barren Strawberry	Native	HB	HN	AWVP		
Primula vulgaris	Primrose	Native	HB	HN	AWVP		**P**
Pteridium aquilinum	Bracken	Native	HB; V				
Pulmonaria longifolia	**Narrow-leaved Lungwort**	**Native**	**HB; V**	**DN, NS**	**AWVP**		
Ranunculus auricomus	**Goldilocks Buttercup**	**Native**	**HB**	**DN**	**AWVP**		
Ranunculus repens	Creeping Buttercup	Native	V; FM			**NI**	

Species	Common Name	Native status[1]	Position[6]	Notable status[2]	Woodland species[3]	Negative species[4]	Pollinator species[5]
Ribes rubrum	Red Currant	Native	HB	HN	AWVP		
Rumex acetosa	Common Sorrel	Native	V; FM				
Rumex obtusifolius	Broad-leaved Dock	Native	FM			**NI**	
Rumex sanguineus	Wood Dock	Native	HB; V				
Ruscus aculeatus	**Butcher's-broom**	**Native**	**HB**	**DN**	**AWVP**		
Sanicula europaea	**Sanicle**	**Native**	**HB**	**DN, NT**	**AWVP**		
Scrophularia auriculata	Water Figwort	Native	D				
Scrophularia nodosa	Common Figwort	Native	HB; V				
Scutellaria galericulata	Skullcap	Native	D				
Serratula tinctoria	**Saw-wort**	**Native**	**V**	**DN**			
Silene dioica	Red Campion	Native	HB; V				
Sison amomum	Stone Parsley	Native	V				
Smyrnium olusatrum	Alexanders	Archaeophyte	V				**P**
Stachys officinalis	**Betony**	**Native**	**HB; V**	**DN**	**AWVP**		
Stachys palustris	Marsh Woundwort	Native	D				**P**
Stachys sylvatica	Hedge Woundwort	Native	HB; V				**P**
Stellaria graminea	Lesser Stitchwort	Native	V; FM				
Stellaria holostea	Greater Stitchwort	Native	HB; V	HN			**P**
Stellaria neglecta	Greater Chickweed	Native	HB; D	HN			
Symphytum officinale	Common Comfrey	Native	D; V				**P**
Taraxacum officinale agg.	Dandelion	Native	V; FM				**P**
Teucrium scorodonia	Wood Sage	Native	HB; V	HN			**P**
Torilis japonica	Upright Hedge-parsley	Native	V; FM				**P**
Tragopogon pratensis	Goat's-beard	Native	FM				
Umbilicus rupestris	Navelwort	Native	HB	HN			
Urtica dioica	Common Nettle	Native	HB; V			**NI**	
Vaccinium myrtillus	Bilberry	Native	HB	HN			
Valeriana officinalis	Common Valerian	Native	V	HN, **NT**			
Verbascum thapsus	Great Mullein	Native	FM				
Veronica beccabunga	Brooklime	Native	D				
Veronica chamaedrys	Germander Speedwell	Native	HB; V				

Species	Common Name	Native status[1]	Position[6]	Notable status[2]	Woodland species[3]	Negative species[4]	Pollinator species[5]
Veronica hederifolia	Ivy-leaved Speedwell	Archaeophyte	HB; V				
Veronica montana	**Wood Speedwell**	**Native**	**HB**	**DN**	**AWVP**		
Vicia sepium	Bush Vetch	Native	HB; V	HN			**P**
Viola hirta	Hairy Violet	Native	HB				
Viola odorata	Sweet Violet	Native	HB				
Viola reichenbachiana	**Early Dog-violet**	**Native**	**HB**	**HN**	**AWVP**		
Viola riviniana	Common Dog-violet	Native	HB	HN			

[1] **Native status** = Native species arrived by natural means after the last ice age. Archaeophytes are species introduced by man and established before 1500.

[2] **Notable status** = DN = Dorset Notable; HN = Hedgerow Notable

[3] **Woodland species** = AWVP – Ancient Woodland Vascular Plants (Hornby & Rose 1986)

[4] **Negative species** = species characteristic of excessively nutrient-enriched ground

[5] **Pollinator species** = species particularly favoured as a source of nectar or pollen by insects, especially bees, wasps and hoverflies

[6] **Position (Ground flora)** = HB = Hedgebank
D = Ditch
V = Verge
FM = Field margin

APPENDIX II-IV: Hedgerow Survey Forms

This document does not provide a full methodology, but sample recording forms are included in the following appendices.

APPENDIX II Dorset Hedgerow Survey Form – to be completed for each hedge.
APPENDIX III Dorset Hedgerow Condition Survey Form – to be completed for each hedge.
APPENDIX IV Hedgerow Summary Sheet – to collate data on a set of hedgerows and assess which hedges qualify as Significant Dorset Hedgerows and which hedgerows are in favourable condition.

DORSET HEDGEROW SURVEY FORM

LOCATION:	**HEDGE ID CODE:**
SURVEYOR:	DATE:
OWNER:	
ADDRESS:	TEL NO:

Section I: Looking at the whole hedge, complete Section I

HEDGEROW DETAILS

Central grid reference:			Length (m):
Duration of survey:	Start:	Finish:	Weather:

HEDGEROW TYPE

Shrubby hedgerow:	Line of trees:	Shrubby + line of trees:

Number of connections with other hedgerows	End 1	End 2	Total	

HEDGEROW STRUCTURE – Select any that apply:

Trimmed & dense

Intensively managed

Untrimmed

Tall & leggy

Untrimmed with outgrowth

Recently coppiced

Recently layered

Other

DIMENSIONS

Average height (m), (excluding bank to nearest 25cm)		Average width (m) (at widest point of canopy; excluding bank to nearest 25cm)	

INTEGRITY

% of gaps (to nearest 5%)	
Any gaps >5m (Y/N)	
Average height of base of canopy (m) to nearest 25cm	

Notes (whole hedge or 30m section)

Fauna (evidence of: e.g. Badger setts, Rabbit holes, feeding signs of Dormouse etc.)

Features (including evidence of recent planting)

Photographs (give reference no. & mark on map)

Management:							
None		Recent		<10 years		>10 years	
Flailed/Trimmed		Layered		Coppiced		Other	

Section II: Assign sides A and B to the hedge, complete Section II					
Orientation:	**Side A**	N	E	S	W
	Side B	N	E	S	W

ADJACENT LAND USE:		A	B			A	B
Arable	*Arable crop*			Road/path	*Major road*		
	Un-cropped margin				*Minor road*		
Grassland	*Improved*				*Track (un-surfaced)*		
	Semi-improved				*Footpath/Bridleway*		
	Unimproved			Water	*River*		
	Wet (*Rushes etc.*)				*Stream*		
Woodland	*Young*				*Lake/Pond*		
	Semi-mature			Other			
	Mature			Management	*Grazed*		

ASSOCIATED HEDGEROW FEATURES:

Half bank  Full hedge bank 

		A	B
Bank	*No bank*		
	Half bank		
	Full hedge bank		
	Height in m (to nearest 25 cm)		
Bank management	*None*		
	Fenced		
	Grazed		
	Mown/cut		
Fence	*Post & rail*		
	Netting		
	Wire strand		
Ditch	*External*	*none /wet / dry*	*none /wet / dry*
	Internal	*none /wet / dry*	*none /wet / dry*
Undisturbed ground (measured from centreline of hedge)	Average width of undisturbed ground (m) to nearest 50cm		
	Average width of perennial herbaceous vegetation(m) to nearest 50cm		
Nutrient enrichment ground flora indicator species (Estimate % cover of each species within a 2m wide band alongside the hedgerow)	Docks		
	Cleavers		
	Cow Parsley		
	Hogweed		
	Nettle		
RECENTLY INTRODUCED NON-NATIVE SPECIES			
% cover of introduced species in the hedge-bottom (to nearest 5%)	Species:		
% cover of introduced species in the shrub layer (to nearest 5%)	Species:		

Section III Record isolated hedgerow trees along the whole hedge

RECORD TREES >20 CM DIAMETER AT 1.3M (DBH)

Species	DBH	Species	DBH

Section IV Record vascular plant species within three 30m sections and whole hedge

WOODY SPECIES (30m survey section[1] and whole hedge[1] [WH])

Species	30m sections			WH	Species	30m sections			WH
Alder					Holly				
Ash					Oak, Pedunculate				
Aspen					Oak, Sessile				
Beech					Privet, Wild				
Birch, Downy					Purging Buckthorn				
Birch, Silver					Rose, Dog				
Blackthorn					Rose, Field				
Broom					Rose spp.				
Butcher's Broom					Rowan				
Cherry, Wild					Spindle				
Crab Apple					Spurge Laurel				
Dogwood					Wayfaring Tree				
Elder					Willow species				
Elm spp.					Willow, Goat				
Elm, English					Willow, Grey				
Elm Small-leaved					Yew				
Elm Wych					**Total number**				
Field Maple					**Climbers** (not included in total)				
Gorse, Common					*Black Bryony*				
Grey Poplar					*Bramble*				
Guelder Rose					*Honeysuckle*				
Hawthorn					*Ivy*				
Hazel					*Traveller's Joy*				
Average number of woody species over three 30m sections					**Number of woody species in whole hedge:**				
Other native woody species:									
Other non-native woody species:									

[1] = use DAFOR scale

D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare; L = Local (e.g. LF = locally frequent)

Section V: Take a ground flora sample within one 30m section. Also record ground flora along whole hedge (WH) using DAFOR[1]					
Woodland species	**30m**	**WH**	**Hedgerow notables**	**30m**	**WH**
Barren Strawberry			Autumn Hawkweed		
Betony			Bilberry		
Bitter-vetch			Black Spleenwort		
Bluebell			Broad Buckler-fern		
Bush Vetch			Bugle		
Butcher's-broom			Common Dog-violet		
Climbing Corydalis			Common Valerian		
Common Cow-wheat			Corn Mint		
Common Polypody			Creeping-Jenny		
Daffodil			Crosswort		
Early Dog-violet			Dog's Mercury		
Early-purple Orchid			Field Scabious		
Giant Fescue			Ground Ivy		
Goldilocks Buttercup			Hairy-stemmed Hawkweed		
Greater Chickweed			Lady-fern		
Greater Stitchwort			Lady's Bedstraw		
Hairy St John's-wort			Male-fern		
Hairy Wood-rush			Meadowsweet		
Hairy-brome			Navelwort		
Hard Shield-fern			Nettle-leaved Bellflower		
Hard-fern			Saw-wort		
Hart's-tongue			Shining Crane's-bill		
Intermediate Polypody			Square-stalked St John's-wort		
Moschatel			Umbellate Hawkweed		
Narrow-leaved Lungwort			Water Mint		
Opposite-leaved Golden-saxifrage			Wild Angelica		
Pendulous Sedge			Wild Basil		
Pignut			Wild Marjoram		
Primrose			Wild Strawberry		
Ramsons			Wood Sage		
Red Currant					
Remote Sedge					
Sanicle					
Scaly Male-fern			**Total woodland species**		
Slender St John's-wort			**Total hedgerow notables**		
Soft Shield-fern			**Total**		
Spurge-laurel					
Stinking Iris			**Negative indicators**		
Toothwort			Broad-leaved Dock		
Tutsan			Cleavers		
Wood Anemone			Cow Parsley		
Wood Melick			Curled Dock		
Wood Speedwell			Himalayan Balsam		
Woodruff			Hogweed		
Wood-sedge			Spanish Bluebell		
Wood-sorrel			Stinging Nettle		
Yellow Archangel			Variegated Yellow Archangel		
Yellow Pimpernel			**Total negative indicators**		

[1] DAFOR scale

D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare; L = Local (e.g. LF = locally frequent)

POSITION OF GROUND FLORA SAMPLE:				
Under canopy:	Bank:	Verge:	Field edge:	No access:

APPENDIX III: DORSET HEDGEROW CONDITION SURVEY FORM

- Hedgerow condition should be applied to a whole hedgerow.
- The condition of the hedgerow can be assessed using the following attributes.
- If a hedgerow fails to meet the target for any attribute it will be in unfavourable condition.
- Significant Dorset Hedgerows can be assessed as in favourable or favourable condition.

LOCATION:	**HEDGE ID CODE:**
SURVEYOR:	DATE:

Attribute & Target	Estimating target	Comments
Undisturbed ground & perennial herbaceous vegetation cover: Undisturbed ground (At least 2m)	Estimate average width of undisturbed (uncultivated) ground from the centre-line of the hedgerow. Automatically favourable if borders permanent grassland.	
Herbaceous vegetation (At least 1m)	Estimate average width of perennial herbaceous vegetation between the centre-line of the hedgerow and adjacent disturbed ground.	
Nutrient enrichment: No suitable thresholds have been developed, but should be less than 20% combined cover of nettles, cleavers and docks.	Estimate percentage cover of nettles, cleavers and docks within a 2m wide band alongside the hedgerow.	
Recently introduced, non-native species: Non-native herbaceous species. (Maximum 10%)	Estimate cover of all non-native herbaceous species as percentage of area of 2m band extending from centre-line of hedgerow.	
Non-native woody species. (Maximum 10%)	Estimate cover of all non-native woody species as percentage of area of vertical face of hedgerow.	
Size: Height: (At least 1m)	Measure 'average' height excluding bank.	
Width: (At least 1.5m)	Measure 'average' width at widest point of hedgerow canopy, shoot tip to shoot tip.	
Cross-sectional area: Minimum $3m^2$	Take the 'average' height and width for the hedgerow, and multiply to give the cross-sectional area.	
Integrity/ continuity: <10% gaps	Estimate total length of gaps present as a percentage of total hedgerow length or 30m section (as appropriate).	

Attribute & Target	Estimating target	Comments
No gaps >5m wide	Record if any gaps > 5m wide excluding access points.	
Base of canopy less than 0.5m above ground for shrubby hedgerows	Estimate 'average' height from the base of the hedgerow to the lowest leafy growth.	
Management: over-management: Several species of woody species and climbers flowering over spring and summer.	Estimate frequency of flowering woody species and climbers using DAFOR scale.	
Several species of woody species and climbers producing fruits in late summer and autumn.	Estimate frequency of flowering woody species and climbers using DAFOR scale.	

[1] DAFOR scale

D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare; L = Local (e.g. LF = locally frequent)

CONDITION

Favourable	Unfavourable	Undecided

APPENDIX IV: HEDGEROW SUMMARY SHEET

LOCATION:	SURVEYOR:

Criteria for selecting Significant Dorset Hedgerows

(see full report for species lists and other features)

A hedgerow needs to meet one of the following criteria to qualify:

1. Average of **5 or more woody species** native to Dorset per **30 metre** section

2. Having **8 or more woody species** native to Dorset along the **entire length** of the hedge

3. Having 5 or fewer native woody species per 30m section or 8 or in the whole hedge, but **7 or more ground layer 'woodland' indicator species**

4. Supporting **1 or more Red Listed species** within the IUCN categories CR, EN, VU, NT

5. Supporting **1 or more Section 41 species** of Principal Conservation Importance under the NERC Act 2006

6. **Features of local distinctiveness** such as double-hedged green lanes, droves and Holloways, and the presence of veteran and ancient trees including coppiced stools and layered boles

	Which criteria does it meet?						Does it qualify?	Condition	
HEDGE ID CODE:	1	2	3	4	5	6	Y/N	Favourable	Unfavourable

APPENDIX V:

DERC Mapping codes

Primary codes:

LF0 Boundary and linear features
- **LF1** Hedges / Line of trees
  - **LF11** Hedgerows – Priority Habitat Type
    - **LF111** Important hedgerows – Hedgerow
    - **LF112** Species-rich hedgerows – DEFRA hedgerow handbook
    - **LF113** Dorset important hedgerows
    - **LF11Z** Non-important hedgerows
  - **LF12** Line of trees
    - **LF121** Line of trees, some veteran
    - **LF12Z** Line of trees, none veteran
  - **LF1Z** Other hedges/line of trees

Matrix codes:

Hedge form

- **LH1** Intact hedge
- **LH2** Defunct hedge
- **LH3** Recently planted hedge

Hedge management

- **LM1** Cut hedge (LU)
  - **LM11** Cut hedge with standards (LU)
  - **LM12** Cut hedge without standards (LU)
    - **LM111** Cut hedge with standard trees, some veteran (LU)
    - **LM11Z** Cut hedge with standard trees, none veteran (LU)
- **LM2** Uncut hedge (LU)
  - **LM21** Uncut hedge with standards (LU)
  - **LM22** Uncut hedge without standards (LU)
    - **LM211** Uncut hedge with standard trees, some veteran (LU)
    - **LM21Z** Uncut hedge with standard trees, none veteran (LU)
- **LM3** Overgrown hedge (LU)
  - **LM31** Overgrown hedge with standards (LU)
  - **LM33** Overgrown hedge without standards (LU)
    - **LM311** Overgrown hedge with standard trees, some veteran (LU)
    - **LM31Z** Overgrown hedge with standard trees, none veteran (LU)