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Ecological Search for Leigh and Bransford Neighbourhood Development Plan

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The Leigh Brook near Papermill Coppice cc-by-sa/2.0 - © Jonathan Billinger - geograph.org.uk/p/5472972

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Ecological Summary for the Leigh and Bransford Neighbourhood Development Plan

This document contains your ecological record search. The following pages provide an ecological summary of the Neighbourhood Development Plan area. The appendix to this document includes mapping drawn from Worcestershire County Council datasets including data provided by the Worcestershire Biological Record Centre, the accompanying records provide more detailed species-specific information.

This document is intended to support the development of the Leigh and Bransford Neighbourhood Plan (NHP) by collating available evidence and describing the biodiversity assets and opportunities within the NHP area. The area of search for this data-trawl is based upon data extrapolated from Malvern Hills District Council webpages, specifically the Neighbourhood Area as designated on 24th September 2013.

By dint of the wide geographic scale of the project brief, this data-trawl provides strategic-scale resolution of known biodiversity assets and, where deemed appropriate (as described further in text below), additional and higher-resolution ecological surveys will be required. The following evidence bases have been drawn upon within this document:

Natural England's **Natural Character Areas** (NCA) studies are 'live documents' which define areas sharing similar landscape characteristics and which follow "natural lines in the landscape" rather than administrative boundaries. Natural England suggests that NCAs are an appropriate unit of land on which to base decision-making frameworks for the natural environment.

An earlier framework to interpret the county's biogeographic areas using the county's flora at a monad (1km grid square) scale was developed by John Day. As a land unit, **Worcestershire's Natural Areas** are intended to provide a framework for interpretation and understanding of the county's natural environment and to provide a basis for integrated conservation policy at county scale. Founded on floristic distributions established in the County Red Data Book (WWT, 1998) and subsequently updated through the 2001 Checklist of Worcestershire Flora, the effort to define biogeographic Natural Areas within the county was driven by the recognition that the majority of the county's native flora is classed as Uncommon (half the flora being classed as Scarce or Rare, a third being classed as Very Rare or Extinct), and that effective conservation of natural flora must extend beyond the network of designated sites in order to tie together 'minor landscape features' in the wider countryside. Indeed, this approach was advocated within the 2010 Natural Environment White Paper, "Making Space for nature: A Review of England's Wildlife Sites". Within this report, we have also made reference to The Flora of Worcestershire (Maskew, 2014).

The Worcestershire Green Infrastructure Framework 2[1] document establishes sub-regional scale trends in biodiversity value. This is achieved through the **Biodiversity Base Map** (Worcestershire County Council, 2009) which places strategic-scale value on units of land ("Land Cover Parcels" a unit used in parity with the parallel Landscape Character Assessment) and evaluates variables including concentration and cohesion of existing semi-natural habitats. The Biodiversity Basemap is founded on the Worcestershire Habitat Inventory analysis (see WHI below for further information) of Land Cover Parcels, by aerial photograph interpretation, data from the Worcestershire Biological Records Centre and field-based survey information from partner organisations. It illustrates the biodiversity context for Worcestershire in broad terms and highlights areas where constraints to development are likely and opportunities for biodiversity enhancement exist at the sub-regional scale.

The GI Framework 2 document merges, assesses and scores the underlying set of environment characteristics relevant to Green Infrastructure (Landscape Character Assessment, Biodiversity and Historic Environment) for each Land Cover Parcel into distinct **Environmental Character Areas**. ECAs are therefore considered the most appropriate land unit for evaluating biodiversity priorities within the Broadway Parish NHP as they hold recognised strategic importance and provide an existing synthesis prioritising opportunities to maintain and enhance connectivity of Green Infrastructure assets between the individual Districts / Boroughs, and link with adjacent areas at sub-regional scale.

The underlying **Worcestershire Habitat Inventory** combines habitat surveys undertaken 'on the ground' with historical site survey data and aerial photograph interpretation, and includes a synthesis of habitat network cohesion for most Priority[2] Habitats within the county, revealing network strength or opportunities for de-fragmentation through habitat creation or restoration. The field-by-field aerial photographic interpretation is primarily derived from a 2005 aerial photograph set and therefore provides only a partial and historic baseline. More detailed evaluation of habitat de-fragmentation opportunities must be informed by an up-to-date and formal ecological appraisal, which may also inform the requirement for detailed habitat and species survey requirements.

It must be recognised that the **Worcestershire Biological Record Centre** (WBRC) dataset comprises records submitted by amateur and professional naturalists on a voluntary basis; the dataset cannot be considered a comprehensive compendium of ecological interest within a given area; rather it is simply a 'snapshot' in time recorded by those observers who have shared their records. Absence of data cannot therefore be interpreted as absence of a protected or notable species or habitat, but rather should be considered as an under-recorded or yet-to-be assessed area where further survey might be beneficial. The WBRC database is therefore a 'living' document and should be subject to regular review by users to ensure decisions are based on up-to-date information.

[1] Worcestershire County Council (July 2012) Planning for a Multifunctional Green Infrastructure Framework in Worcestershire: Green Infrastructure Framework 2

[2] Habitats of principal importance recognised in the Biodiversity Action Plan, or listed under Section 41 of the Natural Environment and Rural Communities Act 2006

An Ecological Context

Natural Character Area

The Neighbourhood Plan area is located partly within NCA 103 (Malvern Hills) but ostensibly within NCA 106 (Severn and Avon Vales) the latter being a diverse area comprising industrial and urban settlements and open agricultural land with sparse woodlands and fragmented but important biodiversity resources in the form of traditional orchards, lowland meadow and floodplains. NCA 103 is also defined by its contrasting topographies containing both the Malvern Hills AONB and the surrounding "jumble of rolling hills and woodlands" which integrate to the north-west into the Herefordshire Plateau. The underlying geologies are also varied, from thin acidic soils on the Malvern Hills to deeper neutral soils over the Old Red Sandstone to calcareous soils on the Silurian shale and siltstone. To the northwest of the Malvern Hills are wooded limestone ridges separated by vales of mixed shale. Steep slopes can be densely wooded and contain both plantations and ancient woodlands. Many field boundaries are species-rich and of medieval origin. Woodland becomes sparser moving east into NCA 106. West of the Severn the Mercia Mudstones predominate, producing silty clay soils. Small pasture fields and commons with regular patterns of parliamentary enclosure are notable. Pasture and stock rearing on floodplains and steeper slopes is common however unimproved neutral grasslands survive in nationally notable quantities.

NCA 106 is also noted for its surviving traditional orchards which retain an important genetic resource in a wide range of local fruit varieties and which are rich in wildlife, providing the UK stronghold for the noble chafer beetle and nest sites for birds and bats. This and surrounding NCAs are a key area for mistletoe, which particularly thrives on old fruit trees, lime and poplar.

The most pertinent Statements of Environmental Opportunities ("SEO") for these Natural Character Areas are:

NCA 103 - SEO 1: Conserve and appropriately manage the highly distinctive range of the Malvern Hills and the areas of semi-natural habitat in the wider character area such as woodland and traditional orchard, providing economic opportunities, fostering community participation.

NCA 103 - SEO 4: Plan for an expansion of semi-natural habitat where appropriate so that a significant ecological network is created and interconnected to adjoining areas. This will increase biodiversity, pollination, food and drink production, as well as regulate soil erosion, water and soil quality, reinforcing a strong sense of place.

NCA 106 - SEO 1: Protect and manage the landscape, heritage and biodiversity associated with the Severn Estuary, the river valleys and other hydrological features, planning for a

landscape scale expansion of wetlands, inter-tidal habitats and unimproved grasslands along river floodplains through, restoration, expansion and re-linkage of existing remnant areas of semi-natural habitat.

NCA 106 - SEO 2: Seek to safeguard and enhance this area's distinctive patterns of field boundaries, ancient hedgerows, settlements, orchards, parkland, small woodlands, chases, commons and floodplain management with their strong links to past land use and settlement history, and for the benefits this will bring to soil erosion, soil quality and biodiversity.

Natural England provide a number of examples which may be apposite for the development of Neighbourhood Plan and other land-management policies:

- Restoring traditional orchards and improving the species diversity of grasslands, especially species rich unimproved grassland and including lowland meadows, especially those in close proximity to existing areas to increase their important biodiversity resource.
- Protecting ancient woodlands and wood pasture, together with their impressive displays of bluebells and other woodland flora.
- Managing woodlands, especially those on inaccessible or difficult sites, to maintain their important biodiversity, their contribution to landscape character and to provide other products such as wood fuel.
- Restoring plantations on ancient woodland sites.
- Maintaining the characteristic hedgerow boundaries (including mature and veteran trees) around small-medium sized fields.
- Restoring hedgerows to good condition (especially species rich hedgerows of ancient origin).
- Managing and restoring species rich meadows and daffodil meadows.
- Altering the management regimes of roadside verges to maximise their biodiversity value (within the limits of highway safety).
- Managing levels and placement of over-wintering livestock (including horses) to help reduce incidents of soil churning and compaction thereby enhancing soil and water quality and reducing soil erosion.
- Adopting a planned and measured approach to the creation of new areas of semi-natural habitat which will support existing wildlife habitats and species of importance in the area.
- Utilising locally appropriate corridors to create physical links between semi-natural habitats, for example flower rich verges, species rich hedgerows and copses.
- Creating and designating 'refuge' sites for breeding or resting for key wildlife species which may be subject to and susceptible to disturbance.
- Restoring the natural floodplain function, landscape and habitat diversity associated with the rivers Severn and Avon and their tributaries through the opportunities provided by managed realignment, and the management of agricultural drainage/land use, increasing flood water storage capacity and reducing surface water run-off and soil erosion.
- Managing standing water features dispersed across the NCA to maintain their significant biodiversity interest.

- Maintaining and extending low-input permanent pasture, hedgerows and woodland across slopes near the River Teme to reduce soil erosion and impact on water quality.
- Reverting arable to permanent unimproved grassland, particularly adjoining or close to existing remnant areas of semi-natural habitat.
- Promoting and expanding, multi-functional quality green spaces and linear routes, integrated with wetland habitats for recreation, health and educational benefits.
- Retaining, restoring, and managing appropriately, all hedges and especially those that define enclosure of medieval strip farming where this is a strong landscape feature. This will enhance the landscape, retain historic field patterns and provide an important biodiversity resource and connectivity of particular importance across the arable areas. Good hedgerow management will also assist in reducing soil erosion and protecting soil quality.
- Managing ditches and rhines together with veteran willow pollards that line their boundaries.
- Protecting the integrity of floodplain grasslands together with embankments that are fundamental to their historic management and are important for present day flood management.
- Protecting ridge and furrow and other buried archaeology from damage by cultivation and enhancing biodiversity by restoring permanent grassland.
- Retaining genetic diversity of orchard trees to allow adaptability to the effects of a changing climate.

Worcestershire's Natural Areas

The Neighbourhood Plan Area is distributed between three distinct but interconnected 'Natural Areas', comprising: The Silurian Highlands, The Teme Plain and Northern Chase.

The Silurian Highlands has a very distinctive and well defined natural area. This is the series of hills and low ridges running north from Mathon to the Abberley Hills. The underlying strata are predominately Silurian Limestones such that the flora is predominately basic. The geology is not simple and the presence of sandstones, Permian and even Malvernian rocks adds diversity to an already very rich flora. It is an incredibly rich area; the vast majority of the landscape is clothed in semi-natural habitats with a series of ancient woodlands forming the core interest. These are some of Britain's most diverse woodlands in terms of their tree and shrub component. Large-leaved lime is present over much of the range and hornbeam is on the edge of its native British limit here. The Natural Area is considered to be an exceptionally high quality landscape for biodiversity.

The Teme Plain is dominated by the river itself and the valley floor habitats (where they survive) support a very distinctive flora throughout the length from Little Hereford to the Severn confluence. For this reason it is given a sub region of its own. Interestingly there are many common features with river systems of the Scottish Border country - *Scirpus sylvaticus*, *Scrophularia umbrosa* but with a distinct southwest British element as typifed by *Aconitum*

napellus. The Teme is considered to be the best British river for a number of different groups and the Natural Area is described as "superb".

The Northern Chase. The northern section of this area is reasonably biodiverse. This in part relates to the relief. The stream valleys as they descend towards the Teme are highly incised. In these areas semi-natural habitats have survived. The pattern of both land tenure and farming practice is different. Hop and fruit growing were both widespread, these forms of agriculture being less destructive for wildlife.

Green Infrastructure Environmental Character Area

The Neighbourhood Plan area is located in central-western Worcestershire, in a landscape context of Principal Wooded Hills and Principal Timbered Farmlands in the West, transitioning to Principal Timbered Farmlands in the east, with Riverside Meadow Landscape Character threaded along the Leigh Brook and River Teme corridor. The Neighbourhood Plan area is primarily located within the Malvern Chase and Commons Environmental Character Area ('ECA 9', as defined within the Worcestershire Green Infrastructure Framework) however a small area along the northern boundaries of the Neighbourhood Plan area is located within the River Teme Environmental Character Area (ECA 21):

ECA 9 – The Malvern Chase and Commons

The Malvern Chase and Commons is a large Environmental Character Area, covering the area from the western county boundary on the crest of the Malvern Hills, inland to the Severn Vale and extending from the River Teme corridor in the north to the M50 corridor in the south. Not surprisingly, for such a large area, it encompasses a wide range of local Landscape Character Types, as well as the Malvern Hills Area of Outstanding Natural Beauty (AONB). The northern part of the ECA, north and east of Great Malvern, is generally of a wooded nature and has been identified by the County Landscape Character Assessment as the Landscape Type Principal Timbered Farmlands with Principal Wooded Hills along the ridge of the Suckley Hills. Here the character relies on small scale, agricultural landscapes of irregularly shaped woodlands, winding lanes and frequent wayside dwellings and farmsteads which have been cleared piecemeal from the local woodlands and subsequently enclosed by hedgerows. The most notable characteristic is the densely scattered hedgerow trees, usually oaks which frame filtered views. The high biodiversity value of the area is reflected by the many Sites of Special Scientific Interest (SSSI) and Special Wildlife Sites (SWS), based on their woodland interest.

The western boundary of the ECA is characterised by the High Hills and Slopes Landscape Type of the Malvern Hills where the unenclosed, unsettled landscape of this striking ridge gives wide panoramic views across both Herefordshire and Worcestershire. Historically, the hills would have been an unenclosed expanse of commons and rough grazing where the

stocking levels would have been sufficient to keep scrub encroachment at bay, lower levels of stocking today have allowed secondary woodland and scrub encroachment, particularly on the lower slopes. Nevertheless, much of the area is categorised as a SSSI, due to its grassland habitat.

To the east of the commons is a band of land which has been identified as Settled Farmlands with Pastoral Land Use. These are small scale landscapes where the heavy, poorly drained soils traditionally discouraged arable farming and where small fields with prominent hedges and hedgerow trees are still generally grazed. Scattered through this landscape are a number of small SSSIs and SWSs designated for their grassland interest.

ECA 9	**Malvern Chase and Commons**
Strategic GI Approach	Protect and Enhance
Overarching principles:	Protect and enhance acid and neutral grassland habitats and wooded landscape of orchards, woodlands and scrub.
Biodiversity Priorities:	Priority to protect, buffer and enhance existing sites to create linked networks of habitat where possible. Protect and enhance grassland habitats (acid and neutral) and the wooded landscape including orchards, woodlands and scrub. Conserve parkland and veteran trees. Maintain traditional field boundaries including hedges, where appropriate to aid habitat connectivity.

ECA 21: The River Teme Corridor

The boundaries of this ECA closely follow the River Teme as it flows from the Herefordshire and Worcestershire border near Knightwick, east to join the Severn at Powick. The River Teme itself is designated as a Site of Special Scientific Interest (SSSI it is one of the best sandstone and mudstone rivers in Britain, supporting a diverse range of plants, fish, insects and mammals. Species of interest found in the River Teme SSSI include salmon, twaite shad, otter, native crayfish, lampreys, bullhead and pearl mussels.

Natural England is working with CCW, the Environment Agency and the Severn Rivers Trust to develop a river restoration plan for the River Teme. The plan aims to return the river to a more natural condition and ecological health by restoring the river's more natural form and function over the next 50 years to create:

- A dynamic and diverse river bed which is suitable for fish and invertebrates.
- Variable channel features with a variety of river depths and flow speeds.
- Varied bankside plant structure, including areas of shading and occasional open stretches of floodplain meadow.

- Diverse plant, invertebrate and breeding bird communities that are able to use the river corridor with minimal disturbance.
- Lowered levels of river engineering allowing natural movement of the channel within a riparian corridor.
- Increased connection with the floodplain where wet grassland and meadows, fen, carr and wooded areas may develop.

This ECA falls wholly or partially within the Malvern Chase with Laugherne Valley Biodiversity Delivery Area, one of the priority opportunity areas determined by the Worcestershire Biodiversity Partnership for the delivery of county Biodiversity Action Plan targets. Information about the Biodiversity Delivery Areas is available from www.worcestershire.gov.uk/biodiversity.

The landscape is characterised by the open, low lying, seasonally flooded Riverside Meadows with their lines of riverside trees and lack of settlement. Woodland is not a typical feature here. Along the eastern stretches, set back on slightly higher ground are areas classified as Principal Timbered Farmlands where the small scale, wooded landscape with densely scattered hedgerow trees has a much more intimate character. Traditional orchards, species rich meadows and small, ancient woodlands are all typical of this Landscape Type.

ECA 21	**River Teme Corridor**
Strategic GI Approach	Protect and Restore
Overarching principles	Protect and restore multi-functional river valley corridor and floodplain.
Biodiversity Priorities	Newly created GI features should aim to augment the existing resource concentrating on the main priorities for protection and creation including wetland and floodplain habitats in the river corridors. Create and enhance existing neutral grassland habitats and traditional field boundaries to aid connectivity and landscape permeability

Designated sites of Nature Conservation Significance

Statutory designated sites

The Neighbourhood Plan area contains two Sites of Special Scientific Interest (SSSI): The River Teme and Aileshurst Coppice. Aileshurst Coppice is part owned by Worcestershire Wildlife Trust and is designated for its coppiced woodland of pedunculate oak and ash with a

diverse and valuable ancient woodland ground flora. The site has a notable population of the rare yellow-star-of-Bethlehem.

The River Teme forms the backbone of a particularly biodiverse corridor along the western flank of the county, a wildlife corridor comprising a network of important native habitats likely to support scarce and legally protected native wildlife. Variations in geology and flow over the length of the Teme create an environment which supports a diverse range of plants, fish, insects and mammals so that the whole of the river and its banks are designated as SSSI. In Britain there are only around 275 km of SSSI river like the Teme with the Teme making up 100 km, over 33%, of the total. Many species including salmon, the increasingly rare twaite shad, otter, native crayfish, lampreys, bullhead and pearl mussel as well as a large variety of aquatic plants, specialist beetles and breeding birds are found on the Teme. Indeed early surveys showed the Teme had the highest number of aquatic species and a higher overall average over its length than any other similar rivers in the Welsh Marches. The Teme is divided into 6 operational units which were last condition assessed between 2012 and 2014 with all units being deemed 'unfavourable' and either 'declining' or having experienced 'no change' in status. Principle causes of unfavourable status are inappropriate water levels, inappropriate weirs and other structures, presence of invasive species, siltation and pollution, agricultural run-off and discharge of polluted waters.

Aileshurst Coppice was last assessed in 2011 and was considered to be in favourable condition with good diversity of ground flora and deadwood present.

New Inn Meadow SSSI has boundaries almost contiguous and is located to the south-west of the Neighbourhood Plan area. New Inn Meadow is a very good example of a rich hay meadow arising from a long continuity of management for hay with aftermath grazing. Hay meadows such as this were once common in Worcestershire but have now become extremely scarce there owing to changes in agricultural practice. The site was last assessed in 2011 and was considered to be in 'unfavourable' condition, being cut at an appropriate time of year but not benefitting from any aftermath grazing.

Non-statutory designated sites

The parish area contains a number of Local Wildlife Sites (LWS). North Wood, Benstoken Coppice, Hayley Broad Dingle & Redcliff and The Ashes are designated for their broadleaved woodland (typically NVC community W8 with some W8 sub-communities and W10 present). North Wood also includes an area of unimproved grassland (MG5).

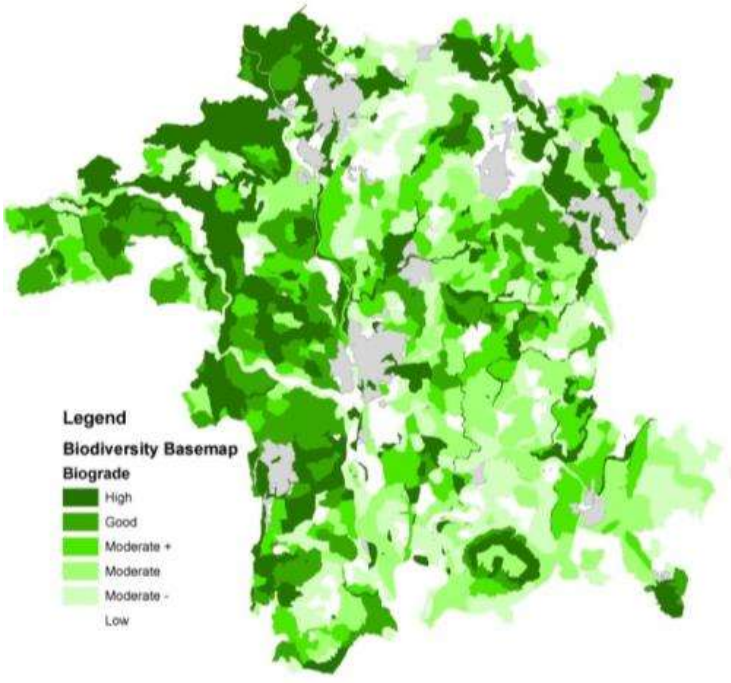
Leigh Disused Railway and The Cuckoopit are also designated for their woodland communities (W1, W5 and W8) with unimproved grassland interest including acidic, neutral and wet grassland communities. Marsh Cottage Meadows is designated for a number of scarce grassland communities (MG5a, MG5b and MG5c with MG6, MG7 and MG10). The three principle watercourses of the River Teme, Leigh Brook and Carey's Brook are all

designated as Local Wildlife Sites and the traditional orchard habitat at Sandlin House Orchard and Birchenhall Farm Orchard is the main criteria for designation at this site, however as with the other LWS sites the variety and quality of semi-natural habitats will support a diversity of scarce and legally protected native fauna including NERC Act S.41 species.

The Neighbourhood Plan area contains one Roadside Verge Nature Reserve, designated primarily for its population of Bithynian Vetch.

The Neighbourhood Plan area contains 10 Grassland Inventory sites: Coles Green Orchard, Coles Green Meadow and Coles Green Piece, Pettyford Meadows (two operational units), Coombe Hill Coppice Meadow, Brockamin Scrub, Brockamin Ford Meadow and Marsh Cottage Meadow (two operational units). All are designated for their MG5 communities (lowland neutral meadows) with the exception of Brockamin Ford Meadow which is designated for its calcareous grassland. While six of the sites have been identified as damaged or destroyed through insensitive land management practice, they may still be capable of restoration if land management practice were to change.

Worcestershire Habitat Inventory Overview Area Report



The Worcestershire Biodiversity Basemap identifies that the two NHP areas are located in an area identified as holding significant value for biodiversity:

Landscape Scale Patterns of Biodiversity

West Worcestershire (west of the rivers Stour and Severn) contains large areas of relatively intact ancient countryside, much of which is of high biodiversity importance. When considered in a wider landscape context, this swathe of countryside is likely to form a critical element of a nationally important ecological network that stretches from the south west via the Severn corridor and Forest of Dean, through west Gloucestershire, east Herefordshire and west Worcestershire, and on into Shropshire and Cheshire.

Laugherne Valley/ Northern Malvern Chase Area (covers much of Alfrick and a sliver of the western border of Lulsley NHP)

This area to the West and North-west of Worcester sits just above the Northern part of Malvern chase. This area has a diverse geology and is relatively biodiverse. The high coverage of broadleaved woodland incorporates numerous areas of ancient woodland with a range of woodland communities. Though some areas are predominantly arable, much semi-natural habitat is retained in steep valleys, on scarps, bluffs, outcrops and in linear features. Much of the area retains elements of ancient countryside, and a high coverage of traditional orchards and a relatively good network of open water add to this character. The area has a varied geology ranging through from basic, through neutral, to acidic and so the flora is very varied and diverse in places.

This area has a notably high proportion of grasslands identified as 'possibly unimproved'; these are potentially species rich grasslands which will require additional botanical surveys undertaken at a suitable time of year to confirm their status. Unfortunately the proportion of grasslands identified as 'probably improved' is also notably high. The 'known' grassland resources are quite low: neutral grassland coverage, calcareous and acid grassland coverage are all very low. Though much of this area, especially the grassland element, is not covered by existing survey, and survey possibly of unimproved grassland may reveal previously unknown sites of BAP or near BAP quality, and potential sites for grassland restoration.

Malvern Chase Central, Southern, Northern Chase (covers much of Leigh & Bransford as well as the majority of Lulsley NHP area).

Malvern Chase, in the west and south-west of the county encompass three distinct areas which differ in character from one another; these are the northern, central and southern chases. The northern chase is quite exploited by agriculture, but retains biodiversity in valleys and on steep slopes, as well as in hedgerows and verges.

Semi-natural habitat in Malvern Chase is variable, and biodiversity value is variable across the three areas. Much of the land use in the area is arable land or is grassland likely to have been agriculturally improved to some degree.

There are scattered pockets of broadleaved woodland in the central, and more frequently the northern chase, where a greater proportion of this is ancient woodland.

"Possibly improved" grassland is scattered throughout the chase and is interspersed with BAP (MG5) neutral meadows and pastures and other neutral grassland, some of which can be found in common land or on verges and small meadows and pastures forming a good network of grasslands. Orchard coverage in Malvern Chase is relatively low, but where orchards are present (more often in the central and northern chase) they form well connected networks. The network of ponds (refer to Appendix 2) shows that there is potentially a high degree of connectivity between standing water/small ponds. Wetland coverage in Malvern Chase is low, and is often confined to small areas or micro features

Worcestershire Habitat Inventory Analysis: Semi-Natural Habitats and Habitat Networks

By merging all recorded priority habitats found within the parish, and applying a least-cost distance analysis (as per Catchpole[3] methodology) to The Worcestershire Habitat Inventory, it is possible to identify 'core' areas of Biodiversity Action Plan habitats, and to also ascribe a distance which both generic and axiophytic taxa are thought likely to disperse from those core areas ("dispersal extent"). This plan indicates likely semi-natural habitat cohesion and, at a strategic-scale, reveals the landscape corridors most notable for their value for biodiversity and key opportunities to restore and defragment these corridors.

The merged BAP network plan indicates two strong ecological corridors within the Neighbourhood Plan area, although this may be geographically biased by the existing aforementioned linear features. The more evident corridor extends from the River Teme and Leigh Disused Railway on the northern extent of the Plan area, in a south-westerly direction

[3] Catchpole, R.D.J. 2007 England Habitat Network Information Note

towards Sandlin House Orchard and Birchenhall Farm Orchard. Along the Parish boundary between Leigh and Bransford a second and much more fragmented corridor can be seen. This comprises much of Leigh Disused Railway, The Cuckoopit, Marsh Cottage Meadows, The Ashes and extending south-east through Chapelhill Coppice towards Little Monksfield Farm.

The network of traditional orchards (predicted network strength is based on flight distances of noble chafer from known traditional orchards) is very roughly divided into two corridors: the first extends from Sandlin House Orchard in the south-western corner of the Parish of Leigh, through Hayward's Cross and around the edges of the principle settlement of Leigh Sinton towards North Wood LWS. A second and more fragmented corridor extends along the axis of Leigh Brook encompassing Greathouse and Pigeonhouse Farms through Brockamin and Brockamin House Farm towards Marsh Cottage Meadows.

The woodland network is highly fragmented across the Neighbourhood Plan area and primarily comprises the aforementioned Local Wildlife Sites (most evident along the Leigh Brook, Leigh Disused Railway and Ashes to Whitehouse & Bush Hill Coppices corridor) and smaller intervening copses providing valuable ecological 'stepping stones'. A key exception is a north-south linear corridor between Pettyford Bridge, Park Coppice, The Dingle, Pipe Elm Farm and Aileshurst Coppice. In stark contrast, the network of ancient woodland and plantation on ancient woodland ('PAWS') is highly fragmented within the Neighbourhood Plan area with notable but isolated resources within Hayley Broad Dingle, south of Brockamin House Farm and Park Coppice, Leigh Brook Valley and Benstoken Coppice to the West of the Neighbourhood Plan area and Leigh Disused Railway/The Cuckoopit, The Ashes and Chapelhill Coppice central to the Neighbourhood Plan area.

The network of ponds and other standing water bodies as identified within the WHI is highly fragmented (reflected in the very few records of amphibians returned within the Plan area) and heavily biased towards the waterbodies present within Bransford House Hotel Golf and Country Club, however it is unknown what value these waterbodies have for biodiversity.

A clear corridor is evident on the semi-natural and priority grassland network. This appears to run roughly along the axis of the Leigh Brook from its junction with and around the Leigh Disused Railway, along a south-western axis towards Stitchin's Hill and Old Storridge Common beyond the Plan's boundaries. On the Eastern boundary of the Neighbourhood Plan area a second distinct merged grassland network extends from Bransford Court through Gilbert's Farm towards Monksfield and Newland Court.

Protected and Notable Species

A total of 136 records of legally protected and/or notable species (afforded additional consideration through Schedule 41 of the Natural Environment and Rural Communities Act (2006), national and local planning policy, local Biodiversity Action Plans and Biodiversity

Agreements) were returned by the WBRC. These records contain amphibians, birds, flowering plants, invertebrates, reptiles and mammals, indicating that fungi are a vastly under-recorded biodiversity asset within the Neighbourhood Plan area.

Floristically, as referenced within the description of county habitat distributions above, the parish contains valuable habitats, particularly remaining pockets of ancient woodland and notable records of scarce arable flora. Of the general locality, The Flora of Worcestershire (Maskew, 2014) describes the following: "*the main botanical interest lies in the River Teme corridor from Lulsley north and west to Tenbury Wells, along which the river meanders through a narrow flood-plain between heavily wooded slopes. Ancient dingle woodlands are lined mainly with* Quercus *species and* Fraxinus *but there is also* Tilia cordata *and* T. platyphyllos*; unfortunately parts of them have been modified by re-afforestation with both coniferous and broad-leaved species, particularly* Populus *spp*". Amongst typical examples cited is Hanley Dingle SSSI which has "*a rich ground flora on streamsides and in the base rich flushes supporting less common and widespread species such as* Chryosplenium alternifolium, Latharae squamaria, Carex strigose, Hypericum androsaemum, Ranunculus auricomaus, Paris quadrifolia *and* Campanula trachelium".

52 records of locally notable and/or nationally scarce plant species were returned from the Worcestershire Biological Record Centre, please refer to appended data search results for further information. Of note are records of the nationally scarce Bithynian Vetch (*Vicia bithynica*) which has been recorded in hedgebanks and roadside since the 19th century in the Alfrick and Leigh area (where it was collected by Reece and Westcombe in 1846). Whilst reportedly increasing in a numbers within some of its previously reported locations, the records between 1997 and 2004 within the Neighbourhood Plan area indicate a considerable variation in population sizes: from a single observation to 200+ plants observed. This makes the Neighbourhood Plan area population notable in its county context, which is reflected by the designation of a Roadside Verge Nature Reserve for this species.

Spreading hedge-parsley (*Torilis arvensis*) is a nationally scarce species suffering from dramatic declines nationally. Worcestershire appears to have fared better than most other counties during the 20th century with multiple populations distributed through the southern portions of the county, particularly on Lias Clay, where it's restricted to the margins of cereal and bean fields, typically in low numbers. 'At least several hundred' plants were recorded ' on the edge of oat and barley crops' at Bransford in 1994.

Only two records of the nationally scarce Spreading Bellflower (*Campanula patula*) have been made within the Neighbourhood Plan area, none more recent than 1998. This attractive plant of disturbed sandy and gravelly soils was previously described as well distributed throughout the county however since around 1996 the species has been in national decline even within core areas of the Welsh Borders and Severn Valley where it is now very restricted.

The faunal observations returned are heavily dominated by mammalian records, however herpatofauna records include both common frog (*Rana temporaria*) and common toad (*Bufo bufo*) together with great crested newts (*Triturus cristatus*) and slow-worm (*Anguis fragilis*). Few bird records were returned. These include song thrush (*Turdus philomelus*) which is a 'red-list' species of conservation concern (BTO, BOCC4, December 2015); cuckoo (*Cuculus canorus*) which is also a red-listed species; and kingfisher (*Alcedo atthis*) which is an amber-listed species of conservation concern.

Amongst the invertebrate records returned, these were dominated by common club-tail dragonfly (*Gumphus vulgatissimus*), a Worcestershire BAP priority species which has been regularly recorded on the Teme between 1992 and 2012. Also of note is the record of white clawed crayfish (*Austropotamobius pallipes*) which has suffered dramatic declines nationally and recent losses within the remaining fragmented populations within Worcestershire. Within the Neighbourhood Plan area it was last recorded within Whippets Brook (upstream of Stocks Lane) in 2000.

Amongst the mammalian records returned are frequent observations of badger (*Meles meles*) and brown hare (*Lepus europaeus*) with only a small number of records of hedgehog (*Erinanceus europaeus*). Seven records of otter were returned, from the Leigh Brook and River Teme areas and dated between 1991 and 2012. A single record of polecat (*Mustela putorius*) and harvest mouse (*Micromys minutus*) were returned, the latter from Sandlin House Orchard belying the value of habitats present for biodiversity. At least three species of bats have been recorded within the Neighbourhood Plan area including: common and soprano pipistrelles (*Pipistrellus pipistrellus* and *P. pygmaeus*), brown long-eared (*Plecotus auritus*) and noctule (*Nyctalus noctule*). Given the mosaic of BAP-quality orchard, broadleaved woodland and grassland habitats present within the Neighbourhood Plan area, this is likely to constitute a considerable under-representation of the diversity present.

A search of registered veteran and ancient trees or specimens/stands with Tree Preservation Orders was not available at the time of report preparation. With due regard to the quanta of ancient and broad-leaved woodlands and parkland, it would be appropriate to ensure veteran trees (and, for sake of continuity, those trees likely to succeed to future veteran tree status) are appropriately accounted for within any future parish-scale land management decisions.

Please refer to the appended data tables for further information.

Summary & Recommendations

- NHP area is predominantly, an ‘agriculturally improved’ landscape,

For more information on the biodiversity value of individual habitats specified here, please refer to the WHI Habitat Information Sheets in the following chapter.

- *The NHP area becomes a more pastoral landscape traversing from west to east*

  Although thought to be dominated by improved grassland, some botanically diverse grasslands can still be found scattered and fragmented through the landscape. Unimproved grasslands and remnant features of biodiversity interest can still be found on steep slopes, within hedgerows and verges.

- *Scattered pockets of woodland with some ancient woodland remaining*

  Notable stands of ancient woodland can be found along Hayley Broad Dingle, south of Brockamin House Farm, Park Coppice and 'The Ashes', Chapelhill Coppice and, to the south of the NHP area, parcels of land within North Wood, Alleshurst Coppice and near Holywell Cottages. The overall picture is one of a fragmented woodland network.

- *Fragmented network of orchards*

  The network of orchard is fragmented with no strong coherent pattern at a landscape scale, but remnants are likely to hold significant biodiversity value such as the veteran trees noted at Sandlin House Orchard.

- *Fragmented pond network: strongest in north-east of NHP area*

  The greatest cluster of ponds can be found around the residential properties in the village of Bransford (likely to be associated with the golf course, although the suitability of these features for wildlife is not known from desktop-assessments alone) and also between Brockamin and the dismantled railway to the north of the NHP area.

- *Strongest merged BAP habitat network overlie existing natural corridors,*

  The strongest corridor of biodiverse habitats runs roughly from the central-west border of the Neighbourhood Plan area extending eastwards from old Storridge Common) to the north-eastern corner of the Plan area. This follows the network of scattered woodland dingles around the Ashfield and Combehill Coppice area, to Winwoodhill Coppice and subsequently along the Leigh Brook to Rockhill Covert and from there along the disused railway at the periphery of the Neighbourhood Plan's boundaries.

- *The list of notable protected species (refer to Appendix 5) recorded within the Plan area includes:*

Common Pipistrelle Bat	*Hydraena rufipes*
Anobium ine x spectatum	Kingfisher
Badger	Large-Leaved Lime
Bithynian Vetch	Noctule Bat
Bluebell	Otter
Brown Hare	Unidentified Pipistrelle Bat
Brown Long-Eared Bat	Polecat
Common Club-tail	Reflexed Saltmarsh-Grass
Common Toad	Sea Lamprey
Corn Marigold	Slow-worm
Cuckoo	Small-Flowered Buttercup
Dorytomus tremulae	Soft Hornwort
Freshwater Crayfish	Song Thrush
Great Crested Newt	Soprano Pipistrelle Bat
Green Figwort	Spreading Bellflower
Harvest Mouse	Spreading Hedge-Parsley
Hedgehog	Unidentified Bat
Henbane	Wild Clary
Hornbeam	Wild Marjoram
Hybrid Yellow Bedstraw	Yellow Star-Of-Bethlehem

Policy Implications

The South Worcestershire Development Plan policies SWDP5 (Green Infrastructure) requires housing development proposals (including mixed-use schemes) to contribute towards the provision, maintenance, improvement and connectivity of Green Infrastructure. It should also be noted that SWDP5 sub-clause C states that "*development proposals that would have a detrimental impact on important GI attributes within the areas identified as "protect and enhance" or "protect and restore", as identified on the Environmental Character Areas Map, will not be permitted unless: a) a robust, independent assessment of community and technical need shows the specific GI typology to be surplus to requirements in that location; and b) replacement of, or investment in, GI of at least equal community and technical benefit is secured*". Given that biodiversity is a key theme within the sub-regional Green Infrastructure framework, it might be contended that the semi-natural and priority habitat assets as outlined within this report should be treated as "an important GI attribute".

SWDP22 (Biodiversity) sub-clauses A-D address consideration of impacts to designated sites, priority habitats and priority species. SWDP22 sub-clause F addresses enhancement measures (rather than compensatory measures, intended for delivery either on or off a development site).

Great emphasis should therefore be placed on the **protection and enhancement** of existing semi-natural and priority habitat assets, especially ancient woodland and broad-leaved woodlands, traditional orchard and botanically diverse grasslands. However, wherever feasible, opportunities should be realised to **restore** these habitats and habitat networks. This may include the **creation** of 'stepping-stone' sites with the intention of defragmenting the local habitat network; to this end even minor features in the landscape may prove immensely valuable, particularly those within the ecological corridors identified within this report. Such habitat creation efforts should always be informed by a formal ecological survey to identify sensitive receptors and to ensure maximum biodiversity gain can be achieved. By requiring all new development to **demonstrate net-gain for biodiversity**, it may be possible to ensure both onsite *and* offsite biodiversity enhancement in order to achieve a cohesive conservation strategy for the Neighbourhood Plan area which achieves benefits for all at a landscape-scale.

There would be considerable value in specifically requiring enhancement measures for biodiversity to be included within the built (as well as natural) environments. This could be achieved through stipulating measures in new residential properties such as artificial nesting and roosting opportunities for species such as swift, house martin, sparrow, starling and bats, as well as measures to assist defragmentation for terrestrial species such as hedgehog. Table 1 (Roost and nest site provision in new development) of the TCPA "eco-towns biodiversity worksheet[4]" provides a useful guide in this respect.

4 Biodiversity Positive: Eco-towns Biodiversity Worksheet Advice to Promoters and Planners December, TCPA 2009.

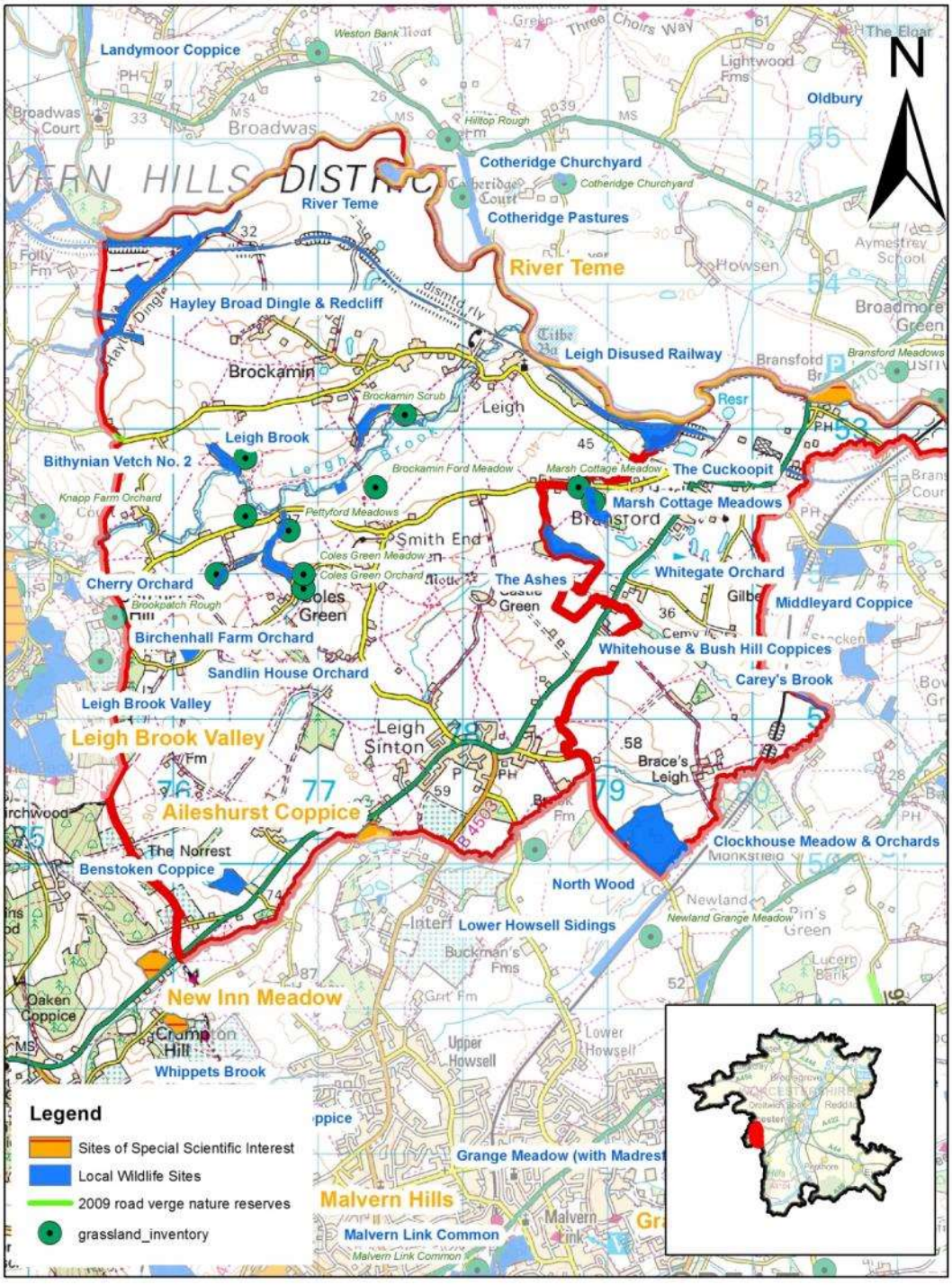
Measures targeting restoration of the natural environment, such as de-culverting and naturalising watercourses, creation of SuDS features which aim to mimic or improve the quality and quantity of outfall from impermeable surfaces, and the creation of (wildlife friendly) ponds should be advocated and positively promoted wherever possible.

Accompanying these operations, enhancement measures designed to provide new nesting opportunities for kingfisher and riverine mammals including otter and water vole should be realised where deliverable and appropriate.

Further information is available on request.

In conclusion the natural environment records for the Neighbourhood Plan area contain a number of assets which are both characteristic and integral to the local landscape. Opportunities to **protect, enhance and restore** the characteristic natural landscape (particularly the ancient woodlands, unimproved grasslands and traditional orchards), should be considered a priority.

1. Designated Sites



worcestershire county council	Scale: 1:35,600	0 125 250 500 750 1,000 1,250 1,500 1,750 2,000 2,250 2,500 Metres 0 0.1 0.2 0.4 0.6 0.8 1 1.2 1.4 Miles
County Hall, Spetchley Road, Worcester WR5 2NP	The Parishes of Leigh and Bransford showing designated sites of importance for nature conseervation	

1a. Statutory Sites Citations

COUNTY: HEREFORD AND WORCESTER/ SHROPSHIRE/POWYS

SITE NAME: RIVER TEME/AFON TEFEIDIAD

Status: Site of Special Scientific Interest (SSSI) notified under Section 28 of the Wildlife and Countryside Act 1981 as amended

Local Planning Authorities: SOUTH SHROPSHIRE DISTRICT COUNCIL, Shropshire County Council, Hereford &Worcester County Council, Worcester City Council, Leominster District Council, Malvern Hills District Council, Powys County Council

National Grid References: SO 121848–SO 850525

Ordnance Survey Sheets:

1:50,000:	136, 137, 138, 150		
1:10,000:	SO 18 SW, SE	SO 57 NW, SW	SO 85 SW
	SO 17 NE	SO 56 NW, NE	
	SO 27 NW, NE, SE	SO 66 NW, NE	
	SO 37 SW, SE	SO 75 NW, NE, SE	
	SO 47 SW, SE, NE	SO 76 NW, SW	

Length		Area	
R. Teme in England	109.6 (km.)	England	419.8 ha
R. Teme in Wales	24.7 (km.)	Wales	44.2 ha
Total of R. Teme	134.3 (km.)	Total	464 ha
R. Clun	4.7 (km.)		
Total	139.1 (km.)		

Date of Notification: 19 July 1996

Other Information
This is a new site. The site supports the following species covered by Council Directive 92/43/EEC on the conservation of Natural Habitats and of Wild Flora and Fauna:

Twaite shad *Alosa fallax*	Annex IIa, Va;
Sea lamprey *Petromyzon marinus*	Annex IIa
Brook lamprey *Lampetra planeri*	Annex IIa
Salmon *Salmar salmo*	Annex IIa, Va;
Bullhead *Cottus gobio*	Annex IIa
Grayling *Thymallus thymallus*	Annex Va
Otter *Lutra lutra*	Annex IIa, IVa;
Atlantic stream crayfish *Austropotomobius pallipes*	Annex IIa, Va
Freshwater pearl mussel *Margaritifera margaritifera*	Annex IIa, Iva

Otter, Atlantic stream crayfish, and freshwater pearl mussel are also listed under Schedule 5 of the Wildlife and Countryside Act 1981, as amended.

The Welsh section of the river lies within the Radnor Environmentally Sensitive Area (ESA). The English section of the river runs through the Clun ESA and Shropshire Hills Area of Outstanding Natural Beauty.

The site incorporates part of Downton Gorge SSSI and National Nature Reserve, as well as Temeside and Temebank geological SSSI.

Description and Reasons for Notification:
The River Teme is the second largest tributary of the River Severn, draining a hilly, predominantly rural catchment of Silurian and Devonian rocks. The notified channel is of special interest as a representative, near-natural and biologically-rich river type associated

with sandstone and mudstones. This type has a mainly northern and western distribution in Britain but is especially characteristic of the Welsh Marches.

The Teme demonstrates a close relationship with the underlying geology. A short, rapid-flowing upland section, with nutrient-poor and relatively acidic waters, changes to a more basic and naturally nutrient-rich system for most of the river's length as it passes over Silurian shales and mudstones, and the Old Red Sandstone strata. At its lowest section, the Teme is a sluggish, lowland river on soft deposits.

These attributes and the high water quality, support significant river plant, fish and invertebrate communities and otter populations. A small section of the lower River Clun is included in the SSSI for a notable species.

The Teme rises at 460 m on Cilfaesty Hill, Powys and falls steeply to Knighton, descending 122 m over 1.6 kms of the English/Welsh border. It then flows through a more gentle landscape via Ludlow and Tenbury Wells to join the River Severn just below Worcester. The river is actively eroding and fast flowing, with many shingle bars, especially above Leintwardine. Where the river cuts through the sandstone, the bed is often formed of submerged rock platforms. The banks are well tree-lined with alder *Alnus glutinosa*, with some willow *Salix* spp. stands.

There are extensive areas of rough grassland and wet flushes dominated by mosses and sedges on Cilfaesty Hill Common, but thereafter the adjoining land use is mostly permanent pasture, arable fields, hop-yards and orchards. Parts of the river run through deciduous woodland, mainly of oak *Quercus* spp. and ash *Fraxinus excelsior*, some of which occurs in steep ravines. Wetter areas hold small alder carrs, on both shingle and alluvial soils. Little flood plain wetland has survived, though some of the early river engineering schemes have left cut-off meander loops which have developed marsh vegetation.

Geology and Topography
Near to the source the young river drains an upland area based on Silurian siltstones, the bedrock geology being the dominant influence on the river bed. Numerous peaty flushes and several small moorland tributary streams join the river here as it passes through a small, steep-sided rocky gorge. The Ring, an active land slip located on Cilfaesty Common, deposits silt and gravel into the channel which has a locally enriching effect on the nutrient status of the waters. After leaving Cilfaesty Hill the Teme flows through the narrow valley of Cwm Owyn to Felindre and from there on to a wider floodplain. Downstream from here the river shows a variety of fluvial geomorphological features such as back channels, storm flow channels and cut-off pools.

Down to Brampton Bryan the rocks are predominantly shales and mudstones of neutral base status but below this they change to more calcareous types and sandstones. Devonian Old Red Sandstone is the bedrock from Downton to Knightwick, with Triassic Mercian Mudstone from there to the confluence. From Felindre down to Leintwardine the river has a well developed pool and riffle system, with a cobble and pebble river bed. There are also extensive lateral gravel banks. After Downton Gorge and past Ludlow, submerged sandstone rock platforms become a feature. The lowest reaches near to Worcester traverse clays and silts to give a lowland and mature river.

Such variations in geology, flow and substrate give rise to diverse river plant and animal communities, ranging from species-poor upland spate types, to those more characteristic of slow flowing, alluvial rivers.

Flora
The highest section of the river has many small falls and pools with a good cover of the moss *Amblystegium tenax*, along with other bryophytes such as the liverwort *Marchantia polymorpha* and the moss *Fontinalis squamosa*. A small side pool supports the stonewort *Chara vulgaris* var. *vulgaris*. Characteristic higher plants in these upper stretches are round-

leaved water crowfoot *Ranunculus omiophyllus* and intermediate water starwort *Callitriche hamulata*, with the reed canary grass, *Phalaris arundinacea*, as a marginal species. There are also algal communities covering the pebble and small boulder-strewn river bed throughout its length, with various species of filamentous green algae and the distinctive red alga *Hildenbrandia rivularis*, the latter reflecting the high water quality.

With an increase in calcareous influence between Knighton and the Clun confluence, beds of the water crowfoots *Ranunculus fluitans* and *R. penicillatus* v *pseudofluitans* appear. The outcropping of the Lower Old Red Sandstone around Ludlow allows the river to cut deeply into the bedrock, with a subsequent change in the aquatic flora. There tends to be one major water plant community in these lower reaches, with the river water crowfoot *R. fluitans* dominating. The large algae *Enteromorpha* is found, together with pondweeds such as fennel pondweed *Potamogeton pectinatus* and perfoliate pondweed *P. perfoliatus*. Vigorous stands of the branched bur reed *Sparganium erectum* occur as a marginal species, along with water plantain *Alisma plantago-aquatica* and water figwort *Scrophularia auriculata*

The river banks between Tenbury Wells and Knightwick are often dominated by dense stands of comfrey *Symphytum officinalis*, with some areas suffering invasion from the alien Himalayan balsalm *Impatiens glandulifera*.

Mammals
The otter *Lutra lutra* has well established populations on the Teme, the stronghold being between Ludlow and Knighton, but they are found all along the river from Cwm Gwyn to Powick. Mink *Mustela vison* are also reported to be widespread in the catchment.

Invertebrates
The Teme has a good population of Atlantic stream crayfish *Austropotamobius pallipes*, a globally threatened and seriously declining species. The extensive shingle shoals hold a particularly interesting and rare riffle beetle community, with some 17 species being recorded. Of these, *Normandia nitens* is classed as Vulnerable, with *Macronychus quadrituberculatus* being nationally rare. The nationally scarce beetles *Riolus subviolaceus* and *R. cupreus* are found in the channel, with the nationally scarce carabid beetle *Bembidium semipunctatum* occurring on the banks. The SSSI also holds a population of the freshwater pearl mussel *Margaritifera margaritifera*, a rare and specially protected species.

Fish
The River Teme has long been recognised as a quality salmonid and coarse fishery. The fish communities strongly reflect the ecological changes in the river as it descends the catchment.

The lower and middle reaches have eels *Anguilla anguilla*, dace *Leuciscus leuciscus*, barbel *Barbus barbus*, bream *Abramis brama*, perch *Perca fluviatilis*, roach *Rutilis rutilis* and chubb *Leuciscus cephalus*. The latter species is typical of the slow and deep flows of the lower and middle river and is found upstream as far as Ludlow, whereas the brown trout is found most commonly above this point. Salmon *Salmar salmo* and grayling *Thymallus thymallus* are also present up to the weir at Buckton. Brook lamprey *Lampetra planeri*, stone loach *Noemacheilus barbatulus* and bullhead *Cottus gobio* can be found in the fast and rocky stretches, though bullhead and stone loach do occur low down the river at Knightwick. Bullheads occur even in the very shallow and fist flows on the open hill near the source. Sea lamprey *Petromyzon marinus* has been recorded on the lower reaches of the Teme.

Of particular conservation interest are the records of the very rare twaite shad *Alosa fallax fallax* in the very lowest reaches of the Teme. This may represent an extension of the spawning ground from the Severn, which is one of only four confirmed breeding sites in the UK.

Breeding Birds

The bird community is typical of that found along medium to fast flowing rivers. The dipper *Cinclus cinclus* is to be found in almost all the rocky sections together with the grey wagtail *Motacilla cinerea*, though the latter species is equally at home on the silt banks of the lower reaches. Both kingfishers *Alcedo atthis* and sand martins *Riparia riparia* readily utilise the eroding earth banks which the river produces as it meanders, and common sandpipers *Tringa hypoleucos* occur on the shingle bars above Ludlow. There are also records of goosander *Mergus merganser*.

COUNTY: HEREFORD & WORCESTER SITE NAME: AILESHURST COPPICE

DISTRICT: MALVERN HILLS SITE REF: 15WNH

Status: Site of Special Scientific Interest (SSSI) notified under Section 28 of the Wildlife and Countryside Act 1981 as amended.

Local Planning Authority: HEREFORD & WORCESTER COUNTY COUNCIL, Malvern Hills District Council

National Grid Reference: SO 774502 Area: 1.97 (ha.) 4.88 (ac.)

Ordnance Survey Sheet 1:50,000: 150 1:10,000: SO 75 SE

Date Notified (Under 1949 Act): 1971 Date of Last Revision: 1975

Date Notified (Under 1981 Act): 1987 Date of Last Revision: –

Other Information:
Part of the site is owned and managed as a nature reserve by the Worcestershire Nature Conservation Trust.

Description and Reasons for Notification:
This site is an area of relict stream-side coppice woodland lying to the north of Malvern. It is situated on base-rich soils overlying Keuper Marl.

It is an example of a type of woodland which is now nationally restricted. The canopy is dominated by pedunculate oak *Quercus robur* and ash *Fraxinus excelsior*, with a diverse understorey including coppiced wych elm *Ulmus glabra*, hazel *Corylus avellana*, field maple *Acer campestre*, elder *Sambucus nigra*, wild privet *Ligustrum vulgare* and spindle *Euonymus europaeus*. Along the stream alder *Alnus glutinosa* occurs as mature trees and coppice stools.

The ground flora contains spurge-laurel *Daphne laureola*, which is scarce in the county, as well as dog's mercury *Mercurialis perennis*, enchanter's-nightshade *Circaea lutetiana*, yellow archangel *Lamiastrum galeobdolon*, early-purple orchid *Orchis mascula* and common spotted-orchid *Dactylorhiza fuchsii*. The grasses include such typical woodland species as false brome *Brachypodium sylvaticum*, wood millet *Milium effusum* and wood meadow-grass *Poa nemoralis*. In the damp areas close to the stream marsh thistle *Cirsium palustre*, pendulous sedge *Carex pendula*, opposite-leaved golden-saxifrage *Chrysosplenium oppositifolium* and wild angelica *Angelica sylvestris* occur.

The site also supports a population of the rare yellow star-of-Bethlehem *Gagea lutea*; the only known site in the county.

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The site also supports a population of the rare yellow star-of-Bethlehem *Gagea lutea*; the only known site in the county.

1b. Non-statutory Site Citations

SITE No: SO74/30

SITE NAME	BENSTOKEN COPPICE
NATIONAL GRID REFERENCE	SO764499
LINEAR SITE LIMITS (if appropriate)	N/A
DATE OF LISTING	17.01.2007
DISTRICT COUNCIL (s)	Malvern Hills District Council
PARISH	Leigh
TOTAL AREA	2.462 ha
LENGTH IF LINEAR	N/A
SWS HABITAT	Broadleaved woodland
NATIONAL BAP HABITATS	Broadleaved, mixed and yew woodland
OTHER HABITATS OF IMPORTANCE	Flowing water
NATIONAL BAP SPECIES	No information
OTHER SPECIES OF IMPORTANCE	Thin-spiked wood-sedge

GENERAL DESCRIPTION

A small wood beneath the Malvern Hills just north of Malvern. Historical management is of ash and alder coppice. Watercourses flow along the east and west boundaries and through the north of the wood. Electricity cables run above the wood and the canopy and shrub layers are kept clear beneath this.

Habitat description: The wood shows characteristics of both W7 *Fraxinus excelsior-Alnus glutinosa-Lysimachia nemorum* woodland and W8 *Fraxinus excelsior-Acer campestre-Mercurialis perennis* woodland. The community appears to be in transition from the former to the latter, possibly due to a drop in the water-table.

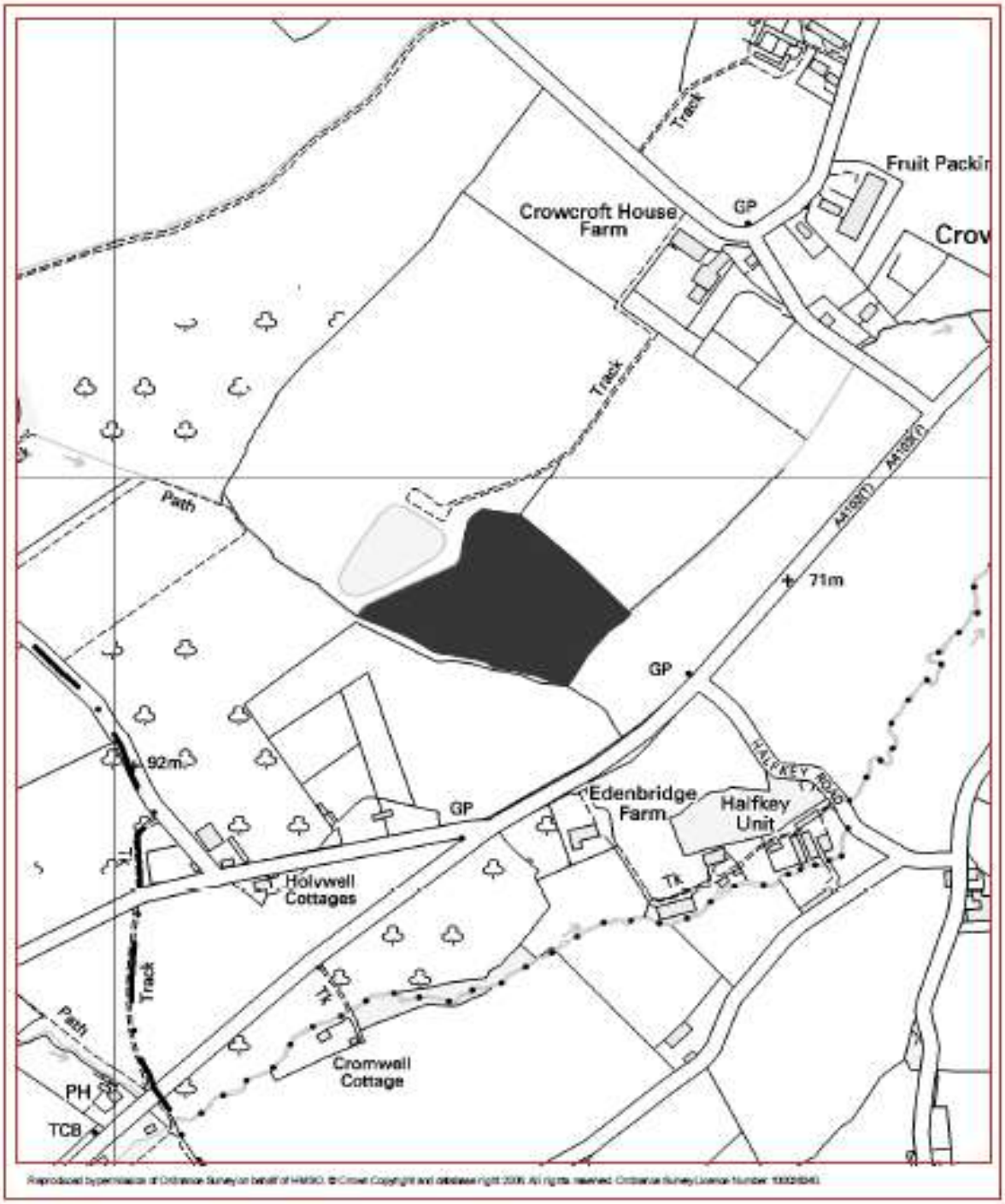
The canopy is of stored alder and ash coppice with few other species – though two veteran wych elm were recorded. The field-layer includes species of damp or dry W8 woodland but also species of wet W8 or W7 woodlands; these include broad buckler-fern, redcurrant, marsh bedstraw, thin-spiked wood-sedge and soft rush. Growth of bramble is particularly dense in the east of the wood. Fallen tree limbs are occasional, standing dead wood rare.

The brook flowing through the wood is canalised with no meanders or shallow muddy margins.

Benstoken Coppice

Do not scale from map. For accurate plan refer to GIS.

Scale 1:5000



SITE No: SO75/47

SITE NAME	THE ASHES
NATIONAL GRID REFERENCE	SO787522
LINEAR SITE LIMITS (if appropriate)	N/A
DATE OF LISTING	28.01.2007
DISTRICT COUNCIL (s)	Malvern Hills District Council
PARISH	Bransford, Leigh
TOTAL AREA	3.446 ha
LENGTH IF LINEAR	N/A
SWS HABITAT	Broadleaved woodland
NATIONAL BAP HABITATS	Broadleaved, mixed and yew woodland
OTHER HABITATS OF IMPORTANCE	
NATIONAL BAP SPECIES	No information
OTHER SPECIES OF IMPORTANCE	

GENERAL DESCRIPTION

A low-lying though dry Semi-Natural Ancient Woodland site – contrary to the indication of the name, dominated by oak. The Leigh/Bransford parish boundary runs through the site.

Habitat description: The majority of the wood is heavily shaded by a dense oak canopy but in the north-east of the site this is replaced by a stand of tall coppice small-leaved lime – probably coppiced in the early 1980s; wild service and ash are also locally dominant. Some of the hazel, which dominates the shrub-layer, has also been coppiced quite recently and possibly at the same time as the small-leaved lime. More unusual species of the shrub-layer here are yew, crab apple and spindle; sycamore is also recorded. This is a W8 *Fraxinus excelsior-Acer campestre-Mercurialis perennis* woodland, with the W8d *Hedera helix* sub-community particularly frequent due to the dense shade. Where the canopy opens up a little, a good diversity of woodland herbs can be found, such as primrose, enchanter's nightshade and wood sedge. At the highest point of the wood there is a transition to W10 *Quercus robur-Pteridium aquilinum-Rubus fruticosus* woodland with species such as broad buckler-fern and red campion.

Localised patches of nettle have developed around piles of decomposing vegetation.

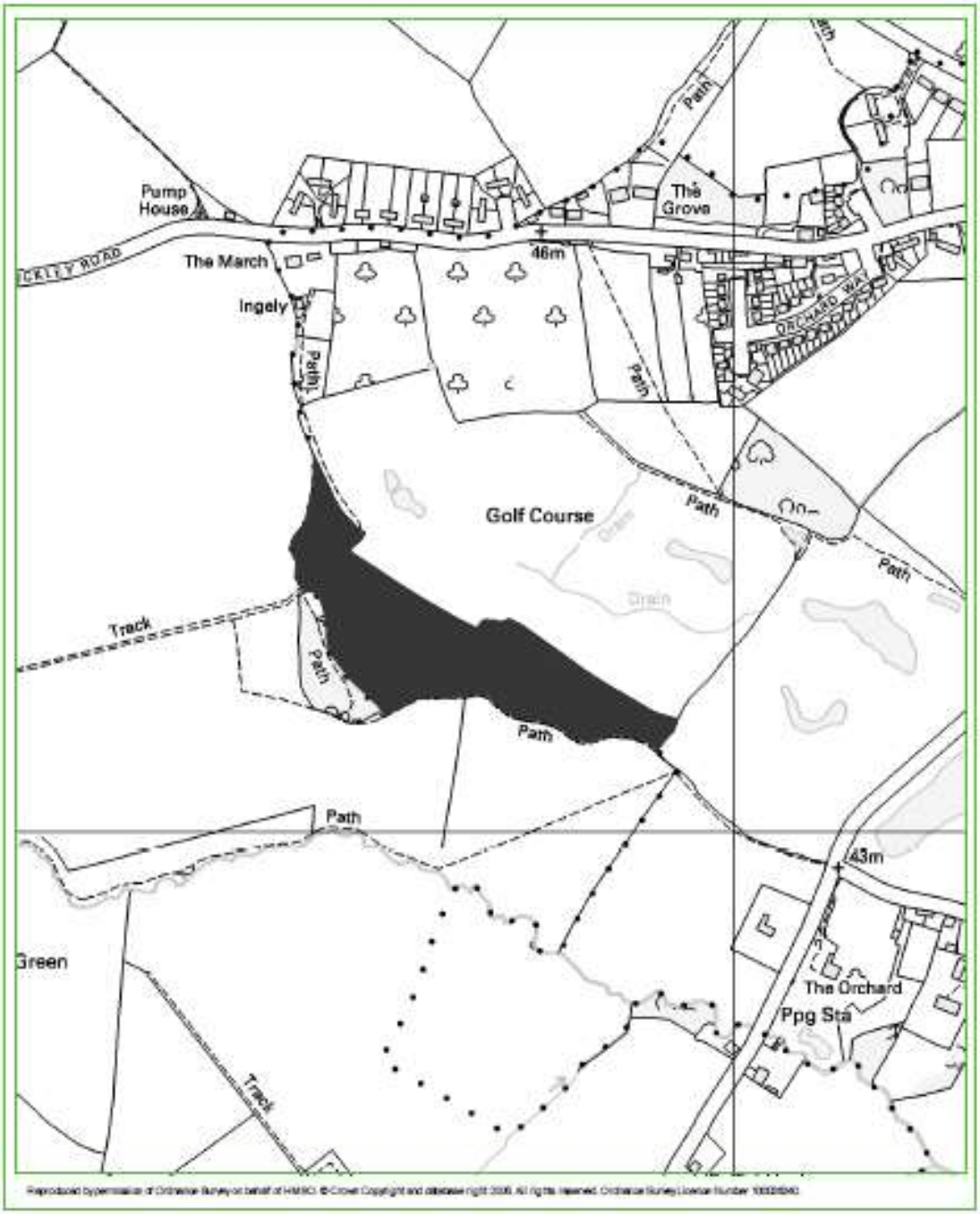
A dried up pond lies by the north boundary of the site; this does not support a significant wetland vegetation but grey willow and a veteran pedunculate oak stand adjacent.

A public footpath runs lengthwise through the wood and a few small tracks link into this.

The Ashes

Do not scale from map. For accurate plan refer to GIS.

Scale 1:5000



SITE No: SO75/49

SITE NAME	NORTH WOOD
NATIONAL GRID REFERENCE	SO793502
LINEAR SITE LIMITS (if	N/A
DATE OF LISTING	14.11.2003
DISTRICT COUNCIL (s)	Malvern Hills District Council
PARISH	Bransford C.P.
TOTAL AREA	16.00Ha
LENGTH IF LINEAR	N/A
SWS HABITAT	Broadleaved Woodland
NATIONAL BAP HABITATS	Broadleaved and yew woodland – NVC: W8a/W8f
OTHER HABITATS OF IMPORTANCE	Damp rides – pendulous sedge; grass rides – MG5 grassland
NATIONAL BAP SPECIES	Black poplar
OTHER SPECIES OF IMPORTANCE	Wild service, spurge laurel, tutsan, goldilocks buttercup

GENERAL DESCRIPTION

A rectangular shaped block of mixed broadleaf and coniferous (mostly plantation) woodland on an ancient woodland site, located near to the village of Leigh Sinton. The site is aligned along a north west-south-east axis, with a minor road along its western boundary.

At 48 m O.D., the middle of the wood is the highest point with a gentle slope down to a stream on the eastern margin. Soils are clay-loams and stagnogleys, over an underlying geology of Triassic Elderfield mudstones with skerry formations.

HABITATS/VEGETATION DESCRIPTION:- The eastern edge of the wood, following the Carey's Brook corridor, is still a relatively undisturbed fragment of semi-natural, high forest canopy – a mix of oak with ash and some field maple, with a shrub layer and ground flora conforming to a National Vegetation Classification (NVC) type: W8a/W8f – dog's mercury, bluebell, wild ramsons. The remaining 80% of the wood is 20th/C (late 1940s) plantation, with canopy dominated by even-aged sessile oak, but with coniferised compartments. The shrub layer is sparse throughout the planted section, with a fairly uniform ground flora, often dominated by bramble. However, the eastern side of the wood shows generally damper conditions with areas along ride edges and under canopy dominated invasively by pendulous sedge, with some ferns and mosses. Throughout the planted canopy section, ground flora distribution is difficult to assess – mostly similar to W8 ash wood flora, but on the highest part of the wood where bramble takes over, there are signs of transitions to W10 oak/bramble/bracken vegetation.

Carey's brook itself is an interesting and natural watercourse displaying pool/riffle sequences, undercut banks and meanders, shingle deposits and woody debris dams which are valuable features for aquatic invertebrates and other riparian wildlife.

FLORA/FAUNA:- The best ground flora is to be found along the stream corridor, where it is a mix of dog's mercury, bluebell, ramsons, wood anemone and yellow archangel. Here too, the shrub layer/canopy is most semi-natural – a hazel understorey and mature specimens of ash, sessile oak, field maple and wych elm in the canopy.

Elsewhere, off the rides, botanical interest is very localised. Only around the wood's edges is there evidence of its ancient woodland origins – for example, a few individual specimens of wild service and black poplar along the boundary ditches; also local patches of goldilocks buttercup and isolated plants of wood spurge, spurge laurel and tutsan.

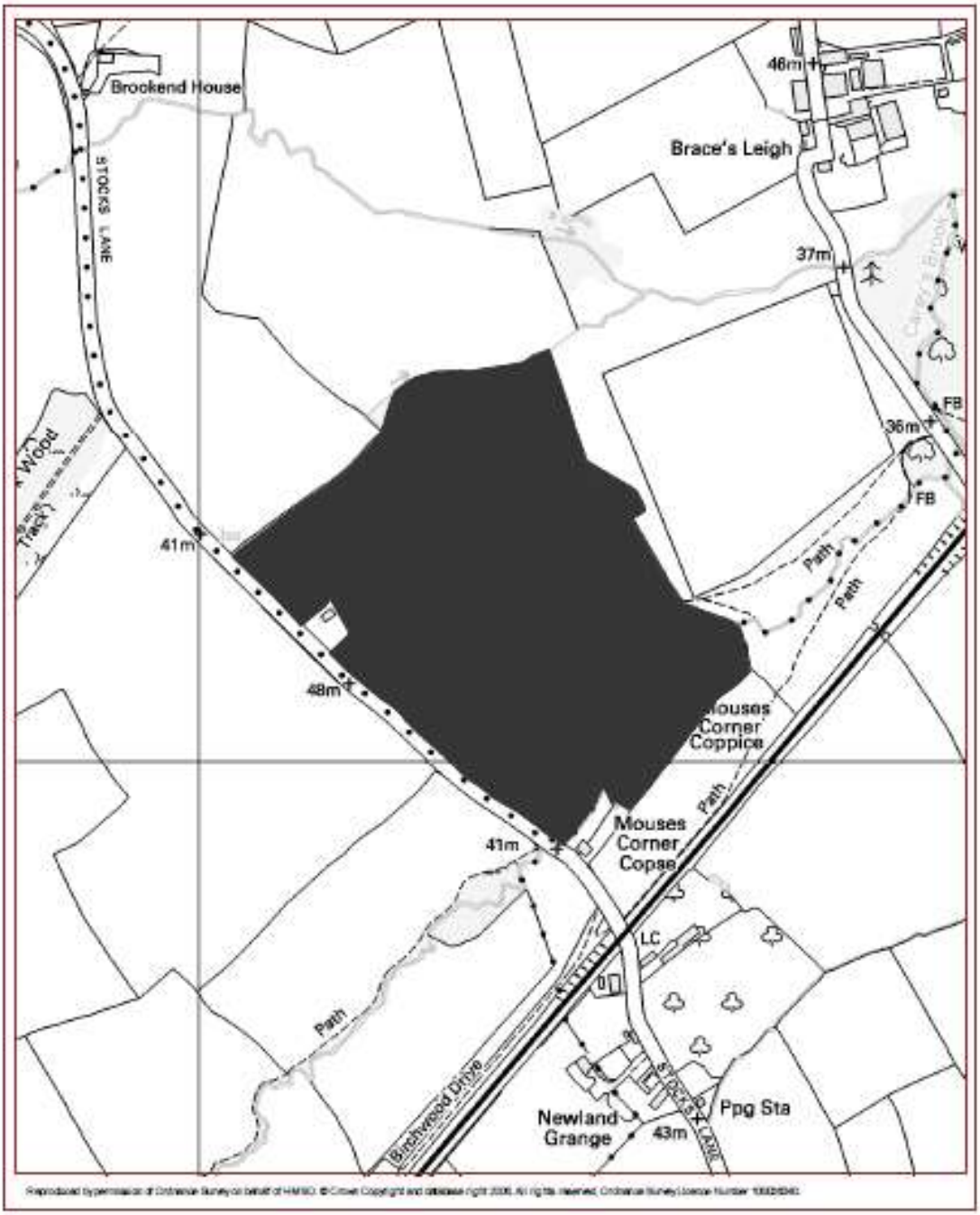
Past surveys of North Wood have recorded large-leaved lime (*Tilia platyphillos*), a nationally scarce tree species, and southern woodrush (*Luzula forsteri*), scarce in Worcestershire.

There is no detailed survey information for fauna.

North Wood

Do not scale from map. For accurate plan refer to GIS.

Scale 1:5000



SITE No: SO75/50

SITE NAME	THE CUCKOO PIT SPECIAL WILDLIFE SITE
NATIONAL GRID REFERENCE	SO794529
LINEAR SITE LIMITS (if appropriate)	N/A
DATE OF LISTING	28.09.1990 Listing Renewal Date: 05.10.2006
DISTRICT COUNCIL (s)	Malvern Hills District Council
PARISH	Leigh
TOTAL AREA	1.5 Ha
LENGTH IF LINEAR	N/A
SWS HABITAT	Marshland; Marshy grassland; Broadleaved woodland
NATIONAL BAP HABITATS	Fen/floodplain grazing marsh (NVC types: MG10, W1, remnant W5(?))
OTHER HABITATS OF IMPORTANCE	Broadleaved woodland. Stream dingle. Standing water pools
NATIONAL BAP SPECIES	None known
OTHER SPECIES OF IMPORTANCE	Wood club-rush, hemlock water-dropwort, ragged robin, marsh marigold, white-legged damselfly, club-tailed dragonfly, sedge warbler. [scarce micro-moths recorded]

GENERAL DESCRIPTION

Located just north of Bransford village, this feature occupies a former incised meander arm of the River Teme. It is now isolated from the river's floodplain by the embanked Worcester to Bromyard disused railway track. (The track bed and embankments are in turn part of a linear Wildlife Site – Leigh Disused Railway (SO75/34))

HABITATS/VEGETATION DESCRIPTION:- The site consists of a basin-shaped marshy hollow, bounded to the north by the scrubby tree-lined railway embankment, and to the south by steeply sloping ash-oak-sycamore woodlands. A small stream dingle descends through the woodland from the south, and feeds some of the marsh and marshy pools. Probably the most interesting vegetational feature is a stand of tall-herb fen with scattered sallow scrub, occupying approx. 0.2 Ha, and dominated by wood club-rush, with associated meadowsweet, hemlock water-dropwort, marsh marigold and marsh horsetail – an uncommon vegetation type in the county. The remainder is more of a marshy grassland with Yorkshire fog-grass, hard rush, silverweed and creeping buttercup. Vegetational interest in the woodland is mainly in the stream dingle and steeper topography – locally a damp ash-wood vegetation: hazel coppice/hawthorn understorey with dog's mercury, bluebell, wild ramsons and ferns. The canopy has become invaded by sycamore and parts of the wood are open to grazing stock

FLORA/FAUNA:-

Noteworthy plants in the marsh and fen include wood club-rush, ragged robin, hemlock water-dropwort and tufted forget-me-not

Flora in the woodland dingle includes hard shield-fern.

Invertebrate interest is still high. The site was comprehensively surveyed in 1990 when 72 species of micro-moth, 5 species of macro-moth, 69 species of diptera, 15 species of butterfly and 12 species of odonata (dragonflies and damselflies) were recorded. Club-tailed dragonfly and white-legged damselfly are both locally notable species. High numbers of small snails occur in the wood club-rush stands and there could be scope for further study of the mollusc fauna.

The Cuckoopit

Do not scale from map. For accurate plan refer to GIS

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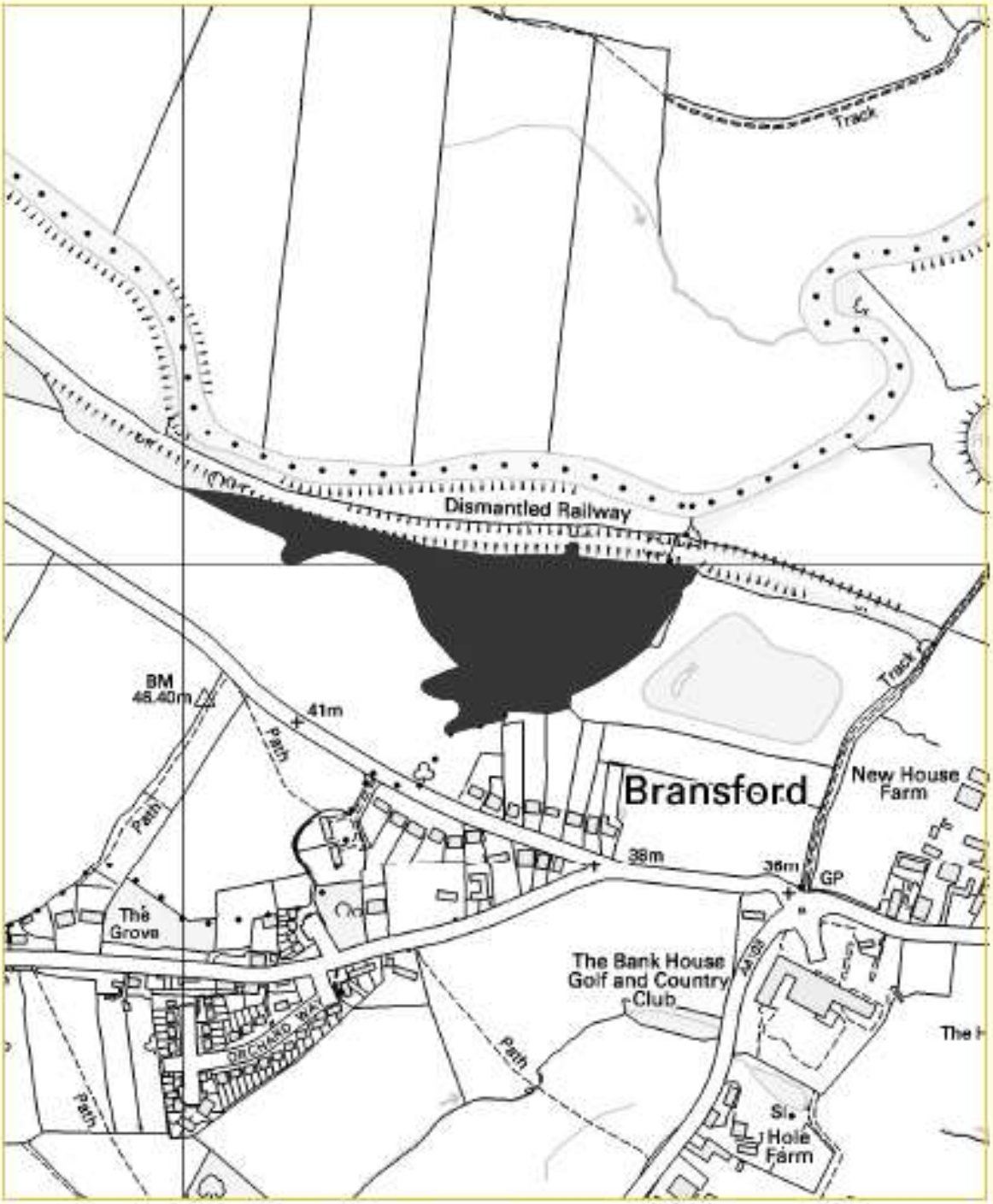

SITE No: SO75/58

SITE NAME	MARSH COTTAGE MEADOWS
NATIONAL GRID REFERENCE	SO789525
LINEAR SITE LIMITS (if appropriate)	N/A
DATE OF LISTING	01.05.2002
DISTRICT COUNCIL (s)	Malvern Hills District Council
PARISH	Bransford
TOTAL AREA	2.25Ha
LENGTH IF LINEAR	N/A
SWS HABITAT	Grassland
NATIONAL BAP HABITATS	Lowland Neutral Grassland: NVC - MG5b
OTHER HABITATS OF IMPORTANCE	Species-rich boundary hedges; open water – standing (pond); semi-improved grassland (MG6-7); damp grassland (MG5a/10)
NATIONAL BAP SPECIES	No information
OTHER SPECIES OF IMPORTANCE	Common spotted orchid, meadowsweet, cowslip, adder's-tongue fern, yellow rattle, quaking grass, ox-eye daisy, lady's bedstraw, pepper saxifrage

GENERAL DESCRIPTION

The site comprises 2 grazed meadows in the Leigh Brook valley on the edge of Leigh village. The southernmost is on a gentle south facing slope and the northern half is on level ground. The soils are neutral to calcareous, mostly free draining (though with localised surface flushing) over a geology of lower liassic clays.

HABITATS/VEGETATION DESCRIPTION:- Grassland: sward vegetation across most of the two fields conforms to a high quality species-rich National Vegetation Classification (NVC) community of MG5c type – common knapweed/crested dog's-tail with lady's bedstraw. However, there is some local variation in condition: towards the north there is evidence of a transition towards a semi-improved sward with a local abundance of perennial ryegrass and red fescue with fewer broadleaved herbs; at the southern end near adjoining woodland, the grassland switches to a damper flora with some sharp-flowered rush, meadowsweet and marsh thistle (Transition to a Yorkshire fog/soft rush type vegetation – MG5a-MG10); some woodland ground flora also occurs here – e.g goldilocks buttercup.

Further features adding habitat diversity to the site are a small pond with water crowfoots and water starworts, some mature oaks in the boundaries (and one mid-field) and species-rich hedgerows

FLORA/FAUNA:- Less common species occurring throughout include meadowsweet, adder's-tongue fern and spring sedge, and fairly prolific colonies of common-spotted orchid are reported in some years.

No detailed records for fauna, though the summer meadow is rich in butterflies, such as marbled white

Marsh Cottage Meadows

Do not scale from map. For accurate plan refer to GIS.

Scale 1:5000

SITE No: SO85/11

SITE NAME	**CAREY'S BROOK**
NATIONAL GRID REFERENCE	SO831 505
LINEAR SITE LIMITS (if appropriate)	West SO761 493, East SO849 506
DATE OF LISTING	28.09.1990
DISTRICT COUNCIL (s)	Malvern Hills
PARISH	Powick
TOTAL AREA	N/A
LENGTH IF LINEAR	12.5km
SWS HABITAT	Open water – flowing
NATIONAL BAP HABITATS	Rivers and streams
OTHER HABITATS OF IMPORTANCE	N/A
NATIONAL BAP SPECIES	Otter
OTHER SPECIES OF IMPORTANCE	No information

GENERAL DESCRIPTION

The Carey's Brook is a small tributary of the River Severn draining part of the west Worcestershire plain between Worcester and Great Malvern. Narrow and shallow throughout its length the brook has a variable bed and bank structure and does not appear to have been much modified in the past. Aquatic vegetation tends to be limited, though some stretches of the brook are more diverse and much of corridor tends to be tree lined. In combination with small areas of contiguous semi-natural vegetation this brook forms a valuable wildlife corridor through the landscape.

Information on associated species of interest is limited but otters are likely to be present.

Carey's Brook

Do not scale from map. For accurate plan refer to GIS.

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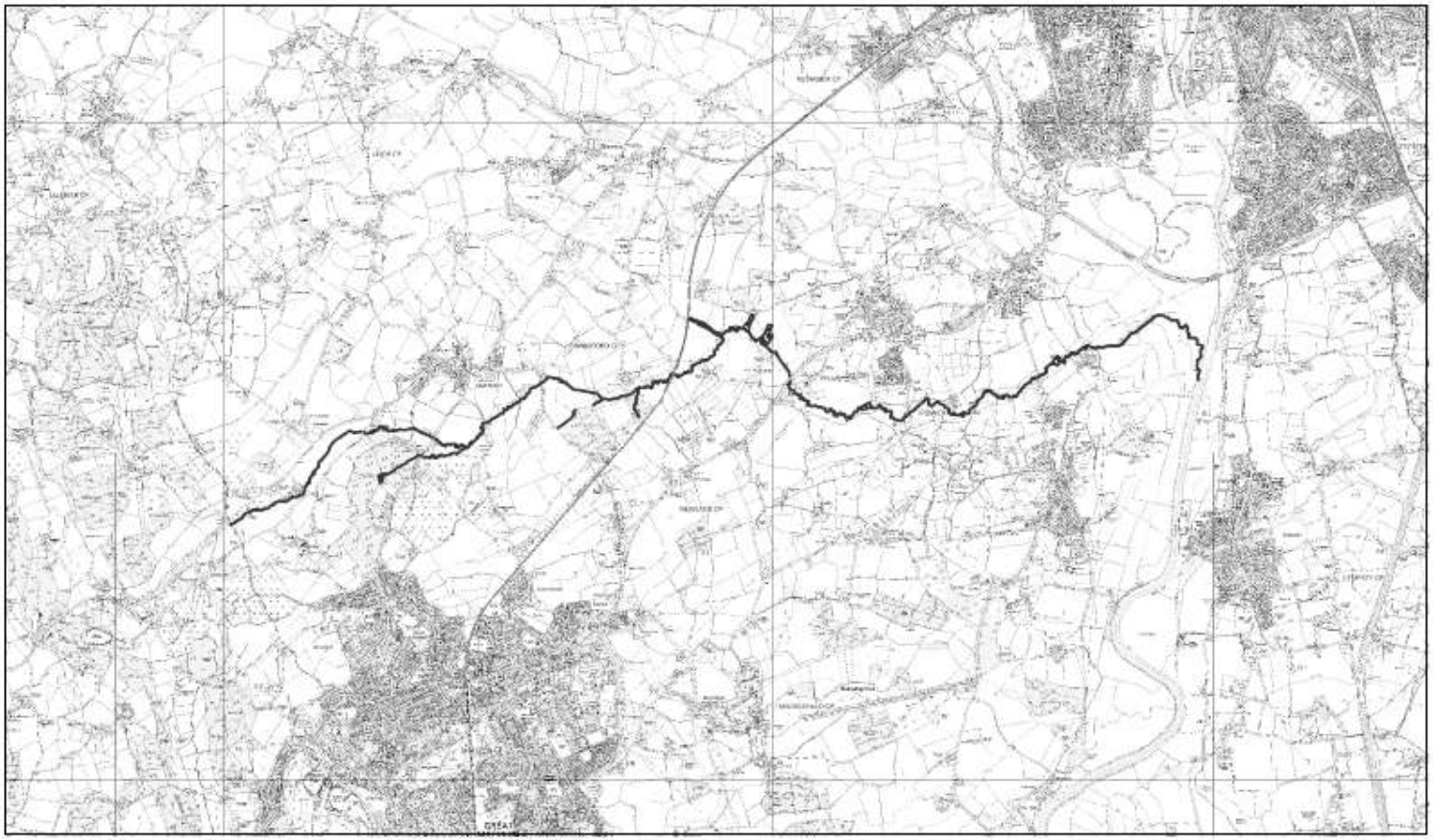

SITE NAME	SANDLIN HOUSE ORCHARD
NATIONAL GRID REFERENCE	SO761514
LINEAR SITE LIMITS (if appropriate)	N/A
DATE OF LISTING	01.02.2011
DISTRICT COUNCIL (s)	Malvern Hills
PARISH	Leigh
TOTAL AREA	1.02 Ha
LENGTH IF LINEAR	N/A
SWS HABITAT	Orchard.
NATIONAL BAP HABITATS	Traditional Orchard
OTHER HABITATS OF IMPORTANCE	Grassland (semi-improved); boundary hedgerows; open water
NATIONAL BAP SPECIES	None known
OTHER SPECIES OF IMPORTANCE	Chicken of the woods fungus. Mistletoe

GENERAL DESCRIPTION

A small, predominantly cherry, orchard, but also some dessert apple trees, set in permanent pasture bounded by hedgerows, and a minor road along the southern edge. Approximately 40 trees, including a number of mature and veteran cherries – though several are dead, or senescent with dead wood in canopy. The understorey is a semi-improved grass sward (but unimproved along a strip nearest the road) which is grazed by sheep.

Habitat Vegetation and Feature Descriptions

The older veteran trees have flaking bark, crevices, hollow trunks and branches, sap runs and fungal fruiting bodies, and support a diverse epiphytic flora of lichens (over 5 species) and mosses, at least 8 – which may need further investigation; also mistletoe which occupies about 10% of the tree canopy. The tree cavities are providing actual and potential nest sites for hole-nesting birds such as woodpeckers.

The relict strip of unimproved , or less improved – turf, immediately parallel to road supports, birdsfoot trefoil, lady's bedstraw, meadow buttercup, bush vetch, crested dogstail, burnet saxifrage and common vetch. There is a small spring in the far south-east corner of the site

Flora and Fauna

Lichens: only species which could be positively identified was *Ramalina fastigiata*

Evidence of breeding birds (2010):- blackbird nesting in cavity. Cuckoo present and calling

Invertebrates (2010):- a colony of the jet ant – *Lasius fuliginosus*, has established itself in the rotting heartwood of one of the veteran cherry trees

Mammals (2010):- red fox seen; mole hill activity

Sandlin House Orchard

Do not scale from map. For accurate plan refer to GIS

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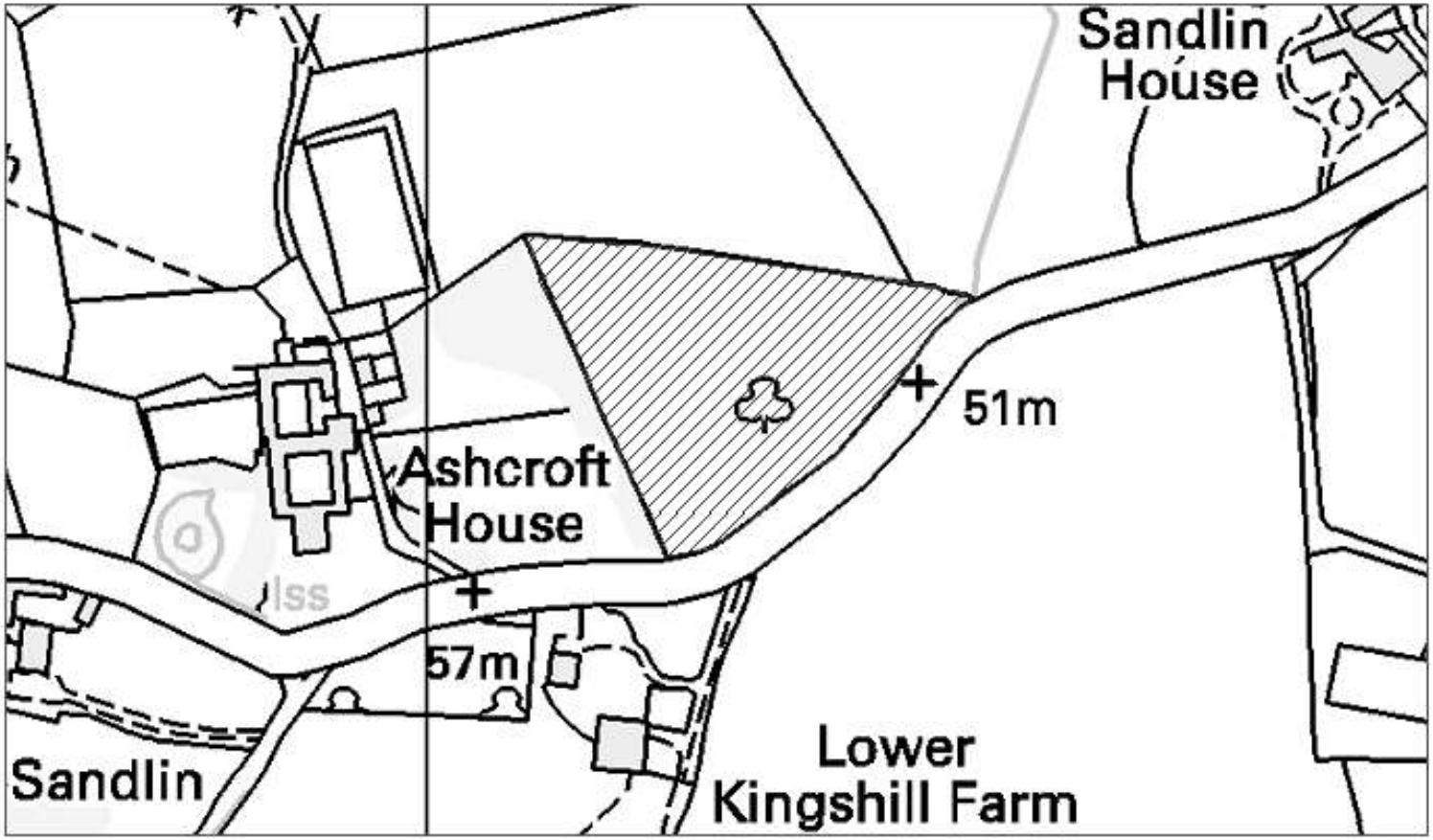

SITE No: SO75/34

SITE NAME	LEIGH DISUSED RAILWAY
NATIONAL GRID REFERENCE	SO751543
LINEAR SITE LIMITS (if appropriate)	West: SO714536; East: SO808527
DATE OF LISTING	28.09.1990 [Listing Renewal Date: 10.01.2007]
DISTRICT COUNCIL (s)	Malvern Hills District Council
PARISH	Suckley
TOTAL AREA	26.61 Ha
LENGTH IF LINEAR	9.88 Km
SWS HABITAT	Grassland; Broadleaved woodland
NATIONAL BAP HABITATS	Unimproved lowland neutral grassland (NVC: MG5b, MG5c and transitions)
OTHER HABITATS OF IMPORTANCE	Scrub; hedgerows; bare ground; arable-edge
NATIONAL BAP SPECIES	No information available
OTHER SPECIES OF IMPORTANCE	Vervain, common toadflax, common restharrow, small toadflax, upright hedge parsley, hawkweed ostongue, hawkweed species, wild basil, aspen, goat willow, wild clematis, black spleenwort, rustyback fern, nettle-leaved bellflower

GENERAL DESCRIPTION A nearly 10Km length of disused railway line running from Bromsford in the east to Suckley and the Herefordshire border. The GWR Worcester to Bromyard branch line was closed in 1964. Since then, this linear site has undergone natural succession so that the site is now a combination of broadleaved woodland, scrub, open grassland and tall herb, or relict - e.g. under arable crop or running along hedge lines and boundaries of arable fields.

HABITATS/VEGETATION DESCRIPTION: The most interesting and botanically significant parts of the line are open grassland/tall herb sections eg at Suckley Station and around the Lulsley to Brockamin stretches. The rank grassland contains an unusual assemblage of semi-natural sward calcicoles, hedge base species, ephemeral trackside and track ballast flora – such as vervain, common toadflax, wild basil, hawkweeds and wild clematis. One sheep and rabbit grazed section has a tight grass sward with mosses and anthill flora resembling a dry acidic, National Vegetation Classification (NVC) U1/MG5c type vegetation. Woodland and scrub sections are generally of less interest, canopy scrub being often of blackthorn and too dense for any ground flora to develop, though they are good breeding habitat for scrub birds and often shelter big badger sett complexes. The site crosses or adjoins areas of semi-natural ancient woodland – such as broad dingle, hayley dingle and extensive woodland at Knightwick where there is a rock cutting. Generally these sections tend to be deeply shaded and with a poor trackbed ground flora. However there are some embanked sections with coppiced hazel, ash, sycamore and even small-leaved lime. Privet, spindle and wild clematis are common on limestone sections (NVC W8 ash woodland type), and occasionally the shade tolerant nettle-leaved bell flower occurs. Other habitats and features of interest along the trackway are the railway infrastructure – viaducts, old bridges, platforms. These are sometimes built of limestone or have lime mortar and are colonised by a number of spleenwort ferns – rare elsewhere in Worcestershire. Finally, the trackbed borders arable fields and though partly obscured by ploughing, a scarce annual arable flora occurs. Examples of species are corn spurrey and the local small toadflax. Although apparently neglected and derelict (the site is not open to public access along the route), this wildlife corridor is very diverse, crossing as it does a range of soils, geology and landscape types and having a varied topography of cuttings, raised embankments and old station track-beds. It forms a valuable and distinctive linking habitat.

FLORA/FAUNA: Worcestershire rare and notable species recorded: Vervain (*Verbena officinalis*), Wood vetch (*Vicia sylvatica*), Small toadflax (*Chaenorhinum minus*), black spleenwort (*Asplenium adiantum-nigrum*), Rustyback (*Ceterarch officinarum*). There is a 1980 record of the nationally scarce narrow-leaved bitter-cress (*Cardamine Impatiens*) from limestones in the Knightwick Station area.

Fauna is not well documented. Among birds sighted in 2006 were green woodpecker, common whitethroat, yellowhammer; and butterfly species included clouded yellow, painted lady, common blue, holly blue, gatekeeper and small skipper

Leigh Disused Railway

Do not scale from map. For accurate plan refer to GIS.

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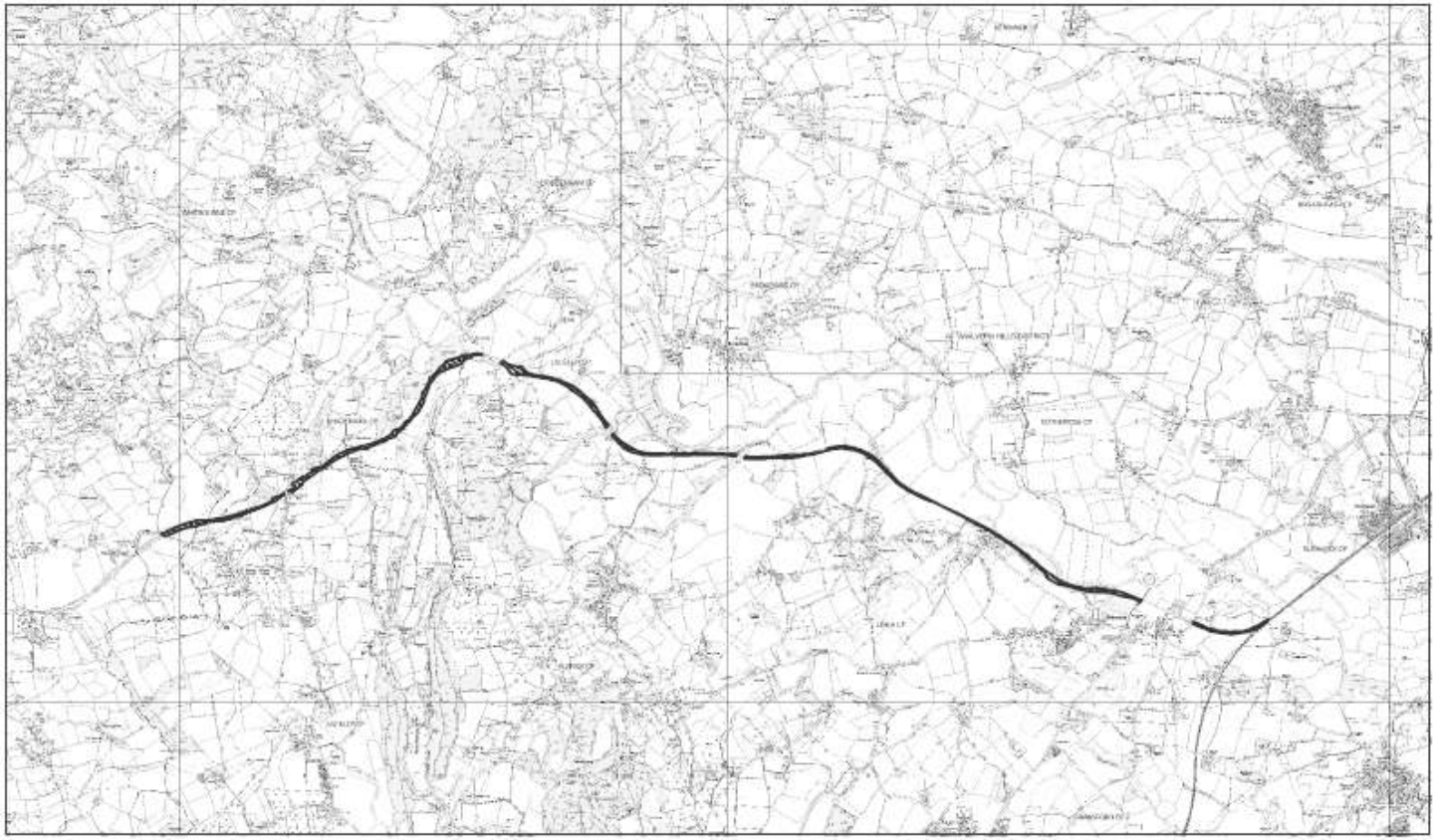


SITE No: SO75/29

SITE NAME	LEIGH BROOK
NATIONAL GRID REFERENCE	SO746 516
LINEAR SITE LIMITS (if appropriate)	West SO734 505 East SO784 536
DATE OF LISTING	28.09.1990
DISTRICT COUNCIL (s)	Malvern Hills
PARISH	Leigh
TOTAL AREA	N/A
LENGTH IF LINEAR	9.5km
SWS HABITAT	Open water – flowing
NATIONAL BAP HABITATS	Rivers and streams
OTHER HABITATS OF IMPORTANCE	N/A
NATIONAL BAP SPECIES	Otter
OTHER SPECIES OF IMPORTANCE	Dipper, grey wagtail, kingfisher

GENERAL DESCRIPTION

The Leigh brook is a significant tributary of the River Teme and drains a large area to the north west of the Malvern Hills. It flows west to east across the county cutting through the silurian limestone ridge north of Malvern before entering the Teme at Leigh. The brook shows a full range of natural features and does not appear to have been much modified for most of its length. There are however one or two impoundments behind small weirs especially in the lower reaches. Substrates vary from stony or gravelly deposits through to significant silt beds in slower sections.

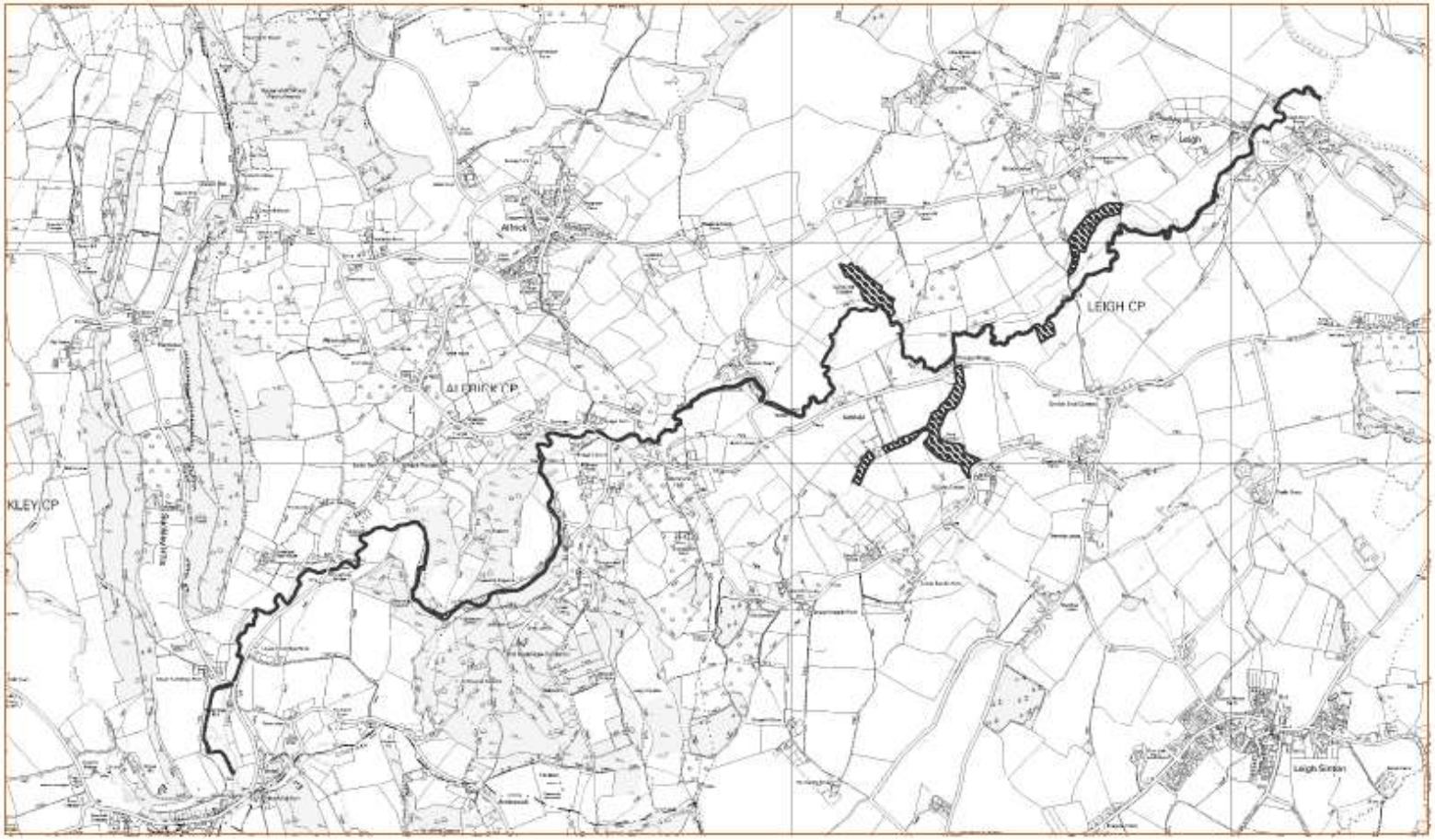
For the most part aquatic flora is rather limited although some stretches have significant water crowfoot beds. The brook is tree lined for much of its length and in places the bankside vegetation broadens out into quite wet woodland, adding to the value of the wildlife corridor.

The good water quality helps to ensure a healthy population of aquatic invertebrates and there are past records of dipper and grey wagtail breeding along the brook. Otters are also known to use the site.

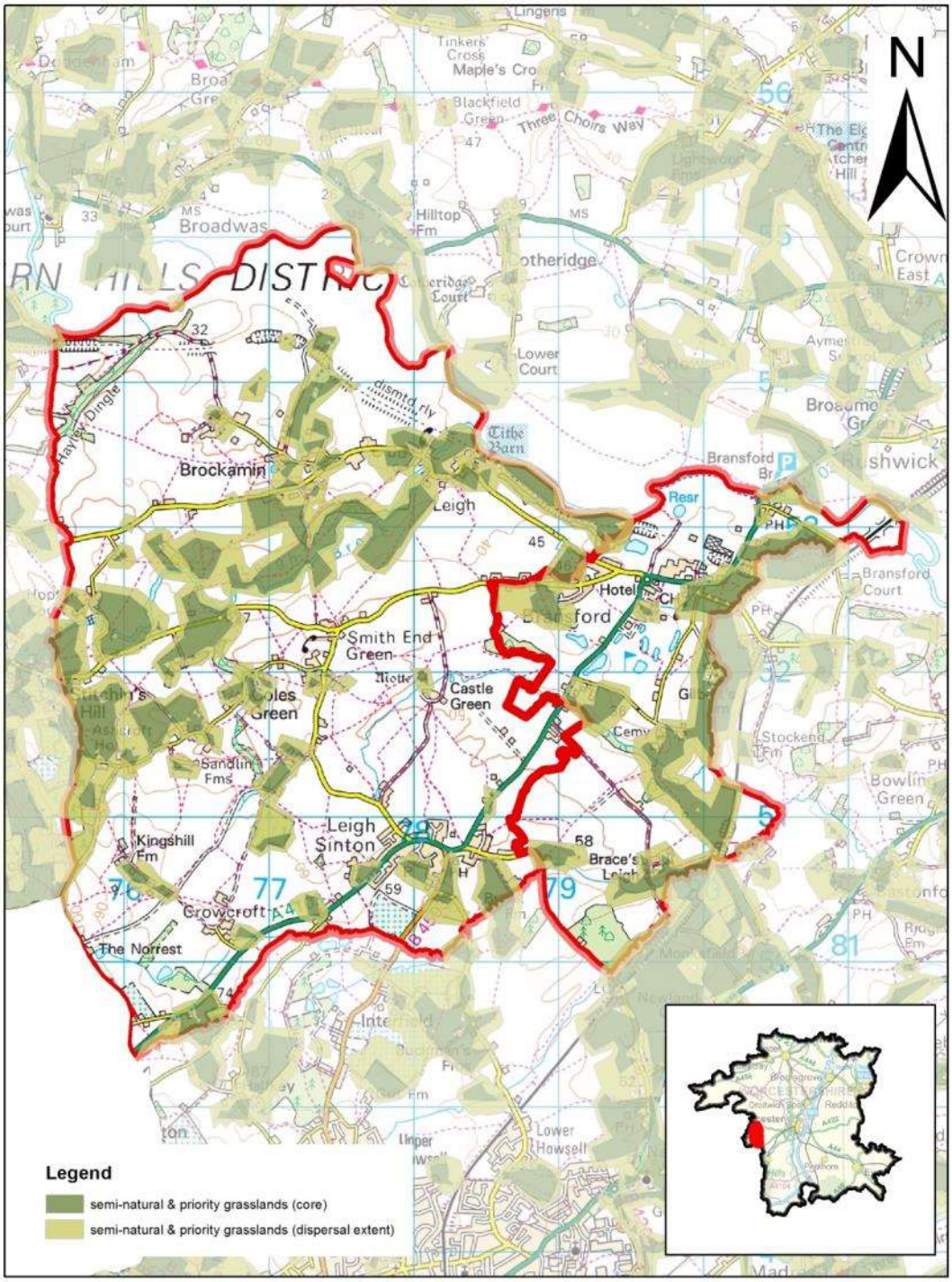
Leigh Brook

Do not scale from map. For accurate plan refer to GIS.

Scale 1:25000



2. Semi-natural Habitats and Habitat Networks



worcestershire county council

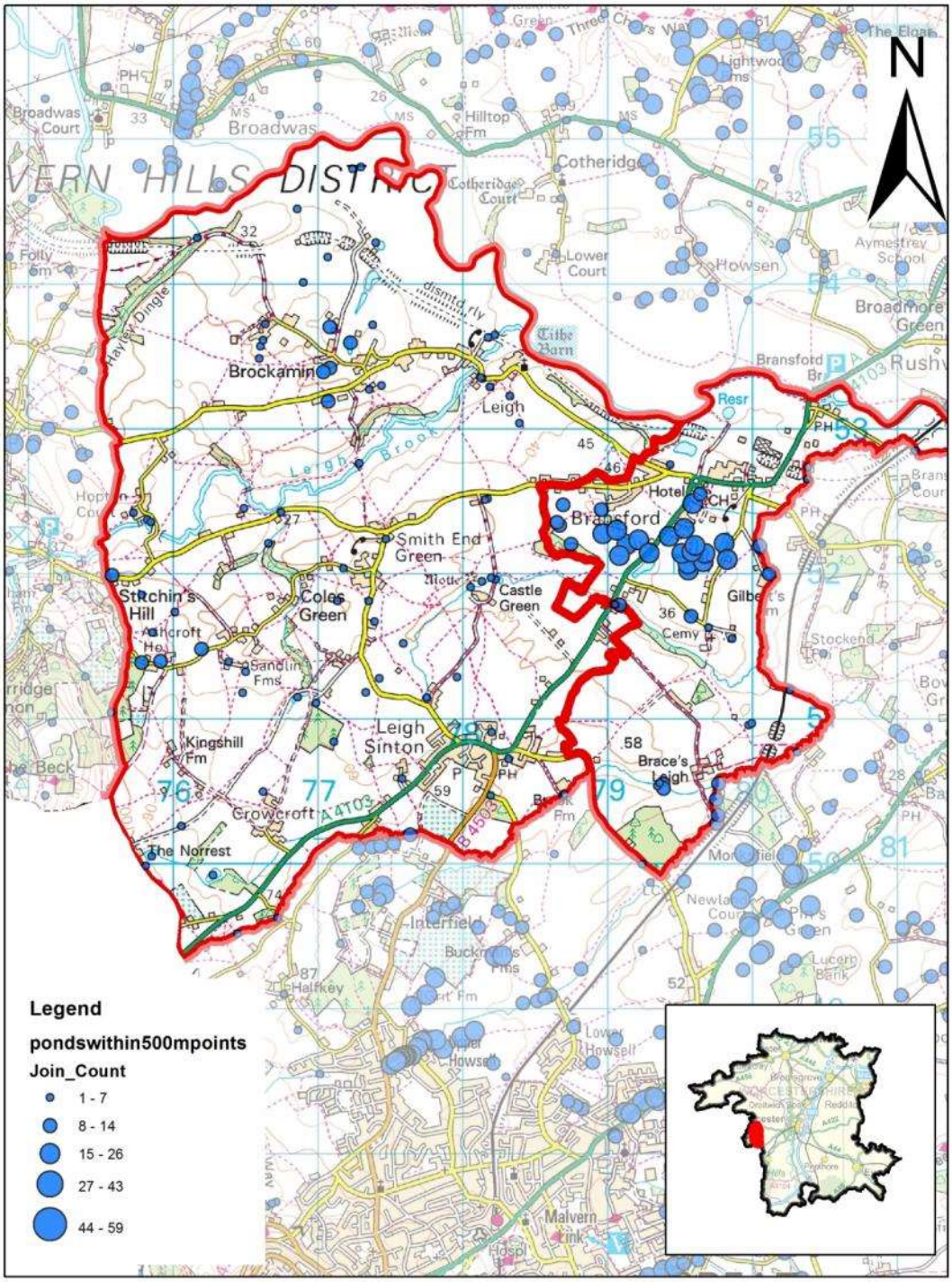
Scale: 1:35,600

0 125 250 500 750 1,000 1,250 1,500 1,750 2,000 2,250 2,500 Metres

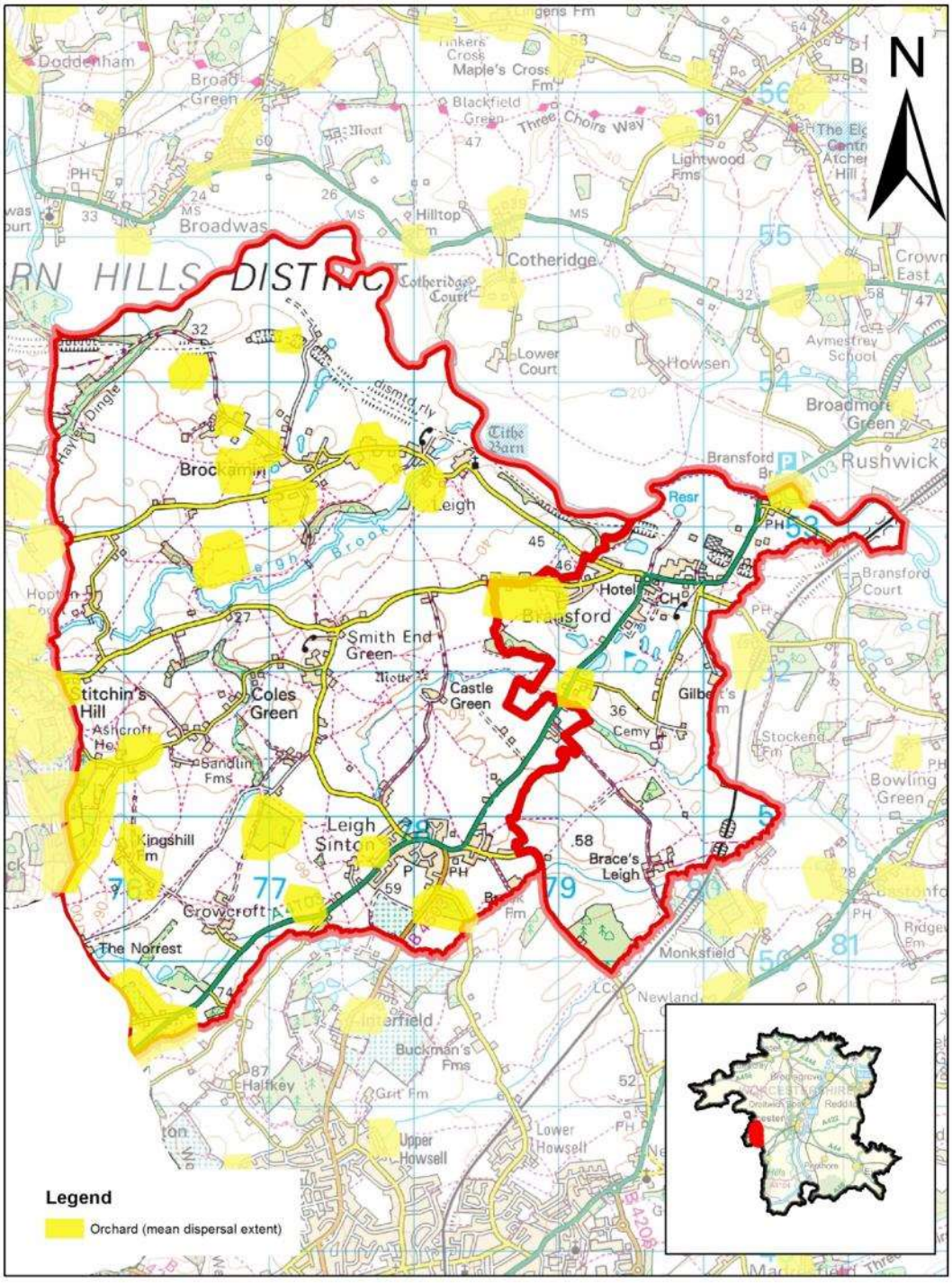
0 0.1 0.2 0.4 0.6 0.8 1 1.2 1.4 Miles

County Hall, Spetchley Road, Worcester WR5 2NP

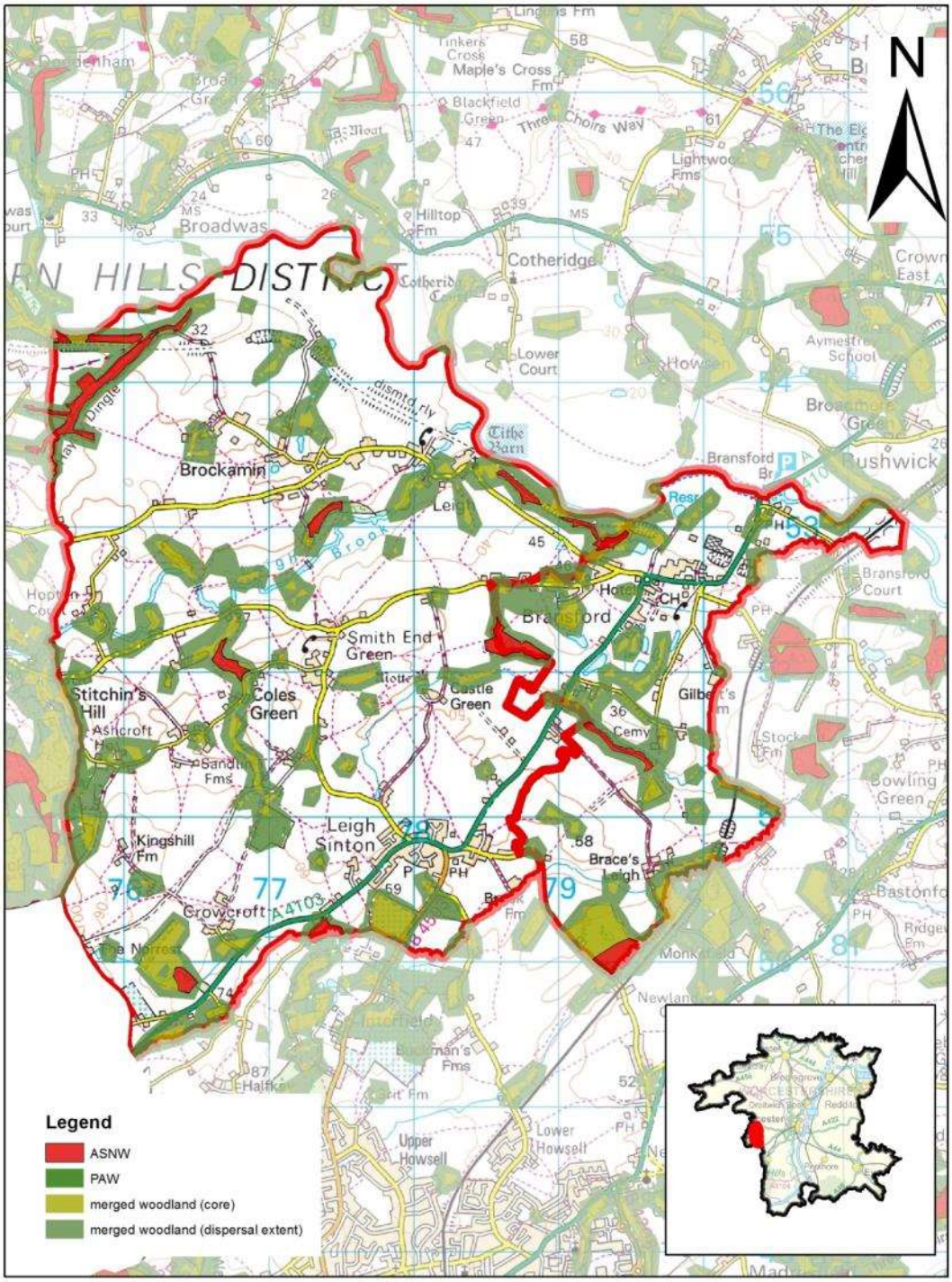
The Parishes of Leigh and Bransford showing semi-natural and priority grassland habitat network



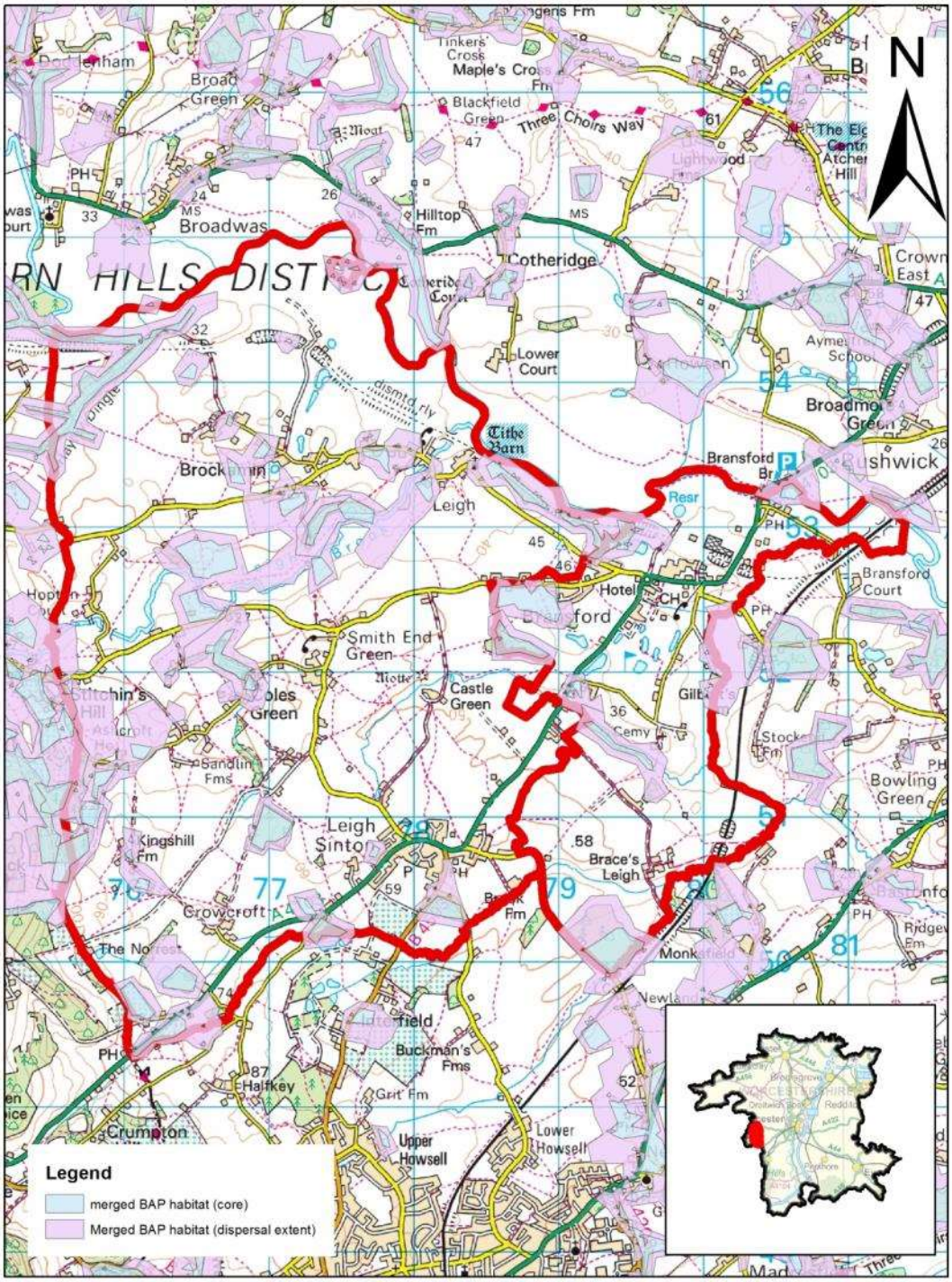
worcestershire county council	Scale: 1:35,600	0 125250 500 750 1,000 1,250 1,500 1,750 2,000 2,250 2,500 Metres 0 0.1 0.2 0.4 0.6 0.8 1 1.2 1.4 Miles
County Hall, Spetchley Road, Worcester WR5 2NP	The Parishes of Leigh and Bransford showing pond density (cluster density of ponds of ponds found within 500m)	



worcestershire county council	Scale: 1:35,600	0 125250 500 750 1,000 1,250 1,500 1,750 2,000 2,250 2,500 Metres 0 0.1 0.2 0.4 0.6 0.8 1 1.2 1.4 Miles
County Hall, Spetchley Road, Worcester WR5 2NP	The Parishes of Leigh and Bransford showing Traditional Orchard network	

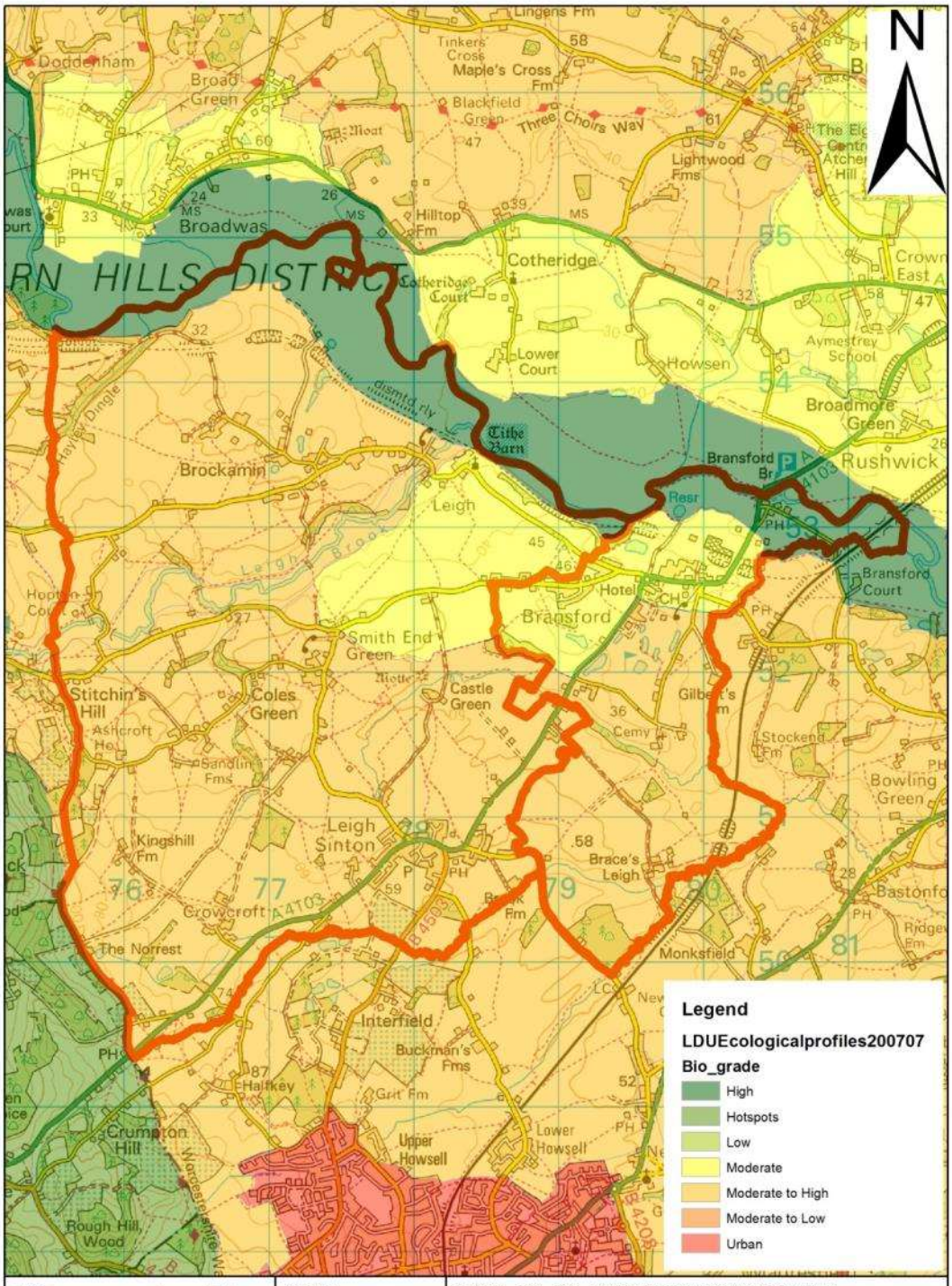


worcestershire county council	Scale: 1:35,600	0 125250 500 750 1,000 1,250 1,500 1,750 2,000 2,250 2,500 Metres 0 0.1 0.2 0.4 0.6 0.8 1 1.2 1.4 Miles	
County Hall, Spetchley Road, Worcester WR5 2NP	The Parishes of Leigh and Bransford showing Ancient Woodland, Plantation on Ancient Woodland and network of Merged Woodland habitats		



worcestershire county council	Scale: 1:35,600	0 125250 500 750 1,000 1,250 1,500 1,750 2,000 2,250 2,500 Metres 0 0.1 0.2 0.4 0.6 0.8 1 1.2 1.4 Miles
County Hall, Spetchley Road, Worcester WR5 2NP	The Parishes of Leigh and Bransford showing merged BAP habitat network	

3. Landscape Description Unit (LDU) level Ecological Grading

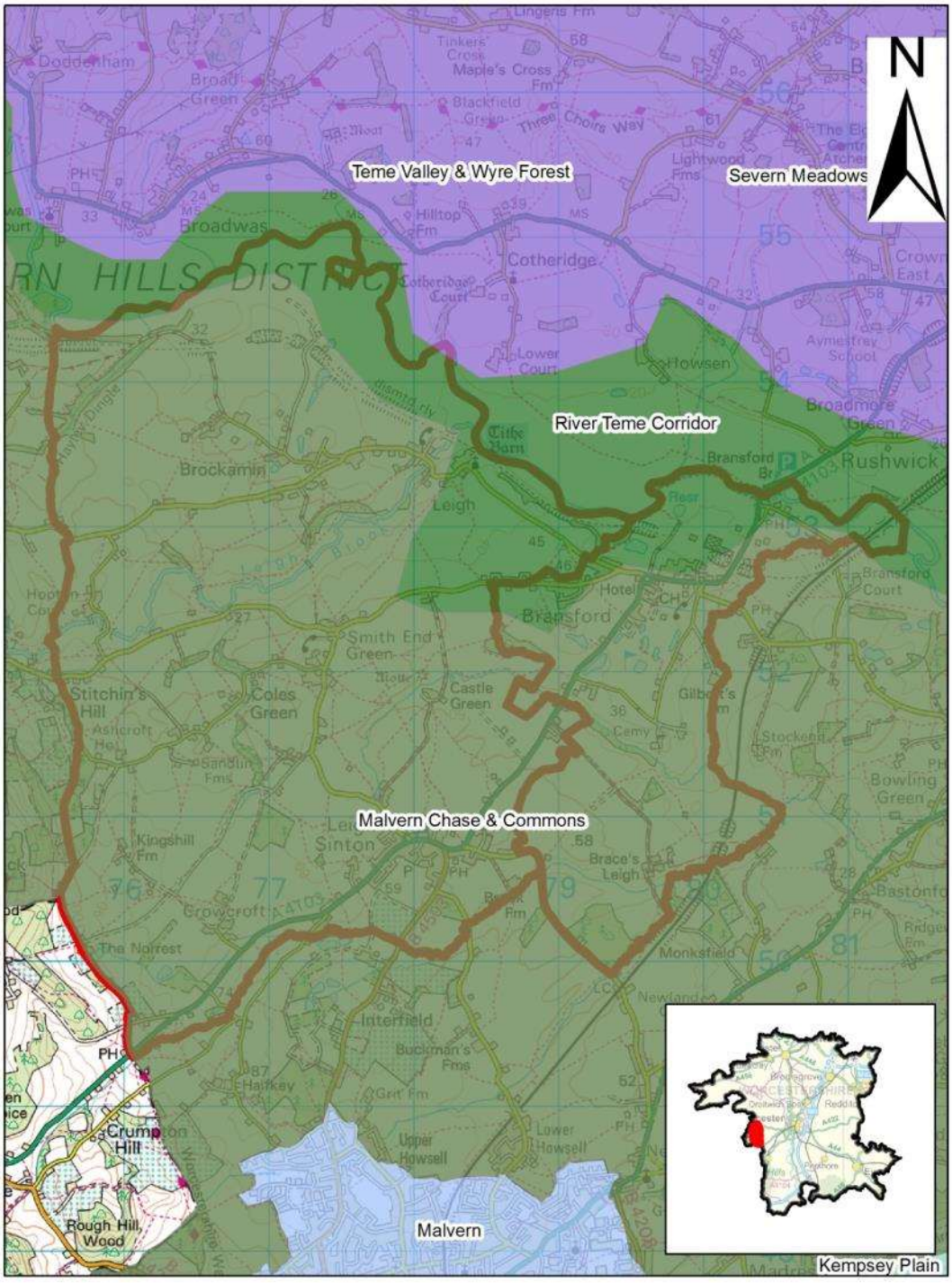


worcestershire county council

County Hall,
Spetchley Road,
Worcester
WR5 2NP

The Parishes of Leigh and Bransford showing Ecological Grades at LDU level

4. Green Infrastructure Environmental Character Area



worcestershire county council	Scale: 1:35,600	0 125250 500 750 1,000 1,250 1,500 1,750 2,000 2,250 2,500 Metres 0 0.1 0.2 0.4 0.6 0.8 1 1.2 1.4 Miles
County Hall, Spetchley Road, Worcester WR5 2NP	The Parishes of Leigh and Bransford showing Environmental Character Areas	

5. Protected Species Records

(contains sensitive information and is not for further circulation)

The species listed here represent records submitted to WBRC and NBN via professional consultants and volunteer enthusiasts and must be used with caution. Although they may have been validated by experts within the WBRC they represent a snapshot of time and only highlight where wildlife has been identified rather than any indication of likely distribution or frequency of a given species. As with all biological data, protected species records should be updated within a period of no more than 2 years in order to ensure decisions can be based on 'up to date' information.

The list included here contains species given legal protection under the Conservation of Habitats and Species Regulations (2010, as amended) as well as species recorded within Schedule 41 of the Natural Environment and Rural Communities Act (2006). Public authorities are required to demonstrate due consideration for the conservation (recognised as both protection, restoration and enhancement) of biodiversity (set out within Section 40 of the NERC Act 'biodiversity duty'). This consideration extends to species listed within S.41 of the Act.

ORDER	SCIENTIFIC NAME	COMMON NAME	LOCATION	DATE	COMMENTS
amphibian	Bufo bufo	Common Toad	Upper Sandlin	08/05/1995	2 Adult
amphibian	Rana temporaria	Common Frog	Upper Sandlin	08/05/1995	12 egg/ovum; 2 Adult
amphibian	Rana temporaria	Common Frog	Rockhill Covert, nr	14/08/2001	1 present
amphibian	Triturus cristatus	Great Crested Newt	Leigh Sinton	28/05/2012	photographed
amphibian	Triturus cristatus	Great Crested Newt		16/05/2014	7 adults; trapped
bird	Turdus philomelos	Song Thrush	Aileshurst Coppice	Jun-99	
bird	Alcedo atthis	Kingfisher	Aileshurst Coppice	26/03/2004	
bird	Cuculus canorus	Cuckoo	Hayley Broad Dingle & Redcliff	31/05/2006	
bird	Alcedo atthis	Kingfisher	Leigh Brook	17/01/2010	Sighting approx 1pm nr footbridge
bird	Cuculus canorus	Cuckoo	Coles Green nr Leigh Sinton	23/04/2010	Call heard
crustacean	Austropotamobius pallipes	Freshwater Crayfish	Whippets Brook, upstream of Stocks Lane Benstoken	06/09/2000	WWT survey. To confluence with Carey's Brook
flowering plant	Hyacinthoides non-scripta	Bluebell	Aileshurst Coppice	08/11/2006	DAFOR; OLF
flowering plant	Gagea lutea	Yellow Star-Of-Bethlehem	Aileshurst Coppice	1993	75 plants plus 15 or so on private land on other side of stream
flowering plant	Gagea lutea	Yellow Star-Of-Bethlehem	Aileshurst Coppice	1996	308 plants
flowering plant	Gagea lutea	Yellow Star-Of-Bethlehem	Aileshurst Coppice	2000	50 flowering; lowest count since annual check began
flowering plant	Vicia bithynica	Bithynian Vetch	Alfrick	2004	Roadside verge - good showing
flowering plant	Ranunculus parviflorus	Small-Flowered Buttercup		01/06/1991	Locally frequent in grassland
flowering plant	Vicia bithynica	Bithynian Vetch	Leigh, Hopton Rd	Jun-92	Several plants
flowering plant	Carpinus betulus	Hornbeam	By Hopton Court	14/06/1992	Roadside - several seedlings from introduced trees
flowering plant	Vicia bithynica	Bithynian Vetch		14/06/1992	Roadside bank - strong colony, 100-20
flowering plant	Ceratophyllum submersum	Soft Hornwort	nr Leigh	26/07/1994	Field pool - locally frequent
flowering plant	Torilis arvensis	Spreading Hedge-Parsley	Bransford	26/07/1994	Arable - about 20 in bean field - several hundred on border of oats & barley
flowering plant	Carpinus betulus	Hornbeam	Coles Green Dingle	18/04/1995	Streamside - 2 young trees
flowering plant	Scrophularia umbrosa	Green Figwort	Red Cliff	10/08/1996	Riverside - 1 or 2 plants
flowering plant	Tilia platyphyllos	Large-Leaved Lime	Hayley Dingle	08/06/1997	At least 1 tree
flowering plant	Ranunculus parviflorus	Small-Flowered Buttercup	By Winwood Hill Coppice	04/05/1998	Grassy bank - widespred & common
flowering plant	Vicia bithynica	Bithynian Vetch	Leigh, Hopton Rd	04/05/1998	Foot of roadside bank - several plants scattered at E end of bank
flowering plant	Chrysanthemum segetum	Corn Marigold	Brockamin	04/08/1998	Disturbed roadside bank - 2 plants.
flowering plant	Campanula patula	Spreading Bellflower	Lower Ashfield	12/08/1998	Paddock - 70+ plants
flowering plant	Campanula patula	Spreading Bellflower	Park Coppice	12/08/1998	Woodland path - 2
flowering plant	Scrophularia umbrosa	Green Figwort	River Teme	18/08/1998	Few clumps

flowering plant	Hyacinthoides non-scripta	Bluebell	Aileshurst Coppice	18/08/1999	
flowering plant	Gagea lutea	Yellow Star-Of-Bethlehem	Aileshurst Coppice	30/03/2000	Only a few scattered plants
flowering plant	Carpinus betulus	Hornbeam	By Bransford School	05/04/2000	Several trees in small copse
flowering plant	Vicia bithynica	Bithynian Vetch	Alfrick to Leigh road	02/05/2000	Roadside bank - scattered along 15m
flowering plant	Salvia verbenaca	Wild Clary	A4103 NE of Leigh Sinton	24/05/2000	Roadside bank - 1
flowering plant	Carpinus betulus	Hornbeam	N of Lower Sandlin	14/07/2000	Streamside - several trees
flowering plant	Origanum vulgare	Wild Marjoram	Crowcroft	14/07/2000	Trackside - few plants
flowering plant	Puccinellia distans	Reflexed Saltmarsh-Grass	A4103, Leigh Sinton	14/07/2000	Road verge - few tufts
flowering plant	Tilia platyphyllos	Large-Leaved Lime	North Wood	24/07/2000	1 or 2 trees
flowering plant	Scrophularia umbrosa	Green Figwort	River Teme	02/09/2000	1 plant
flowering plant	Carpinus betulus	Hornbeam	Suckley Rd, Bransford	05/09/2000	Road verge - 1 tree established
flowering plant	Hyoscyamus niger	Henbane	Leigh	05/09/2000	Edge of arable beside disused railway - 18 plants
flowering plant	Scrophularia umbrosa	Green Figwort	Teme Cliff Rockhill Covert	14/08/2001	
flowering plant	Scrophularia umbrosa	Green Figwort	Red Cliff	04/09/2001	DAFOR; R - riverside
flowering plant	Tilia platyphyllos	Large-Leaved Lime	Hayley Dingle	04/09/2001	Old specimen
flowering plant	Tilia platyphyllos	Large-Leaved Lime	Hayley Dingle	04/09/2001	
flowering plant	Tilia platyphyllos	Large-Leaved Lime	Leigh Brook	10/09/2001	Old pollard on bank of brook
flowering plant	Vicia bithynica	Bithynian Vetch	Lane to Alfrick northern hedgebank east of Meadow Court,	28/06/2002	Several hundred
flowering plant	Vicia bithynica	Bithynian Vetch	Vicia bithynia Quadrat	28/06/2002	Verge
flowering plant	Vicia bithynica	Bithynian Vetch	Lane from Leigh to Alfrick	28/06/2002	1 plant, N side of lane
flowering plant	Vicia bithynica	Bithynian Vetch	Lane to Alfrick northern hedgebank east of Lane to Alfrick	28/06/2002	5 Present
flowering plant	Vicia bithynica	Bithynian Vetch	northern hedgebank east of Hopton Turn,	28/06/2002	20 Flowering
flowering plant	Vicia bithynica	Bithynian Vetch	Vicia bithynia Quadrat	28/06/2002	Hedgebank. DAFOR; A
flowering plant	Vicia bithynica	Bithynian Vetch	Hopton Turn, Vicia bithynica Quadrat	28/06/2002	Verge
flowering plant	Scrophularia umbrosa	Green Figwort	River Teme	11/08/2004	Eroding bank below oxbow; 20

flowering plant	Scrophularia umbrosa	Green Figwort	River Teme NE of Brace's	11/08/2004	1 present
flowering plant	Carpinus betulus	Hornbeam	Leigh	15/09/2004	Field hedge, 2 small trees, probably planted
flowering plant	Ranunculus parviflorus	Small-Flowered Buttercup	Leigh Brook	01/02/2005	4 rosettes under fence of pasture
flowering plant	Hyacinthoides non-scripta	Bluebell	Hayley Broad Dingle & Redcliff	31/05/2006	DAFOR; OLF
flowering plant	Tilia platyphyllos	Large-Leaved Lime	Hayley Broad Dingle & Redcliff	31/05/2006	DAFOR; O - mature trees
flowering plant	Hyacinthoides non-scripta	Bluebell	The Ashes	20/07/2006	DAFOR; F
flowering plant	Galium x pomeranicum	Hybrid Yellow Bedstraw	A4103 Hereford Road Aileshurst	1996	Growing with parents on grassy roadside bank
insect - beetle (Coleoptera)	Anobium inexspectatum	Anobium inexspectatum	Coppice	27/07/1999	hedgerow
insect - beetle (Coleoptera)	Hydraena rufipes	Hydraena rufipes	Leigh, Leigh Brook	13/04/2002	
insect - beetle (Coleoptera)	Dorytomus tremulae	Dorytomus tremulae	Smith End Green	01/12/2004	
insect - beetle (Coleoptera)	Hydraena rufipes	Hydraena rufipes	Bransford Bridge	03/05/1990	
insect - dragonfly (Odonata)	Gomphus vulgatissimus	Common Club-tail	Broadwas, River Teme	27/05/1992	2-5 larval case, emerged
insect - dragonfly (Odonata)	Gomphus vulgatissimus	Common Club-tail	Broadwas, River Teme	25/05/1993	2-5 larval case, emerged
insect - dragonfly (Odonata)	Gomphus vulgatissimus	Common Club-tail	Bransford, River Teme, Cotheridge	06/06/2012	
insect - dragonfly (Odonata)	Gomphus vulgatissimus	Common Club-tail	River Teme, Leigh Court Farm	06/06/2012	
insect - dragonfly (Odonata)	Gomphus vulgatissimus	Common Club-tail	River Teme, Bransford Bridge	06/06/2012	Upstream; 1
jawless fish (Agnatha)	Petromyzon marinus	Sea Lamprey	River Teme nr Brockamin	25/06/2001	1 present
reptile	Anguis fragilis	Slow-worm	Lower Leigh	1997	
reptile	Anguis fragilis	Slow-worm	Bransford	09/06/2007	dead juvenile on road
terrestrial mammal	Meles meles	Badger	Leigh Sinton	05/03/2006	dead on road
terrestrial mammal	Meles meles	Badger	Oaken Coppice	24/10/2006	Dung or other signs
terrestrial mammal	Meles meles	Badger	Halfway House, Leigh Sinton	24/10/2006	Dung or other signs
terrestrial mammal	Lepus europaeus	Brown Hare	Coombe Hill Wood	1998	
terrestrial mammal	Lutra lutra	Otter	Leigh Court	17/10/1991	WWT Survey. Signs
terrestrial mammal	Pipistrellus pipistrellus	Pipistrelle	Leigh Lodge	25/06/1994	1 present
terrestrial mammal	Pipistrellus pipistrellus 45kHz	45 Khz Pipistrelle	Leigh Lodge	25/06/1994	Roost site: 143 in chimney causing disturbance
terrestrial mammal	Pipistrellus pipistrellus	Pipistrelle	Smith End Green	05/07/1995	1 present
terrestrial mammal	Pipistrellus pipistrellus 45kHz	45 Khz Pipistrelle	Delphoniums Cottage, Leigh	05/07/1995	Roost site: 49 in roof apex

			Sinton		
terrestrial mammal	Meles meles	Badger	Aileshurst Coppice	Jun-99	
terrestrial mammal	Plecotus auritus	Brown Long-Eared Bat	nr Brockamin	Jul-00	1 present
terrestrial mammal	Erinaceus europaeus	Hedgehog	Bransford	28/05/2001	dead on road
terrestrial mammal	Lutra lutra	Otter	Bransford, River Teme	14/08/2001	tracks/trail
terrestrial mammal	Meles meles	Badger	Brockamin, The Dingle Lane	14/08/2001	dung/droppings, etc.
terrestrial mammal	Meles meles	Badger	Leigh, Rockhill Covert	14/08/2001	Occupied sett
terrestrial mammal	Meles meles	Badger	Leigh, Rockhill Covert	14/08/2001	Unoccupied sett
terrestrial mammal	Meles meles	Badger	Hanley Dingle	04/09/2001	Dung or other signs
terrestrial mammal	Meles meles	Badger	Hayley Dingle	04/09/2001	Dung pits & tracks
terrestrial mammal	Meles meles	Badger	Red Cliff, old railway	04/09/2001	Sett, dung pits & tracks
terrestrial mammal	Meles meles	Badger	Hanley Dingle	04/09/2001	Occupied sett
terrestrial mammal	Meles meles	Badger	Hayley Dingle	04/09/2001	Sett & dung pits
terrestrial mammal	Meles meles	Badger	Brockamin	10/09/2001	Occupied sett
terrestrial mammal	Meles meles	Badger	Leigh Sinton	30/01/2002	tracks/trail
terrestrial mammal	Meles meles	Badger	Brockamin Wood	01/04/2002	Large active sett
terrestrial mammal	Meles meles	Badger	Brockamin Wood	01/04/2002	dung/droppings, etc.
terrestrial mammal	Meles meles	Badger	Chapel Lane	17/04/2002	dead on road
terrestrial mammal	Meles meles	Badger	Bransford/Leigh	17/07/2002	dead on road
terrestrial mammal	Lepus europaeus	Brown Hare	Crowcroft	04/02/2003	
terrestrial mammal	Meles meles	Badger	Leigh Sinton	30/11/2003	dead on road
terrestrial mammal	Lutra lutra	Otter	River Teme, Rockhill Covert	26/01/2004	Fresh prints in alluvial silts at cliff base
terrestrial mammal	Lutra lutra	Otter	River Teme, Rockhill Covert Cliff	26/01/2004	Fresh prints in alluvial silts at cliff base
terrestrial mammal	Meles meles	Badger	Hayley Dingle	26/01/2004	Large active sett
terrestrial mammal	Meles meles	Badger	Hayley Dingle	26/01/2004	Occupied sett
terrestrial mammal	Meles meles	Badger	Hayley Dingle	26/01/2004	
terrestrial mammal	Meles meles	Badger	Red Cliff - eastern end	26/01/2004	Large active sett; E end
terrestrial mammal	Meles meles	Badger	Disused railway	26/01/2004	Active sett, N bank
terrestrial mammal	Nyctalus noctula	Noctule	Upper House Farm	27/06/2004	Bat detector
terrestrial mammal	Pipistrellus pipistrellus 45kHz	45 Khz Pipistrelle	Upper House Farm	27/06/2004	Bat detector & droppings
terrestrial mammal	Plecotus auritus	Brown Long-Eared Bat	Upper House Farm	27/06/2004	Bat detector & seen in roof void, droppings
terrestrial mammal	Meles meles	Badger	Riverlands Farm, Brockamin	11/08/2004	Fresh dung in latrine pit, arable
terrestrial mammal	Meles meles	Badger	Alfrick/Bransford	23/10/2005	dead on road
terrestrial mammal	Lepus europaeus	Brown Hare	Leigh Sinton, A4103	Feb-06	dead on road

terrestrial mammal	Meles meles	Badger	Hayley Broad Dingle & Redcliff	31/05/2006	
terrestrial mammal	Myotis	Unidentified Bat	Aileshurst Coppice	31/07/2008	1 present
terrestrial mammal	Pipistrellus pipistrellus 45kHz	45 Khz Pipistrelle	Aileshurst Coppice	31/07/2008	1 present
terrestrial mammal	Pipistrellus pygmaeus	Soprano Pipistrelle	Aileshurst Coppice	31/07/2008	1 present
terrestrial mammal	Lutra lutra	Otter	Leigh Brook, Smith End Green	20/03/2009	1 spraint, recent.
terrestrial mammal	Erinaceus europaeus	Hedgehog	Bransford	15/07/2009	Road kill, roundabout
terrestrial mammal	Lutra lutra	Otter	Leigh Brook	17/01/2010	Footprints in mud bank underneath footbridge
terrestrial mammal	Meles meles	Badger	Leigh Sinton	30/03/2010	1 Dead
terrestrial mammal	Meles meles	Badger	Alfick Pound	26/03/2011	1 present
terrestrial mammal	Lutra lutra	Otter	River Teme, Broadwas	04/06/2012	live sighting; 1
terrestrial mammal	Lepus europaeus	Brown Hare	Smith End Green	03/04/2014	dead on road
terrestrial mammal	Micromys minutus	Harvest Mouse	Sandlin House Orchard	16/12/2014	2 Nest
terrestrial mammal	Meles meles	Badger	Bransford	08/12/2006	dung/droppings, etc.
terrestrial mammal	Lepus europaeus	Brown Hare	Leigh Brook	1999	
terrestrial mammal	Lepus europaeus	Brown Hare	Lower Lightwood	1999	
terrestrial mammal	Lepus europaeus	Brown Hare	Smith End Green	08/06/1991	1 present
terrestrial mammal	Mustela putorius	Polecat	Cotheridge	30/06/1994	1 present

6. Worcestershire Habitat Inventory – Habitat Information Sheets

Habitat Information Sheet

Worcestershire Habitat Inventory

What is the Worcestershire Habitat Inventory?

The Worcestershire Habitat Inventory (WHI) is a digital mapping project involving field-by-field survey of the county. Aerial photograph interpretation was used to map habitats and land use, with the first map iteration completed in 2008 using an aerial photograph set flown in 2005. Other datasets, such as national habitat inventories published by Natural England, were also incorporated as appropriate.

The WHI is intended as a tool to aid decision making by planners, land managers, conservation bodies and others, principally to inform the targeting of habitat restoration and creation projects.

How do we determine the quality of a habitat within the WHI?

Accuracy in interpretation of the aerial photographs was assessed in a targeted programme of ground truthing at an early stage in the project. This confirmed the ability to distinguish between notionally similar habitat types, e.g. acid grassland and neutral grassland, and also to distinguish habitat quality, e.g. unimproved and improved grassland, with a good level of accuracy. A programme of ground truthing is continuing with the support of volunteer surveyors.

Analysis of the WHI data allowed mapping of the strongest intact networks of semi-natural habitat with the highest potential wildlife value. Also identified were habitats of Biodiversity Action Plan quality. Biodiversity Action Plans have been written for habitats and species of the highest priority for nature conservation, at both UK and local level.

Traditional orchard

Traditional orchards are a distinctive and valued feature of Worcestershire's landscape and our county is recognised nationally for its high remaining concentration of the habitat. Traditional orchards contain tall, standard trees often of locally distinctive varieties of apple, plum, pear and cherry that are allowed to mature and grow over a period of 50-80 years. The high biodiversity value of these sites is a result of historic, sustainable management practices including little or no use of chemicals and a tolerance for aged and decaying timber to remain in the orchard. The fruit trees are planted on permanent grassland, which itself may be a valuable flower-rich wildlife habitat.

Why is this habitat important?

Fruit trees are short lived relative to other tree species and so produce decaying wood more quickly than most native hardwoods. This provides important habitat for insects, including the rare noble chafer beetle, for which Worcestershire is a stronghold, and for hole-nesting and insect eating birds. Fruit trees are also valuable hosts for mistletoe and lichens and a good source of food for birds in the autumn and winter months.

England's main concentration of traditional orchards is within the three counties of Gloucestershire, Worcestershire and Herefordshire. The Traditional Orchard Inventory for England, completed in 2011, shows 2453 traditional orchards within Worcestershire covering over 2000 hectares. This represents 6.9% (by number) and 12% (by coverage) of the England total. Traditional orchard loss to other land uses continues and is sadly common however, with a national average of 63% lost per county since 1950. Local data suggests that in Worcestershire this figure may be closer to 85%.

Species associated with traditional orchard habitat

Noble chafer *Gnorimus nobilis*
This striking green beetle is a specialist of old orchards. Its larvae feed on the decaying timber of fruit trees, particularly plum, apple and cherry. The adults sometimes emerge on hot, still days in summer to feed on hogweed, meadowsweet and elder. The beetle is classed as Vulnerable in the UK and it is a national Biodiversity Action Plan species. Its distribution in England is centered on Worcestershire, Herefordshire and Gloucestershire. Any orchard in these counties containing dead and decaying timber and spared the use of chemicals has the potential to contain populations of this beetle.

Mistletoe *Viscum album*
This semi-parasitic plant grows on poplar, lime, willow and hawthorn but its preference is for cultivated apples. It is most obvious during the winter when bunches of white berries appear and although found across the UK, its heartland is within the English/Welsh border counties and Somerset. Mistletoe is pollinated by small insects and the seeds spread by birds such as mistle thrush and black cap, which feed on the fruit. Mistletoe provides habitat for the rare mistletoe marble moth, whose mines can be seen in the plant's leaves.

Birds including lesser spotted woodpecker, mistle thrush, song thrush, fieldfare and redwing (photo)
A great variety of birds take advantage of the feeding, nesting and roosting opportunities found in traditional orchards. Hollow branches or tree trunks are used by birds such as green, great spotted and the declining lesser spotted woodpecker. During the winter months fallen fruit supplements the diet of species such as fieldfare and redwing.

Where can I see this habitat in Worcestershire?

Hipton Hill Plum Orchard *Vale Landscape Heritage Trust*
On a hillside above Evesham, this orchard stretches to 28 hectares of traditional plum, damson and damascene trees. The orchard was originally planted in the 1920s and has had a small amount of replanting done over the last decade. The remaining trees are slowly being restored and rejuvenated and trials are underway to determine the best form of management for the grassland, which has fantastic numbers of orchids and other plants.

Melrose Farm Meadows and Orchard *Worcestershire Wildlife Trust*
This small, 2 hectare nature reserve consists of an old orchard and two meadows. The rich grassland flora includes species such as meadow saffron, green-winged orchid, adder's-tongue fern, dyer's greenweed, cowslip and saw-wort, whilst the orchard is being restored with new tree planting. There is a public footpath through the reserve.

Wyre Forest *various ownerships*

The area south of the Wyre Forest was once dominated by orchards of cherry, apple and pear trees suppling fruit to Birmingham and further afield: some of these remain on scattered farms and small holdings. Studies have been carried out here that demonstrate how much biodiversity traditional orchards can support: 1,868 species were recorded during 2004 by the Wyre Forest Study Group within 5.39 hectares of traditional orchard. Keep a look out for orchards within the landscape on your next walk.

How is this habitat managed?

Trees in a traditional orchard are planted at low density on vigorous or semi-vigorous rootstock, in contrast to the dwarf 'bush' trees typical of commercial orchards. Key to maintaining biodiversity value is the total absence of chemical application. The grassland floor is best managed by low-intensity grazing and hay cutting, with tree guards to ensure that livestock do not damage the trees.

Is this habitat threatened?

Post-war agricultural intensification, coupled with commercial competition from intensively managed orchards at home and abroad, has caused a sharp decline in the extent of traditional orchards within England. Many orchards have fallen derelict as trees die and are not replaced and orchards around the edges of settlements are frequently lost to housing development.

How is this habitat being protected?

A small number of orchards are designated as Sites of Special Scientific Interest or are included within SSSI's where the main designation is for other habitats, often unimproved pasture.

Traditional orchards in Worcestershire have recently begun to be surveyed and listed as Local Sites of importance for nature conservation: this gives no statutory protection but enables recognition of their value within local planning policies and provides a means of engagement with owners to give advice on management. Sites containing Biodiversity Action Plan quality habitat also have added protection through the local planning system.

The Environmental Stewardship schemes administered by Natural England contain options for the planting, restoration and management of traditional orchards.

Individual fruit trees can be protected by Tree Preservation Orders if they are no longer cultivated for fruit production. Worcester City Council is aiming to conserve all known intact orchards and to develop new community orchards within the city.

The public profile of traditional orchards is raised by events such as Apple Day and the Pershore Plum Festival and the promotion of Community Orchards.

Links and References

Worcestershire Biodiversity Action Plan

UK Biodiversity Action Plan

Worcestershire Wildlife Trust nature reserves

Vale Landscape Heritage Trust

People's Trust for Endangered Species

Environmental Stewardship

Tree Preservation Orders

Worcestershire Orchards

Common Ground

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Analysis of the WHI data allowed mapping of the strongest intact networks of semi-natural habitat with the highest potential wildlife value. Also identified were habitats of Biodiversity Action Plan quality. Biodiversity Action Plans have been written for habitats and species of the highest priority for nature conservation, at both UK and local level.

Species-rich Hedgerows

A hedgerow is a boundary line of trees or shrubs dividing fields, land uses or land ownerships. A hedge is defined as a more-or-less continuous feature over 20m long and less than 5m wide at the base, with any gaps being less than 20m wide. A species-rich hedgerow is one which contains a certain diversity of woody plant species. In Worcestershire seven or more different shrub species within a 30m section would generally be considered very species-rich.

Common hedgerow shrubs in this county include hawthorn, blackthorn, field maple, ash, elder, English elm, holly, rose and hazel. Spindle, wild service, small-leaved lime, wild privet and dogwood will also be a natural hedgerow component in certain parts of Worcestershire. Non-native species such as sycamore are becoming more commonly seen as hedgerow shrubs.

Many ancient hedges are found along parish boundaries and old roads or may be remnants of the woodland that used to be present before clearance for farming activities. These hedges will often be naturally species rich, with the various shrubs being ancient woodland remnants or accumulating to the hedgerow over time, sometimes centuries. Newly planted hedges can also be species-rich, but will not contain the other features associated with age and wildlife value such as a biodiverse ground flora. The Parliamentary Enclosure Acts of the 18th and 19th

centuries resulted in the planting of many hundreds of kilometres of hedgerow throughout the countryside. These hedges tend to be comprised of only one or two species, usually hawthorn and / or blackthorn, but still provide good wildlife habitat if well managed.

Why is this habitat important?

Hedgerows can support a wide range of wildlife, combining the benefits of scrub, woodland and woodland edge habitat. Many ancient roadside hedges are associated with verges rich in wild flowers and together they provide wildlife corridors which link larger areas of habitat. A species-rich hedge will provide a good source of food, cover and nesting and hibernating opportunities for insects, birds and mammals. Trees present in the hedge add wildlife interest and ancient trees or shrubs, including pollarded, coppiced and laid timber, provide cavities and dead and decaying wood. Certain parts of Worcestershire have had a long tradition of planting fruit trees such as damsons, apples and pears into hedgerows.

Species associated with hedgerow habitat

Brown Hairstreak butterfly *Thecla betulae*

This butterfly lays its eggs on young, often suckering blackthorn. Colonies are normally centred on an ancient semi-natural woodland or close group of woodlands, with mating and egg laying taking place in the immediate surrounding countryside or along woodland rides and glades. The butterfly is rare and declining across the UK and its only West Midlands population is in Worcestershire. Long term monitoring and habitat management by Butterfly Conservation is ensuring that the population here remains fairly healthy. Brown hairstreak is a UK and Worcestershire Biodiversity Action Plan species.

Farmland birds such as tree sparrow *Passer montanus* and yellowhammer *Emberiza citronella* (photo)

Many farmland bird species have undergone dramatic population declines in the last 40-50 years, due to a loss of habitat and food supply as the countryside becomes more intensively farmed. Hedges provide nesting and roosting habitat and food supplies for many small birds, including these two, and good hedgerow management to provide thick cover is crucial. Hedgerows also allow the safe movement of birds and other species around the farmed landscape.

Ancient woodland indicators such as wild service *Sorbus torminalis* (photo) and small-leaved lime *Tilia cordata*

In west Worcestershire many of the hedgerows are woodland remnants – survivors of woodland clearance for agriculture when strips of trees and shrubs were left in situ as field or property boundaries. These hedgerows often contain species more typically seen in ancient woodland such as wild service tree and small-leaved lime, along with a woodland rather than grassland ground flora.

Where can I see this habitat in Worcestershire?

The countryside of northwest Worcestershire is a good place for spotting ancient, species-rich hedgerows. Look out for these features: a high number of native woody species per 30m of hedge (5 species is good, 7 excellent, more than that outstanding); ground flora species such as bluebell, dog's-mercury, primrose, lords-and-ladies and herb robert; evidence that the hedge has been coppiced or laid in the past.

How is this habitat managed?

The traditional function of a hedge, to provide a stock-proof field boundary, would originally have been maintained by hand through a cycle of laying and trimming every few years. This was good for wildlife and maintained biodiversity value. Although hedge laying is now becoming more widely recognised as a skilled countryside craft, for the most part these traditional methods have been replaced by the use of mechanical flails. Management by annual flailing alone tends to result in hedges that become thin and 'leggy' (gaps at the base of the hedge, requiring the addition of a fence to enclose stock) as well as removing much of the young growth providing nectar and food for birds and insects.

Is this habitat threatened?

During post-war agricultural intensification many hedgerows were removed and the mechanisation of their management led to a deterioration in biodiversity value of many remaining hedges. The management of other hedgerows is neglected entirely and they may grow out into lines of trees or become gradually gappier, with their function having to be replaced by fencing. The damage that unrestricted livestock access can cause to a hedge through soil compaction, nutrient input and exacerbating existing gaps can also be significant.

Although Cross Compliance agricultural regulations now offer some protection to hedgerows in arable situations they are still vulnerable to damage from ploughing and to sprays used within the crop or on arable margins to control invasive weeds or pests.

How is this habitat being protected?

The Hedgerow Regulations 1997 prohibit the removal of most countryside hedgerows without permission being obtained from the Local Authority. 'Important' hedgerows can have an order placed on them for their retention – importance being determined by their species-richness and historical or wildlife value as defined by the Regulations.

Tree Preservation Orders can be applied to trees in hedgerows.

The Environmental Stewardship schemes administered by Natural England contain options for the planting, restoration and management of hedgerows.

Cross Compliance regulations include hedgerow protection and management standards.

Links and References

Worcestershire Biodiversity Action Plan

UK Biodiversity Action Plan

Hedgelink Partnership

Hedgerow Regulations

Cross Compliance

Tree Preservation Orders

Environmental Stewardship

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The WHI is intended as a tool to aid decision making by planners, land managers, conservation bodies and others, principally to inform the targeting of habitat restoration and creation projects.

How do we determine the quality of a habitat within the WHI?

Accuracy in interpretation of the aerial photographs was assessed in a targeted programme of ground truthing at an early stage in the project. This confirmed the ability to distinguish between notionally similar habitat types, e.g. acid grassland and neutral grassland, and also to distinguish habitat quality, e.g. unimproved and improved grassland, with a good level of accuracy. A programme of ground truthing is continuing with the support of volunteer surveyors.

Analysis of the WHI data allowed mapping of the strongest intact networks of semi-natural habitat with the highest potential wildlife value. Also identified were habitats of Biodiversity Action Plan quality. Biodiversity Action Plans have been written for habitats and species of the highest priority for nature conservation, at both UK and local level.

Road Verges

Road verges are strips of land between the road and the hedge (or other boundary) which separate the highway from the surrounding land. They vary in width from less than 1m to 15m or so and usually consist of grassland or scrub. They may also include a ditch which provides wetland interest and in some parts of the country may be associated with a bank or stone wall. If managed to promote biological interest verges can support an extensive range of flora and fauna.

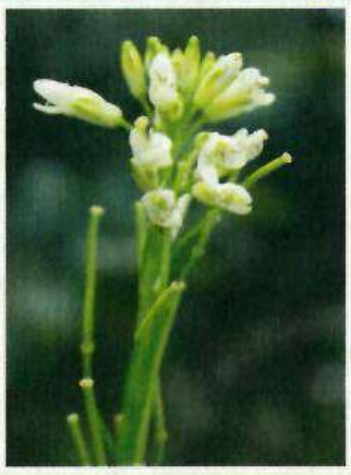
Why is this habitat important?

It has been estimated that 80% of Worcestershire's botanical diversity is to be found on roadside verges. The road verge is generally as old as the road itself: many of our country lanes have been unchanged in size and course for centuries and even a number of the larger highways are simply re-engineered versions of a Roman or mediaeval road. In some parts of the county, roadside verges may therefore support the last remaining fragments of our natural vegetation, particularly unimproved, wildflower-rich grassland, being a haven for plants, fungi and insects that are becoming increasingly scarce in the wider countryside. Worcestershire has somewhere in excess of 2,250km of road verges with a total extent of around 700 hectares.

Species associated with road verge habitat

Deptford Pink *Dianthus armeria*
This very rare plant has declined considerably in number and distribution. It is now thought to occur on only 13-15 sites nationally, one of which is in Worcestershire. It is protected under Schedule 8 of the Wildlife and Countryside Act, is listed in Schedule 41 of the Natural Environment and Rural Communities Act and is a UK Biodiversity Action Plan species. The plant has a bright pink flower with delicate pale spots and ragged edges to the petals with a rosette of green leaves at its base. It requires bare, disturbed ground in which to germinate and is mainly found on roadsides, field margins and waste ground. It is threatened by the inappropriate management of these habitats and by the encroachment of scrub, which shades out seedlings.

Tower Mustard Arabis glabra
This is a tall, slim, grey-green plant with small creamy flowers that can grow up to 4 feet in height. The species has declined in recent decades and is now endangered in the UK. It is known from only 25 sites in England, concentrated in East Anglia and Worcestershire. It usually grows on nutrient-poor chalky or sandy soils in open situations and flowers from July to August. It is a UK Biodiversity Action Plan species. Like Deptford pink, it is threatened by the scrubbing up and shading of previously open habitats.



Where can I see this habitat in Worcestershire?
Road verges of all shapes and sizes can be seen throughout the county. Exemplar road verge sites supporting a high diversity of wild plants are designated under Worcestershire's Roadside Verge Nature Reserve scheme. A walk along country lanes in May and June to experience the delights of some of these verges is well worth doing in the following suggested locations: between Broadwas, Martley and Lower Broadheath; countryside southeast of Droitwich around Himbleton and Saleway; countryside southeast of Malvern between Clevelode and Welland.

How is this habitat managed?
Management of most road verges within the county is the responsibility of Worcestershire Highways, part of Worcestershire County Council, although ownership of the verge generally remains with the adjacent landowner. The cutting of road verge vegetation is contracted out to a number of different operators, with safety and visibility being the primary drivers for most verge cutting regimes.

Is this habitat threatened?
The management regime on much of our road verge network, particularly trunk and main roads, is not generally compatible with supporting or maintaining wildflower species-richness. The timing and high frequency of cutting, coupled with cut grass being left on the verge to enrich the soil, suppresses wildflowers in favour of course grasses and less desirable vigorous plants.

Verges also suffer due to the nature of their location next to the highway, including receiving run off and spray from road salt and vehicle oil, dumping of rubbish or temporary storage of road-building materials and car and lorry parking.

How is this habitat being protected?

Two sites that incorporate road verges have been notified as Sites of Special Scientific Interest: Cropthorne New Inn on the A44 and Burcott Lane Cutting at Blackwell near Bromsgrove. Both were notified for their geological interest. At several other sites, including Castlemorton Common and the Malvern Hills SSSI, the road verge is incorporated where the designation covers land on both sides of the road.

Worcestershire maintains a Roadside Verge Nature Reserve (RVNR) scheme whereby verges with high botanical interest are identified and earmarked for specialist management. 44 sites currently qualify as RVNRs. These sites are managed to allow the wildflowers present to seed and germinate, with vegetation cut and removed at the appropriate time of year and monitoring taking place of species present on the verges. The verges are marked at each end by a red and white post to identify them to other contractors.

Links and References

Worcestershire Biodiversity Action Plan

UK Biodiversity Action Plan

Worcestershire Roadside Verge Nature Reserves

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Rivers and streams

Rivers and streams can be fast or slow flowing running water habitats, varying hugely in width and depth depending on the amount of water flowing through the catchment at any one time. They are continually altering their form by the erosion and deposition of materials within the channel and the course of a river can alter significantly over time. The presence of features such as gravel bars, islands, oxbows, pools and riffles indicate the naturalness of the watercourse and contribute to its biodiversity value. Rivers and streams provide water for wetland sites within their floodplain, supporting a diverse range of flora and fauna.

Why is this habitat important?

Rivers and streams provide vital wildlife corridor links between fragmented habitats in intensively farmed areas, allowing the movement of many species around the countryside. The natural flooding regime of rivers also sustains many important wetlands within the floodplain, supporting their own unique biodiversity. The rivers and streams of Worcestershire support a rich variety of plants, insects, birds, mammals and fish. In addition, our watercourses act as major transport corridors, venues for leisure and recreation and provide industry and agriculture with water for cooling and irrigation.

Species associated with rivers and streams

Otter *Lutra lutra*
One of the UK's top mammalian predators, the otter is making a comeback on the majority of Worcestershire's larger watercourses and streams. Population numbers are recovering nationwide after crashing during the 1950s, 60s and 70s due to hunting and the effects of certain agricultural chemicals (both now banned). An otter's main territory is largely defined by the length of river along which it hunts for food, but smaller watercourses, adjacent areas of wetland and wet woodland are all used as habitat for hunting, resting and raising young. They are protected under European law and are a Biodiversity Action Plan species.

White-clawed Crayfish *Austropotamobius pallipes*
The UK supports around a quarter of the world population of this crayfish, which is under threat due to competition from the introduced American signal crayfish and the 'crayfish plague' that the alien species carries. White-clawed crayfish tend to be found in watercourses containing rocky or woody debris within which they can hide. They are omnivorous, feeding on virtually anything including freshwater invertebrates, carrion and algae. They are protected under European law and are a Biodiversity Action Plan species.

Common Club-tail Dragonfly *Gomphus vulgatissimus*
This is a species of moderate to slow-flowing, meandering rivers. Worcestershire is an important stronghold for the common club-tail in the UK and it breeds on all of our major rivers. The distinctive club-shape to the end of its abdomen makes it easily distinguishable, although it is also one of the only dragonflies to have separated eyes. It is a black-bodied dragonfly with striking yellow markings, which in males gradually turn green as individuals mature.

Where can I see this habitat in Worcestershire?

Lowland rivers and streams can be found all over Worcestershire, including:

River Severn
The vast majority of other rivers and streams within the county drain into the Severn, which flows north-south through the heart of Worcestershire. The riverside can be accessed in numerous places, both in towns and cities, such as Worcester, Bewdley and Upton-upon-Severn, and by public footpaths in more rural areas.

River Teme
The entire length of the Teme is designated a Site of Special Scientific Interest for the flora and fauna it supports, including otter, white-clawed crayfish, freshwater pearl mussel, round leaved water crowfoot, intermediate water starwort and fish such as salmon and sea lamprey. Despite few physical modifications the river suffers from the impacts of agricultural diffuse pollution. The Teme can be accessed at Tenbury Wells and by public footpaths in more rural areas.

Bow Brook
The Bow arises south of Redditch and joins the River Avon just outside Pershore. Associated with the brook corridor are valuable wet woodlands, fen and marsh. The Bow catchment is

currently a focus for habitat restoration in a partnership between conservation bodies and local landowners. The brook can be accessed in numerous places by public footpaths and fords.

How is this habitat managed?

Historically, many physical modifications were made to our river channels to re-profile banks, straighten meanders and dredge material from the bottom to deepen and widen the watercourse for boat traffic. Control structures such as weirs were added to maximise and maintain, year round, the volume of water needed for abstraction by industry and agriculture. Latterly, modifications have been made to prevent or mitigate flooding and its effects both on urban areas and agricultural land.

The emphasis is now changing to promote and enable the re-naturalisation of our watercourses and the re-connection of rivers with their floodplains. There is a desire to see the natural processes and natural variation in flows within our rivers and streams reinstated by restoring wetlands and reversing channel modifications.

Is this habitat threatened?

The habitat quality and biodiversity value of rivers and streams can be reduced by over-abstraction and low flows for irrigation of farmland, drinking water supply or industrial use. Diffuse and point source pollution from industry, agricultural chemicals and sewage will damage or destroy biodiversity as will large inputs of sediment washed from fields. On main rivers disturbance from boat traffic can damage vegetation and destabilise banks. Urban and infrastructure development has historically been a motive for many physical modifications to our rivers and the separation of a watercourse from its floodplain and associated wetland habitats. Invasive non-native species such as Himalayan balsam and the American mink can have severe detrimental impacts on our native biodiversity in rivers and streams.

How is this habitat being protected?

Surface water bodies including rivers and streams fall under the Water Framework Directive legislation. Targets have been set for all inland and coastal waters within each defined river basin district to improve chemical and biological water quality against defined objectives.

The River Teme is designated as a Site of Special Scientific Interest in its own right and several smaller watercourses, including Dowles Brook and Ipsley Brook, are protected along parts of their length where they flow through a SSSI. Most other county rivers and larger streams have been listed as Local Sites of importance for nature conservation: this gives no statutory protection but enables recognition of their value within local planning policies and provides a means of engagement with owners to give advice on management. Sites containing Biodiversity Action Plan quality habitat also have added protection through the local planning system.

Cross compliance regulations, pertaining to all landowners who claim payments under the Common Agricultural Policy, such as the Single Payment Scheme or Environmental Stewardship, include measures for the protection of watercourses through the siting of buffer strips to reduce the impact of agricultural chemicals.

Links and References

Worcestershire Biodiversity Action Plan

UK Biodiversity Action Plan

Water Framework Directive

River Restoration Centre

Worcestershire Wildlife Trust (Bow Brook project)

British Dragonfly Society

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Ponds, Lakes and Canals

All of these habitats contain water that is still or slow flowing. Ponds may be permanent or seasonal and are defined as a water body up to 2 hectares in size, whereas lakes are over 2 hectares and large enough to be permanently wet. The water is normally fresh but can be brackish where sea water intrudes. There are few natural lakes in Worcestershire, with most created as landscape features, reservoirs or for recreation. Many ponds are also man-made, such as garden ponds, mill ponds, to water livestock or due to the flooding of hollows where clay, gravel or sand has been dug. Other ponds have arisen from more natural processes. If left untended many ponds would and do gradually silt up over time and dry out.

The first great period of canal building in the UK between the late 1750s and early 1770s served England's coal mines and mills in the north and midlands. There was initially no planned, interlinked network of waterways, with individual canals sponsored by private companies or individuals as a means of moving raw materials or goods from A to B. Many stretches of open water, whether linear or oblong, are surrounded by a fringe of natural vegetation comprising submerged, semi-aquatic and emergent species of plant.

Why is this habitat important?

Still, enclosed water bodies can support very high levels of biodiversity, possibly more species per cubic metre than any other terrestrial habitat. A huge variety of invertebrates, plants, amphibians and birds depend on still, enclosed water for part or all of their life cycle.

Canal tunnels and other structures can provide excellent roosting and breeding sites for bats and the walls and lock gates can support important assemblages of ferns and mosses. Stretches of canal with soft, naturalised banks can host colonies of water vole. Canals also provide green corridors through urban areas and therefore have huge recreational value.

Species associated with ponds, lakes and canals

Water vole *arvicola amphibious*

With small ears, a blunt nose and furry tail, the water vole is our largest vole species but also the UK's fastest declining mammal. It is a UK Biodiversity Action Plan species because of its vulnerability to extinction. Water voles construct burrows in the banks of rivers, canals, ditches and pools, marking their territories with latrines. Their decline is due to a combination of habitat loss and predation by the American mink. In Worcestershire, water voles are now only found in the streams and canals around Bromsgrove.

Great crested newt *Triturus cristatus*

Our largest native newt grows up to 17cm in length. During the breeding season males develop the distinctive crest which, combined with a mottled yellow-orange belly, make it unmistakable. Great crested newts can be found in ponds, lakes and canals throughout the UK, but Worcestershire is a hotspot. Water is essential only for breeding and the newts actually spend significant amounts of time on land, searching for food and hibernating during the winter months in underground crevices or rock piles. Great crested newts are protected by British and European Law.

Water beetles such as the Common Black Diving Beetle *Agabus bipustulatus*

Water beetles are one of the most numerous and diverse group of species found in freshwater. One frequently seen in ponds, lakes and canals is the common black diving beetle, which grows to about 1cm. Many water beetles are also strong fliers and quick colonisers of any new ponds created. The larvae are fiercely carnivorous, feeding on other small pond creatures that they catch.

Where can I see this habitat in Worcestershire?

Lyppard Grange Ponds *Worcester City Council*

This complex of ponds on the outskirts of Worcester supports an internationally important population of great crested newts, for which the site has been designated a Special Area of Conservation under European legislation. The ponds and surrounding land are managed as a nature reserve and can be visited at any time.

Bittell Reservoirs *Barnt Green Waters Ltd*

These two reservoirs form the largest expanse of open water in the county and are designated as a Site of Special Scientific Interest. As well as recreational use, being the base for a local

sailing club and fishing club, they are important for breeding and overwintering water birds. Nationally rare plants such as slender spike rush and mudwort are found on the silt shoreline. The reservoirs are private property but can be viewed from surrounding public footpaths.

Doitwich Canal *Droitwich Canal Trust*
The Droitwich Barge and Junction Canals re-opened in 2011 to complete a 22 mile loop between Droitwich, Worcester and the River Severn. The whole network can now be accessed by boat or along the towpaths.

How is this habitat managed?

Larger still water bodies may need very little day-to-day active management but the biodiversity interest is vulnerable to damaging external factors. The freshwater ecosystem depends on clean water containing low levels of nutrients. Pollutants entering the water can introduce chemicals toxic to wildlife or result in algal blooms, which starve plants and animals of oxygen.

Some water bodies may require periodic de-silting or for marginal plants and scrub to be thinned to slow the process of natural succession. The biodiversity value of water bodies can also be damaged by the accidental or intentional introduction of invasive non-native species such as Himalayan balsam or Australian swamp stonecrop and so control of these is essential.

Is this habitat threatened?

Habitat quality and biodiversity value can be threatened by pollutants entering the water with run-off from roads and farmland or invasion by non-native species. Smaller water bodies can quickly become silted up and disappear. Nutrient enrichment, through run-off from surrounding land or the presence of high numbers of water birds such as ducks and geese, can lead to algal blooms and the loss of submerged vegetation. Low river and stream flows due to abstraction can impact on water levels in ponds or lakes within the catchment system. Many farm ponds have been lost through neglect and silting up or deliberate in-filling to dispose of waste.

How is this habitat being protected?

A number of larger pools and pond complexes in the county have been designated as Sites of Special Scientific Interest and one, Lyppard Grange, as a Special Area of Conservation. Other sites, mostly in private ownership, have been listed as Local Sites of importance for nature conservation: this gives no statutory protection but enables recognition of their value within local planning policies and provides a means of engagement with owners to give advice on management. Sites containing Biodiversity Action Plan quality habitat also have added protection through the local planning system.

Surface water bodies including ponds, lakes and canals fall under the Water Framework Directive legislation. Targets have been set for all inland and coastal waters within each defined river basin district to improve chemical and biological water quality against defined objectives.

The Environmental Stewardship schemes administered by Natural England contain options for the creation, restoration and management of ponds.

The canal infrastructure in England and Wales now includes over 2,700 listed structures, 50 Scheduled Ancient Monuments and 5 UNESCO World Heritage Sites.

Links and References

Worcestershire Biodiversity Action Plan
UK Biodiversity Action Plan
Worcester City Council
Canal and River Trust
Barnt Green Waters Ltd
Water Framework Directive
Environmental Stewardship schemes
Pond Conservation

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Neutral Grassland

Lowland neutral grasslands are the most frequently occurring grassland type in Worcestershire, found across the county on pH neutral soils. They are often described according to their traditional form of management as unimproved, lowland hay meadows or grazing pasture. The most valuable sites have not been altered in hundreds of years and remain untouched by the intensive agricultural activities that have led to the general decline in wildlife-rich grasslands, such as ploughing and reseeding or the use of high nutrient fertilisers and herbicides.

Unimproved grassland can be extremely species-rich, supporting wildflowers such as cowslip, knapweed, green-winged orchid and pyramidal orchid and fungi such as waxcaps. They provide habitat for populations of ground nesting birds including skylark and lapwing. Most of our remaining grasslands are small and often isolated from one another within the landscape.

Species associated with neutral grassland habitat

Devil's-bit scabious ***Succisa pratensis***
This tall plant has rounded purple-blue flower heads that look like a pin cushion. It is related to the teasel and you will find it growing in the damper parts of lowland meadows. It is a popular food plant of bees, moths and butterflies. 'Scabious' derives from 'scabies' - one of the many ailments that the flowers were supposed to help cure. According to one legend, the Devil grew angry about these medicinal properties and tried to get rid of them by biting the roots off, hence the plant's short, stubby roots and the 'Devil's-bit' in the name.

Adder's-tongue fern ***Ophioglossum vulgatum***
This plant is considered a good indicator species of ancient meadows although you will also find it growing along undisturbed woodland rides and on sand dunes. It usually appears between June and August, spending the rest of the year underground as a rhizome. The plant has a bright green, oval, upright frond with a single tall spike (occasionally a pair) bearing the spores.

Why is this habitat important?
Lowland meadows are one of the habitats for which Worcestershire is crucially important in a national context. Approximately 7,000 hectares of unimproved lowland hay meadows and neutral pastures are estimated to remain in England, thought to be just 3% of the amount that would have existed before the Second World War. Just over 1200 hectares of the habitat have been mapped in Worcestershire, meaning that our county contains in the region of 20% of the traditional wildflower meadows that still exist in England.

Where can I see this habitat in Worcestershire?
Foster's Green and Eades Meadows *Worcestershire Wildlife Trust*
This 12 hectare complex of traditional hay meadow has been designated a National Nature Reserve. The fields have not been ploughed for at least 100 years nor have they ever been treated with chemical fertilisers, herbicides or other agricultural chemicals. Ridge and furrow structure can still be seen beneath the carpet of wildflowers. Over 180 species of plants have been recorded, including green-winged orchids in spring and meadow saffron in autumn. The site is managed by grazing and hay cutting and can be accessed by a public footpath.

Hornhill Meadow *Worcestershire County Council*
This 10 hectare Local Nature Reserve is part of the Worcester Woods Country Park complex. The fields are grazed by traditional native breeds of cattle, including the English Longhorn, and support a rich diversity of plant and insect species. Some of the fields have a ridge and furrow pattern. The meadows are open year-round with a leaflet to the self-guided trail available from the Countryside Centre café.

How is this habitat managed?
The biodiversity value of all lowland grassland types depends on management by an appropriate grazing and/or hay-making regime sympathetic to the timing of wildflowers setting seed and germinating. Many of our old grasslands have been lost through ploughing and conversion to arable land or through the addition of nitrates and other chemicals to 'improve' the grassland for the intensive grazing of livestock. Outside of protected areas, the biodiversity value of much of the remaining lowland meadow resource is diminished.

Is this habitat threatened?

The habitat remains under threat from agricultural intensification, the fragmentation of sites into small, isolated blocks and over grazing. It can be hard to secure the correct regime of grazing and hay cutting on small, isolated sites due to the difficulties in finding appropriate livestock and machinery.

How is this habitat being protected?

The largest sites containing lowland meadow habitat that remain in Worcestershire are in nature conservation or local authority ownership. Around 430 hectares of lowland meadows in Worcestershire have been designated as Sites of Special Scientific Interest. Many more sites, mostly in private ownership, have been listed as Local Sites of importance for nature conservation: this gives no statutory protection but enables recognition of their value within local planning policies and provides a means of engagement with owners to give advice on management. Sites containing Biodiversity Action Plan quality habitat also have added protection through the local planning system.

Land management schemes such as Environmental Stewardship, administered by Natural England, may be available to assist with the restoration and management of priority habitats including lowland meadow.

Links and References

Worcestershire Biodiversity Action Plan

UK Biodiversity Action Plan

Worcestershire Wildlife Trust nature reserves

Worcestershire County Council countryside sites

Environmental Stewardship

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Grassland

This broad habitat includes all types of grassland, from valuable species-rich semi-natural grassland, improved pasture used for grazing livestock, parks and playing fields to private gardens. The green patchwork of England's rural countryside includes just over 5 million hectares of grassland of one kind or another. Grassland covers approximately 47% of Worcestershire – over 80,000 hectares.

What does the habitat look like?

All grassland habitats are, as the name suggests, defined by the presence of plant species from within the grass family. Grassland is also predominantly an open habitat, with a lack of significant numbers of woody plant species such as trees. However, the number of plant species found within a particular grassland site will vary depending on the use and management of that site. Agricultural grasslands managed intensively for grazing livestock or for the production of silage will comprise perhaps only two or three very vigorous species, whose growth is promoted with the use of chemical fertilisers. Grasslands managed for amenity

purposes – parks, golf courses etc – are likewise generally very species poor. In contrast, the richest semi-natural grasslands, managed to promote nature conservation value, can contain 20-30 or even more plant species per square metre, including not just grasses but wildflowers, mosses and fungi.

How do we define Biodiversity Action Plan (BAP) quality habitat?

Habitat types can be identified and named according to the National Vegetation Classification (NVC) system, used within Britain as a common standard of habitat description. Both the UK and the Worcestershire Biodiversity Action Plan uses the NVC system in some cases to identify priority BAP habitat. This indicates that the habitat present contains the number and diversity of plant species, or very close to it, that we would expect to find in a natural system which had experienced little or no human intervention or 'improvement'. The means of defining other BAP priority habitat types is not so prescriptive.

Priority BAP grassland types occurring within Worcestershire are:

- Lowland Meadows* (NVC community MG5)
- Lowland Dry Acid Grassland* (NVC communities U1, U2, U4, U5, U6, U16 and U20)
- Lowland Calcareous Grassland* (NVC communities CG1, CG3, CG4, CG5 and CG7)
- Wet Grassland - included within 'Coastal and Floodplain Grazing Marsh' habitat in the UK BAP - (NVC communities MG4 and MG8)

* Same habitat description in UK BAP

What different types of grassland habitat are there?

Species-rich lowland meadows are found on soils with a neutral pH, typically 5-7. Worcestershire is thought to contain around 20% of the semi-natural lowland meadow habitat remaining in the UK, much of the resource having disappeared over the last 60 years as agricultural practices have intensified. For meadows that remain, a cycle of grazing and hay cutting with no addition of artificial chemicals will see species such as cowslip, knapweed, green-winged orchid, dyer's greenweed and adder's-tongue fern flourish.

Acidic grasslands occur on free draining and often sandy soils with a pH below 5 and are often found in combination with lowland heathland habitat. Typical plants include sheep's fescue, wavy-hair grass, heath bedstraw and bracken.

Grassland occurring on calcareous soils of pH 6.5-8.5 will support plant species such as upright brome, ploughman's spikenard, wild liquorice, twayblade, pyramidal orchid and wild thyme.

When grassland is artificially improved, with chemicals added to boost the growth of certain species and suppress certain others, the habitat will lose its biological diversity and become dominated by a small number of vigorous plant species, such as rye grasses, fescues and clovers, which will out-compete smaller plants such as wildflowers for space and nutrients.

How is this habitat managed?

Amenity grassland – our lawns, parks and sports pitches – is usually managed by mowing, perhaps combined with the application of fertiliser or herbicide. Agricultural grasslands can be used to graze livestock, as a short-term rotation to protect bare soil and replace depleted nutrients between crops or to produce silage for animal feed or biomass. Agriculturally improved grasslands will also have chemical inputs to maximise productivity.

Semi-natural grasslands, in contrast, have retained their biodiversity interest and value due to the lack of chemical application and the annual cycle of grazing and hay cutting that is sympathetic to the timing of flowering and seed-set of our native wild plants.

What influences the presence or extent of the habitat?

Development and population growth will influence the creation of grassland habitats, with increases in the number of private gardens, parks, playing fields and sports fields.

In an agricultural situation the presence and location of grassland will depend on individual choices regarding crop rotation and stocking numbers and also on global economic influences such as crop prices.

The survival of semi-natural grasslands, or at least the maintenance of biodiversity value, very often depends on the personal interest of owners. Other factors include the availability of suitable stock or machinery needed to manage the grassland and the economics of competing land use requirements.

How can this habitat be protected or enhanced?

The compulsory set-aside of a proportion of agricultural land to fallow each year was first introduced with the 1992 reform of the Common Agricultural Policy (CAP). The environmental benefits of set-aside soon became apparent; however, rising cereal prices and low global cereal stocks nevertheless prompted Government to abolish compulsory set-aside in 2007. A number of monitoring and research programmes are underway to determine the impacts of this decision and to inform the inclusion, or otherwise, of payments for set-aside or permanent grassland within the current reform of the CAP. Since 2007 a partnership of farming and environmental organisations has encouraged farmers to adopt a voluntary approach to set-aside as part of a wider programme of measures under the Campaign for the Farmed Environment project.

Land management schemes such as Environmental Stewardship, administered by Natural England, may be available to assist with the restoration and management of priority BAP grassland habitats.

Advice and guidance on restoring and managing semi-natural grassland for its biodiversity value can be obtained from organisations such as Flora Locale, Plantlife and The Wildlife Trusts.

Links and References

Worcestershire Biodiversity Action Plan

UK Biodiversity Action Plan

Campaign for the Farmed Environment

Environmental Stewardship

Flora Locale

Plantlife

The Wildlife Trusts

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Worcestershire Habitat Inventory

What is the Worcestershire Habitat Inventory?

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The WHI is intended as a tool to aid decision making by planners, land managers, conservation bodies and others, principally to inform the targeting of habitat restoration and creation projects.

How do we determine the quality of a habitat within the WHI?

Accuracy in interpretation of the aerial photographs was assessed in a targeted programme of ground truthing at an early stage in the project. This confirmed the ability to distinguish between notionally similar habitat types, e.g. acid grassland and neutral grassland, and also to distinguish habitat quality, e.g. unimproved and improved grassland, with a good level of accuracy. A programme of ground truthing is continuing with the support of volunteer surveyors.

Analysis of the WHI data allowed mapping of the strongest intact networks of semi-natural habitat with the highest potential wildlife value. Also identified were habitats of Biodiversity Action Plan quality. Biodiversity Action Plans have been written for habitats and species of the highest priority for nature conservation, at both UK and local level.

Cropped land

This land use refers to farmland currently under cultivation to produce a crop, which may include fallow land (set aside) or temporary grass leys grown between crops. A wide variety of crops are produced in the UK, including cereals and grains such as wheat or barley, maize, root or other vegetables, legumes (peas and beans) and salad crops.

The arable field can contain a range of habitat features including those created by the crop itself (such as autumn and spring sown crops, post-harvest stubble, over-winter stubbles, cultivated fallow), set aside, bare uncropped areas (e.g. failed crops, around power line pylons, tramlines), grassy or cultivated field margins, conservation headlands, rough corners (that are stony, awkwardly shaped or wet), field tracks, hedges, walls, fences, hedgerow trees, in-field trees, copses, ponds and ditches.

The monoculture of a crop can be a relatively inhospitable place for wildlife and the margins of fields, if deliberately managed to create conditions that benefit key farmland species, can be vital reservoirs of biodiversity. Well managed hedgerows and ditches provide an important source of food, shelter and means of movement across the farmed landscape. Features such as arable field margins, buffer strips and conservation headlands can be created and managed to provide a nectar and seed source for insects and birds.

Why is this habitat important?

Arable land is a significant habitat for insects, with around 2000 species commonly found in cereal fields, providing a rich food supply for birds and small mammals. The populations of certain species of farmland bird, including grey partridge and skylark, are critically dependent on insect availability as their chicks eat nothing else for the first few weeks of life. Farmland birds are therefore severly affected by the use of chemical insecticides and herbicides, which remove both insects and the food plants of insects from the food chain.

The native, wild flora found within arable fields is the most critically threatened group of plants in Britain and is of conservation concern because of the enormous national declines in their distribution and abundance. Overall, some 300 species of plant can occur in arable fields. Worcestershire is an important county for rare arable flora such as cornflower, corn buttercup, shepherd's-needle and narrow-fruited cornsalad.

Species associated with cropped land

Brown hare - *Lepus Europaeus* (photo, right)
The brown hare was introduced into Britain around 2000 years ago and is now naturalised into our native fauna. It has declined in population dramatically over the last 100 years and is currently thought to number around 800,000 in Britain. It is a species predominantly, although not exclusively, of open farmland, with factors such as the intensification of grassland management and increase in livestock numbers contributing to their decline.

Skylark - *Alauda arvensis*
The skylark is best known and identified by its continuous, warbling flight song during the breeding season. It is on the UK Red List of birds of conservation concern due to a decline in population of 53% in the last four decades. The skylark requires open fields with low, undisturbed vegetation in which to breed and a steady year-round supply of weed leaves, seeds and insects. Their decline is due mainly to the move from spring to winter cereals and the intensification of grassland management.

Cornflower - *Centaurea cyanus*
The cornflower was once considered a weed and agricultural intensification has now all but wiped out cornflowers in the wild. The delicate, bright blue flowers are actually composite heads of many small flowers and most cornflowers you will find have been re-seeded as part of a wildflower-rich arable field margin or similar habitat. It flowers from June to August and can grow up to 1m in height.

Shepherd's-needle - *Scandix pectin-veneris* (photo, right)
Shepherd's-needle has small groups of white flowers and feathery leaves. It is now restricted to the south east of England, its distribution just creeping into the south east corner of Worcestershire. It prefers mainly heavy clay soils and favours disturbed ground as well as field margins of arable fields. It is critically endangered in the UK and is considered to be at high risk of extinction.

Where can I see this habitat in Worcestershire?

Kemerton Estate *Kemerton Conservation Trust*

The Estate has been in Countryside Stewardship and Higher Level Stewardship farming schemes for over a decade and has been experimenting with best practice management for conserving arable flora for even longer. Take a walk over the footpaths on the south west side of Bredon Hill during the summer and see if you can spot some of the rare flowers present within the arable field margins.

Naunton Court *Worcestershire Wildlife Trust*

The two arable fields here were purchased by the Wildlife Trust in 2006 after surveys revealed that the site is of international importance under the Plantlife criteria for Important Arable Plant Areas. Corn buttercup, shepherd's-needle and blue pimpernel are all found here. Access by permit can be arranged by contacting Worcestershire Wildlife Trust.

How is this habitat managed?

Arable land is managed to produce a crop, in a cycle of cultivation, sowing, fertilisation and weed control and then harvesting. Crops on a single landholding are often grown in a rotation, the purpose being to avoid a build-up within the soil of pests or diseases specific to a particular crop type. The rotation is likely to include a period of fallow when no food crop is planted on a particular area of land or a rotational grass ley to provide silage or grazing for dairy cattle and return organic matter to the soil. Arable farming today is very highly mechanised, with precision machinery used to undertake the various operations.

Is this habitat threatened?

The habitat is not threatened. However, the intensity and type of arable farming in a given area can have considerable detrimental impact on biodiversity or, equally, can be carried out in a way that is sympathetic to the needs of farmland wildlife.

Threats to wildlife on cropped farmland come mainly from the use of synthetic chemicals - fertilisers, pesticides and herbicides - and the timing of farming operations, which may prevent or disrupt breeding or result in the destruction of habitat or food supplies at critical times.

How is this habitat being protected?

Several sets of rules and regulations relate to standards of environmental management on to farmed land in England and compliance with these is essential if the landowner receives payments under the Single Payment Scheme, Environmental Stewardship or elements of the English Woodland Grant Scheme. Statutory Management Requirements are legal requirements based on EU and UK law and are applicable to all farmers. They address the environment, animal welfare and public, plant and animal health. Good Agricultural and Environmental Condition standards are legal requirements set in UK and English law. These relate to soil erosion, soil organic matter, soil structure and the protection and management of boundary features such as hedgerows and water courses.

Twelve arable flora species are protected under Schedule 8 of the Wildlife and Countryside Act.

Land management schemes such as Environmental Stewardship, administered by Natural England, may be available to assist with the creation and management of features on cropped land that will increase biodiversity and protect watercourses and trees.

Links and References

Worcestershire Biodiversity Action Plan

UK Biodiversity Action Plan

Worcestershire Wildlife Trust nature reserves

Kemerton Conservation Trust

Cross Compliance

Environmental Stewardship

Plantlife

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How do we determine the quality of a habitat within the WHI?

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Analysis of the WHI data allowed mapping of the strongest intact networks of semi-natural habitat with the highest potential wildlife value. Also identified were habitats of Biodiversity Action Plan quality. Biodiversity Action Plans have been written for habitats and species of the highest priority for nature conservation, at both UK and local level.

Broadleaved Woodland

Most of the native woodland in the UK is comprised of broadleaved species – trees with non-needle-like leaves and which (with a few exceptions) lose their canopy in the winter. Broadleaved woodland may be classified as *ancient* on sites that have been continuously wooded since at least 1600AD, it may comprise ancient woodland that has been significantly re-planted with more commercial timber species – a *Planted Ancient Woodland Site* – or it may be younger, more recent woodland. Native broadleaved species found in the UK include English oak, ash, birch, lime, field maple, hazel, English elm and holly.

Above: Nunnery Wooc

Why is this habitat important?

Woodlands of all types provide shelter and food for many species of birds, mammals, reptiles and insects. Native broadleaved woodlands contain tree species that have arrived here naturally in the UK since the last ice age and which have developed complex inter-dependent relationships with our other native wildlife. In Worcestershire, rare woodland species include dormouse, Bechstein's bat and pearl-bordered fritillary butterfly.

Woodlands are also an important resource for public leisure and recreation activities. Many are managed to provide timber for various uses, including renewable energy in the form of wood fuel.

Species associated with broadleaved woodland

Woodland warblers such as blackcap (photo), chiffchaff, willow warbler and wood warbler
Woodland bird species require nesting habitat and a year-round source of food suitable for both adults and chicks. Structural diversity within a woodland is essential and should include a mature canopy with an understory of future canopy trees, a scrub layer, ground flora including flowers, ferns, grasses, mosses and lichens, clearings and glades within the wood and dead and decaying timber that can provide a source of insect food and cavities for nest sites.

Woodland butterflies such as wood white, pearl-bordered fritillary (photo) and brown hairstreak
Butterflies thrive in open, sunny habitats with a ground flora layer that provides nectar and food plants for caterpillars. One of the biggest causes of decline amongst woodland butterflies is the abandonment of active management, particularly coppicing, within many of our woodlands. This shades out the plants on the woodland floor and cools the temperature within the wood. Woodland management designed to promote butterfly numbers and diversity will include maintaining open rides and glades and managing areas of rotational coppice.

Where can I see this habitat in Worcestershire?

Wooded hills between Suckley and Abberley, west Worcestershire
The countryside stretching north from the Malvern Hills between Suckey and Abberley is a rolling landscape of wooded hills. It includes a number of nature reserves including Ravenshill Wood and the Knapp and Papermill, as well as numerous footpaths along which you can explore the ancient woodlands, veteran trees, orchards, meadows and farmland.

Grafton Wood *Worcestershire Wildlife Trust, Butterfly Conservation*
Jointly owned by these two conservation bodies, Grafton Wood Site of Special Scientific Interest is an ancient semi-natural broadleaved woodland with a canopy and shrub layer of ash, oak, field maple, hawthorn and hazel. The woodland is also the centre of the only midlands population of the brown hairstreak butterfly. There are public footpaths and permissive trails running through the wood.

How is this habitat managed?

Woodland can be managed for a variety of objectives - biodiversity, timber, shooting and recreation being just some. Conservation (or restoration) of the biodiversity value of broadleaved woodland will often focus on increasing the amount of light and space within the wood through selective felling, cyclical coppicing and the creation of glades and rides. This will promote the growth of woodland ground flora which in turn provides a food source for insects. Woodland bird species require a food supply including insects, seeds and berries, as well as nesting sites within scrub and in tree cavities.

Is this habitat threatened?

Many remaining woodlands are small and relatively isolated, with increasing fragmentation a threat to biodiversity value.

Deer and grey squirrels can cause large amounts of damage to woodland through bark stripping and the grazing of new vegetation growth. This can be a particular issue when parts of the woodland are managed by coppicing.

Woodlands can be invaded by undesirable non-native plant species such as rhododendron, sycamore, Himalayan balsam and Japanese knotweed.

Biodiversity interest can also be damaged by excessive recreational use or if game rearing or forestry operations are carried out too intensively.

How is this habitat being protected?

The largest woodlands remaining in Worcestershire are designated as National Nature Reserves or Sites of Special Scientific Interest, including Wyre Forest, Chaddesley Wood and Tiddesley Wood. Many smaller sites also have legal protection and there are currently just over 1,800 hectares of woodland designated as SSSI within the county.

Other sites, mostly in private ownership, have been listed as Local Sites of importance for nature conservation: this gives no statutory protection but enables recognition of their value within local planning policies and provides a means of engagement with owners to give advice on management. Sites containing Biodiversity Action Plan quality habitat also have added protection through the local planning system.

Many Planted Ancient Woodland Sites are now being restored to remove conifers and non-natives. Forestry Commission has published good practice guides and standards for undertaking PAWS restoration.

The requirements on a woodland owner for obtaining a felling licence prior to forestry operations are incorporated within the Forestry Act 1967.

Tree Preservation Orders can be applied by the Local Authority both to individual trees and to woodland.

The Forestry Commission are the statutory body with responsibility for the protection and expansion of woodlands in Great Britain. The English Woodland Grant Scheme administered by Forestry Commission provides support for creating, restoring and managing woodland.

Links and References

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Ancient Woodland

Ancient woodland sites are those that have been continuously wooded since at least 1600AD. They may be remnants of the original wildwood that once covered Britain or they may have been significantly re-planted with native or non-native species, usually for commercial timber production (the latter known as Planted Ancient Woodland Sites). Ancient Semi-Natural Woodland and Planted Ancient Woodland cover approximately 3-4% of Worcestershire. Because of the continuity of tree cover, ancient woodlands can support a high diversity and abundance of plants within the canopy, shrub and ground flora layers. Tree species typical of natural, native woodlands in Worcestershire include English oak, ash, field maple and birch.

Above: Nunnery Wood

Why is this habitat important?

Woodlands of all types provide shelter and food for many species of birds, mammals, reptiles and insects. Ancient woodlands can also contain a rich ground flora including bluebells, primroses, lichens, mosses and fungi. In Worcestershire, rare woodland species include the dormouse, Bechstein's bat, pearl-bordered fritillary butterfly and true service tree.

Woodlands are also an important resource for public leisure and recreation activities. Many are managed to provide timber for various uses, including renewable energy in the form of wood fuel.

Species associated with ancient woodland habitat

Dormouse - *Muscardius avellanarius*
The Wyre Forest and surrounding woodlands are a particular stronghold for dormice in Worcestershire. Loss and fragmentation of woodland and hedgerow habitat is contributing to this species decline: it is now classed as Vulnerable and is a UK Biodiversity Action Plan priority species. Dormice eat flowers and pollen during the spring, fruit in the summer and nuts, particularly hazel nuts, in the autumn. Insects also supplement their diet throughout the year. Dormice are known to hibernate for up to 7 months. One means of surveying for the presence of dormice within a wood is by identifying the teeth marks on rodent-nibbled nuts.

Common fan-foot moth - *Pechipogo strigilata* – and Drab looper moth (photo centre) - *Minoa murinata*
Both of these moths are priorities for conservation in Worcestershire and both are associated with woodland. Common fan-foot is found in open woodland and recently abandoned coppice - usually on heavy soils. It prefers leaf litter, humid conditions and cover from shrubs and low branches of scattered trees. The larvae are now known to feed on withered oak leaves. The drab looper prefers sunny rides and clearings within ancient woodland where the caterpillar food plant wood spurge can be found.

Broad-leaved helleborine - *Epipactis helleborine*
A member of the orchid family, this helleborine grows in woodland clearings and can reach 75cm in height. It has purple tinged, drooping flowers from July to September. The leaves are wider than those of other helleborines with ribbed veins, with the lower leaves being almost elliptical.

Where can I see this habitat in Worcestershire?

Wyre Forest *Forestry Commission, Natural England, private landowners*
Large parts of the Wyre Forest are designated as a National Nature Reserve or Site of Special Scientific Interest. The wood has long been managed for timber and charcoal production and the coppice system is being restored to further enhance biodiversity. Wyre is a popular visitor destination in Worcestershire, with a network of walking and cycling trails and a visitor centre.

Tiddesley Wood *Worcestershire Wildlife Trust*
One of the largest woodlands in the county, Tiddesley is managed using methods including coppicing to promote insect life and provide scrub for woodland birds. A small area of conifer plantation is being restored to native woodland. The site is open to the public year-round.

How is this habitat managed?

Woodland can be managed for a variety of objectives - biodiversity, timber, shooting and recreation being just some. Conservation (or restoration) of the biodiversity value of ancient woodland will often focus on increasing the amount of light and space within the wood through selective felling, cyclical coppicing and the creation of glades and rides. This will promote the

growth of woodland ground flora which in turn provides a food source for insects. Woodland bird species require a food supply including insects, seeds and berries, as well as nesting sites within scrub and in tree cavities.

Is this habitat threatened?

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