



Natural Capital
Assessment Partnership

Warwickshire, Coventry and Solihull's **State of Habitats 2025**

Sarah Barnsley & Lorna Gwilliam

With contributions from
April Webb and Camille Newton.

Reviewed by Ian Jelley and Jo Hudson.

With huge thanks to Wildlife Trust and local
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Foreword

Remnant heathland patches, pockets of ancient woodland, species-rich post-industrial sites... These are just a few examples of the rich diversity of habitats found across Warwickshire, Coventry and Solihull. Yet many of our precious sites and the wildlife they are home to are being squeezed. Development, intensive agriculture and climate change, either collectively or in isolation, all form threats to the region's remaining habitats and biodiversity.

Human communities also need places to live, access to green space and food to eat, making the balance of multiple pressures on available space a challenging task. A habitat baseline is essential for balancing these needs. It allows informed conservation decisions to be made, whether identifying the rarest habitats requiring protection,

or highlighting opportunities for connecting habitats at a small scale or at landscape-level. This State of Habitats 2025 report aims to provide this baseline.

The next few years will be integral for shaping the future of habitats across Warwickshire, Coventry and Solihull. Local Nature Recovery Strategies are being developed for the region that will identify focal areas for nature's recovery. The statistics underpinning this report and the data gathered through the Natural Capital Assessment Partnership over the last **25 years** can all feed into this process. They will be used to assess progress against other nationally and regionally embedded targets such as **'30% of land for nature by 2030'**^{1,2,3}.

By taking the right action for nature now and monitoring progress, we can hope to see a future where wildlife declines and habitat loss are reversed and nature is thriving across our region.





Habitat headlines

This State of Habitats report draws on data collated by the Natural Capital Assessment Partnership (formerly the Habitats Biodiversity Audit) over the last **25 years**^{4,5}. The partnership is managed by Warwickshire Wildlife Trust, hosted by Warwickshire County Council and is part-funded by these organisations and **7** other local authorities across the sub-region. The statistics presented will provide a habitat baseline to update the last report written in **2013**⁶ and which was used to designate Living Landscape priority conservation areas such as the Dunsmore Living Landscape. The current report will also be used to inform appropriate and effective conservation action, by helping to drive regional priorities for landscape-scale work and inform the Local Nature Recovery Strategy. While survey methods have evolved over time, where feasible we provide a broad comparison of the current habitat data to the earlier report (page 28).



Warwickshire is home to a whole array of incredible habitats

From ancient woodland and wood pasture to species-rich post-industrial sites, Warwickshire, Coventry and Solihull boast a huge diversity of habitats^{7,8,9}. This diversity spans from the Cotswold Area of Outstanding Natural Beauty in the south¹⁰ to the pockets of remaining acid grassland and heathland in the north, which were once much more extensive across the region^{8,9}.



Steven Cheshire

Semi-natural grasslands are rare across the region. They include calcareous grasslands, **95%** of which are found in Stratford-upon-Avon District, at sites such as Ufton Fields Site of Special Scientific Interest¹¹.



Louise Barrack

The region has several post-industrial sites, now home to rare and valuable plants. One example is **Claybrookes Marsh**, a Site of Special Scientific Interest on the edge of Coventry¹².



Rare and unique species are found in the region, such as **Dyer's Greenweed**, (*Genista tinctoria*) a Warwickshire scace species, found in scrub and semi-natural grassland habitats^{13,14}.

Some of these are protected sites



Louise Barrack



River Arrow

Warwickshire, Coventry and Solihull have **133 sites** with legal (statutory) protection^{15,16,17}.

1 Special Area of Conservation¹⁶

67 Sites of Special Scientific Interest¹⁵

65 Local Nature Reserves¹⁷

These legally protected sites cover approximately **1%** of Warwickshire, Coventry and Solihull (**2,101 hectares of land**).

Local Wildlife Sites are non-statutory designations that are provided some protection from development in local development plans¹⁸. Across the sub-region there are:

667 Local Wildlife Sites⁵.

These sites represent **7,858 hectares** of land or **3%** of the total area⁵. This is an increase of **3,080 hectares** since the previous State of Habitats report from **2013**⁶. Slightly more than half of these Local Wildlife Sites are known to be in good or favourable management⁵.

Warwickshire's habitat statistics

Warwickshire, Coventry and Solihull collectively cover **225,450 hectares** of land¹⁹. Heathland and mire are the rarest habitats, each representing less than **0.01%** of the land area⁴.

At the other end of the scale, it's estimated that **64%** of Warwickshire, Coventry and Solihull is farmed⁴.

Just over **7%** of Warwickshire, Coventry and Solihull is covered by woodland and parkland habitats⁴. This compares to **10%** across England as a whole²⁰. Over half of woodland is plantation woodland (clearly planted rather than semi-natural²¹).

Approximately **2%** of the region, or **4,700 hectares**, is covered by ancient woodland & wood pasture²².

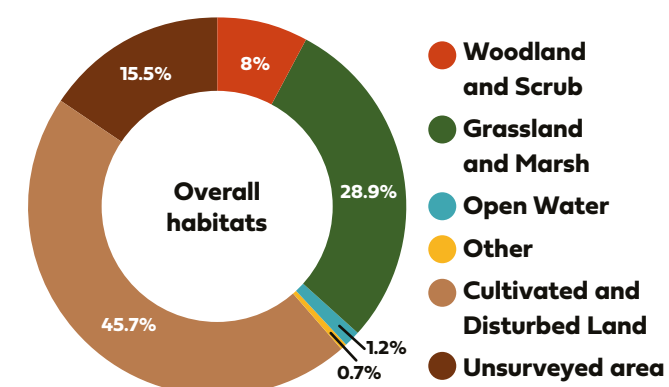
Outside woodlands, an estimated **10,733km** of hedgerow zig-zag across the region, providing valuable connectivity corridors for wildlife⁴.



Urban land cover types such as buildings and roads represent **9%** of the region's land area²³.

65,250 hectares of grassland are found across the sub-region (**29%** of total area). Of this, only **11%** is semi-natural grassland with distinct acid, calcareous (alkaline soils), neutral or marshy grassland plant communities^{4,21}.

The remaining **89%** are agriculturally improved or species-poor semi-improved grasslands. In this context, 'agriculturally improved' means grasslands managed to increase farming performance, for example through the application of fertilisers^{4,21}.



Wetland habitats are some of the rarest in the region, collectively accounting for less than **1%** of the total area.

Standing waterbodies, including canals, ponds, lakes and reservoirs, account for **1%** of Warwickshire, Coventry and Solihull.

1,260km of river wind their way across the region²⁴.

There are still challenges to achieving landscape-level conservation

Sections of Local Wildlife Sites and potential Local Wildlife Sites are known to have been lost in **65 locations**⁵. In some instances, whole sites have been lost. Potential Local Wildlife Sites are those that are thought to be of Local Wildlife Site value but that haven't yet been fully surveyed. Many potential sites are also facing development pressure. Further potential sites may have been lost, but are not included in this figure.

It's estimated that approximately **15%** of the region surveyed can be counted as 'wildlife-friendly' habitat⁴, so we still have a long way to go to achieve our strategy goal of **30% by 2030**^{1,2,3}.



Opportunities and recommendations

The rarest habitat types, including wetlands, semi-natural grasslands and heathland, should be protected so that they are not lost entirely.

Opportunities for connecting up and buffering key habitats and sites should be explored, particularly where there are large clusters of legally designated sites and Local Wildlife Sites. Regional Local Nature Recovery Strategies²⁵ could go a long way in refining this process.

All Local Wildlife Sites should be protected and management

could be improved in over a third of Local Wildlife Sites⁵.

A further **1,310 sites** are potential Local Wildlife Sites⁵. Surveying and designating these sites **could protect over 10,000 hectares** of additional wildlife habitat in development plans⁵.

There are big gaps in our knowledge of habitat condition, where data are missing or very outdated. These data gaps need to be filled rapidly to gain a true understanding of the action needed for nature across the region.





Introduction

Across Warwickshire, Coventry and Solihull, we are lucky to host an enormous diversity of different habitats. These range from ancient woodlands and flood meadows to reedbeds and remnant heathland patches. By increasing awareness of these habitats, protecting and enhancing them, we can support abundant wildlife for everyone to enjoy for years to come. Through our network of nature reserves, landscape-scale nature recovery projects, community engagement and habitat survey work, we are aiming for a world where nature is thriving.

As well as its intrinsic value, nature provides people with multiple benefits without which we could not survive. These range from providing food, medicine and raw materials, to regulating air quality, water quality and natural hazards such as flooding²⁶. In addition to tangible benefits, a healthy and vibrant natural world provides many more intangible benefits, whether that's improved health and wellbeing, spiritual connection, opportunities for learning and advancing knowledge, or simply enjoying the beauty of a landscape brimming with life^{26,27,28}.

A pivotal moment

Yet, we sit at a pivotal moment for nature. Pressures caused by human

activities are squeezing wildlife and ecosystems to the limit. At an international level, research suggests that greater than **1 out of every 8 plant and animal species** globally may be heading towards extinction²⁶. As outlined in the Living Planet Report 2022²⁹, the Biodiversity Intactness Index (BII)³⁰ provides an estimate for the percent of remaining natural biodiversity in a given area. The average BII globally is estimated at **77%**, well below the **90%** threshold which is thought to be needed for well-functioning and reliable ecosystems^{29,30}.

At a national level, the recent State of Nature 2023 report also sends a stark message: that human action over the last **50 years** has led to considerable declines in the UK's wildlife²⁷. Humbling headline figures from the report show the abundance of freshwater and terrestrial species has decreased, on average, by **19%** in that **50-year** timeframe²⁷. It's not just animal species that have seen worrying decreases, but flowering plants too²⁷. Over a **50-year period, 54%** of flowering plants have seen the area over which they are distributed decrease, compared to only **15%** that have seen an increase in their distributions²⁷. At a local level, **42%** of Warwickshire's **265 rarest plants** haven't been recorded since **2000**¹⁴.

This trend of species decline has a direct impact on wildlife itself, including iconic and well-loved species like the dormouse (*Muscardinus avellanarius*)²⁷.



Wildlife declines also have knock-on effects in terms of ecosystem functioning and the benefits people get from nature^{31,32}. Decreases in pollinators for example, could potentially lead to reduced crop yields³³. It goes without saying, taking action for nature has never been more important. To do so, we need to understand the key drivers of wildlife decline.

Drivers of decline

A **2016 study**, summarised in the State of Nature 2023, found that the greatest contributor to the UK's declining wildlife over an approximately **40-year** period, was agricultural intensification^{27,34}. Individual 'sub-drivers' classified under the umbrella of agricultural intensification were broken down further. The three sub-drivers exerting the greatest negative influence on species population trends were found to be farming practices linked to production (such as the time of year in which crops were sown), a reduction in semi-natural habitat and intensive livestock grazing³⁴.

Climate change was found to be the second most important factor influencing population species trends³⁴. However, while climate change was shown to have a considerable negative impact on some species, it was also



shown to have a positive impact on a greater number of species³⁴. This is potentially because the northern range limits of many species are often found in the UK,^{34,35} although a bias toward studies focusing on species with high dispersal abilities may be influencing these statistics. As species move northwards, their range covers a greater extent of the UK^{34,35}. However, the ability for species to expand their ranges will also depend on other factors such as habitat availability³⁵. Protected sites can play an important role in providing habitat within a species' shifting range³⁶. This is evidenced by a **2013 study** which found that of six wetland bird species who have established breeding populations in the UK, all bred for the first time in Sites of Special Scientific Interest³⁶.

Landscape-scale thinking

Increasing the area of wildlife habitat through creation and restoration, as well as protecting and connecting up existing habitats, could go a long way in preventing further species declines, allow for the movement of species between areas and prevent the loss of ecosystem functioning^{29,35-38}. This requires landscape-level thinking and is the principle underpinning the 2011 Lawton review of 'more, bigger, better and joined-up' habitat³⁸. Larger

and better-connected sites are more likely to meet species' resource and habitat diversity requirements³⁸. Yet, the space available for natural habitat in England is limited³⁸. In this context, an ecological network of key sites of high habitat quality, connected by 'corridors' of habitat or small sites that provide a 'stepping-stone' function for wildlife, can also meet the needs of a wide range of species³⁸.

The need for a landscape-level approach has been recognised by UK Government through the target of protecting for nature, **30% of the UK's land by 2030**¹. This will be achieved through mechanisms including the development of Local Nature Recovery Strategies (LNRS)²⁵. In the Warwickshire, Coventry and Solihull sub-region, Warwickshire County Council and the West Midlands Combined Authority are leading on the development of LNRS. The **30 by 30 target** is similarly

captured in the Wildlife Trust's collective 2030 Strategy². The primary goal of the strategy is to see 'Nature in Recovery', with success including **30%** of the UK's land and seas under positive management for nature². A starting point is to understand what habitats we have already and where the gaps are. This way, we will have a better idea of where conservation action will be most effective.

This is where the State of Habitats report comes in. In this report, we use a combination of ongoing survey data that has been collated over the last **25 years**, as well as exciting new remotely sensed datasets, to assess the extent and position in the landscape of different habitats. Armed with this information, we can identify steps that need to be taken to ensure a future where wildlife have the resources they need to thrive and where humans have access to these wildlife-rich landscapes.



The Natural Capital Assessment Partnership and remit of the report

To plan conservation efforts strategically, we need to understand the extent and spatial location of different habitats using the best and most up-to-date data available. The last regional assessment as to the state of Warwickshire, Coventry and Solihull's habitats was completed over **ten years ago** in **2013**⁶. This report emerged from the need to establish the current habitat baseline. Moving forward, the statistics presented will feed into a new era of landscape-level conservation. They will help inform the most appropriate locations to target for habitat enhancement or creation so that wildlife can benefit from a well-connected and climate resilient landscape.

The statistics in this State of Habitats report have been produced by the Natural Capital Assessment Partnership. NCAP was **established in 1995** as the Habitat Biodiversity Audit. Managed by Warwickshire Wildlife Trust (WWT), NCAP is hosted by Warwickshire County Council (WCC). It is part-funded by WWT, WCC and **7** other local authority partners across the region.

These include Coventry City Council, North Warwickshire Borough Council, Nuneaton and Bedworth Borough Council, Rugby Borough Council, Solihull Metropolitan Borough Council, Stratford-on-Avon District Council and Warwick District Council. In the context of this report, the sub-region refers to Warwickshire, Coventry and Solihull, although Coventry and Solihull do not fall within Warwickshire County.

Statistics were produced using a combination of long-term datasets managed by NCAP and which store habitats⁴ and Local Wildlife Site data⁵, as well as more recently acquired remotely-sensed data^{39,40-42,23}. The habitats and Local Wildlife Site datasets were also used to inform the earlier State of Habitats report in 2013⁶. Where we can, we look broadly at habitat change in the years since the previous report.





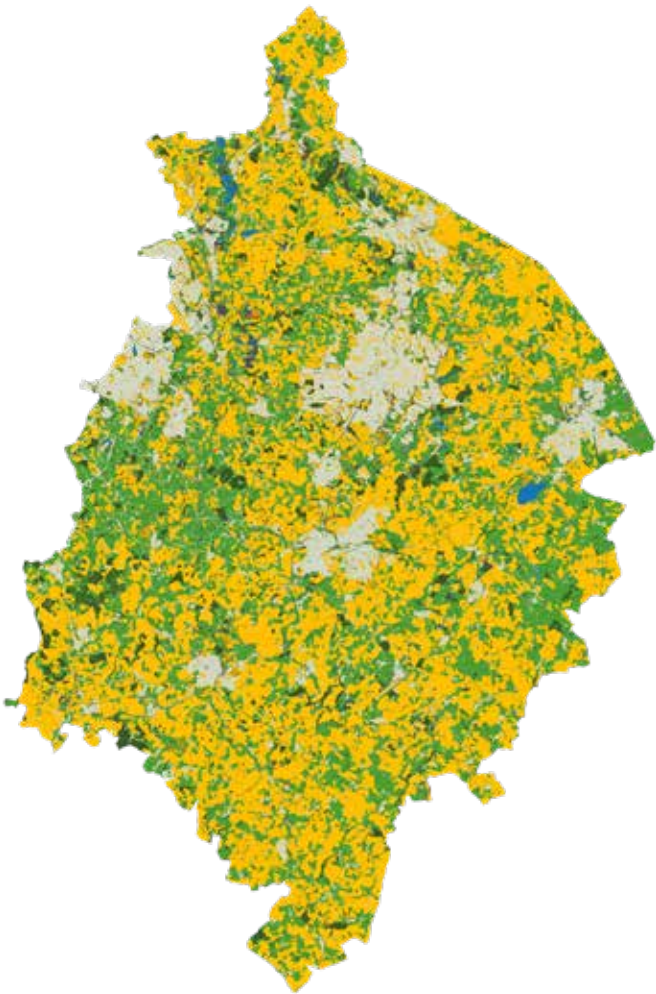
NCAP Data

NCAP habitats data

Over the last **25 plus years**, the NCAP partnership has established a habitat database for the whole of Warwickshire, Coventry and Solihull⁴. Data have been gathered on the ground by the NCAP team using a habitat survey method known as 'Phase 1', developed by the Joint Nature Conservation Committee²¹. Spatial data are also available, in the form of a habitats map (Figure 1). This map has been continuously adapted as habitats have been re-surveyed over time on a rolling basis.

Since the inception of NCAP, this dataset has underpinned strategic decision-making for all partners. Local authorities use the data when creating Local Plans and in planning decisions⁴³. Warwickshire Wildlife Trust has used the habitats data to identify key 'Living Landscapes' across the region⁴⁴. These include Dunsmore Living Landscape⁴⁵, with its complexes of woodland and meadow. They also include the River Sherbourne Living Landscape, with conservation work focusing on the river itself, its catchment and tributaries⁴⁶.

Figure 1. Broad habitat types across Warwickshire, Coventry and Solihull. Unserved areas are predominantly urban features as urban land cover types are not represented extensively in the Phase 1 habitat survey.



- Phase I Habitat & Code
- A - Woodland and Scrub
 - B - Grassland and Marsh
 - C - Tall Herb and Fern
 - D - Heathland
 - E - Mire
 - F - Swamp, Marginal and Inundation
 - G - Open Water
 - I - Rock Exposure and Waste
 - J - Cultivated and Disturbed Land
 - Unsurveyed Area

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Local Wildlife Sites

A second key aspect of NCAP's work is the Local Wildlife Site (LWS) project. The LWS system affords a non-statutory designation to any highly valuable, wildlife-rich site that meets a minimum standard¹⁸. This is unlike statutorily designated Sites of Special Scientific Interest (SSSIs) which are often selected as being representative of valuable features or wildlife⁴⁷. SSSIs don't include all highly valuable wildlife sites. LWS designation is therefore an important mechanism for recognising sites of high wildlife value that would otherwise not be protected, and LWS sites often receive protection from development in local authority planning considerations. LWS can also play an important role in acting as 'stepping-stones' or corridors that connect habitats at a landscape level.

NCAP plays an important role in the LWS designation process. Ecological surveys of potential Local Wildlife Sites are carried out by the NCAP team. Potential Local Wildlife Sites (pLWS) are usually recognised through other surveys, such as Phase 1 habitat surveys. The LWS survey report is passed on to a panel who collectively decide whether the site should be designated. Panel members have expert knowledge of the nature and ecology of Warwickshire, Coventry and Solihull.

The LWS panel consider the value of a site against a set of scientific and community criteria⁴⁸. These have been designed to assess a site's local value, for example whether it supports rare animal and plant species, or whether it provides important access to green space for the local community. NCAP also manage LWS data as a spatial layer which allow the team to calculate statistics such as the number of LWS or pLWS lost or gained over time⁵.

As of **April 2024**, the Warwickshire, Coventry and Solihull sub-region has **667 Local Wildlife Sites**, collectively covering an area of **7,858 hectares**⁵. Some of these are accessible to the public, such as Whittleford Park and Barpool Valley LWS⁵ which is managed by Nuneaton and Bedworth Borough Council. Others are privately owned and not accessible. LWS / pLWS are known to have been lost in **65 locations** (labelled as 'destroyed' on Figure 2)⁵. These include either sections of LWS / pLWS or whole sites in some instances. Further sections of pLWS may have been lost but are not included in this figure. Of those LWS sites that remain, only **339** (just over **50%**) are known to be under good / favourable management⁵. Data are missing or unclear for the remaining sites, or are known to be under medium to inappropriate management or only partly under favourable management. The breakdown of LWS for each local authority can be found in Table 1.

1,310 sites are potential Local Wildlife Sites, representing an area of **10,161 hectares**⁵. Designating all these sites as Local Wildlife Sites would represent an enormous additional area of wildlife habitat with greater protection from development. It also requires a huge investment in surveying resources. It is estimated that it would take a single surveyor approximately **46 years** to survey and write up the reports for all remaining potential LWS.



Warwickshire Wildlife Trust

Table 1. Number of existing Local Wildlife Sites (LWS) and potential LWS (pLWS) per local authority and the number of locations where sites / sections of sites are known to have been lost in each local authority⁵.

Local Planning Authority	Number of LWS	Number of pLWS	Number of LWS / pLWS sections lost*
Coventry City Council	71	13	11
Nuneaton & Bedworth Borough Council	52	42	8
North Warwickshire Borough Council	111	218	7
Rugby Borough Council	74	116	11
Stratford-on-Avon District Council	143	657	9
Solihull Metropolitan Borough Council	122	95	15
Warwick District Council	94	169	4

*This includes sections of LWS / pLWS or whole sites in some instances. Further pLWS in particular may have been lost but are not included in this figure.

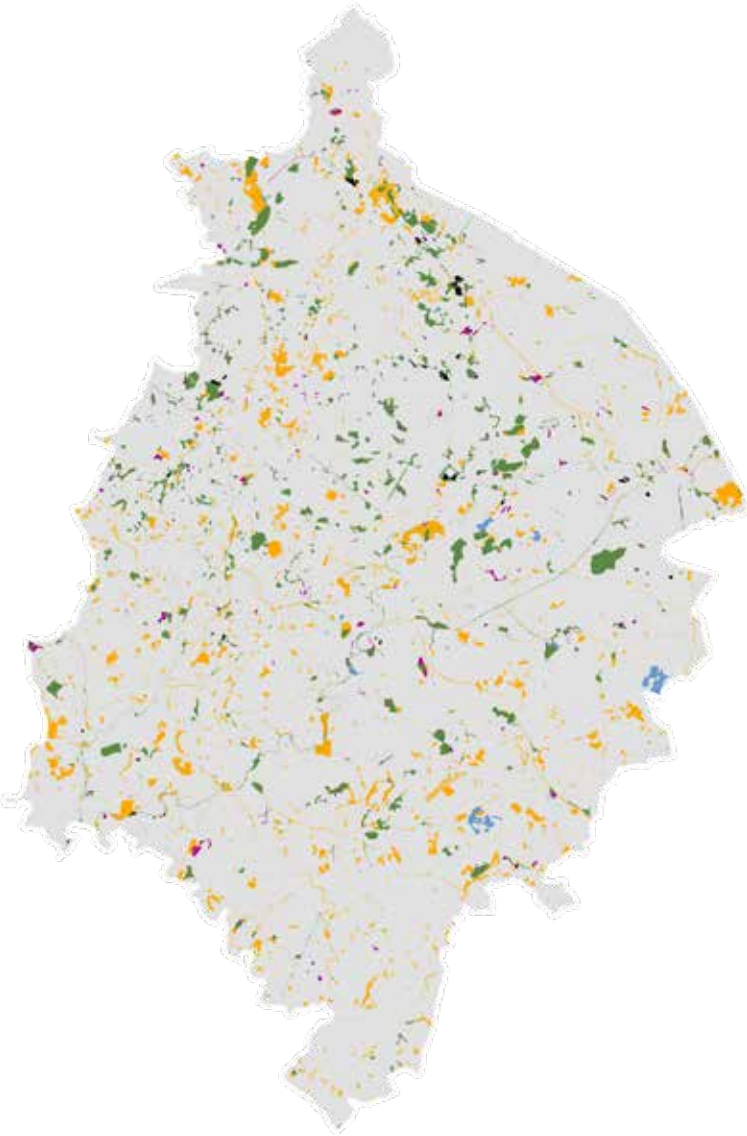


Figure 2. Map showing Local Wildlife Sites and potential Local Wildlife Sites across the Warwickshire, Coventry and Solihull sub-region.

- LWS Status**
- Local Wildlife Site
 - Deferred
 - Destroyed
 - Potential site
 - Rejected

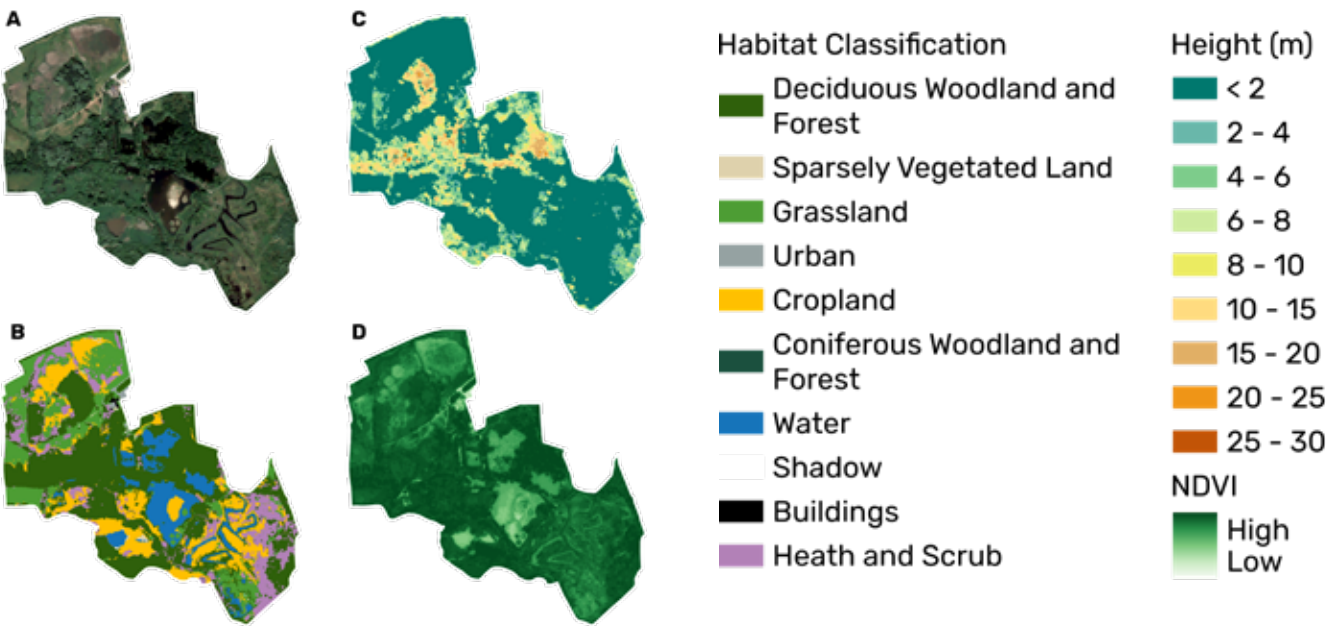
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Remote-sensing data

More recently, NCAP has acquired a remotely sensed dataset of satellite imagery from **July 2023** (Figure 3A), height data⁴⁰ and Normalised Difference Vegetation Index data³⁹ (NDVI – an index that provides an indicator of the density or health of vegetation). These data layers provide

useful information which can underpin conservation decisions going forward. The height layer can be used as a tool for viewing how the structure of a woodland varies (Figure 3C). The NDVI layer can show areas where there is very low density of healthy vegetation and so indicate where there may be barriers to the movement of species across a landscape (Figure 3D).

Figure 3. Brandon Marsh Nature Reserve shown as A. Raw satellite imagery, B. Habitat classification map, C. Height layer (m) and D. Normalised Difference Vegetation Index.



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April Webb

The NCAP partnership have also acquired a habitat classification map²³ derived from the remotely sensed data layers and which was produced by Spottitt, a company that specialises in satellite remote-sensing data analytics⁴⁹. This habitat classification map places every section of Warwickshire, Coventry and Solihull into **11 habitat categories** (Figure 3B for example section). Additional details as to the habitat classification map can be found in Appendix 1.

Moving forward, the habitat classification map can complement the ongoing habitat data collation, through methods such as Phase 1, by the NCAP team. While on-the-ground survey methods can capture data at a finer level of detail, they are time consuming and are limited by survey capacity and other restrictions such as access.

On the other hand, the satellite-derived habitat classification map provides an instant rapid overview of broad habitat categories.

The accuracy with which a habitat on the ground has been placed into the correct habitat category in the habitat classification map needs to be checked^{50,51}. This process assesses, for example, how much of the area recorded as 'woodland' on the map is woodland in real life. The accuracy assessment for some habitats has already been completed namely, woodland, water bodies and urban features (buildings and other non-natural features). Where this is the case, the remote sensing data has been considered alongside the Phase 1 data in each relevant Chapter.

The NCAP team will be producing the accuracy statistics for the remaining habitats in the satellite-derived habitat map throughout **2024/2025**. Further details as to accuracy with which different habitats have been mapped can be found in Table 4 on page 27.



Overview of habitats

Covering an area of **225,450 hectares**¹⁹, the Warwickshire, Coventry and Solihull sub-region is lucky enough to have no less than **9 National Character Areas**⁵² (NCA - Figure 4.). These cover a wide range of landscape characteristics and natural features, ranging from the northern tip of the Cotswolds NCA and its Area of Natural Beauty^{10,52} in the south, to the Mease/Sence Lowlands NCA in the very north of the sub-region, with its wet meadows and rivers and the Coventry Canal⁵³.

Spanning this diversity of landscapes and habitats, Warwickshire, Coventry and Solihull have **133 statutorily designated sites**, namely, **65** Local Nature Reserves (LNRs)¹⁷, **67** Sites of Special Scientific Interest (SSSIs)¹⁵ and **1 Special Area of Conservation** (SAC)¹⁶. Combined, these protected sites represent an area of **2,101 hectares**^{15,16,17}.

The first of the major two NCAs in the sub-region is the Arden NCA^{7,52}, stretching predominantly across the west, centre and northwest of the sub-region. The NCA covers some densely populated urban areas, such as the amalgamated towns and other settlements in the outskirts of Birmingham. In more rural areas,

patches of ancient woodland, gently rolling farmed landscapes, wood pasture, and river meadows and valleys carved out of clay are all characteristic Arden landscapes⁷. Patches of heathland can still be found in the north and centre of the NCA⁷. The industrial northeast developed around the coal mining industry⁵⁴. The NCA has a range of statutory designations including Coleshill and Bannerly Pools SSSI with its bog / mire habitat, woodlands and acid grassland^{8,55}.

Dunsmore and Feldon, the second major NCA, stretches in a band through the centre from the south to the northeast of the sub-region. The NCA is generally rural, although areas are more urbanised, around Coventry and Rugby for example. Dunsmore is generally more wooded than Feldon, with remnants of ancient woodland in areas⁵⁶. Patches of heathland remain, particularly in woodland clearings. These once formed part of Dunsmore Heath⁹. The Feldon area is more open with rolling hills and far less wooded⁵⁶. Disused sand and gravel quarries, as well as spoil heaps, can be found in the south and centre of the NCA⁹. The NCA includes Brandon Marsh SSSI, which is managed by Warwickshire Wildlife Trust and which contains a mosaic of reedbeds, scrub and woodland around pools created through gravel extraction^{57,58}.

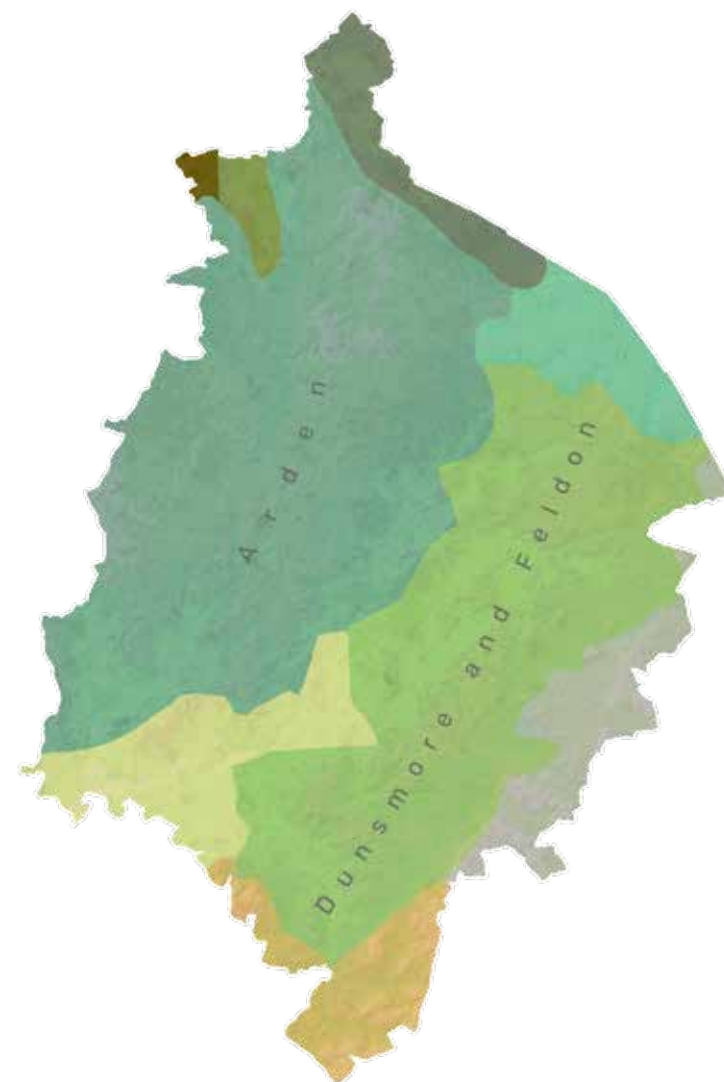
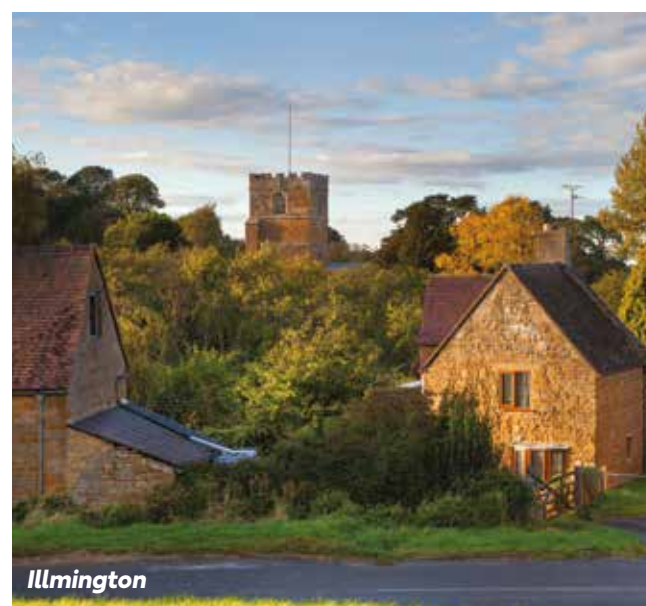


Figure 4. National Character Areas

- National Character Area Name
- Arden
 - Cannock Chase and Cank Wood
 - Cotswolds
 - Dunsmore and Feldon
 - Leicestershire Vales
 - Mease/Sence Lowlands
 - Northamptonshire Uplands
 - Severn and Avon Vales
 - Trent Valley Washlands

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Dunsmore Living Landscape

Stretching between Rugby and Leamington Spa, the Dunsmore region is home to some of Warwickshire's most important woodland sites⁵⁹. Interconnected by a series of meadows, fields and hedges running through the landscape, they include ancient woodlands, such as those at Ryton and Wappenbury⁵⁹. Funded by National Highways and the National Lottery Heritage Fund, Warwickshire Wildlife Trust, Rugby Borough Council, Warwick District Council and Coventry City Council are all partners on the Dunsmore Living Landscape initiative^{60,61}. A key focus of the initiative is to enhance and restore the valuable mosaic of habitats and the wooded character of the area. The partnership engages with volunteers, community groups, corporate teams, land managers and other NGOs, in activities from scrub control and meadow creation to hedge planting and dormice releases under license^{61,62,63}.

Phase 1 habitats

‘Cultivated and disturbed land’ is the most extensive broad habitat type in Warwickshire, Coventry and Solihull, covering 46% of the sub-region^{4,21}.

This includes arable land and other disturbed land cover types such as amenity grassland. In stark contrast, the rarest habitat types, heathland and mire, each contribute less than 0.01% of the total sub-region area^{4, 21}.

The combined area of improved grassland, arable land and set-aside, which together can be taken to represent agricultural land use, represent 64% of the sub-region.

The proportion and area of broad habitat categories across Warwickshire, Coventry and Solihull can be seen in Figure 1 (page 14) and Table 2 below. These data have been calculated from the Phase 1 habitat dataset managed by NCAP and which was last updated in 2019⁴.

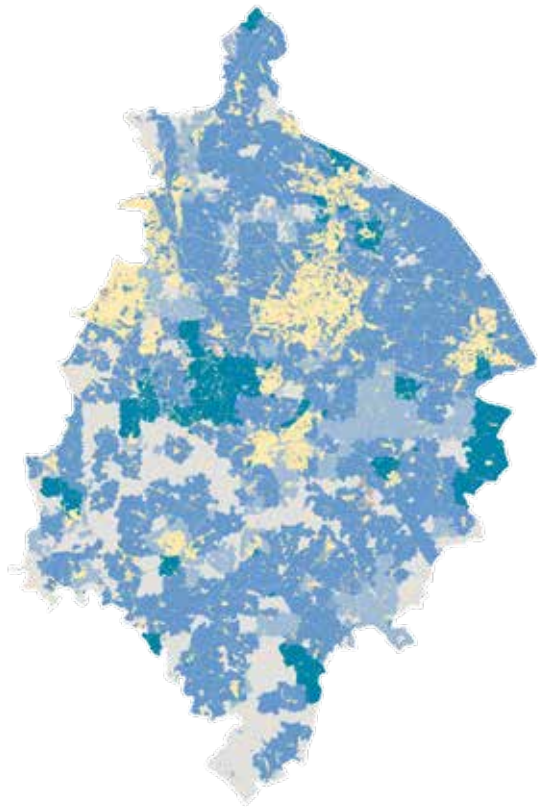
Table 2. The area of each broad Phase 1 habitat category across Warwickshire, Coventry and Solihull and the proportion of each habitat across the area surveyed and whole sub-region⁴

Phase 1 broad habitat	Area (hectares)	Proportion area surveyed (%)	Proportion of total sub-region (%)
Woodland and Scrub	18048.6	9.5	8.0
Grassland and Marsh	65250.1	34.2	28.9
Tall Herb and Fern	801.2	0.4	0.4
Heathland	9.9	<0.1	<0.01
Mire	2.4	<0.01	<0.01
Swamp, Marginal and Inundation	186.9	0.1	0.1
Open Water	2628.8	1.4	1.2
Rock Exposure and Waste	590.0	0.3	0.3
Cultivated and Disturbed Land	103084.9	54.1	45.7
Total area surveyed	190602.9	100.0	84.5

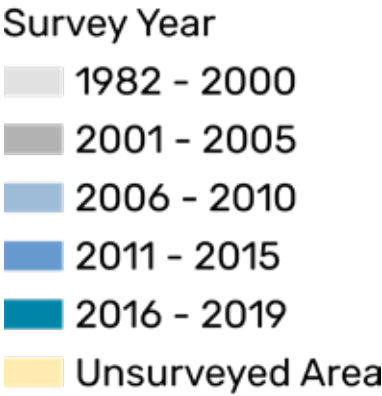


Survey data haven’t been gathered for urban features (e.g. roads / buildings) and urban habitats, as these are not extensively accounted for as land cover types in the Phase 1 survey method²¹. NCAP have surveyed the area of all other habitats as extensively as possible. However, there are areas that haven’t been surveyed, for example due to access issues. Unserved areas therefore mostly represent urban features/habitats but may also include other habitat / land cover types. The ‘proportion area surveyed’ habitat statistics calculated in Table 2 and throughout this report are therefore broadly representative of habitat coverage across the sub-region, excluding urban features, but do not provide exact figures. Throughout the report, we also provide the proportion of the total sub-region covered by different habitat types, according to the 2019 Phase 1 dataset⁴ (see Table 2.)

Figure 5. Map showing the areas of Warwickshire, Coventry and Solihull that have undergone habitat surveys and the date range of the last survey.

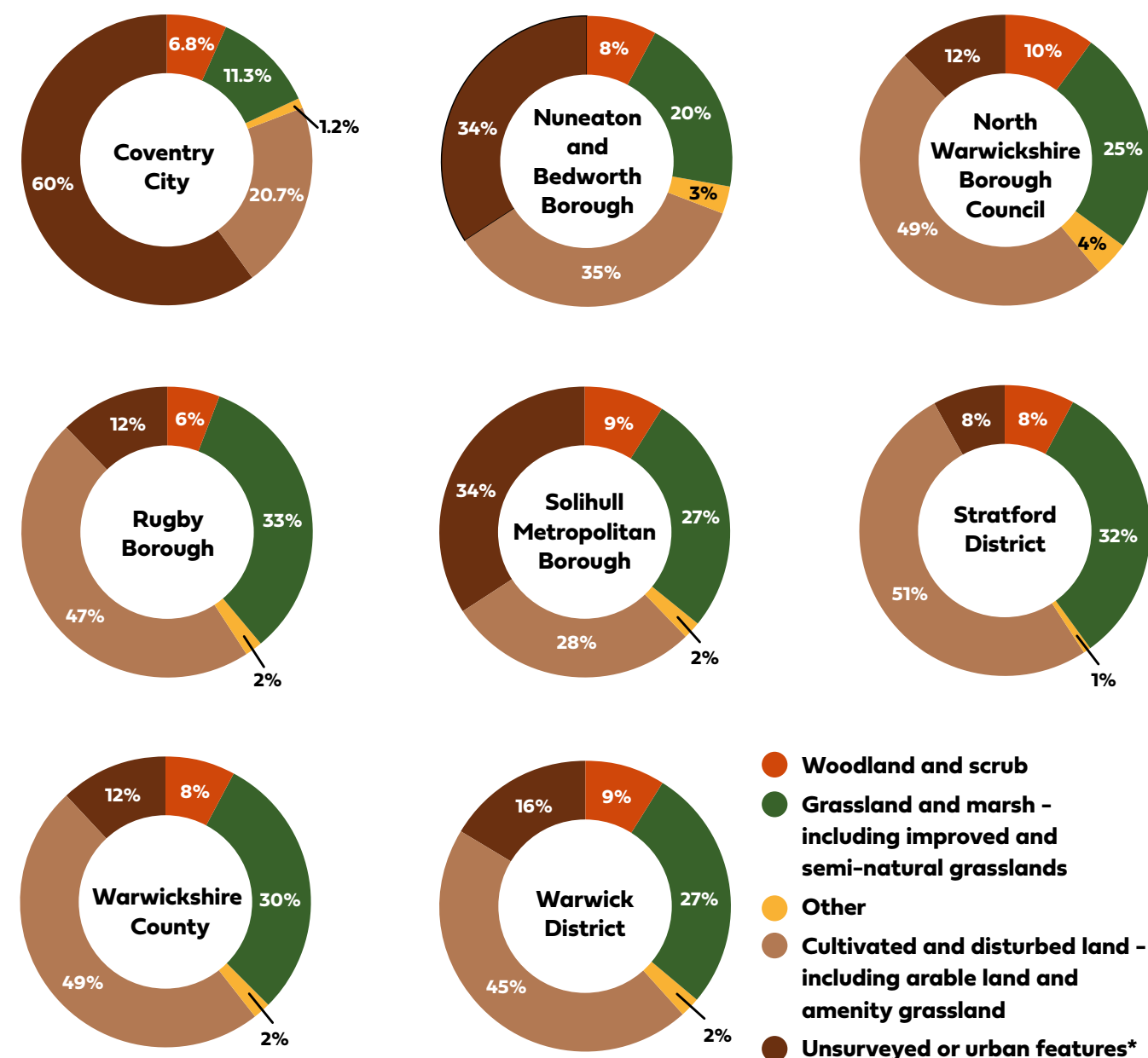


The date range in which areas were last surveyed can be seen in Figure 5. The breakdown showing the proportion of broad habitat types across each local authority can be seen in Figure 6. For additional details as to the methods for calculating the statistics, see Appendix 1. Note that some of the very early NCAP surveys in the 1990’s used aerial imagery rather than field surveys for allocating Phase 1 habitats to different areas. Most of these have been updated since with field surveys.



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Figure 6. The area and proportion of broad Phase 1 habitats for each local authority across Warwickshire, Coventry and Solihull.



30 by 30 statistics

The Phase 1 habitat statistics⁴ can be used to estimate the amount of 'wildlife-friendly' habitat across Warwickshire, Coventry and Solihull (Figure 7). This allows us to assess how close we are at the regional level to meeting

the **30 by 30** target captured in strategies and policies at all levels, from global and national, to regional and organisational: **30%** of land protected and managed for wildlife by **2030**^{1,2,3}.

By combining Phase 1 habitats that can be described as 'wildlife-friendly', an initial estimate is that **15%** of the

surveyed area or **13%** of the total sub-region provides suitable habitat for wildlife. In other words, the initial estimate suggests we are approximately halfway there with achieving **30 by 30**^{1,2,3}. This figure will be revised over the next year as additional data is gathered and refined, and discussions are held with various stakeholders as to how wildlife-friendly habitat is defined.

There are several caveats associated with the initial estimate, such as the fact that it doesn't take into account habitat connectivity. Lots of tiny unconnected habitat patches are generally less valuable for wildlife than large areas of connected habitat. There are many reasons for this but, factors such as smaller sites lacking the resilience to external pressures (e.g. extreme weather

and disease) and having less genetically diverse populations are important^{37,38,64}. In most cases, information as to the condition of habitats is also missing. If additional habitat condition data can be obtained, we could better define the line as to when a habitat is counted as beneficial for wildlife or not.

Some data may also be missing. For example, we don't have an area for individual trees which, in some instances, can provide excellent habitat. At a later stage, the satellite-derived habitat classification map produced by Spottitt²³, could help to fill some of these data gaps. How to handle the different data caveats will be discussed further as the wildlife-friendly habitat figure is refined. For the details as to how this statistic was calculated, see Appendix 1.

Figure 7. Map of 'wildlife' habitats across Warwickshire, Coventry and Solihull



30 by 30

- Wildlife habitat
- Non-wildlife habitat

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Local Wildlife Site habitats

Many of our most valuable habitat patches have been designated as Local Wildlife Sites (see page 15)⁵. Local Wildlife Sites (LWS) receive greater protection from development (although this is not a guarantee due to their non-statutory status). Over **3,800 hectares** woodland are in LWS, as are over **2,100 hectares** of grassland / marsh (Table 3).

LWS spatial data allow us to view areas where there are clusters of Local Wildlife Sites and/or potential LWS near one another. These clusters of sites are particularly valuable as they provide a continuity of habitat and allow wildlife to move across the landscape, whether

in response to climate change, searching for new territories or accessing additional resources, among other reasons. Future policies, plans and strategies should prioritise protecting these sites, improving connectivity between them and buffering them from human pressures. Particularly important is surveying remaining potential LWS in these areas and designating them as LWS if they meet the minimum criteria.

Examples of locations with large clusters of sites include the area between Combrook, Wellesborne, Walton and Pillerton Hersey in Stratford-upon-Avon or along the Coventry Canal between Atherstone in North Warwickshire and Nuneaton in Nuneaton and Bedworth Borough⁵.

Table 3. Area of different habitats under Local Wildlife Site (LWS) designation across the Warwickshire sub-region and the proportion of LWS area that they represent⁵.

Phase 1 broad habitat	Area (hectares)	Proportion of total LWS area represented by habitat (%)
Woodland and Scrub	3818.9	50.5
Grassland and Marsh	2155.7	28.5
Tall Herb and Fern	170.9	2.3
Heathland	8.6	0.1
Mire	2.3	<0.1
Swamp, Marginal and Inundation	52.4	0.7
Open Water	977.6	12.9
Rock Exposure and Waste	53.8	0.7
Cultivated and Disturbed Land	318.0	4.2
Total	7558.1	100.0

Note that the Phase 1 NCAP data was clipped to the NCAP Local Wildlife Site data layer and that these two data layers don't precisely align (there is a 2m offset between layers). Care should therefore be taken when using these figures which should only be used to assess habitat proportions across Local Wildlife Sites very broadly.

Satellite-derived habitat data

The remote sensing data acquired by Spottitt²³ shows that Warwickshire, Coventry and Solihull is a very urbanised part of England. **9%** of the total area is covered by buildings or other urban features (Table 4.).

In the remote sensing data overview (page 17), we noted that an accuracy assessment had been completed for

certain habitats. The User's Accuracies for each habitat can be seen in Table 4. These allow an individual using the habitat classification map, to know whether a particular pixel on the map has been given the actual habitat type found on the ground^{50,51}. For example, 'urban' land cover has a User's Accuracy of **97%**. This means that **97 out of every 100** pixels that are classified as urban on the map are correctly classified as urban. The remaining **3 out of every 100** may have been wrongly classified as urban when they are other habitats on the ground.

Table 4. Area of habitats across Warwickshire, Coventry and Solihull from remotely-sensed habitat map²³, the proportion of the sub-region they represent and User's Accuracies for each

Habitat	Area mapped (hectares)	Proportion of mapped sub-region (%)	User's Accuracy (%)
Woodland and Trees	36160.5	16.0	82
Urban	20458.6	9.1	97
Rivers and Lakes	1972.2	0.9	74

While the Phase 1 habitat map⁴ has unsurveyed areas, the satellite-derived habitat map²³ provides a complete snapshot of the whole sub-region at a given point in time, including urban features. Its accuracy is not **100%** and it cannot and should not replace an ecologist on the ground. It also doesn't provide habitat data to the same level of detail. A lowland acid grassland in the Phase 1 layer for example, would be captured simply as a 'grassland' in the satellite-derived habitat map. However, the satellite-derived map does provide recent data and therefore is valuable for 'sense-checking' the Phase 1 habitat map, where some sites have potentially not been surveyed for many years. When considering these contexts, the Phase 1 and satellite habitat classification maps are complementary to one another.



Land cover change

The area coverage of Phase 1 broad habitat types remained similar between 2012⁶⁵, the year from which data were used for the last State of Habitats report⁶, and 2019 (Table 5.)⁴. A sub-set of the Phase 1 spatial data⁴ were used to calculate the habitat changes over time. Only areas that had been surveyed since 2012 were used in the calculations. The figures in the table therefore need to be read with caution. They don't necessarily represent the full situation across the sub-region, particularly as regards urbanisation of habitats. Urban areas that were previously other habitats are less likely to have been included in the most recent Phase 1 habitat spatial layer⁴ as the Phase 1 classification system does not fully account for urban features²¹.

The data can only be used as broad indicators of habitat change and cannot be compared directly between the two time points. This is because survey techniques have changed over

time making it difficult to draw any definitive conclusions as to habitat change. The statistics for heathland demonstrate the care that needs to be taken. Table 5. suggests that the area of heathland habitat has increased from 0.1ha to 3.7ha over 7 years. This apparently large increase of an incredibly rare habitat in the region is potentially linked to the fact that the scale at which habitats have been mapped has changed over time. Prior to 2012, tiny patches of heathland may have been mapped as a different habitat category like grassland if data were mapped at a broader spatial scale than was used more recently.

Nonetheless, heathland remains one of the rarest habitats in the region, along with others such as mire. Cultivated and disturbed land which, among other categories, includes arable land and amenity grassland, remains the most extensive broad habitat type, followed by grassland / marsh. Grassland appears to have decreased over time and much of the grassland is improved, as outlined in more detail on page 39. The area of woodland and scrub appears to have increased, perhaps in line with the national focus on woodland planting¹.



Table 5. The area of broad Phase 1 habitats and the proportion of the surveyed area that they represent in 2012 and 2019^{4,65}

Phase 1 broad habitat	Area 2012 (hectares)	Percentage surveyed area 2012 (%)	Area 2019 (hectares)	Percentage surveyed area 2019 (%)
Woodland and Scrub	3545.6	7.9	4405.6	9.8
Grassland and Marsh	14848.1	33.1	14177.6	31.6
Tall Herb and Fern	260.9	0.6	194.8	0.4
Heathland	0.1	< 0.01	3.7	< 0.1
Mire	0.7	<0.01	0.5	< 0.01
Swamp, Marginal and Inundation	44.4	0.1	82.5	0.2
Open Water	807.8	1.8	912.9	2.0
Rock Exposure and Waste	316.7	0.7	196.2	0.4
Cultivated and Disturbed Land	25084.7	55.9	24957.7	55.5





State of woodland, scrub and trees outside woodland

The woodland matrix provides an incredible array of resources for wildlife. These include dead and decaying wood for deadwood-dependent invertebrates, nectar sources for pollinators and nesting and foraging habitat for birds and mammals⁶⁶.

The value for wildlife such as bats is demonstrated by a **2011 study**⁶⁷. Researchers found a lower chance of finding a bat roost for some species, such as serotines (*Eptesicus serotinus*), further away from broadleaved woodland. The same study found a lower chance of finding bat roosts for some species, like brown long-eared bats (*Plecotus auritus*), when lower proportions of mixed/ broadleaved woodland were found in the surrounding landscape⁶⁷.

From a human perspective, woodlands also provide many benefits. Woodland and trees affect water quality in a variety of ways, for example by reducing soil erosion into rivers through tree roots providing greater bank stability or, through a buffering impact reducing the nutrients and chemicals entering water from human activities⁶⁸. Improved water quality is important for many activities, for example recreational swimming⁶⁸. Woodland and trees can also influence

air quality, for example through intercepting or absorbing air pollutants, which can have positive effects for human physical and mental health⁶⁸.

8% of Warwickshire is covered by woodland and scrub

Despite having high wildlife and human value, woodland and scrub habitats (Table 6.) contribute only **9%** (approximately **18,049 hectares**) of the surveyed area of Warwickshire, Coventry and Solihull, or **8%** of the total sub-region⁴. This is less than Forestry Research suggestions for woodland cover across the UK (**13%**) and across England (**10%**)²⁰. However, different methods are used for amalgamating habitats and analysing the data. A more appropriate comparison to the **13%** woodland cover across the UK, would be the combined areas of the Phase 1 ‘woodland’, ‘parkland’, ‘recently-felled woodland’ and ‘wet woodland’ habitat categories which collectively represent **7%** of the sub-region’s land cover⁴.

North Warwickshire Borough Council is the most wooded local authority region, with **10%** of the local authority’s land area constituting woodland / scrub habitat (Table 7)⁴. The Spottitt satellite data²³ suggest that **16%** of the sub-region is covered by woodland and trees (Table 4). This higher

figure is linked to the fact that both woodland and trees outside woodland are included in the same category, essentially it is an estimate of canopy cover across the sub-region. This figure is therefore not directly comparable to the Phase 1 woodland data.

Table 6. The area and proportion of different woodland / scrub habitats (as defined by Phase 1) across Warwickshire, Coventry and Solihull⁴

Habitat	Total area (hectares)	Proportion of woodland / scrub habitats (%)	Proportion of total sub-region (%)
Woodland	14333.9	79.4	6.4
Scrub	2481.6	13.7	1.1
Parkland	825.3	4.6	0.4
Recently-felled Woodland	22.0	0.1	<0.1
Orchard* ¹	185.8	1.0	0.1
Wet Woodland* ¹	200.1	1.1	0.1
Total	18048.6	100.0	N/A

^{*1} Not officially Phase 1 codes as defined under JNCC Phase 1 guidelines²⁰⁻²¹ but, included under woodland and scrub habitat classification by NCAP.



Louise Barrack

Table 7. The area and proportion of woodland and scrub in Warwickshire, Coventry and Solihull local authorities⁴

Local authority	Area (hectares)	Proportion of Warwickshire, Coventry and Solihull's woodland / scrub (%)	Proportion of total area of local authority (%)
Coventry City Council	669.3	3.7	6.8
Nuneaton & Bedworth Borough Council	628.5	3.5	8.0
North Warwickshire Borough Council	2768.5	15.3	9.7
Rugby Borough Council	2150.7	11.9	6.1
Solihull Metropolitan Borough Council	1531.5	8.5	8.6
Stratford-upon-Avon District Council	7698.1	42.7	7.9
Warwick District Council	2602.0	14.4	9.2
Total	18048.6	100.0	NA

Woodland represents **79%** of the broad Phase 1 ‘woodland & scrub’ habitats⁴¹⁻⁴² across the sub-region, accounting for **6%** of the sub-region’s land cover. If we breakdown the figures further, woodland is predominantly broadleaved (**74%**), with a much smaller extent of coniferous (**9%**) and mixed (both broadleaved and coniferous) woodland (**17%**)⁴.

Woodland:
79%

Woodland and scrub habitats

accounting for **6%** of the sub-region's land cover



Looking at the data from a different angle, there is more plantation woodland (**54%**) than semi-natural (**46%**)⁴. It is recognised globally that non-native plantations are less biodiversity-rich than natural forests⁶⁹. However, plantations of native tree species can support levels of biodiversity close to natural forests with appropriate management⁶⁹. Native mixed-species plantations can therefore be beneficial for biodiversity when replacing a previous land use of low biodiversity value such as intensively managed agricultural land^{69,70}. Conversely, it is probable that plantations replacing valuable habitats such as natural or semi-natural grasslands or long-established woodland are going to have negative impacts on biodiversity and so should be avoided^{71,72}.

The biodiversity value of any plantation, or indeed any woodland, will be affected by management. Resources for wildlife will be greater with an increased tree species diversity in the plantation⁷⁰. Light levels linked to canopy cover in conifer plantations have been shown to influence the species richness of the ground flora⁷². A greater structural diversity in plantations, but also in woodlands generally is beneficial for wildlife^{72,73}. A mosaic of scrub, shrubs and trees for example is likely to host a wider range of bird species⁷³. One study found more bird species and a greater abundance of birds in older woodland patches containing mature trees and therefore a more diverse structure⁷⁴. The wildlife value of a woodland can also be influenced by fragmentation and the size of woodland parcels. It has been shown that as woodland parcels increase in size, bird abundance and species richness also increase, leading some studies to suggest that conservation action should aim for woodland patches of greater than **5 hectares** in size⁷⁴.

As well as woodland, the other habitats included in the broad ‘woodland & scrub’ Phase 1 habitat category²¹ can also be seen in Table 6. These are also hugely valuable for wildlife. Parkland, for example, can include remnants of old human land uses, such as pastures or hunting forests⁷⁵. The scrub and old / veteran trees found in old parklands provide an array of resources such as nectar sources for invertebrates that need open habitat for nesting⁷⁵. Holes in old trees can act as nesting sites for many birds such as tawny owls (*Strix aluco*) and nuthatches (*Sitta europaea*)⁷⁵. Orchards too, if traditionally managed, can be wildlife-friendly. They can support a range of deadwood-dependent species, birds including redwings (*Turdus iliacus*) and fieldfares (*Turdus pilaris*) which enjoy the available fruit and buds, as well as mistletoe (*Viscum album*), which itself is used by a variety of species including waxwings (*Bombycilla garrulus*)^{76,77}. Stratford is a stronghold for orchards in the sub-region, with **82%** of the remaining area of orchards found in the District⁴.





Traditional orchards in Stratford

Most of the traditional orchards in the region can be found in Stratford-upon-Avon District. Some of these, such as Mount Pleasant Orchard and Portobello Crossroads Orchard are Local Wildlife Sites, demonstrating the value that this habitat can have for wildlife. At Bridgetown Meadowland community orchard, Stratford District Council planted a total of **300 fruit trees** in **2014**, including **21 apple varieties** and **6 pear**^{76,78}.

Ancient woodland

The Ancient Woodland Inventory captures ancient woodlands down to **0.25 hectares** in size⁷⁹. It includes areas of continuous woodland cover since **1600** or earlier, following the definition of Ancient Woodland used

by Natural England and the Forestry Commission⁸⁰.

Within this broad definition, semi-natural ancient woodland, historic parkland or ancient wood pasture, and plantations on ancient woodland sites would all be classed as ancient woodland⁸⁰. It should be noted that many remnant woodland patches

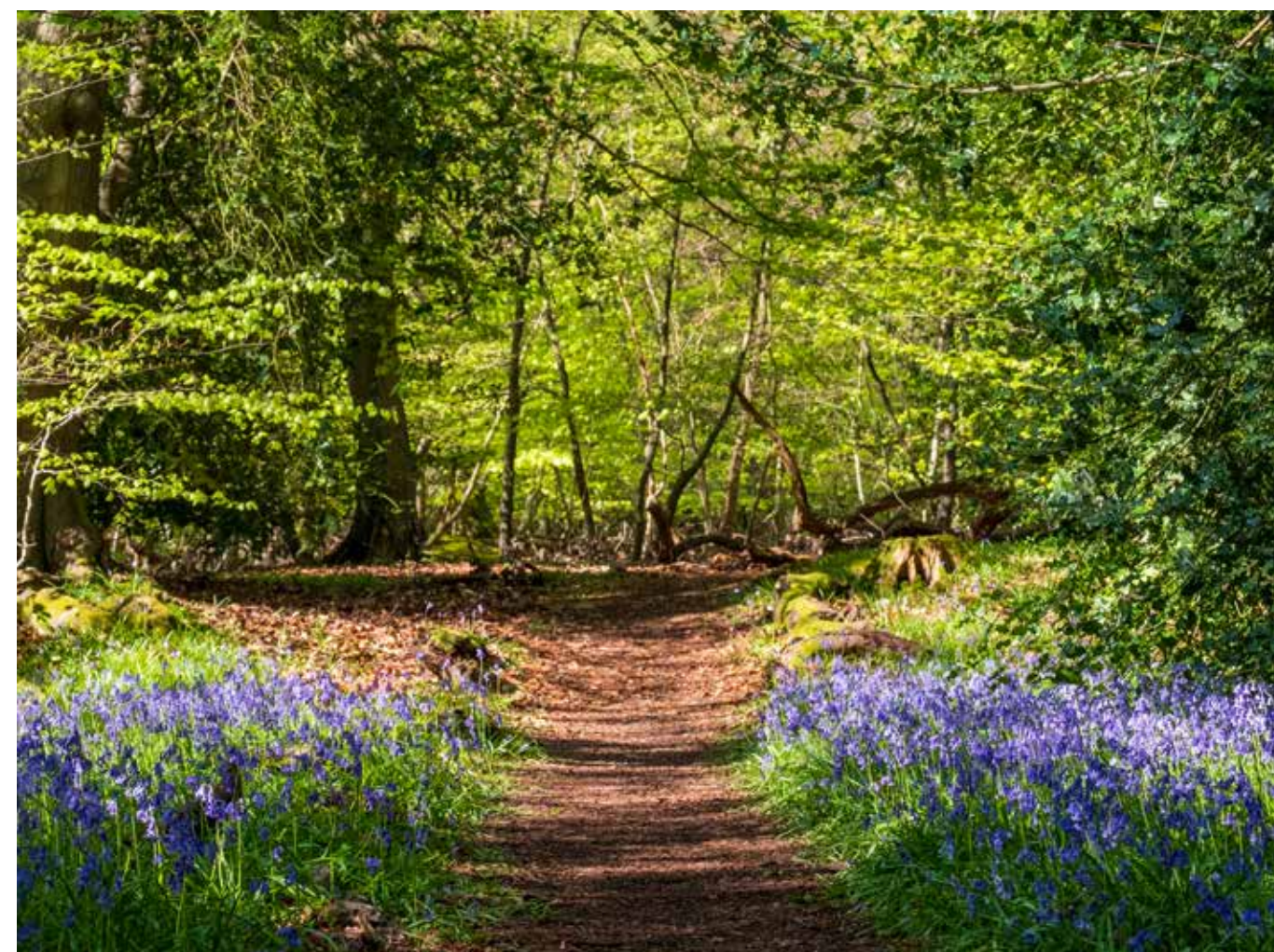
across the sub-region may be ancient but not captured in the Ancient Woodland Inventory as they are less than **0.25 hectares** in size.

Ancient woodland sites cover 2.1% of the Warwickshire, Coventry and Solihull sub-region²².

This represents **4,700 hectares** of ancient woodland, **57%** of which are semi-natural ancient woodland²². **41%** are re-planted ancient woodland sites and **2%** are ancient wood pasture²².

Having remained under woodland cover for centuries, our ancient woodland sites have typically retained valuable water features, have escaped soil disturbance and are hotspots for plants and wildlife⁶⁶. When considering **192** species woodland plants, an analysis by the Woodland Trust found that plant species richness was higher in areas with a greater extent of ancient woodland⁸¹.

Structural variability has been shown by another study to increase with woodland age, which can be beneficial for wildlife^{82,74}. Wood rot in individual ancient trees can also provide valuable resources for deadwood-dependent invertebrates⁶⁶. The management practices of ancient woodland sites will also affect their overall biodiversity value⁸².





Yellow archangel *Lamiastrum galeobdolon*

A Warwickshire ancient woodland and hedgerow indicator species, yellow archangel is seen in spring just as bluebells are finishing. It is not to be confused with the very similar invasive garden escapee, variegated yellow archangel (*Lamiastrum galeobdolon* subspecies *argentatum*), which is often found alongside it in woodlands, close to housing or urban conurbations, due to the dumping of garden waste.

Trees outside woodland

Throughout history, trees found outside woodlands e.g., in hedgerows or as individual trees lining streets, have been hugely valuable to people⁸¹. Among other uses, they have acted as boundary markers and as sources of wood products such as timber⁸¹.

They can be incredibly valuable to wildlife, acting as stepping-stones or

connectivity corridors between larger fragments of natural habitat⁸³. This enables species' movements, such as when dispersing into new areas or for foraging⁸³. Data suggest that brown long-eared bats (*Plecotus auritus*) will roost outside woodland for example, if there is woodland connectivity via hedgerows or lines of trees⁸⁴. The connectivity role of trees outside woodlands can have more subtle effects as well, such as allowing for gene flow for tree populations themselves across a landscape. This

could potentially allow tree populations to better adapt to a changing climate⁸⁵.

As well as enhancing connectivity between remnant habitat patches across a landscape, trees and woody linear features outside woodlands can provide habitat and resources in their own right. Hedgerows can be an important source of pollen and nectar for emerging pollinators and other insects in the spring^{86,87}. A **2019 study**⁸⁷ carried out across four farms in south-west England, found that across a whole year, hedgerows were the habitat producing the most nectar sugar per m². Ancient and veteran trees (see page 38) can provide nesting sites for many species including barn owls (*Tyto alba*)⁸⁸. Hollows at the base provide spots for reptiles like grass snakes (*Natrix helvetica*) to lay their eggs, while the dead or decaying wood supports deadwood-dependent invertebrates of which there are at least **2,000 species** in Britain⁸⁸.

The number of individual trees outside woodland haven't been collected in Phase 1 habitat data⁴. However, from the Phase 1 habitat data for **2019**, it was calculated that there were **10,733 km** of hedgerow across Warwickshire, Coventry and Solihull⁴.

**10,733km
hedgerow
wind across
Warwickshire,
Coventry and
Solihull⁴**

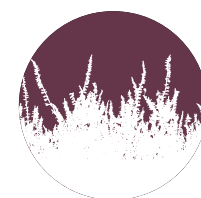
The Phase 1 hedgerow data allow us to view where hedgerows are connecting remnant patches of semi-natural habitat and where there are gaps in landscape connectivity which can be filled. The **2019** data⁴ used for this report do not include hedgerow condition and management data. There are earlier NCAP datasets which include this data⁶⁵ but as hedgerow management and condition can change rapidly, this is a substantial data gap. Hedgerow condition and management can have significant impacts upon wildlife value. Cutting hawthorn (*Crataegus monogyna*) hedgerows every third year rather than on a yearly basis for example, has been shown to lead to more than twice as many flowers and more than three times the berry mass available to wildlife⁸⁹. When surveying for bats along hedgerows, hedgerows that haven't been cut for **three years** or more have also been found to have a greater bat species richness than hedgerows cut the previous winter⁹⁰.



Ancient and veteran trees

Some trees are classed as ancient or veteran trees and can be found inside or outside woodland. Ancient trees have gone past the point of maturity and when compared to fellow trees belonging to the same species are considered old⁹¹. They have developed some distinctive features such as hollow, wide trunks, rough bark and small crowns where the branches have started to die back⁹¹. In some instances, they can be many hundreds of years old⁹¹. Veteran trees on the other hand are trees that have experienced damage or stress and may display some characteristic features of ancient trees⁹¹.

Both veteran and ancient trees are particularly valuable for wildlife. They can host a whole range of fungi and invertebrates that like to feed on the dead and decaying wood⁸⁸. They provide roosting and nest sites for birds and bats and foraging sites for birds like woodpeckers (*Dendrocopos major*) and redstarts (*Phoenicurus phoenicurus*). They also provide hollows and gaps around the base which can be used by mammals like hedgehogs (*Erinaceus europaeus*) for hibernating⁸⁸. From the Ancient Tree Inventory, which is collated and managed by the Woodland Trust, we estimate that there are a combined **1,013** ancient and veteran trees across the sub-region⁹².



State of grassland and heathland

Grassland

While **29%** Warwickshire, Coventry and Solihull is covered by grassland (Table 8.), this is predominantly improved grassland (**78%**)⁴. These are grasslands that have been improved for agricultural performance and intensively managed, for example through applying agrochemicals like fertilisers and herbicides or through over-grazing²¹. They are very species-poor in terms of wildflowers and grass varieties, with species tending to be those that tolerate high grazing and nutrient levels such as perennial ryegrass (*Lolium perenne*) and white clover (*Trifolium repens*).

The remaining **22%** grasslands could be counted as semi-natural (**6%** of total sub-region area), although **51%** of these are in poor condition, meaning they are classified as 'poor semi-improved'⁴. This means that although they have not been managed so intensively that they count as 'improved grasslands', they have been improved to the extent that they cannot reliably be placed into a true semi-natural grassland type as represented through soil type and characteristic plant communities²¹. Despite the grassland

type from which they derive (e.g. acidic, calcareous or neutral), they often take on the appearance of a neutral grassland with a limited species list²¹.

The grassland figures presented here do not include amenity grassland. Under the Phase 1 habitat survey, amenity grassland falls under the 'cultivated and disturbed land' broad habitat category²¹. In addition to the grassland figures in Table 8., **4%** of Warwickshire, Coventry and Solihull is amenity grassland⁴.



Table 8. The area and proportion of different grassland habitats across Warwickshire, Coventry and Solihull⁴

Grassland type	Area (hectares)	Proportion of all grassland habitats in surveyed area (%)	Proportion of whole sub-region (%)
Acid Grassland*	77.4	0.1	<0.1
Neutral Grassland*	6169.4	9.5	2.7
Calcareous Grassland*	178.8	0.3	0.1
Improved Grassland	51017.9	78.2	22.6
Marsh/marshy Grassland*	595.7	0.9	0.3
Poor semi-improved grassland*	7210.9	11.1	3.2
Total	65250.1	100.0	NA

* semi-natural grasslands

Phase 1 acid and calcareous grasslands are the rarest grassland types, respectively contributing **0.5%** and **1%** of the semi-natural grassland area across the Warwickshire sub-region. Acid grasslands are found on acidic soils with a low pH (<5.5)²¹. Examples of species representative of this grassland type include *Rumex acetosella* (sheep sorrel) and *Galium saxatile* (heath bedstraw)²¹. Examples of plants often found in calcareous grasslands on the other hand include heath false brome (*Brachypodium pinnatum*), a type of grass, and salad burnet (*Sanguisorba minor*)²¹. Calcareous grasslands are found on calcareous (alkaline) soils with a high pH (>7.0)²¹.

4% of Warwickshire, Coventry and Solihull's semi-natural grasslands are marsh / marshy grasslands. These have a proportionally high cover of certain species that prefer a wetter environment such as sedges (*Carex* species) or rushes (*Juncus* species)^{*21}.

Other than poor semi-improved, neutral grasslands contribute the greatest area of semi-natural grassland (**43%**). The

latter are found on soils with a neutral pH (between **5.5** and **7.0**)²¹. Examples of grasses often found on neutral grasslands include crested dog's-tail (*Cynosurus cristatus*) and false-oat grass (*Arrhenatherum elatius*)²¹. Pastures and hay meadows are most likely to be neutral grasslands which can provide important habitat for species such as barn owls (*Tyto alba*)^{13,21}.



* 1 Note however that, under the Phase 1 classification system, certain wet grasslands are classified under one of the other grassland types instead, such as neutral grasslands²¹.

Table 9. The area and proportion of grassland in Warwickshire, Coventry and Solihull local authorities⁴

Local authority	Area (hectares)	Proportion of Warwickshire, Coventry and Solihull's grasslands (%)	Proportion of total area of local authority (%)
Coventry City Council	1118.5	1.7	11.3
Nuneaton & Bedworth Borough Council	1579.2	2.4	20.0
North Warwickshire Borough Council	7249.1	11.1	25.5
Rugby Borough Council	11573.7	17.7	32.7
Stratford District Council	31152.4	47.7	31.9
Solihull Metropolitan Borough Council	4829.2	7.4	27.1
Warwick District Council	7747.9	11.9	27.4
Total	65250.1	100.0	NA

The small proportion of semi-natural grassland found in the sub-region is reflected at a national level. It has been suggested that **89%** rough and semi-natural grasslands in the English and Welsh lowlands had been lost by the **1980's**, compared to **50 years** prior⁹³. A more recent study analysed over **800** English sites identified as semi-natural grassland between **1960-1981**. The study found that **47%** of the semi-natural grassland sites had been lost by **2013**⁹⁴. The same study found that some semi-natural grassland types had experienced greater loss than others, with **85%** of lowland heath and dry acid grassland and **39%** calcareous grasslands lost respectively^{*2}.

* 2 It should be noted that different habitat classification systems don't necessarily translate directly. For example, the 'Lowland Heath and Dry Acid Grassland' category in the study could fall under a number of Phase 1 habitat categories including either unimproved or semi-improved acid grassland habitats, dry or wet heath/acid grassland mosaics, or even other Phase 1 categories such as 'Bracken'^{94,96}.



Agricultural intensification has been a key contributor to the loss of semi-natural grasslands, with many converting to improved grassland over time or to land used for growing crops⁹⁴. Grassland improvement can arise from different actions, such as the application of agrochemicals like nitrogen fertilisers which have been shown to decrease the number of plant species present⁹⁵. Other examples of more intensive grassland management include the shift towards producing silage rather

than hay (as this removes the plants earlier in the year before they can seed), or re-seeding with plant species that increase grassland productivity⁹⁷. As well as agricultural improvement, new developments remain a threat to the remaining semi-natural grasslands in the Warwickshire sub-region, as does inadequate management⁹⁸. No grazing or cutting, for example, can lead to scrub encroachment or coarser, rank grassland⁹⁸.



Quaking grass *Briza media*

A near threatened species for England⁹⁹, quaking grass is most frequently found in unimproved, well-grazed grasslands, old pastures and meadows on calcareous soils. It favours well-drained slopes¹⁰⁰.

In Warwickshire, the destruction, neglect or under grazing of grasslands have led to widescale losses of this species in many areas. It is now found in a handful of Local Wildlife Sites, nature reserves and privately owned land managed with grassland conservation in mind¹⁴.



Harebell *Campanula rotundifolia*

A nationally threatened herb found on dry, open, unimproved grasslands¹⁰⁰. It can be found on both mildly acidic and calcareous soils across Warwickshire.

Although the harebell remains fairly widespread in the UK, it is becoming less common as a result of habitat destruction, reductions in grazing and grassland fertilisation⁹⁹.

Protecting the remaining areas of semi-natural grassland is hugely important as they can support rare and valuable plant species such as mat-grass (*Nardus stricta*)⁸ or dyer's greenweed (*Genista tinctoria*). Mat-grass is a species found in acid grasslands⁸ and that is classed as near-threatened on the English species red-list⁹⁹. Dyer's greenweed (*Genista tinctoria*), a Warwickshire Scarce plant, can be found in neutral grasslands^{13,14}. Warwickshire Scarce plants are those that from 1990 onwards, have been recorded no more than **10 times**¹⁴.

Semi-natural grasslands can also be home to non-threatened but

iconic British species like the foxglove (*Digitalis purpurea*), a vibrant and colourful flowering plant that grows particularly well in acidic soils^{8,99}. They can host thriving populations of fungi, such as waxcaps¹⁰¹, as well as wildlife including the green hairstreak butterfly (*Callophrys rubi*)^{8,102}, marbled white butterfly (*Melanargia galathea*)⁹⁸ and birds such as linnets (*Linaria cannabina*) and skylarks (*Alauda arvensis*)¹³. Maintaining or reinstating appropriate management of semi-natural grasslands, for example through light grazing and controlling extensive scrub encroachment, should help protect these valuable habitats for years to come^{98,8}.

Heathland

A tiny, less than **0.01%** of Warwickshire, Coventry and Solihull consists of heathland, representing an area of **10ha**⁴. Heathland habitats include areas where heather and gorse species predominate²¹.

Remaining pockets of heathland are found mostly in the north of the sub-region, at Baddesley Common and Grendon Heath Local Wildlife Sites, for example. In the past, much larger areas of heathland were present across Warwickshire, Coventry and Solihull, as is evidenced through place names such as Hockley Heath¹⁰³ and Dunsmore Heath⁹.

Despite the current rarity of this habitat type across the sub-region, the remaining pockets should be protected, both for the public’s enjoyment and for the wildlife value. Heathlands support a variety of species such as the true lover’s knot (*Lycophotia porphyria*), a moth whose caterpillars feed on heather^{103,104}.

Table 10. The area and proportion of mire, swamp, marginal and inundation habitats across Warwickshire, Coventry and Solihull⁴

Habitat name	Broad Phase 1 habitat	Area (hectares)	Proportion of mire, swamp, marginal & inundation habitats in surveyed area (%)	Proportion sub-region (%)
Bog	Mire	2.0	1.1	<0.01
Flush and Spring	Mire	0.2	0.1	<0.01
Fen	Mire	0.1	<0.1	<0.01
Swamp	SM&I ^{*1}	152.0	80.3	0.1
Marginal and Inundation	SM&I ^{*1}	34.8	18.4	<0.1
Total	NA	189.2	100.0	NA

^{*}Stands for swamp, marginal and inundation

State of waterbodies and wetland

Wetland habitats are incredibly rare across Warwickshire, Coventry and Solihull⁴. As described in the state of grasslands chapter on page 39, marshy grasslands only represent **0.3%** of the total sub-region. Mire and swamp, marginal and inundation wetland habitats are rarer still (Table 10.)⁴.

Less than **0.01%** of the whole sub-region area is classified as mire⁴. This is defined as wetland plant communities, including species such as *Sphagnum* mosses, often found growing on peat over half a metre thick, although spring and flush habitats are often found on much shallower peat if any at all²¹. Swamp, marginal and inundation habitats as a Phase 1 category, makes up **0.1%** of the sub-region area. For the majority of the year in this habitat type, the water table typically sits above the soil surface and

examples of species that may be found include those in the reedmace family (*Typha* species) and *Glyceria* grasses²¹.

Despite their rarity, wetlands are a hugely valuable habitat type in the sub-region. One particularly notable example is Kingsbury Waterpark in North Warwickshire. The park, designated in **2024** as a Local Wildlife Site, sits in the Tame Valley Wetlands and encompasses a diversity of habitats including wet woodland, neutral and marshy semi-improved grasslands, as well as open standing water, reedbeds and fen¹⁰⁵. The site, managed by Warwickshire County Council, provides important breeding habitat for birds such as common tern (*Sterna hirundo*), great crested grebes (*Podiceps cristatus*), black-headed gulls (*Chroicocephalus ridibundus*) and reed buntings (*Emberiza schoeniclus*)¹⁰⁵. Brandon Marsh Reserve, managed by Warwickshire Wildlife Trust, provides another important mosaic of wetland habitat, lying in Rugby Borough at the very edge of Coventry.

Open waterbodies

1,469km of rivers and canals meander across the sub-region (Table 11)²⁴. These rivers and canals, and the associated wetland and terrestrial habitats that run alongside, can act as important corridors for wildlife, allowing species to move across the landscape and even through quite urbanised settings or those dominated by agriculture^{106,107}.

Important examples in our area include the Grand Union Canal, which provides a wildlife corridor through urban areas of Solihull, and the Coventry Canal, which passes through heavily urbanised areas around Nuneaton and Atherstone and

stretches all the way up to Tamworth in North Warwickshire District^{108,5}.

Table 11. The length of rivers and canals across Warwickshire, Coventry and Solihull^{*}

Watercourse type	Total length (km)
Canal	209.7
River	1259.8
Total	1469.5

^{*} These length statistics were calculated from the Open Source OS Rivers layer²⁴ to calculate the total estimated length of rivers and canals across the sub-region. Under Phase 1, canals are instead classed as ‘standing water’²¹



0.8% of Warwickshire, Coventry and Solihull (1,913 hectares) is classified as standing water under the Phase 1 habitat survey²¹, which includes ponds, reservoirs, lakes and canals*.

The sub-region's rivers and standing water bodies, the latter including canals, can support aquatic plants, such as grass-wrack pondweed (*Potamogeton compressus* L.), and can provide important foraging habitat for species such as bats¹⁰⁶. Riverbanks can provide nesting habitat for sand martins (*Riparia riparia*)¹⁰⁷, while species like water voles (*Arvicola amphibius*) and kingfishers (*Alcedo atthis*) will shelter in bankside vegetation¹⁰⁶.

Sadly, many open waterbody habitats face a number of threats, including pollution from sources such as industry and agriculture, as well as invasive species. The latter includes plants such as floating pennywort (*Hydrocotyle ranunculoides*), Himalayan balsam (*Impatiens glandulifera*) and water fern (*Azolla filiculoides*), as well as animal species such as the signal crayfish (*Pacifastacus leniusculus*)^{107,106,109}. The erosion and mismanagement of the associated terrestrial and wetland

habitats adjacent to waterbodies is an issue. This can include regular mowing along canal towpaths, livestock poaching of riverbanks, growing scrub on exposed riverbanks that are used by sand martins and, damage to habitats through recreational use^{107,106,109}.

While much remains to be done, many groups and organisations are working hard to protect and improve the waterbodies of the sub-region. This includes local volunteer groups organising rubbish clear-up days^{106,110} and local authorities, such as Coventry City Council who have taken action to reduce algal blooms at Coombe Pool Site of Special Scientific Interest¹⁰⁹. Partnerships such as the Tame Valley Wetlands are working to restore and protect the wetlands and tributaries of the river Tame¹¹¹.

Designating all waterbodies and associated habitats with existing high wildlife value and recognising these sites in neighbourhood plans and local development plans will also help to protect them^{106,107,109}. The Natural Capital Assessment Partnership team will continue to survey these sites and put them forward to the Local Wildlife Site panel for consideration for Local Wildlife Site designation.



^{*1} This area figure also includes canals but does not include rivers and streams²¹. The length of canals calculated instead from the open-source OS rivers layer²⁴ can be found in Table 11.



Himalayan balsam *Impatiens glandulifera*

Introduced to Britain in **1839** and despite turning out to be a fantastic provider of nectar for insects, Himalayan balsam is now a prevalent invasive plant of riverbanks and ditches throughout the country, including in Warwickshire, Coventry and Solihull. It stops all other plants from growing due to its fast growth and highly efficient seed dispersal. It dies back over the winter leaving the riverbank soil exposed, which then increases erosion and adds silt into the water.



Jacob Loughran

Tame Valley Wetlands

Tame Valley Wetlands is a partnership of **23** organisations, including Warwickshire Wildlife Trust, Warwickshire County Council, Solihull Metropolitan Borough Council and North Warwickshire Borough Council¹¹². The aim of the partnership is to establish and restore wildlife-rich wetlands in the Tame valley, leading to a wildlife-rich landscape for all to enjoy¹¹¹. Recent works have included restoring sections of the River Blythe SSSI through creating wildflower meadows, planting hedges and enhancing the river structure for wildlife¹¹³.

State of agriculture

41% of Warwickshire, Coventry and Solihull is managed as arable land, while **23%** is managed as agriculturally improved grassland⁴. A further **0.3%** is managed as set-aside⁴. If we take these three habitat types as the predominant agricultural land uses across Warwickshire, Coventry and Solihull, we can say that **64%** of the sub-region is under agricultural management. This is higher than the UK average of **52%** enclosed farmland cover¹¹⁴.

In reality, other habitats may also sit within agricultural systems. Some of the semi-natural acidic, calcareous and neutral grasslands may well be under a form of extensive livestock management. Although the Phase 1 habitat survey determines habitat type, it doesn't necessarily provide detail as to who is managing that habitat²¹. A local community group could be maintaining a semi-natural grassland habitat through regular cutting, or a farmer could be maintaining it through low-intensity sustainable grazing.

Intensive agricultural practices have led to the complete loss or gradual deterioration of many important semi-natural wildlife habitats³⁴. Actions such as overgrazing, fertiliser applications and the move to silage rather than hay production have all contributed to the loss of semi-natural grasslands⁹⁷. Intensification has also led to increases in field size and hedgerow removal to improve production efficiency with modern machinery¹¹⁵.



Bugloss *Lycopsis arvensis*

Looking like a prickly forget-me-not, bugloss is a striking ancient farmland herb. It is now most often seen in the north of the county. Agricultural intensification and the increased use of herbicides has contributed to its continuing decline.

This is not a blame game.

Agricultural practices have simply responded to legislative and policy changes over time¹¹⁵. Legislation designed to increase food production following the Second World War in particular, put in motion the intensification of agriculture¹¹⁵. However, agriculture can also be part of the solution to reversing wildlife declines. Nationally, many farmers are involved in some kind of agri-environment scheme (AES), which involve management actions designed to help wildlife and protect the natural environment¹¹⁶. AES have been shown to be beneficial for biodiversity, although this can

vary depending on the scheme and location¹¹⁷⁻¹¹⁹. AES actions implemented in non-productive parts of a farm such as hedgerows, have been shown to increase species richness more effectively than in-field actions such as reducing agrichemical use¹¹⁷. Agri-environment actions have also been shown to be more effective at increasing species diversity on arable farms in simple landscapes (those with less than **20%** semi-natural habitat in the vicinity) when compared to those in more complex landscapes (those with more than **20%** semi-natural habitat in the vicinity)¹¹⁸.



Corn buttercup *Ranunculus arvensis*

In the last **50 years**, herbicides have become incredibly efficient at controlling almost all wild arable plants like corn buttercup. This means that they have all but disappeared from the Warwickshire landscape.

It is important not just to prevent the extinction of plant species, but to maintain diversity in the farmland ecosystem. This contributes to the survival of other wildlife species that may use these arable annuals for part of their life cycle.



Warwickshire Wildlife Trust work with farmers and land managers

Warwickshire Wildlife Trust actively works to promote sustainable farming and wildlife-friendly practices in the agricultural industry. The agricultural advice team support farmers in a range of activities, whether that's advising on sustainable grazing practices, soil health or the management, restoration or creation of on-farm habitats such as hedgerows, ponds or woodland¹²⁰.

The Trust also established the Arden Farm Wildlife Network and, alongside the Severn Rivers Trust and Warwickshire Rural Hub, two other farm cluster networks in South Warwickshire and the Leam and Upper Avon region¹²¹. These farm clusters provide platforms for farmers and land managers to gain and exchange knowledge and best practice when it comes to farming sensitively for wildlife within a productive farm system. There are over **120** members belonging to one of these three farm clusters, collectively farming over **25,000** ha of land. Events organised through the farm clusters have covered topics including, calculating a farm's estimated carbon footprint, restoring wildflower meadows and habitat management for species such as barn owls (*Tyto alba*)¹²¹.

Beneficial actions for wildlife don't have to be at odds with productive agricultural systems. Precision agriculture breaks down agricultural inputs and outputs to a very fine level of detail¹²². This allows inputs to be more selectively targeted and production to be maximised¹²². For example, rather than applying a consistent level of fertiliser across a cropped field, a farmer can use precision farming tools to only apply fertiliser where it is most needed¹²². This reduces costs and, applying lower levels of agrochemicals can only be beneficial for wildlife too¹²². As precision agriculture uses technology to monitor every aspect of production, it can be used to identify

cropped areas that are low yielding year on year¹²². Instead of wasting resources on areas of land that are unproductive, these areas can instead be taken out of agricultural production and turned into wildlife habitat¹²².

Working with farmers to implement appropriate management and actions for wildlife will be integral for achieving conservation at a landscape level. Even in the agriculturally dominated landscapes found outside urban areas across Warwickshire, Coventry and Solihull, farmers can play a valuable role in providing wildlife resources and habitat connectivity.



Warwickshire Wildlife Trust



State of the urban environment

Remotely-sensed satellite data show us that **9%** of Warwickshire, Coventry and Solihull consists of urban land cover, representing an area of **20,459** hectares²³. This compares to a **7%** urban / suburban* land cover across the UK as a whole^{114,123}.

In the context of the satellite-derived habitat classification map, urban land cover includes buildings and any 'non-natural' surfaces or objects²³.

Given the heavily urbanised landscape across the region, particularly around the key urban centres of Solihull, Coventry and Rugby, protecting, maintaining and restoring any remaining wildlife-friendly habitats and other greenspace is vitally important. Studies have shown the value of natural features and green spaces for urban communities. A greater tree cover reduces urban air temperatures for example, suggesting that increasing tree cover could be a valuable tool in adapting cities to a changing climate¹²⁴. Studies have shown positive effects of greenspace on a range of human health outcomes, including greater levels of physical activity and sleep and better mental health¹²⁵. The benefits of having a patch of greenspace in an urban setting can be disproportionately greater than the area coverage of the greenspace itself, as many people are likely to benefit from the site when the population density is high.

Urban environments don't have to be wildlife deserts if the right resources are available. Swifts (*Apus apus*), for example, can happily nest in roof cavities. Studies have shown instances of urban environments supporting a greater number of bee species (species richness) than rural areas. This could be linked to factors such as farmland potentially having less resource availability when intensively managed^{126,127}.



* Note that due to differences in analysing data, the ONS statistics for suburban area also include some vegetation features such as gardens^{114, 123}, whereas the NCAP satellite data will not necessarily be including gardens containing vegetation. These are more likely to be classified as one of the other habitat types such as grassland.



Rusty-back fern *Asplenium ceterach*

A distinctive limestone-loving fern, the rusty-back fern has historically benefitted from the increase in available habitat created by traditional limestone mortared walls and bridges across the county. With its wall habitats having been cleaned or renovated more recently, population loss has been widespread. Only a handful of rusty-back fern communities are now present across Warwickshire¹⁴.



Allotments in Nuneaton and Bedworth

Nuneaton and Bedworth Borough Council's (NBBC) **2012-2022** Allotment Strategy recognised the numerous benefits of allotments, including their educational use and health benefits, for example through them acting as 'green lungs' in urban areas and providing physical exercise. It also recognised the value of allotments for wildlife, through acting as wildlife corridors and, their generally higher biodiversity value than parks in towns and cities¹²⁸. Several allotment associations have successfully used surplus land, or land where cultivation is problematic (such as areas prone to flooding), to create new wildlife areas.



Even species surviving in urban landscapes can only do so if the right resources are available and pressures are not too great. Populations of the rusty-back fern (*Asplenium ceterach*) are still clinging on to bridges over canals in some urban areas of our region, for example, but they can only survive if walls are not cleaned of vegetation. Providing a range of habitats in urban centres, protecting those that remain and providing connectivity between them, are all actions likely to benefit wildlife.

Expanding urbanisation and development are placing pressure on the remaining greenspaces and semi-natural habitats in and around urban centres. Designating the most valuable of these as Local Wildlife Sites can go some way toward helping to protect them from development. When local authorities are producing development plans, and subsequently making planning decisions, the Government's National Planning Policy Framework must be taken into consideration¹²⁹. This states that Local Wildlife Sites, as well as statutorily designated national

and international sites, should all be identified and safeguarded¹²⁹.

There are a number of Local Wildlife Sites in urban centres of differing sizes across Warwickshire, Coventry and Solihull. Claybrookes Marsh is one such site, located on the edge of Coventry and providing a mosaic of habitats on a former industrial site for visitors to enjoy. These include willow carr, semi-improved grassland and reed beds. The site is managed by Warwickshire Wildlife Trust and has also been designated a Site of Special Scientific Interest^{12,130}. Churchyards also often support valuable habitat. One example is Leek Wootton Churchyard, home to a range of valuable plants such as the near-threatened wild strawberry (*Fragaria vesca*) and the county notable spiked sedge (*Carex spicata*)¹³¹. The NCAP team, along with local authority partners, are also developing new selection criteria for urban Local Wildlife Sites. These will place a greater emphasis on recognising the community and human value of urban sites as well as their value for wildlife.



Hatton Locks



David P Howard / All Saints Church, Leek Wootton



Lorna Gwilliam

Engaging communities in urban centres

At a landscape-recovery level, Warwickshire Wildlife Trust (WWT) and local authorities across the sub-region are working hard to restore nature in urban centres. The **£3 million** Natural Lottery Heritage funded Sherbourne Valley Project has been re-connecting communities in Coventry with the River Sherbourne, which flows through and under the city centre⁴⁶. Virtual reality¹³² and river festivals¹³³ have brought the Sherbourne to life for the citizens of Coventry, while river restoration works have taken place upstream at Coundon Wedge. This is a site in suburban North-West Coventry and which is also a Local Wildlife Site¹³⁴.

An important element of work at WWT is engaging local communities to take their own action for nature, including in urban environments. The #TeamWilder initiative works with both individuals and groups to inspire people of all ages and from all backgrounds to become nature champions in their local patch¹³⁵. Communities have already made a massive difference through wildlife-friendly gardening, setting up swift nest boxes, pond restoration and so much more. By increasing this momentum, together we can bring nature back to our streets and gardens¹³⁵.



Conclusions and key considerations

As stated in the habitats overview at the start of this report, we estimate that Warwickshire, Coventry and Solihull are halfway there with meeting the '30% of land for wildlife by 2030' target which is incorporated into global, national, local and organisational strategies^{1,2,3}. While there is a long way to go, we have incredible wildlife champions already having massively positive impacts for the habitats and species in our humble but important corner of the world and at every level of society.

Landscape-level conservation is ramping up like never before, providing huge opportunities for nature's recovery. Over the next year and beyond, regional authorities will be producing Local Nature Recovery Strategies (LNRS) that will identify key areas for habitat restoration, creation and management at a whole landscape level²⁵. The authority responsible for producing this strategy for Warwickshire is Warwickshire County Council, while the West Midlands Combined Authority will produce the LNRS that covers Coventry and Solihull. The Natural Capital Assessment Partnership habitats and Local Wildlife Site data will play a big part in understanding the baseline habitat resources we already have in the sub-region so that, following conservation action, progress can be monitored.

This report has highlighted some key considerations for conservation action at a landscape level, as well as additional data that would be useful to collect.

- We must do everything in our collective power to protect the remaining semi-natural and wildlife habitats that already exist. We cannot afford to lose any more of the rarest habitats, such as heathlands, wetlands and semi-natural grasslands.
- Also of great value, and which must be protected, are those areas with already large clusters of Local Wildlife Sites, potential Local Wildlife Sites, sites with statutory designations and other areas of semi-natural habitat. These areas should not be eroded but instead, appropriately buffered from human activity and connected by wildlife corridors. Other datasets not included in this report, such as connectivity models, could be particularly valuable, for example when developing the Local Nature Recovery Strategies.
- Making sure that all potentially valuable habitats are recorded as potential Local Wildlife Sites (pLWS), and surveying and designating all pLWS meeting minimum criteria as Local Wildlife Sites, could go a long way in protecting many habitats.

- Data as to the extent of habitats needs to better incorporate data as to the condition and quality of habitats. Where condition data does not exist, this needs to be gathered. Even semi-natural habitats don't have the wildlife value that they could have if they are poorly managed. Many Local Wildlife Sites, for example, degrade over time due to inappropriate management.
- While it was beyond the scope of this report, the habitat data could be explored from different angles to provide additional information as to action that could be taken in the sub-region. For example, it has been suggested that 5 hectares is the minimum woodland parcel size to aim for, for supporting generalist species of woodland bird⁷⁴. Assessing how many woodland parcels in the sub-region meet this criteria would be valuable additional data and identify priorities for woodland expansion. Assessing the proportion of individual habitats lying within 10m of the edge of a habitat could also be calculated. A recent study noted that 10km hedgerow per km² was an optimum amount for supporting wildlife¹³⁶. The proportion of hedgerow, or other habitats, per km² across the sub-region could also be calculated.

Our collective actions at a landscape level will make a huge difference to the state of habitats across Warwickshire, Coventry, Solihull. Several local authorities in the area have declared an ecological emergency, putting nature high up on the priority list. The most valuable sites can be protected as Local Wildlife Sites and incorporated into Local Development Plans, Neighbourhood Plans and the Local Nature Recovery Strategies. Local Biodiversity Action Plan targets already exist for many of our most

vulnerable and valuable species and habitats and progress can continue to be monitored against these.

Ultimately, a thriving and healthy natural world is good for nature and good for people. If we are able to restore Warwickshire, Coventry and Solihull's habitats to recreate thriving ecosystems, we will play our part in helping to safeguard the future for humanity, adapt to and mitigate the impacts of climate change and make the sub-region a nicer place to live.

Finally, at an individual level, our actions can also make a difference for wildlife, whether that's through getting involved with community groups sustainably managing a Local Wildlife Site, volunteer groups cleaning up a local river or, creating a mini pond in a garden. Together we can achieve **30 by 30** in our region, restore Warwickshire, Coventry and Solihull's habitats and bring our wildlife back.



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Burton Dassett Hills



Appendix 1. Methods

Habitat mapping

Phase I habitats

Habitat coverage across the subregion was calculated using data from the most recent NCAP Phase I habitat survey data, incorporating records from **1982-2019**⁴. Data were cleaned prior to inclusion in this report resulting in the removal of **109 features**. Habitats were grouped by Phase I code⁴ and clipped to the OS boundary line of the subregion¹⁹. Summary statistics of habitat area were performed using ESRI ArcGIS Pro 3.2.1¹³⁷. Additional statistics on the length of rivers and canals were calculated using OS Open Rivers data²⁴.

Ancient woodland and ancient trees

Statistics on the coverage of ancient woodland were calculated using Natural England Revised Ancient Woodland data²². Statistics on the number of ancient and veteran trees was calculated using Woodland Trust Ancient Tree Inventory data¹³⁸. Data was clipped to the OS boundary line of the subregion¹⁹ and summary statistics performed using ESRI ArcGIS Pro 3.2.1¹³⁷.

30 by 30 statistics

Phase I habitats were divided into those that provide suitable resources and habitat for wildlife and those that don't. The polygon areas from

NCAP's Phase I spatial data⁴ for each category ('wildlife' and 'non-wildlife') were summed. Hedgerow data was incorporated by converting NCAP linear hedgerow data⁴ into a **2m-wide polygon**. The hedgerow polygon was used to clip and remove the hedgerow area from the Phase I habitat polygon layer, which includes all non-linear habitats, to avoid double counting habitat area.

There are caveats associated with deciding which habitats are wildlife-friendly. There is a chance that some habitat areas that haven't been surveyed recently are no longer the habitat recorded on the Phase I spatial layer. Also, looking at 'non-wildlife' or 'wildlife' habitats from a different angle may change which category they are placed into. For example, arable land was considered 'non-wildlife' habitat but, many farms are in agri-environment schemes and could be providing 'wildlife habitat' even within cultivated areas. The process for estimating '**30 by 30**' will undergo refinement and discussions with stakeholders as to how 'wildlife habitat' is defined. As this process progresses, updated estimates of **30 by 30** will be produced.

Change detection

The most recent Phase I habitat survey data was filtered to include the years **2013-2019**. Historic NCAP Phase I

Habitat survey data was obtained up to and inclusive of the year **2012**. Data was cleaned and habitats were grouped by Phase I code⁴. Summary statistics of habitat area were performed using ESRI ArcGIS Pro 3.2.1¹³⁷ on those areas surveyed in the field within both time scales (**1982 – 2012 and 2013 – 2019**). The percentage of each habitat from the surveyed area was calculated.

Habitat classification & validation

The coverage of habitat classes was calculated using Spottit classification raster data²³ generated from satellite imagery collected in **2023**⁴¹. Pixel size was **50cm** resolution. The classification was generated using a bespoke algorithm by Spottit that combined Convolutional Neural Network / Maximum Likelihood methods. An accuracy assessment was performed by the NCAP team on classes Woodland, Rivers and Lakes and Urban, by cross referencing the assigned pixels against known habitat data to check the accuracy with which each habitat had

been classified. Raster data was clipped to OS boundary line of the subregion¹⁹. The pixel count of each habitat class was calculated using QGIS 3.28.10 Raster Layer Unique Values Report tool¹³⁹.

Designated sites

Statutory designated sites data (SAC, SSSI and LNR) were obtained from Natural England and clipped to the OS boundary line of the subregion^{15,16,17,19}. To obtain an estimate of statutory designated site subregion area coverage, datasets were dissolved to remove overlapping polygons.

NCAP Local Wildlife Site data⁵ was clipped to the OS boundary line of the subregion¹⁹ and summary statistics were calculated using ESRI ArcGIS Pro 3.2.1¹³⁷. The local authority at the centre of each site was allocated. Summary statistics were calculated on the number and designation status of Local Wildlife Sites per local authority. The habitat coverage within potential, designated and destroyed local wildlife sites was calculated using the most recent NCAP Phase I habitat survey data⁴.



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