



State of Habitats: Rugby Borough

1. The State of Habitats

This State of Habitats summary for Rugby Borough Council (RBC) is based on data gathered by the Natural Capital Assessment Partnership (NCAP) over the last 25 years^{1,2}. Formerly known as the Habitat Biodiversity Audit, NCAP is managed by Warwickshire Wildlife Trust (WWT) and hosted by Warwickshire County Council (WCC). WWT, WCC, RBC and 6 other local authorities across Warwickshire, Coventry and Solihull contribute funding to the partnership. The aim of the overall State of Habitats report³ and this summary is to provide a habitat baseline that can help to inform the most effective actions for protecting, enhancing and restoring the nature of the sub-region. In this report, the sub-region refers collectively to the Warwickshire, Coventry and Solihull local authority areas.

2. NCAP data

The statistics in this summary draw primarily on 'Phase 1' habitat data gathered by the NCAP team¹. Phase 1 is a habitat survey method developed by the Joint Nature Conservation Committee⁴. Habitat data have been gathered by the NCAP team on a rolling basis over the last 25 years. It should be noted that some areas of the sub-region remain un-surveyed, due to factors such as inaccessibility, because appropriate phase 1 habitat definitions do not exist, e.g. for urban habitats⁴, or because urban features, such as building and roads, haven't typically been mapped in the past. As a result of these factors, **12% of Rugby Borough is un-surveyed**^{1,5}.

In 2023, NCAP also acquired remotely sensed satellite data from Spottitt⁶⁻¹⁰, as well as a habitat classification map produced by Spottitt and derived from the satellite data¹¹. The habitat map places the entire sub-region into 11 different habitat categories¹¹. The long-term aim is for this remotely sensed dataset to complement the Phase 1 habitat data, for example by filling in some of the gaps that have arisen from using Phase 1. Where relevant, the State of Habitats report and this summary refer to this new remotely sensed dataset.

3. Rugby's diversity of habitats: summary

Covering 35,358 hectares of land⁵, Rugby Borough sits at the crossroads of 5 National Character Areas (NCAs)¹²⁻¹⁶. The two largest are the Dunsmore and Feldon NCA, which features remnants of ancient woodland and important post-industrial quarry sites¹², and the Leicestershire Vales NCA¹³. The latter is represented by an open character and clay soils, associated mixed livestock and arable farming systems, and woodland copses/spinneys often found on the clay ridges¹³.

To the south and east lie pockets of the Northamptonshire Uplands NCA, with its undulating limestone and sandstone landscape shaped by ancient ridge and furrow field systems and hedgerows characteristic of enclosure¹⁴. To the west are tiny pockets of the Arden NCA¹⁵. The very north stretches into the Mease/Sence lowlands NCA, known for its rivers, wetlands and neutral grasslands¹⁶.

Rugby Borough is home to many important wildlife habitats, including some of the sub-region's rarest. Many sections of these are found in Local Wildlife Sites, including Frankton Meadows Local Wildlife Site, with its wet meadows and calcareous grasslands².



Wetlands are the rarest broad Phase 1 habitat types across Rugby Borough¹. Rugby's 50 hectares of 'swamp, marginal and inundation' wetland habitats collectively represent **0.1%** of the borough's area and 27% of the sub-region's swamp, marginal and inundation habitats¹. These habitats fall under the 'other' category in Figure 1.

At the other end of the scale, it is estimated that **47%** of Rugby is categorised as Phase 1 '**cultivated and disturbed**' land, which includes habitats such as amenity grassland, arable land and introduced shrub^{1,4}.

Under the broad Phase 1 'Woodland and Scrub' habitat category, '**parkland**', '**woodland**', '**recently-felled woodland**' and '**wet woodland**' collectively account for **5% of Rugby's local authority area**, compared to 7% at the sub-regional level^{1,3} and 13% at a national level¹⁷.

39% of the sub-region's remaining **200 hectares of wet woodland** are found in Rugby Borough, making the Borough a stronghold for this incredibly rare habitat¹.

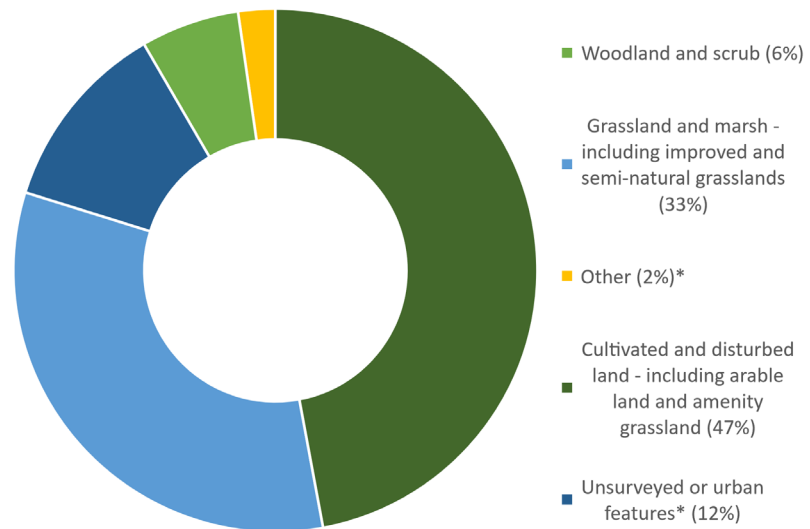
Rugby is slightly less **urbanised** than the sub-region as a whole, as

demonstrated by remote sensing imagery. This shows that **7%** of the local authority region is covered by urban features such as roads and buildings compared to 9% of the sub-region¹¹.

If we consider improved grassland, set-aside and arable land as the main agricultural land uses across the sub-region, we estimate that approximately **71% of Rugby is farmed**. This is higher than at the sub-regional level (64%)^{1,3}.

8% of Rugby's grasslands are **semi-natural grasslands with distinctive calcareous, neutral, acid or marshy grassland plant communities**. This compares to 11% across the Warwickshire, Coventry and Solihull sub-region as a whole. 3% of the sub-region's remaining 179 hectares of calcareous grassland and 12% of the remaining 77 hectares of acid grassland are found in Rugby Borough^{1,3}.

Figure 1. Proportion of broad Phase 1 habitats across Rugby¹



*Urban features, e.g. buildings / roads and other 'artificial' surfaces are not included in the Phase 1 survey process and so are included in un-surveyed areas. 'Other' includes 'swamp, marginal and inundation' wetlands, 'tall herbs', 'open water' and 'rock exposure & waste'.

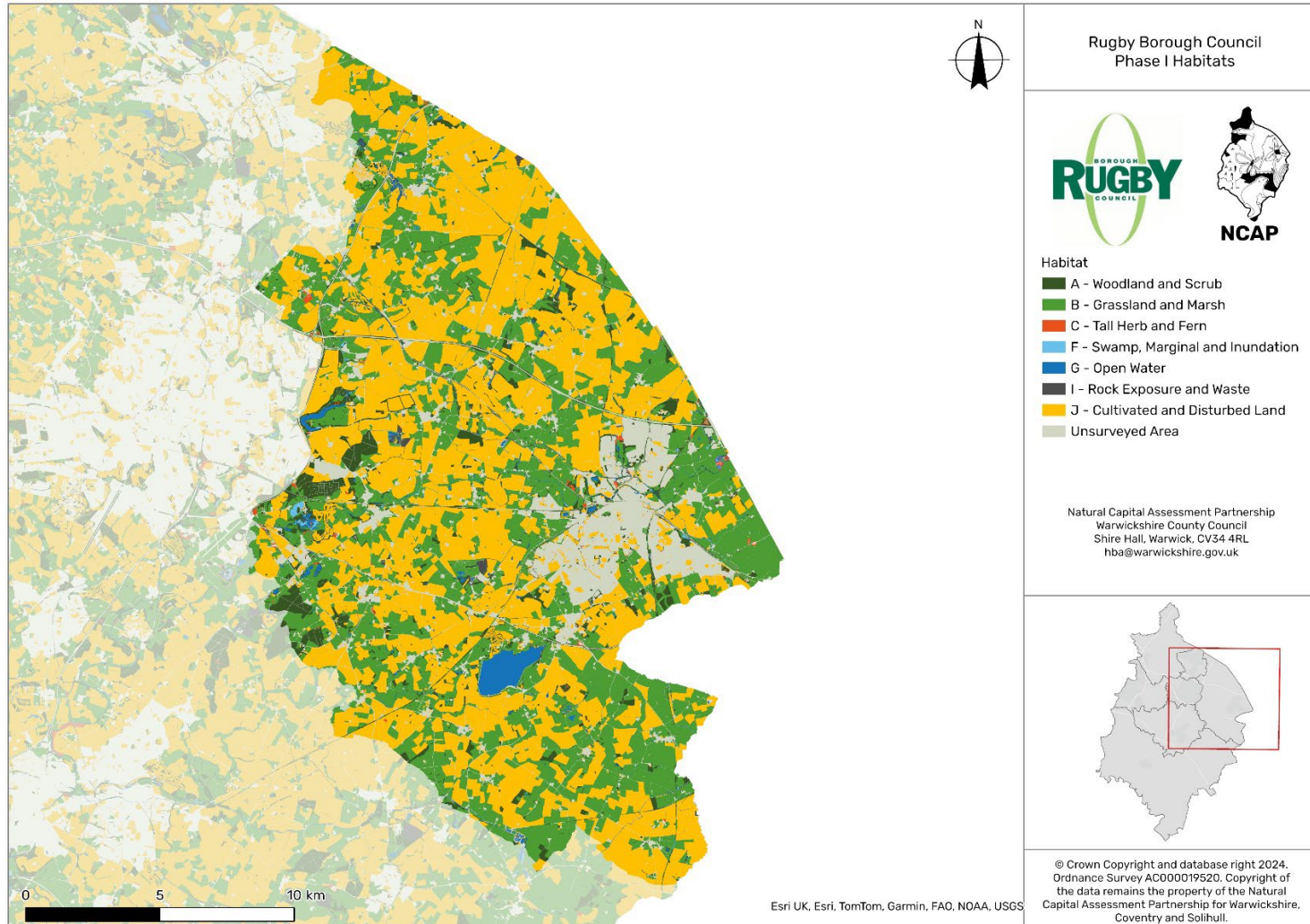


Figure 2. Phase 1 habitats across Rugby Borough



4. Rugby's protected sites

Rugby has **16 sites with statutory protection**^{18,19}:

- **7** Local Nature Reserves¹⁹
- **9** Sites of Special Scientific Interest¹⁸

These statutorily protected sites account for approximately **1%** of Rugby's land area (**328 hectares**)^{5,18,19}.

Rugby has **81 Local Wildlife Sites** (including those with boundaries across multiple authorities), or **1311 hectares** of land in Local Wildlife Sites (4% of the total area). An additional 126 potential Local Wildlife Sites sit, at least partially, within Rugby Borough's boundaries².

Out of these 81 sites, **41** were known, at the time of survey, to be under **good or favourable management**.² For the remaining sites, data are either missing or their condition would benefit from management changes.

5. Breakdown of Phase 1 habitats

Woodland

6% of Rugby is covered by woodland and scrub habitats (Table 1.), less than the sub-region as a whole (8%)^{1,3}.

As can be seen from table 1, woodland alone accounts for 4% of Rugby's total land area and 73% of the broad Phase 1 'woodland & scrub' habitats¹. Breaking down the statistics further shows that the majority of woodland across Rugby is broadleaved (84%). Only 5% of woodlands across Rugby are coniferous and 11% are mixed woodland¹. There is also a greater extent of semi-natural woodland (62%) across the local authority region than plantation (38%)¹.

Table 1. The area and proportion of Phase 1 woodland / scrub sub-habitats across Rugby¹

Habitat	Total Area (Ha)	Proportion of Rugby's woodland / scrub habitats (%)	Proportion of local authority area (%)
Woodland	1571.2	73.1	4.4
Scrub	400.8	18.6	1.1
Parkland	88.9	4.1	0.3
Recently-felled Woodland	1.5	0.1	<0.01
Orchard* ¹	9.5	0.4	<0.1
Wet Woodland* ¹	78.7	3.7	0.2
Total	2150.7	100.0	6.1

*¹ Not officially Phase 1 codes as defined under JNCC Phase 1 guidelines⁴ but, included under Woodland and Scrub habitat classification by NCAP.

As noted in the summary, Rugby is a stronghold for the remaining 200 hectares of wet woodland found across the sub-region. 39% of the sub-region's wet woodland is found in Rugby Borough¹.



Although 82% of the sub-region's 186 hectares of orchards are found in Stratford District, Rugby is the local authority in the sub-region with the third greatest proportion of orchard habitat – 5%¹.

Grassland

Grassland and marsh covers 33% of Rugby's local authority area, compared to 29% of the sub-region as a whole¹. The majority of grassland across Rugby is improved grassland (81% - Table 2)¹. Improved grasslands have been more intensively managed to increase agricultural performance, for example through the application of agrochemicals such as herbicides or fertilisers⁴. As a result, plant species diversity is poor and tends to include species with a high tolerance for over-grazing and high nutrient levels⁴.

Semi-natural grasslands account for the remaining 19% grasslands across Rugby. However, 58% of these are in poor condition meaning that they cannot be allocated a semi-natural grassland according to environmental conditions and characteristic plant communities (calcareous, acid, neutral or marshy grasslands). Instead, they are classed as 'poor semi-improved grasslands'^{1,4}.

The value of Rugby's grassland habitats are clear; 20% of the sub-region's remaining 596 hectares of marsh and marshy grasslands are found within the borough¹. Although 95% are found in neighbouring Stratford, Rugby also hosts 3% of the remaining 179 hectares of the sub-region's calcareous grasslands¹. 12% of the sub-region's remaining 77 hectares of acid grassland are found in Rugby, as are 13% of the sub-region's 6169 hectares of neutral grassland¹.

The statistics in this summary section do not include amenity grassland which falls under the 'cultivated and disturbed land' Phase 1 broad habitat category⁴. Amenity grassland accounts for 2% of Rugby's local authority area, in addition to the grassland habitats outlined in Table 2.¹

Table 2. The area and proportion of different grassland sub-habitats across Rugby¹

Grassland type	Area (Ha)	Proportion of Rugby's surveyed grassland habitats (%)	Proportion of Rugby area (%)
Acid Grassland	9.2	0.1	<0.1
Neutral Grassland	793.6	6.9	2.2
Calcareous Grassland	5.2	<0.1	<0.1
Improved Grassland	9393.5	81.2	26.6
Marsh/marshy Grassland	116.6	1.0	0.3
Poor semi-improved grassland	1255.6	10.8	3.6
Total	11573.7	100.0	32.7

Waterbodies and Wetland

Some of the rarest habitats across the sub-region, wetlands are similarly rare across Rugby (Table 3)^{1,3}. As described in the grassland summary section above, marshy grasslands also represent less than 1% of Rugby's land cover.¹



Swamp, marginal and inundation habitats include those where the water table lies above the surface of the soil for most of the year. Plants such as *Glyceria* grasses and species in the *Typha* family (reedmaces) are often found growing in these habitats.⁴

‘Standing water’, which under the Phase 1 habitat survey definition includes reservoirs, ponds, canals and lakes, accounts for 1% of Rugby’s land area (522 hectares).¹

Table 3. The area and proportion of ‘mire’ and ‘swamp, marginal & inundation’ habitats across Rugby¹

Habitat Name	Broad Phase 1 habitat	Area (Ha)	Proportion of Rugby’s surveyed wetland habitats (%)	Proportion of Rugby’s area (%)
Swamp	SM&I	40.0	79.9	0.1
Marginal and Inundation	SM&I	10.1	20.1	<0.1
Total	Wetland	50.1	100.0	0.1

6. Satellite-derived habitat data

Table 4. outlines the areas of different habitats found across Rugby as calculated using the remotely-sensed habitat classification map produced by Spottitt¹¹. It also demonstrates the proportion of Rugby’s local authority area covered by each habitat type. 7% of Rugby’s area is covered by the ‘urban’ land cover types which include artificial surfaces such as roads and buildings¹¹.

The Spottitt habitat classification map¹¹ shows 12% Rugby as being covered by woodland and trees. This proportion cover is higher than that shown by the Phase 1 habitat data¹, linked to the fact that both woodland and trees outside woodland are included in the same category. Essentially the habitat classification provides an estimate of tree canopy cover and so is not directly comparable to the Phase 1 woodland data.

Table 4. Area of broad habitats across Rugby, the proportion of the local authority area they represent and their User’s Accuracies¹¹

Habitat	Area mapped (Ha)	Proportion of Rugby’s local authority area (%)	User’s Accuracy (%)
Woodland & Trees	4393.4	12.4	82
Urban	2524.1	7.1	97
Water	585.5	1.7	74

A key part of using a remotely-sensed classification map is to assess whether habitats on the ground have been mapped correctly. The User’s Accuracies in Table 4. show how well three habitats have been mapped. The statistics for the remaining habitat classification categories will be completed throughout 2024. For a particular pixel on the habitat classification map¹¹, User’s Accuracies outline the probability that the pixel has been allocated the correct habitat type as is found on the ground^{20,21}. The ‘woodland’ habitat, for example, has a User’s Accuracy of 82%. 82 out of every 100 pixels



classified as woodland on the habitat classification map are woodland on the ground and therefore correctly classified. However, 18 out of every 100 pixels have been incorrectly classified as woodland when they are in fact other habitats on the ground.

7. Opportunities

Protecting the rarest habitat types, such as semi-natural grasslands and wetlands, should be a priority so that they're not lost completely from Rugby and the sub-region.

Local Wildlife Sites (LWS) / potential LWS (pLWS) are known to have been lost in 12 locations across Rugby². These may include either sections of LWS / pLWS or whole sites in some instances.

Protecting existing LWS from development will go a long way to preventing the loss of some of the area's most valuable sites for nature. Surveying pLWS and designating those meeting the threshold criteria as LWS could add up to **1032 additional hectares of wildlife habitat across Rugby Borough²**.

Additional pLWS sites may have been lost of which the NCAP team are not currently aware. Once the accuracy assessment has been completed for the remotely sensed habitat classification map, a useful next step would be to use the data to determine which pLWS have already been lost.

Management could be improved across Local Wildlife Sites so that they are all considered as being under **good / favourable management**.

Exploring opportunities for buffering and connecting remnant habitat patches and sites would be valuable. The Local Nature Recovery Strategies will identify key nature-recovery focal areas at a landscape level. Areas with large clusters of Local Wildlife Sites / potential Local Wildlife Sites could be a good starting point in this process.



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