
Biodiversity Value Mapping Methodology



Produced for: Nuneaton & Bedworth Borough Council

By: Warwickshire, Coventry & Solihull Local Biodiversity Action Plan Partnership

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1. Habitat scoring methodology:

This is a summary of the methodology used for the development of the biodiversity value map for Nuneaton & Bedworth Borough Council. Habitats selected for inclusion within this methodology are the most significant in terms of coverage within the sub-region (as per the State of Warwickshire Biodiversity – Habitats 2007).

- a. For each 500m grid square the habitats found have been scored as set out in Table 1:

Table 1. Key habitats and corresponding scores

Habitat	Score
Semi-natural woodland	10
Species rich hedgerow	9
Unimproved grassland (acid, neutral, calcareous)	8
Semi-improved grassland (acid, neutral, calcareous)	6
Running water	6
Standing water	6
Broadleaved plantation	6
Species rich defunct hedgerow	5
Species poor hedgerow	5
Poor-semi-improved grassland	4
Mixed plantation	4
Coniferous plantation	3
Amenity grassland	2
Improved grassland	1
Arable	1

- b. For each 500m grid square the presence of designated statutory and non-statutory sites habitats found have been scored as set out in Table 2:

Table 2. Statutory/Non-statutory site scoring

Site Status ¹	Score
SAC / SSSI	3
SINC / LWS / RIG	2
LNR / pSINC / pLWS score	1

¹ See 1.2 below for explanation of abbreviations

- c. Cumulative scores are shown on a grid square map (Biodiversity Value Map) as set out in Table 3:

Table 3. Nuneaton & Bedworth grid scores and target actions

Score Range	Colour	Target Action
1-17	Red	Maintain Extent
18-30	Yellow	Restoration
31-47	Green	Expansion

- d. Table 3 above also lists the primary target action for each square:
- **Maintain extent** – maintain current extent of resource, which entails securing the ecological function of the habitat, and this may involve some change in the habitat distribution over time (e.g. due to climate change). Hence, for certain habitats a maintenance target can be met without every occurrence of the habitat being retained provided there is no net loss and its overall integrity is sustained; or
 - **Restoration** – improve the condition of relict habitat (or historically former habitat) so that it qualifies as BAP habitat, restoring areas of degraded habitat or remnant elements to a state where it is considered to be BAP habitat in good condition. This leads to an expansion of the extent of the BAP habitat and ultimately an increase in the area in good condition; or
 - **Expansion** – increase the extent of resource, establishing BAP habitat on land where it is not present and where no significant relicts of the BAP habitat currently exist.
- e. The Biodiversity Value Map ties in with the Habitat Opportunity Map for Nuneaton & Bedworth Borough Council to determine what is the most appropriate habitat to be the focus of the relevant target action (maintain, restore or expand) as above.

1.1 Source documents and definitions:

The following documents were used as the basis for developing this methodology:

- Birmingham and the Black Country Biodiversity Value Map (September 2008)
- Oxfordshire Wildlife & landscape Study (2004)
(<http://owls.oxfordshire.gov.uk/wps/wcm/connect/OWLS/Home/>)
- Assessment of Ecological Condition: Pilot Study for Warwickshire/Coventry Urban Fringe (July 2007)

The England Biodiversity Group Review of BAP Targets (2006) was also referred to for the target definitions (maintain, restore or expand) used above. The document can be found on their website:

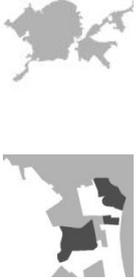
<http://www.ukbap.org.uk/library/brig/TargetsReview06/Final/BAPTargetDefinitionsGuidance.pdf>

Definitions of abbreviations used in table 2:

- SAC – Special Area for Conservation
- SSSI – Site of Special Scientific Interest
- SINC – Site of Importance for Nature Conservation
- LWS – Local Wildlife Site (replacing SINC)
- RIG - Regionally Important Geological/Geomorphological Site
- LNR – Local Nature Reserve
- pSINC – Potential Site of Importance for Nature Conservation
- pLWS – Potential Local Wildlife Site (replacing pSINC)

2. GIS methodology:

2.1 Source data:

- a. Habitat Biodiversity Audit (HBA) data from Warwickshire courtesy of Warwickshire Wildlife Trust (WWT), version 2007.
 - This data includes the whole of Warwickshire classified into habitat categories following the Phase 1 Habitat Survey classification system – not directly displayed on the maps but used in selecting key habitats and scoring the grid squares.
- b. Local authority boundaries, courtesy of WWT.
 - County, district and civil parish boundaries, derived from Ordnance Survey material – displayed as a grey line on the map.
- c. Settlement areas 2001 obtained from the Local Government and Communities website: www.communities.gov.uk
 - Urban settlements are defined as areas of built up land with a minimum area of 20 ha with a population of 1,000 (at the 2001 census), settlements separated by less than 200 m have been lumped together¹ - displayed on the maps in pale grey.
 - Since substantial growth has occurred in the vicinity of Nuneaton following 2001, additional areas were digitized to indicate these new urban extension areas – on the map these areas are displayed in a darker shade of grey. These areas were digitized using 1:10000 OS raster data (release 2008/2009) of the area.
- d. Statutory and non-statutory sites (SSSIs, SACs) courtesy of Natural England; (SINCs, pSINCs, LNRs & RIGs) courtesy of WWT – the data is not directly displayed on the maps but used in scoring the grid squares.

2.2 Source data handling:

- The source data for these maps came in ESRI shape file format, “wcs_p_region.shp” for habitat areas and “WCS_I_polyline.shp” for hedgerow data (excerpts of the WWT Habitat Biodiversity Audit database, version 2007) and “Borders_region.shp” for district/council boundaries. Natural England data for designated sites were downloaded from their web site in ESRI shape file format and modified as habitat shape files.
- Each of these shape files was split into discrete district areas (performing a “Clip” in Arc Toolbox/Analysis Tools/Extract/Clip) and geo-corrected if necessary (“Repair Geometry” in Arc Toolbox/Data Management Tools/Features/Repair Geometry).

- Using the district shape files for Nuneaton & Bedworth, key/target LBAP habitats were separated from the “wcs_p_region.shp” & “WCS_I_polyline.shp” and:
 - Each habitat type was saved into their own discrete shape file.
 - Within each habitat shape file, all shapes were initially merged (to remove the artificial grid division and any overlap between shapes) and the resulting single habitat block was then exploded to create spatially discrete shapes for each patch of habitat.
 - When all the shapes were saved in their respective shape files and treated as above, the habitats were scored as per Table 1.
 - The above treatment ensured that the presence of any one type of habitat was counted/scored independent of presence of other habitats once (and only once) within a grid square.
- The grid used is purely geometrical and not based on the British National Grid. The grid size of 500 m was chosen for Nuneaton & Bedworth due to its relatively small size.
- With the habitats divided and treated accordingly and the grid size having been selected, the habitat shape files were individually joined to the grid by the “Spatial Join” tool in Arc Toolbox/Analysis Tools/Overlay, thus creating “join shape files” for the presence of the individual habitats in the grid squares.
- All of the “join shape files” were then merged into one by carrying out a concatenated “Intersect” (Arc Toolbox/Analysis Tools/Overlay) analysis with the help of ModelBuilder in ArcMap (9.3.1).
 - Subsequently, a cumulative score for each grid square was calculated based on the presence of any target habitat and/or statutory/non-statutory sites in the grid squares.
 - N.B. the complicated procedure for this analysis step is due to the fact that we currently have only the “ArcView” license package, with the “ArcEditor” or “ArcInfo” licensing packages multiple Intersects and Spatial Joins are allowed in “one-go”, and therefore these steps would be greatly shortened.
- The resulting “intersect shape file” was symbolized using the cumulative score for each grid square, the categories were formed using the “Natural breaks” function in ArcMap, see Table 3 for cumulative score ranges. The general grid square value statistics are shown below in Figure 1.

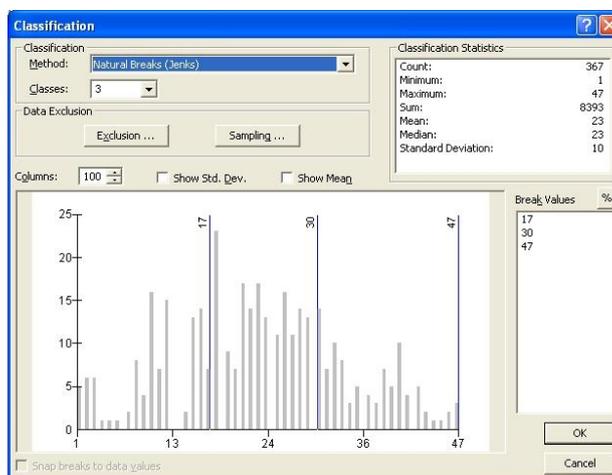


Figure 1. Grid square cumulative score statistics

3. Data copyright:

Settlements 2001:

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HBA data & statutory non-statutory sites (LNR, RIG, pSINC, SINC):

Copyright of the data remains the property of the Habitat Biodiversity Audit for Warwickshire, Coventry and Solihull. While every effort has been made to ensure that the data is accurate in accordance with Phase I habitat survey standards, the project cannot guarantee its accuracy or accept responsibility for any changes to landuse or habitat that may have occurred since the survey was undertaken. Data currency: 2007 edition.

Natural England designated sites (SSSI, SAC etc.):

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All map documents:

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References:

ⁱ "Urban Settlements; Methodology Guide" by Communities and Local Government, <http://www.communities.gov.uk/publications/planningandbuilding/urbansettlement2001>