

# GEODIVERSITY ACTION PLAN Worcestershire



Making a contribution to Worcestershire's environment and quality of life through education, conservation, enhancement, management and promotion of the county's geodiversity



working to record and protect  
geology & landscape

**Geodiversity** is the natural range (diversity) of geological (rocks, minerals, fossils), geomorphological (landforms and processes) and soil features. It also includes their relationships to people, places and nature.

## Geodiversity and People

Geodiversity influences everyone's lives; from where we live, to what we grow, quarry and mine. Settlements develop where the underlying geological conditions have created a favourable environment; for example close to water sources, or at the bridging point of a river. Vineyards and fruit farms flourish in warm valleys where fertile soils create excellent growing conditions. Mines and quarries are located where the geological conditions of the past have created sites from which suitable materials can be extracted, for example roadstone.

## Geodiversity and Places

Geodiversity directly influences landscape. Resistant rocks such as granite and limestone underlie the spectacular Malvern and West Worcestershire Hills. Relatively hard sandstones form the higher ground around Kidderminster and the Wyre Forest. In contrast the softer mudstones in the central parts of the county have been more easily eroded, creating the Severn Vale and the valley of the River Avon.

The local character of different areas is often influenced by the underlying rocks. For example Malvern Stone, used in walls and buildings in the area, was quarried from the Malvern Hills. The honey coloured stone buildings of the Broadway and Bredon areas are built of Jurassic Limestone, dug from the nearby hills.

## Geodiversity and Nature

Geodiversity includes soils, which directly influence the type and location of habitats and the species which thrive in these habitats. For example, red sandstones break down to give sandy, acidic, well-drained soils. These soils can give rise to areas of scrub or heathland, for example around Kidderminster. Lime-rich soils, with areas of calcareous grassland, have developed on the limestones underlying Bredon Hill and the top of the Broadway escarpment.

## Geodiversity and Climate Change

Understanding how geodiversity influences landscape, habitats and species, is essential to understanding how biodiversity and landscape may alter as a result of present and future climate change. In order to do this, we need an up to date and accurate picture of geodiversity in the county - an audit of geology, soils, rivers and unconsolidated materials will help to achieve this.

Understanding past and present natural processes and features can also help identify what has happened to the environment of Worcestershire in the past, and what may happen to the environment in the future. This is crucial in assisting wildlife and people to adapt to the effects of climate change.



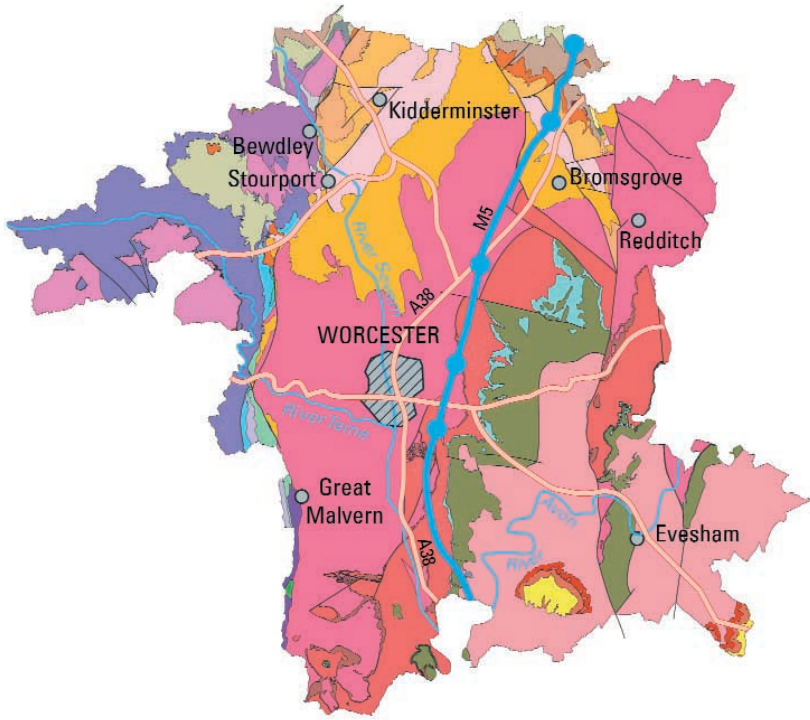
Top picture: Blackstone Rock, Bewdley. A former hermitage carved into the large Permian red sandstone cliff.

Above: Shelsley Beauchamp Church. The Nave is built out of Devonian (Old) Red Sandstone. The tower is built of more brightly coloured and younger Triassic (New) Red Sandstone.

Left: Shavers End Quarry, Abberley Hills. A former aggregates quarry exposing steeply dipping Silurian limestones and shales, with red mudstones giving rise to red soils in the distance.

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# GEOLOGY MAP OF WORCESTERSHIRE



**JURASSIC (200-145ma)**

- Inferior Oolite Group
- Whitby Mudstone Formation
- Dyrrham Formation and Marlstone Rock Formation
- Charmouth Mudstone Formation
- Blue Lias Formation

**TRIASSIC (251-200ma)**

- Penarth Group
- Branscombe Mudstone Formation and Blue Anchor Formation
- Arden Sandstone Formation
- Sidmouth Mudstone Formation
- Bromsgrove Sandstone Formation
- Wildmoor Sandstone Formation
- Kidderminster Formation

**PERMIAN (299-251ma)**

- Bridgnorth Sandstone Formation
- Clent Formation and Haffield Breccia Formation

**CARBONIFEROUS (359-299ma)**

- Salop Formation
- Halesowen Formation
- Etruria Formation
- Pennine Lower Coal Measures Formation

**DEVONIAN (416-359ma)**

- St Maughans Formation

**SILURIAN (444-416ma)**

- Raglan Mudstone Formation
- Ludlow
- Wenlock
- May Hill Sandstone Group

**ORDOVICIAN (488-444ma)**

- Lickey Quartzite Formation
- Barnt Green Volcanic Formation

**PRECAMBRIAN (before 542ma)**

- Warren House Formation
- Malverns Complex

(Where ma is millions of years before the present)

For further information contact:

The Worcestershire Geodiversity Partnership, H&W EHT, Geological Records Centre, University of Worcester, Worcester, WR2 6AJ.

Tel: 01905 855184 Fax: 01905 855132 e-mail eht@worc.ac.uk

More details and updates will be found on the website: [www.EarthHeritageTrust.org](http://www.EarthHeritageTrust.org)



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## Worcestershire Geodiversity Action Plan Objectives

- Objective 1: Audit and record all geodiversity resources.
- Objective 2: Increase awareness, understanding and appreciation of the county's geodiversity.
- Objective 3: Ensure that geodiversity is identified and included in regional and local strategies, plans and policies.
- Objective 4: Provide guidance and support to those dealing with geodiversity, e.g. local authorities, landowners, organisations and individuals.
- Objective 5: Protect, conserve and enhance geodiversity resources.
- Objective 6: Further the opportunities for business involvement in geotourism and geodiversity.
- Objective 7: Improve and sustain the links between geodiversity, biodiversity, archaeology and landscape.
- Objective 8: Secure the continuity, sustainability and effectiveness of the GAP process and geoconservation in Worcestershire.



Main picture: Four Stones, Clent Hills. Erected in the 18th century by Lord Lyttleton, supposedly to irritate a nearby landowner, the Earl of Dudley. They are not built of the rock that makes up the Hills (the Clent Formation). Instead, they are made of a rock found at the base of the Hills; the Kidderminster Formation.

Above: Castlemorton Common. The poor soil here is underlain by gravels washed down off the Malvern Hills during the last ice age. The spectacular ridges of the Malvern Hills are made of resistant rock, formed deep in the Earth's crust around 700 million years ago.

Below: Broadway Quarry. An aggregates and building stone quarry, revealing distortion of Jurassic limestone.



## A Geodiversity Action Plan (GAP) for Worcestershire



Martley. Brightly coloured orange-red sandstones of Triassic age.

This Plan identifies some of the objectives and actions to provide long term and sustainable support for the conservation of geodiversity within Worcestershire. It is not meant to be an exclusive list and it is hoped the Plan will evolve and grow. It aspires to be an incentive for interested groups and individuals to get involved and take action to

better understand and conserve the wonderful environment of Worcestershire.

The Aim of the Plan is to make a contribution to Worcestershire's environment and quality of life through education, conservation, enhancement, management and promotion of the county's geodiversity.