

# GEODIVERSITY ACTION PLAN Herefordshire

Making a contribution to Herefordshire'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 has far reaching effects; it influences where we live, what we grow and what we quarry or 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. Mines, quarries and pits are located where useful geological materials can be extracted. For example, lime kilns were built close to limestone rock. Glacial deposits in the centre of the county and hard rock areas have been exploited for road stone. Small amounts of coal have been extracted in the south east of the county. Geodiversity influences the building materials which give each area its character such as pale coloured limestone and red sandstone. Bricks were made from local mudstone rocks. Hill forts were sited on easily defended sites on outcrops of resistant rock such as Herefordshire Beacon on the Malvern Hills and Little Doward.

## Geodiversity and Nature

Geodiversity includes soils, which influence what plants and animals can thrive in any area. For example many lowlands are on softer mudstones and may become water logged. Crops can be grown more easily on river terraces, underlain by gravels, where drainage is better. Lime loving plants are found in the limestone areas. Acid grasslands, which support entirely different species, developed on the Malvern Hills.

## Geodiversity and Landscape

Geodiversity shapes the landscape. Harder more resistant rocks underlie higher land and produce steep slopes, as in the Malvern Hills or the Black Mountains. Softer rocks are worn away to form the lowlands of central Herefordshire. Melting glaciers left deposits producing the hummocky topography and diverting rivers. Downton Gorge is an example of the new course cut by the River Teme after its former valley was blocked during the Ice Age.

## Geodiversity and Climate Change

Knowledge of 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 help identify what has happened to the environment of Herefordshire 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.



Cover picture: Crystalline Precambrian rocks, the oldest in the county, nearly 700 million years old, are seen in the Malvern Hills.

Top: Fossils are preserved in Silurian limestone, about 420 million years old, formed in clear tropical seas.

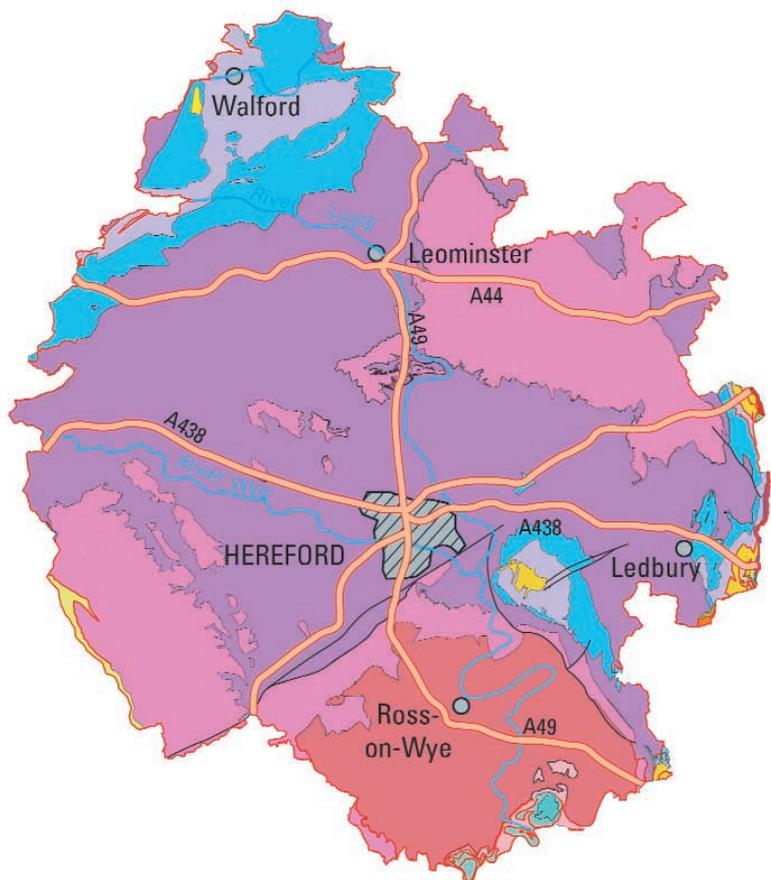
Above: Carboniferous limestone about 350 million years old, is seen in the Wye Gorge. Here the limestone is coated by recent irregular deposits of calcareous tufa.

Left: Devonian 'Old Red Sandstone' rocks, are deposits of ancient seasonal rivers crossing an arid land about 400 million years ago.



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# GEOLOGY MAP OF HEREFORDSHIRE



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

**TRIASSIC (251-200ma)**

Sidmouth Mudstone Formation

**PERMIAN (299-251ma)**

Bridgnorth Sandstone Formation

Haffield Breccia Formation

**CARBONIFEROUS (359-299ma)**

Warwickshire Group

Carboniferous Limestone Supergroup

**DEVONIAN (416-359ma)**

Tintern Sandstone Formation and Quartz Conglomerate Formation

Brownstones Formation

Senni Formation

St Maughans Formation

**SILURIAN (444-416ma)**

Raglan Mudstone Formation

Ludlow

Wenlock

May Hill Sandstone Group

**CAMBRIAN AND ORDOVICIAN (542-444ma)**

Cambrian and Ordovician

**PRECAMBRIAN (before 542ma)**

Longmyndian and Tremadoc Rocks

Malverns Complex and Warren House Formation

(Where ma is millions of years before the present)



Supported through Defra's  
Aggregates Levy Sustainability Fund



## Herefordshire Geodiversity Action Plan Objectives

- Objective 1: Audit and record all the geodiversity resources.

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- Objective 2: Increase awareness, understanding and appreciation of the county's geodiversity.

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- Objective 3: Ensure that geodiversity is identified and included in regional and local strategies, plans and policies.

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- Objective 4: Provide guidance and support to those dealing with geodiversity e.g. local authorities, landowners, organisations and individuals.

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- Objective 5: Protect, conserve and enhance geodiversity resources.

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- Objective 6: Further the opportunities for business involvement in geotourism and geodiversity.

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- Objective 7: Improve and sustain the links between geodiversity, biodiversity, archaeology and landscape.

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- Objective 8: Secure the continuity, sustainability and effectiveness of geoconservation and the GAP process in Herefordshire.

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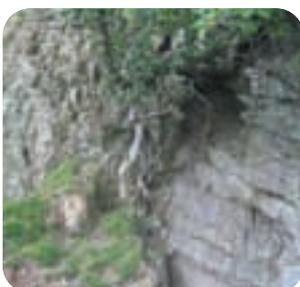
Main picture above: The Whet Stone, a huge boulder, was dropped from a melting ice sheet. This is Precambrian gabbro from Hanter Hill which can be seen behind in the middle distance.

Above inset: Upper Devonian Quartz Conglomerate contains coarse material carried downstream after a storm. As well as quartz there is a red jasper pebble.

Below: A rare fossil of a shrimp-like creature found in the Carboniferous.



## A Geodiversity Action Plan (GAP) for Herefordshire



Rock sheared in a fault zone.

The Plan identifies some of the objectives and actions to provide long term and sustainable support for the conservation of geodiversity within Herefordshire. It is not meant to be an exclusive list and it is expected that the Plan will evolve and grow over time. It also aims to be an incentive for interested groups and individuals to become involved and take action

to better understand and conserve the wonderful environment of Herefordshire.

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