



# COPPETT HILL



Community Earth Heritage  
**CHAMPIONS**  
project

View of Wye Valley looking  
north past Kerne Bridge  
towards Chase Wood

# GEOLOGICAL HISTORY OF THE AREA

Nine geological systems are represented in Herefordshire:

1. Precambrian (4600 million years ago to 542 million years ago)
  - Igneous and metamorphic rocks making up the Malvern Hills, here they are approximately 680 million years old, and amongst the oldest in England.

2. Cambrian (542 million years ago to 488 million years ago)
  - Quartzite, sandstone and shale formed as the sea level began to rise; found in small areas adjacent to the Malvern Hills.
3. Ordovician (488 million years ago to 444 million years ago)
  - Shales deposited within a deep ocean environment; found in a small area near Pedwardine and west of the Malvern Hills, as well as igneous intrusions seen near Eastnor.

## Geological Map of Herefordshire



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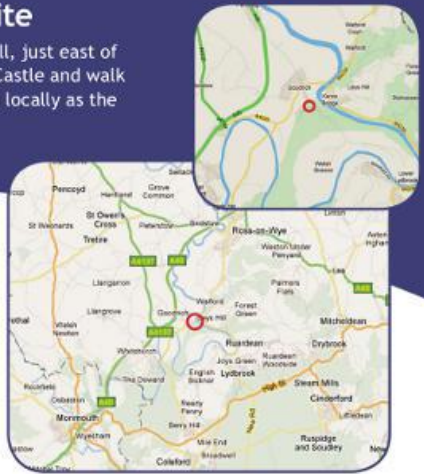
## Key to Geological Map of Herefordshire

<b>Quaternary</b> (2.6 million years ago to recent)	
<b>Neogene</b> (23 million years ago to 2.6 million years ago)	
<b>Palaeogene</b> (66 million years ago to 23 million years ago)	
<b>Cretaceous</b> (146 million years ago to 66 million years ago)	
<b>Jurassic</b> (199 million years ago to 146 million years ago)	
<b>Triassic</b> (251 million years ago to 199 million years ago)	
<b>Permian</b> (299 million years ago to 251 million years ago)	
<b>Carboniferous</b> (359 million years ago to 299 million years ago)	
<b>Devonian</b> (416 million years ago to 359 million years ago)	
<b>Silurian</b> (444 million years ago to 416 million years ago)	<b>Pridoli stage</b> (419 million years ago to 416 million years ago)
<b>Llandovery, Wenlock and Ludlow stages</b> (444 million years ago to 419 million years ago)	
<b>Ordovician</b> (488 million years ago to 444 million years ago)	
<b>Cambrian</b> (542 million years ago to 488 million years ago)	
<b>Precambrian</b> (4600 million years ago to 542 million years ago)	



## Location of Coppett Hill Champions Site

The site is located at the north-westernmost point of Coppett Hill, just east of the village of Goodrich. It is recommended to park at Goodrich Castle and walk along the road towards Welsh Bicknor. At a road junction known locally as the Triangle, there are steps that lead up to and past the site.



### 4. Silurian (444 million years ago to 416 million years ago)

#### a Pridoli stage (419 million years ago to 416 million years ago)

- Mudstones, sandstones and calcrites (calcium-rich fossilised soil) deposited within a flat, arid landscape near the coast, crossed by seasonal streams.

#### b Llandovery, Wenlock and Ludlow stages (444 million years ago to 419 million years ago)

- Limestones and shales deposited in warm, shallow seas.

### 5. Devonian (416 million years ago to 359 million years ago)

- Sandstones deposited by streams in an otherwise flat arid landscape.

### 6. Carboniferous (359 million years ago to 299 million years ago)

- Thick beds of limestone on the southern margin of the county with very small amounts of coal measures around Howle Hill.

### 7. Permian (299 million years ago to 251 million years ago)

- Red desert sandstones and breccias (sediments containing angular fragments) formed during catastrophic events such as flash floods or earthquakes. These rocks are found in a small area south of Ledbury. There is also a small igneous intrusion of this age near Bartestree.

### 8. Triassic (251 million years ago to 199 million years ago)

- Siltstones and mudstones representing a change in environment from a flat, arid landscape covered in rivers and lakes, into oceanic conditions; found in a small area north of Malvern.

### 9. Quaternary (2.6 million years ago to recent)

- Glacial deposits, river sands, gravels and alluvium, and chemical deposits such as tufa, overlying the hard rocks (but not shown on the geological map).

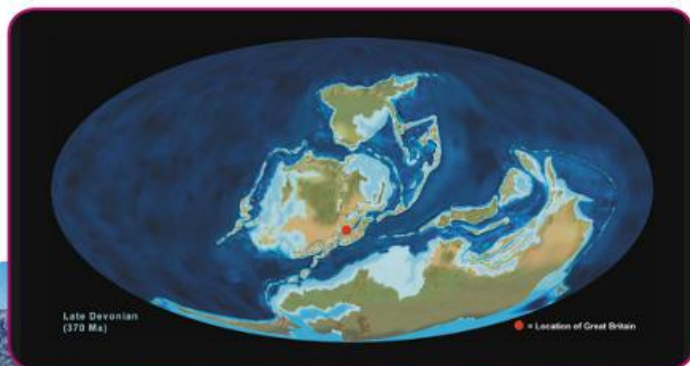
The Devonian Period and the Pridoli time of the Silurian make up a group of rocks known as the 'Old Red Sandstone' which covers most of the county. It gives the soils their characteristic red colour and in the centre of the county it reaches a thickness of up to 2000m. The other Silurian rocks give the overlying soils a grey colour.

# GEOLOGICAL HISTORY OF THE SITE

The rocks seen at Coppett Hill formed approximately 375 million years ago, during a period of time known as the Devonian. At this time the layout of the oceans and continents looked very different from today. Britain was located some 15° south of the equator and formed part of a newly created landmass called Laurussia, which had formed from the collision of modern day North America and Scandinavia. The environment was very hot and dry, with seasonal rivers criss-crossing the landscape.

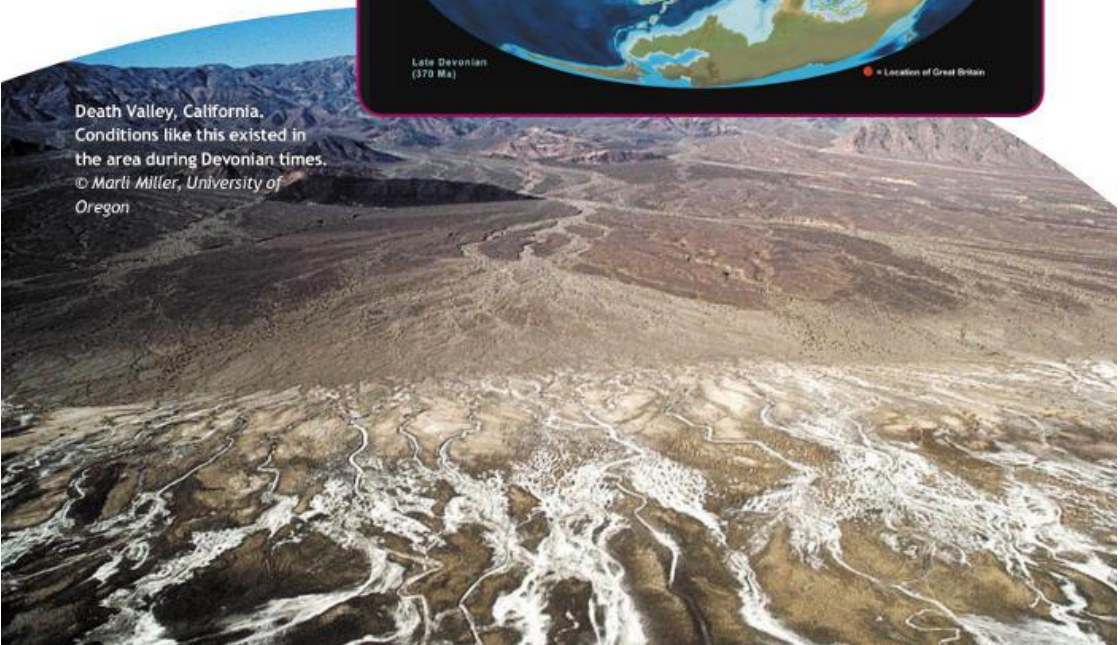
► Distribution of the continents during the Devonian

© Ron Blakey, Colorado Plateau Geosystems, Inc.



Death Valley, California. Conditions like this existed in the area during Devonian times.  
© Marti Miller, University of Oregon

The collision of ancient landmasses that formed this new continent created a large mountain chain to the west of the area. The erosion of these mountains provided huge amounts of sediment to the low-lying areas, resulting in the formation of thick layers of rock, which underlie most of the landscape of Herefordshire. Due to the presence of red iron oxide, these rocks are known as 'Old Red Sandstone'.





# THE COPPETT HILL FLOODS

## Did you know?

Conglomerate is sometimes known as "pudding stone".

**T**he rock forming the cliff that runs around the edge of the hillside is called a conglomerate. A conglomerate is a rock that is a mixture of different sized pebbles, held together by a finer material, in this case a red sand. The rock formed as flash floods swept across the arid landscape, dropping the majority of the water-borne material so quickly that it was not sorted by size very well. Most of the water-rounded pebbles that you can see are made of a milky or glassy mineral called quartz; hence the name of the rock, quartz conglomerate.

In some cases, as the water levels from the flood fell slowly, material of different sizes was laid down. Firstly, layers of mainly large round pebbles were dropped, followed by smaller sand-sized particles, and then finally mud and clay. These layers can also be seen in the rock face and allow you to see when one flood event finished and another one started. A rock layer that has progressively smaller material laid down is called a graded bed.

►  
Conglomerate layer  
*Courtesy of John Stocks*



◄  
A graded bed in the cliff face  
as indicated by arrow  
*Courtesy of John Stocks*



# BIODIVERSITY

**T**he site forms part of the Coppett Hill Common Local Nature Reserve and supports a rich and diverse woodland flora. Around the exposed rock faces, a large canopy of mainly oak and ash exists. Higher up the slopes, oak is accompanied by silver birch and holly. More rarely within the canopy are sweet chestnut, hornbeam and beech. The understorey comprises scattered hazel with the occasional hawthorn, elder and cherry laurel. The ground flora is ash woodland supporting frequent false brome, dog's mercury and plants including wild strawberry and soft shield fern. The oak and birch canopy consists of wavy hair-grass, greater stitchwort, wood sage and more rarely

bilberry. Prominent throughout the slopes are a number of ferns and bracken, and brambles dominate recently felled areas. The rock face itself supports a number of mosses, lichens and plants including locally-frequent great wood-rush, navelwort and common polypody.

The woodland is particularly important for a number of species. It is known to support slow-worm, common lizard, grass snake and adder, as well as dormouse. Records show the presence of a number of rare and notable butterflies including the pearl-bordered and small pearl-bordered fritillary, as well as the rare wood white.



▲  
Grass Snake  
© Rosemary Winnall



▲  
Adder  
© Peter Preece

## Did you know?

Coppett Hill has a large diversity of flora and fauna, whose presence and distribution is largely because of the landscape and the variety of the underlying rocks.

# ARCHAEOLOGY

‘Coppett’ or ‘Coppet’ means coppiced or ‘topped with a crest of trees’, suggesting that the hillside has been fairly bare of trees for a long period of time. This may be reflected in the use of charcoal for iron smelting, which occurred in this area from the Iron Age onwards. Limestone, which underlies the land to the east of the site, has also been extracted

locally for hundreds of years, for use in iron-smelting, agriculture and as a building stone.

There are a number of small excavations into the slope around the quartz conglomerate cliffs themselves. They may well represent small-scale quarrying for local building and walling stone.

Evidence of use of the rock can be seen extremely

close by, as the boundary wall immediately above the site is composed of the conglomerate.



◀ Quartz Conglomerate used as a walling stone

▶ Small excavation in the cliff face



## Did you know?

There is an ancient trackway from Goodrich to Courtfield that goes across the hill.





## what is the Community Earth Heritage CHAMPIONS project?

The Community Earth Heritage Champions Project, funded by the Heritage Lottery Fund, and Natural England through Defra's Aggregates Levy Sustainability Fund, has involved communities across Herefordshire and Worcestershire.

Each of the nineteen geological sites chosen for the project has a Champions community group carrying out conservation work, promoting the use of the site to other people in their parish and monitoring the site for any changes in condition.

The idea of the project is to take a holistic view of the environment and to understand the relationships between geology, ecology and archaeology.

The Champions have received training in a number of subjects in order to understand the features observed at their site; knowledge which they will now pass on to new volunteers. The conservation work being undertaken will help to ensure the protection of these important features and enable people to enjoy the natural world for years to come.



For more information about the project, or any aspect of the work carried out by the Herefordshire and Worcestershire Earth Heritage Trust, please contact us at:

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