

Adventure Landscapes in the UK – ‘geography explained’ fact sheet



Cheddar Gorge

What is Cheddar Gorge like?	Cheddar Gorge is Britain’s best known limestone feature and also its largest gorge forming part of a series of features, the Cheddar Complex. The gorge is a dramatic gash in the wooded landscape with grey limestone cliffs, almost vertical in places, reaching almost to 500ft and three miles long. The importance of the site has been recognised as a Site of Special Scientific Interest (SSSI) with numerous caves.
How did the Gorge form?	Cheddar Gorge is a spectacular river feature scoured out by torrents of melt water at the end of the last Ice Age which cut down rapidly into the Carboniferous Limestone. Former river sediments can be found high up on ledges on the sides of the gorge indicating that it was vertical erosion of the river bed that was responsible for its formation. Although the area is riddled with caves and caverns it does not appear that it was formed by their collapse. It appears that freeze thaw weathering occurred as water entered the joints in the limestone during the cold period at the end of the last Ice Age and this may also have been responsible for shaping the sides of the gorge.
Who visits the Gorge?	Cheddar Gorge is a major tourist honeypot with approximately 500,000 people visit the area of Cheddar Gorge every year with up to 400,000 of them visiting the show caves. Most visitors are tourists staying within 30 miles of Cheddar but very few come from the local communities. The visitor profile indicates that most are first time visitors, between 25 and 44 and may visit with their children. Peak visitor numbers to this honeypot site occur during Bank Holidays and the summer.
Why does Cheddar Gorge need to be managed?	Cheddar is a spectacular and unique environment and one which is protected by legislation. Evidence of prehistoric occupation has resulted in the site becoming a Scheduled Ancient Monument whilst the inner caves are Sites of Special Scientific Interest (SSSI). The caves are also home to Greater and Lesser Horseshoe Bats, one of Britain’s more endangered mammals whose habitats are threatened by human activity. The environment provides a number of habitats ranging from caves to cliffs and grassland each with their own species. One problem requiring management is the growth of invasive species. During the summer months the local population is matched by the visitors, some 5,000 a day who may arrive in the area in 2,000 cars. Many are found in the lower gorge area but those venturing into the more vulnerable upper gorge may be responsible for footpath erosion and damage caused when parking cars.



Large visitor numbers to the area often results in increased litter, theft from cars and vandalism. The cliffs provide ideal climbing adding to the danger of rockfalls.

Caves

How do limestone caves form?

The underground caves that characterise many areas of limestone scenery are formed due to the structure and the composition of limestone and the way it interacts with water. Limestone contains both joints and bedding planes which run perpendicular to each other splitting the rock into well-defined blocks and making it permeable. Both joints and bedding planes provide lines of weakness along which water can flow and as it does so its slight acidity dissolves the limestone with which it comes into contact. At the surface the joints within the limestone pavement widen to produce features known as grykes separating the limestone blocks, clints.

Water flowing over the surface plunges down the joints which it rapidly enlarges to form swallow or sink holes. Underground the processes continue and as limestone is dissolved along the route of the submerged stream caves, caverns, waterfalls and lakes begin to form. Carboniferous Limestone in both the Yorkshire Dales and Derbyshire form spectacular caverns such as Gaping Ghyll and Titan. Eventually the underground stream may descend to an impermeable layer such as clay and can emerge where the water table intersects with the hillside as a spring or river (a resurgence) such as the River Axe at Wookey Hole in the Mendips or the River Aire which reappears from under Malham Cove in the Yorkshire Dales. Some cave systems may also have been influenced by changes in the level of the water table and in volumes of water passing through as climate has changed.

What physical features are found in caves?

Within the caves water continues to play a crucial role in shaping the scenery and the growth of stalactites and stalagmites (speleothems). Gaping Ghyll contains extensive speleothem formations in the "Stalactite and Stalagmite Chambers".

How do speleothems (cave

Stalactites, and thinner tubular soda straws, grow down from the ceiling and stalagmites up from the floor. Calcium carbonate, dissolved from the limestone above the caverns, is precipitated from the water seeping through the roof of the cave system. Water dripping from the roof provides CaCO_3 for the stalactites, roughly



<p>formations) form?</p>	<p>carrot-shaped features, to descend from the ceiling and where the calcium-rich water hits the floor for stalagmites to grow upwards. The shape of the features is dependant upon speed of flow with thicker stalactites resulting from slower flow and thinner ones from more rapid flow.</p> <p>Flowing, rather than dripping, water forms carbonate encrustations of the walls known as Curtains although stalactites may form where water drips from them, and flowstones where deposition occurs on the sides and floors.</p>
<p>Why do caves need conservation?</p>	<p>Not only are caves a unique ecosystem they are also major tourist attractions leading to conflict between humans and the environment. With their own microclimate and ecology which is closely linked to the availability of light caves their environment has been threatened as they have been opened up to day trippers and cavers. In natural caves as the availability of light decreases so too do the number of species, the biodiversity. The introduction of artificial light can encourage the growth of green algae and this alters the food chain. Passages may be straightened or widened to allow access or entrances blocked by doors to secure sites, all changing the airflow and humidity and subsequently the environment and the ecosystem.</p>
<p>How was Titan formed?</p>	<p>The vertical cavern, named Titan, measures a vertical drop of approximately 140m from top of the main shaft, some 60m higher than the previous record at Gaping Ghyll in the Yorkshire Dales. Water has passed down joints and along bedding planes for thousands, possibly millions of years, dissolving the limestone as it flowed, generating tunnels and caverns beneath the surface.</p>
<p>Isle of Skye</p>	
<p>What is it like to visit Skye? Characteristics of a Scottish mountain environment</p>	<p>The Isle of Skye is one of the few remaining unspoiled areas of Europe and some say the most “alpine-like” and rugged mountain range in Great Britain. This is The Cuillins, with dramatic peaks, vertical faces and precipitous ridges. At the same latitude, 57 degrees North, as ice-bound locations such as Hudson Bay and central Russia it could be presumed to be very cold and bleak, with long, hard winters. Skye’s climate however owes its mildness to the presence of the warm waters for the Gulf Stream. There is often no snow in winter. Incredibly, the climate allows palm and exotic trees to grow and is well cultivated.</p>



What is the Quiraing?	<p>The Quiraing, a fascinating landscape on the Trotternish peninsula on Skye, results largely from geomorphological processes resulting from gravity. The whole of the Trotternish Ridge escarpment was formed by a great series of landslips. The dramatic Quiraing which is the largest landslip in Britain, with five stages of movement identified, extends to a width of 2km from the scarp slope to the coast. Some sections of the landslide are still active as evidenced by the need for regular repairs to the local road.</p> <p>The landscape has a number of distinctive features which have earned specific names The Needle is a jagged 120-foot high pinnacle to the northwest is The Table, a flat area that has slipped down from the plateau whereas to the southwest is the Prison. Trotternish is probably the second most popular visitor location on Skye after the Cuillin Hills the next most visited part of Skye with stunning scenery at the Quiraing making it popular with walkers and photographers.</p>
How was it formed?	<p>The geology of the Trotternish peninsular consists of Jurassic sediments, clays, shales and sandstones overlain by thick lava flows. The rocks dip gently westwards, creating gently rising slopes from west to east however these are cut by faults running N-S along the peninsula. The landslides were formed due to the overlying weight of the lava flows approximately 300m thick, weighing down on the weaker Jurassic sedimentary rocks. Under the pressure, the Jurassic rocks sheared along the N-S faults and huge lava blocks slid seawards along a rotational glide plane. A steep scarp slope is found on its eastern margin.</p>