

Eycott Hill Nature Reserve: Geology fact file



Cumbria
Wildlife Trust

Where is Eycott Hill Nature Reserve?

This is Eycott Hill Nature Reserve, located between Penrith and Keswick, just past the hamlet of Berrier in Cumbria. It is an upland reserve with spectacular views and incredible wildlife, and is 216 hectares in size — that's the same size as 300 football pitches!



Why is the geology at Eycott Hill so special?

Eycott Hill Nature Reserve is a Site of Special Scientific Interest (SSSI) for geology. The nationally-important group of rock formations known as Eycott Volcanics was named after this site—yes, that's right, the nature reserve has its own rock type!

What is geology?

Geology is the study of the Earth, the materials that make it, the structure of those materials and the processes acting upon them. Rocks, a material of the Earth, can be found in all sorts of shapes and colours. Some are very hard and some are very soft. All rocks belong to one of three categories or types: igneous, sedimentary and metamorphic.



Basalt

Igneous rocks are formed by the cooling and solidification of molten rock (magma) from underneath the Earth's crust. As magma cools, mineral crystals begin to grow, and as they get larger they interlock to form a hard crystalline rock. Igneous rocks include granite, basalt and andesite.



Sandstone

Sedimentary rocks are formed from sediments, which can be made from clay, sand, gravel or the bodies of animals and plants. As the sediments settle at the bottom of lakes, seas and oceans, they build up in layers, which compresses them to form a hard rock. Sandstone, limestone and shale are all types of sedimentary rocks.



Slate

Metamorphic rocks have been subjected to tremendous heat and/or pressure, causing them to change into another type of rock. Metamorphic rocks are highly resistant to erosion and are often harder than the original rock. Examples include slate, marble and quartzite.



Eycott Hill's geological story...



During the Carboniferous Period, 300–360 million years ago, the eroded lava landscape was covered by a warm, shallow sea. The remains of sea creatures gathered on the sea bed as a limey mud which hardened over time to form limestone. Hollows in the ground, known as sinkholes, are visible at Eycott Hill Nature Reserve and are a clue to the limestone rock that lies below the glacial deposits, soils and grass.



Present Day

Eycott Hill features...

Feldspar crystals were formed as molten rock cooled slowly in a magma chamber. These crystals are present in the older lava flows on the nature reserve. Each crystal can be up to 4 cm in length.



These holes in the rock show where geologists have taken rock cores to find the latitude of the land when the lava cooled.



Around the summit of Eycott Hill the lavas are quite thick and show some layering. As the lava cooled from about 1,000 °C, the rock contracted and formed rough cooling columns.



Early in the Ordovician Period, 480 million years ago, sediment washed into the ancient Iapetus Ocean. Layers of mud and silt built up forming siltstones and mudstones. This is known as the Skiddaw Group, which forms the nature reserve's western edge.

Cambrian Period
(540 million years ago)

Around 450–460 million years ago, the Iapetus Ocean began to close as surrounding continents moved together, triggering volcanic eruptions and lava flows. The stepped landscape visible at Eycott Hill is due to the eruption, tilting and erosion of around 20 separate lava flows.

A thick ice cap covered the Lake District during the last ice age around 20,000 years ago. As ice flowed over Eycott Hill it carved out softer material and weaker rocks from between the lava flows and left behind 'erratic' rocks from other locations.

