



The 51 best places to explore Scotland's Geology

www.scottishgeology.com/best-places/

Scotland's Geological Story

Scotland's spectacular scenery derives from a geological story stretching back 3000 million years. The distinctive rocks and landscapes have played a crucial role in our understanding of how the Earth works, dating back to the revolutionary ideas of James Hutton in the 18th century.

Earth's continents are forever moving, splitting apart to make new ocean basins and colliding to form mountain ranges. Scotland has been caught up many times in these processes, resulting in a wide variety of rock types of different ages.

This geological diversity is reflected in Scotland's scenery, as the rocks have been sculpted over millions of years to create the Highlands and Lowlands, the firths and the islands, the glens, lochs and serrated mountain ridges.

In the beginning ...

The oldest rocks in Scotland are found in the Outer Hebrides and on the coast of the Northwest Highlands. The 'Lewisian Gneiss' is ancient, highly deformed rock that formed deep in the Earth's crust 2800 million years ago and reveals a long history of volcanic events, mountain building, deep burial and slow erosion.



North Uist from Eaval

Caledonian Orogeny - a big crash

The most important event in Scotland's geological past was a massive continental collision associated with the closure of an ancient sea called the Iapetus Ocean. This 'Caledonian Orogeny' involved the collision of three continents to form a huge mountain chain. The hard rocks that form most of the Scottish Highlands and Southern Uplands were created at this time.



Knockan Crag

400 million years ago, molten rock beneath these Caledonian mountains rose upwards to form granite, and sometimes erupted in large volcanoes. Near the end of the collision a large block of older rock was pushed on top of younger rocks in the Northwest Highlands creating the world famous 'Moine Thrust'.

Discover more of Scotland's fabulous geology!

There are visitor centres and museums across Scotland where you can find out more about local geology. A good starting point is the online gateway run by the Scottish Geodiversity Forum, with lots of news, information and links: www.scottishgeology.com

British Geological Survey

British Geological Survey (BGS) has a long history of mapping and researching Scotland's geology. You can access maps and publications on their website, or download the free iGeology app to your phone. www.bgs.ac.uk

Dynamic Earth

Dynamic Earth in Edinburgh is the UK's only science centre dedicated to the story of our planet and was inspired by the work of James Hutton, the founder of modern geology. Expect a fully immersive visitor experience! www.dynamicearth.co.uk

Geoparks

Geoparks use their outstanding geology in sustainable ways to benefit local communities through education activities and tourism. There are three in Scotland: Shetland, North West Highlands and Lochaber, and a new Geopark is being established in Arran. www.scottishgeology.com/geopark/

Earthcaching

An Earthcache is a specific place for learning about local geology. You can 'claim' the cache by answering questions. To take part all you need is a smartphone and the free Geocaching app. There are Earthcaches all over the world and hundreds in Scotland. www.geocaching.com

Scottish Natural Heritage

Scottish Natural Heritage (SNH) is the Government funded body that looks after all of Scotland's nature and landscapes enabling people to enjoy, understand and appreciate it. Their website has further information about Scotland's landscapes and geology. www.snh.gov.uk

Groups and societies

Voluntary Geoconservation Groups and Geological Societies help people find more about Scotland's geology and explore local geological sites. They organise lecture and excursion programmes and publish books and leaflets. Find one near you. www.scottishgeology.com



Siccar Point



**Scottish
GEODIVERSITY
Forum**



The Old Man of Hoy

The final stretch – opening of the North Atlantic

Scotland's final episode of rock creation was a dramatic period of volcanic activity centred on the west coast. This began after the dinosaur extinction, and created a thick pile of lava flows and large volcanoes; some of the underlying rocks contain dinosaur fossils.

After the mountain building

The past 400 million years have been relatively quiet; most rocks remained above sea level as Scotland drifted northwards across the Equator. The Caledonian mountains eroded quickly and in low-lying areas sediments built up to form new rocks including the Old Red Sandstone and the coal fields of central Scotland, and later, the oil and gas bearing rocks of the North Sea. In the Central Belt, volcanic activity created upland areas including the Campsie and Arthur's Seat.

Fingal's Cave, Staffa



And finally ...

In the past 50 million years Scotland has remained on the edge of the Atlantic but the geological story didn't stop. During the Quaternary Ice Age (the last two million years), the entire country has been covered by an ice sheet many times, and the moving glaciers and their meltwater have helped to shape Scotland as we know it. Natural processes continue to pick out the contrasts between different rocks to create today's impressive landscapes. As the pioneering geologist James Hutton said, we can foresee "a different state that must follow in time, from the continued operation of that which actually is in nature".



Corrieshalloch Gorge
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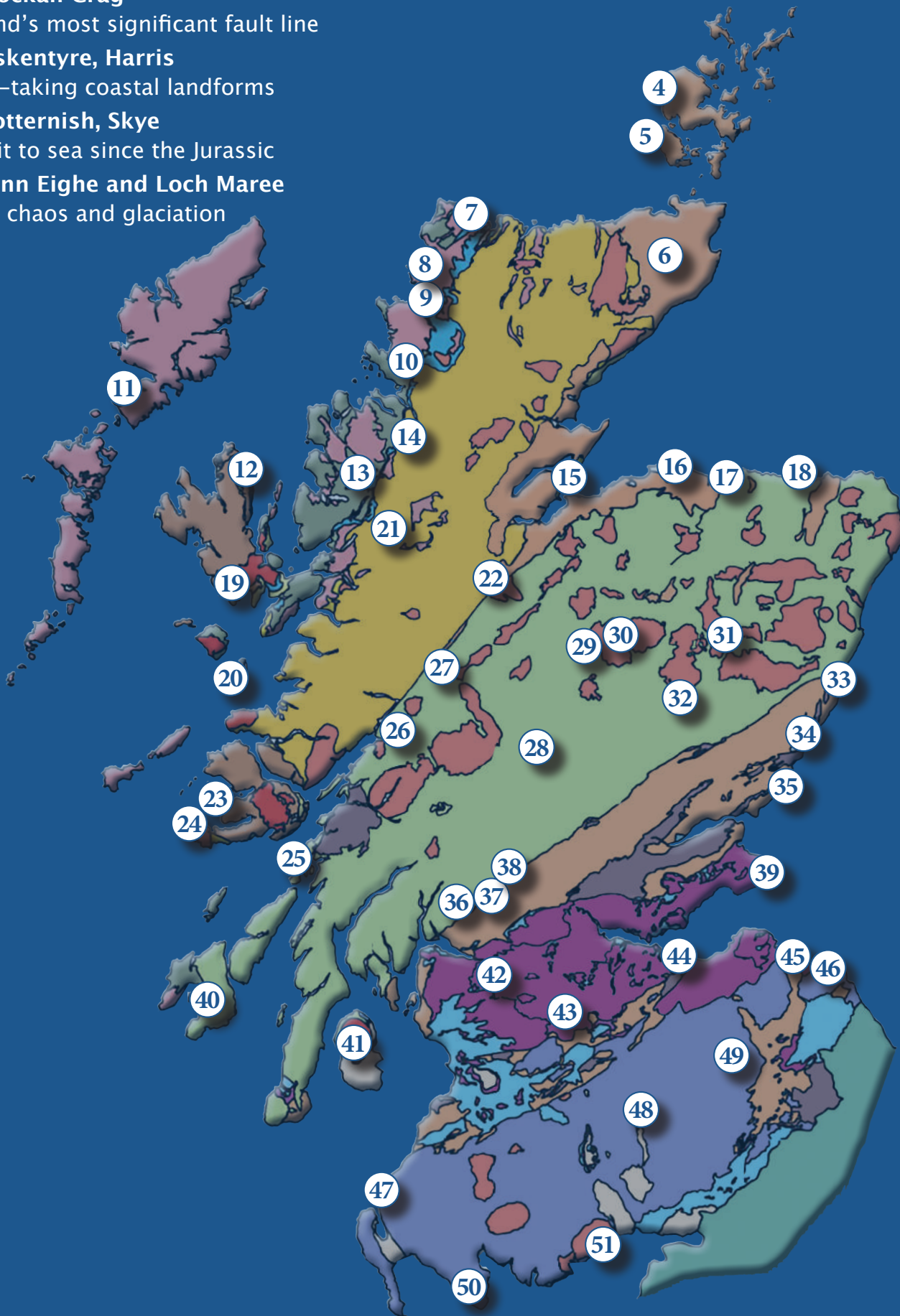
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Geological map showing the 51 Best Places to explore Scotland's Geology

Find out more about the sites at
www.scottishgeology.com/best-places/
For a key to the map see:
www.scottishgeology.com/geology-of-scotland-map/

- 1 Unst, Shetland**
Ancient ocean floor rocks
- 2 Eshaness Coast, Shetland**
A blast from the past
- 3 St Ninian's Tombolo, Shetland**
Arcs of sand and shells
- 4 The Heart of Neolithic Orkney**
Geological and human history entwined
- 5 North-West Hoy, Orkney**
Old Red Sandstone coastal scenery
- 6 Achanarras Quarry**
Where ancient fish shoals lie
- 7 Smoo Cave to Am Fairaid**
Sandy beaches, caves and rock formations
- 8 Scourie Bay and Laxford**
Oldest Rocks in Western Europe
- 9 Loch Glencoul**
Continental collisions laid bare
- 10 Knockan Crag**
Scotland's most significant fault line
- 11 Luskentyre, Harris**
Breath-taking coastal landforms
- 12 Trotternish, Skye**
Summit to sea since the Jurassic
- 13 Beinn Eighe and Loch Maree**
Thrust chaos and glaciation



- 14 Corrieshalloch Gorge**
The carving force of glacial meltwater
- 15 The Black Isle & Hugh Miller Museum**
Sandstones rich in fossil finds
- 16 Laich Sandstones, Elgin**
A world of extinct herbivores, reptiles and fish
- 17 Spey Bay**
The sea of stones
- 18 Portsoy**
Beautiful pebbles and tortured rocks
- 19 Cuillin Hills, Skye**
Mountains of fire and ice
- 20 Eigg**
Jurassic reptiles and volcanic glass
- 21 Loch Monar**
Rocks of ancient Caledonian mountains
- 22 Falls of Foyers, Great Glen**
The smoking falls
- 23 Staffa**
Nature's organ pipes
- 24 Iona**
Contrast in rock, colour and light
- 25 Luing and the Atlantic Islands**
A tale of two oceans
- 26 Glen Coe**
Scene of an ancient caldera collapse
- 27 Parallel Roads of Glen Roy**
Unlocking the lines in the landscape
- 28 Schiehallion**
The mountain that weighed the Earth
- 29 River Feshie**
How modern-day landscapes are formed
- 30 Cairngorms**
A subarctic landscape carved out of granite
- 31 Burn o' Vat, Dinnet**
Step inside a granite cauldron
- 32 Corrie Fee, Glen Clova**
A gem from the last glaciation
- 33 Stonehaven**
The power of colliding continents
- 34 St Cyrus Beach**
A story of fire and water
- 35 Seaton Cliffs**
Sandstone sculpted by the sea
- 36 Balmaha**
Walk the Highland Boundary Fault
- 37 Flanders Moss NNR**
Colourful 'shaking' bogs
- 38 Callander**
Ancient rivers and glaciers
- 39 East Neuk of Fife**
Folds, fire and fossils
- 40 Islay**
Evidence for 'Snowball Earth'
- 41 Arran**
Scotland's geology in one place
- 42 Fossil Grove**
An ancient forest tale
- 43 Falls of Clyde**
Glacial rivers shape the landscape
- 44 Holyrood Park**
The volcano in Scotland's capital
- 45 Dunbar and Barns Ness**
Ancient seascape and volcanic hellhole
- 46 Siccar Point**
James Hutton's 'abyss of time'
- 47 Ballantrae**
A rare relic of an ancient ocean
- 48 Loch Skeen and Grey Mare's Tail**
Ice Age landforms and the "roaring linn"
- 49 Eildon Hills**
The Borders' volcanic past
- 50 Back Bay, Monreith**
Twisted rocks of a long-lost ocean floor
- 51 Southernness**
Solway's ancient and modern shorelines

Best Places to see the different episodes of Scotland's geology

In the beginning ... 8, 11, 24

Caledonian Orogeny 1, 2, 7, 9, 10, 13, 18, 21, 25, 26, 28, 30, 33, 36, 40, 46, 47, 50

After the Orogeny 4, 5, 6, 15, 16, 34, 35, 38, 39, 42, 44, 45, 46, 49, 51

Opening of the North Atlantic 12, 19, 20, 23, 41

And finally... 3, 11, 14, 17, 22, 27, 29, 31, 32, 37, 43, 48

Map courtesy of National Museums Scotland