

Edinburgh Rocks! Local Geodiversity Sites of East Edinburgh

Most people have heard of biodiversity, which deals with the living components of nature. However ecosystems also comprise non-living elements that are natural, these soils, rocks, water bodies, the atmosphere and fossils and minerals are the basis of geodiversity, the non-living natural world.

In Edinburgh, we are fortunate to have an extensive network of Local Geodiversity Sites that Edinburgh City Council has designated and takes into consideration in the local development plan, as well as sites of national and international significance such as Hutton's Section and Agassiz's Rock

For more information about the geology of Edinburgh and the Lothians, a free PDF of the Scottish Natural Heritage Landscape Fashioned by Geology booklet covering Edinburgh <http://www.snh.gov.uk/publications-data-and-research/publications/search-the-catalogue/publication-detail/?id=45>

Detailed field trip directions to visit geological sites in Edinburgh and the Lothians can be found on the BGS Earthwise site

http://earthwise.bgs.ac.uk/index.php/Lothian_Geology:_an_excursion_guide

Although only one of the sites we will visit, Calton Hill, has rocks that are exposed where they were deposited (*in situ*), the examples drawn from buildings, monuments and the pavements of Edinburgh showcase the wide range of rock types that can be found across Scotland and the great span of geological time covered by the rock record in Scotland.

Stop 1: Calton Hill (Early Carboniferous volcanic rocks offset by a geological fault from Arthur's Seat)

Calton Hill is covered in monuments and, like many a lower peak in the higher hills that is slightly offset from the main bulk of a range, offers excellent panoramas. On the steps up the hill, it is possible to see cross-sections through the lava and ash deposits.

A leaflet about the site, with additional information about a building stones walk around the monuments of Calton Hill and in the adjacent areas of the New Town can be downloaded from

http://www.edinburghgeolsoc.org/downloads/rigsleaflet_caltonhilla4.pdf

Stop 2: Stones of Scotland (Rocks from all ages from across Scotland)

Rocks, soils and landforms generate the physical landscape that forms the ecological theatre that species, including our own, perform upon. Culture is also influenced by landscape and the next two stops demonstrate facets of this interaction between place and folk. A leaflet is available here:

http://www.edinburghgeolsoc.org/downloads/rigsleaflet_stonesofscotlanda4.pdf

Stop 3: Geodiversity Wall on the Scottish Parliament

Another site which brings the geology of Scotland into the city. The cultural and design elements are much more heavily emphasized than at the Stones of Scotland site, with a number of quotations chiselled into the rocks of the Geodiversity Wall. A leaflet is available at

http://www.edinburghgeolsoc.org/downloads/lbgcleaflet_canongatewalla4.pdf

Stop 4: Our Dynamic Earth: 3.5 Billion Years in 100 metres

Our Dynamic Earth has much on the inside to entertain, amuse and inform. However, the approach ramp has rocks on open display that span the whole range of geological

time intervals found in what is currently Scotland. Walk with me through 3.5 billion years of time and find out about the major geological events that have shaped the landscape and spot some fossils and minerals in the rocks on display.

Although the rocks here are designated as a Local Geodiversity Site, no leaflet exists. However, the *Scottish Geology* website gives a good overview of the story of the geological forces that shaped Scotland.

<http://www.scottishgeology.com/geo/getting-started/>

Stop 5: Pavement Palaeontology: Fossil Fish on Caithness Paving slabs outside Scotsman building

As we move up towards our final stop on St John's Hill, we briefly stop to examine an example of a fossil fish from Lake Orcadie, a giant freshwater lake that covered Caithness, Moray and Orkney during the Devonian Period around 380 million years ago. The blue tinge to the specimen is generated as material in the bony scales underwent change to a secondary mineral vivianite, which is an excellent indicator of bone in the fossil record.

To find out more about Pavement Palaeontology in Edinburgh, you can have a look at the Pavement Palaeontology walk (<https://hillsofhame.wordpress.com/wp-admin/post.php?post=33&action=edit&postpost=v2>) Hills of Hame also offers.

Stop 6: Hutton Memorial Garden: 'No vestige of a beginning, no prospect of an end.'

The final stop acts as a bookend to Calton Hill. Upon Calton Hill we can find monuments to individual figures with connections to the Scottish Enlightenment, sites that contributed data to the Enlightenment or buildings designed by people associated with the Enlightenment. Yet James Hutton, the discoverer of Deep Time, is not among those commemorated on Calton Hill. This secluded spot the upon St John's Hill, one of the original 'Seven Hills of Edinburgh' is where his monument lies. Salisbury Crags loom above us, with at least two sites that have an intimate connection with Hutton's demonstration that the theory that all rocks were deposited in layers on the bottom of oceans (Neptunism) could not explain his observations at Hutton's section of rocks intruding other rocks. This leaflet

(http://www.edinburghgeolsoc.org/downloads/rigsleaflet_huttona4.pdf) has more information about Hutton's life and geological work around Scotland.

The Historic Scotland Rangers run geological walks in Holyrood Park throughout the year (<http://www.historic-scotland.gov.uk/rangerservice>). Dr Angus Miller (<http://www.geowalks.co.uk/>) also offers walks in Holyrood Park.