

## 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 exceptionally fortunate to have an extensive network of Local Geodiversity Sites that Edinburgh City Council has designated and takes in to consideration in the local development plan, as well as some sites of national and international significance such as Hutton's Section and Arthur's Seat.

The Lothian and Borders GeoConservation group ([http://www.edinburghgeolsoc.org/r\\_home.html](http://www.edinburghgeolsoc.org/r_home.html)) produced leaflets for some of the sites on the walk that are available as free downloads.

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 in Scotland and the great range of geological time intervals these rocks span.

### **Stop 1: Calton Hill (Early Carboniferous volcanic vent 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.

The 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](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 from

[http://www.edinburghgeolsoc.org/downloads/rigsleaflet\\_stonesofscotlanda4.pdf](http://www.edinburghgeolsoc.org/downloads/rigsleaflet_stonesofscotlanda4.pdf)

### **Stop 3: Geodiversity Wall on the Scottish Parliament**

Another site that 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](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 4: 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 Orcade, 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, which includes many monuments either commemorating individual figures with connections to the Scottish Enlightenment, sites that contributed data to the Enlightenment or were designed by people associated with the Enlightenment. Yet, here we find the former site of the home of James Hutton, the discoverer of Deep Time, in the Old Town on St John's Hill, one of the original 'Seven Hills of Edinburgh'. 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 observations of rocks intruding into other rocks. The Historic Scotland Rangers run geological walks in Holyrood Park throughout the year (<http://www.historic-scotland.gov.uk/rangerservice>). Dr Angus Miller also does walks in the Park (<http://www.geowalks.co.uk/>) and a clear free map (<http://www.geowalks.co.uk/iarthurmap.html>)

Although the site is rather hard to find, a number of leaflets are available about Hutton, who was also a medical doctor and pioneer in agricultural improvement techniques in the Scottish Borders.

[http://www.edinburghgeolsoc.org/downloads/rigsleaflet\\_huttona4.pdf](http://www.edinburghgeolsoc.org/downloads/rigsleaflet_huttona4.pdf)