

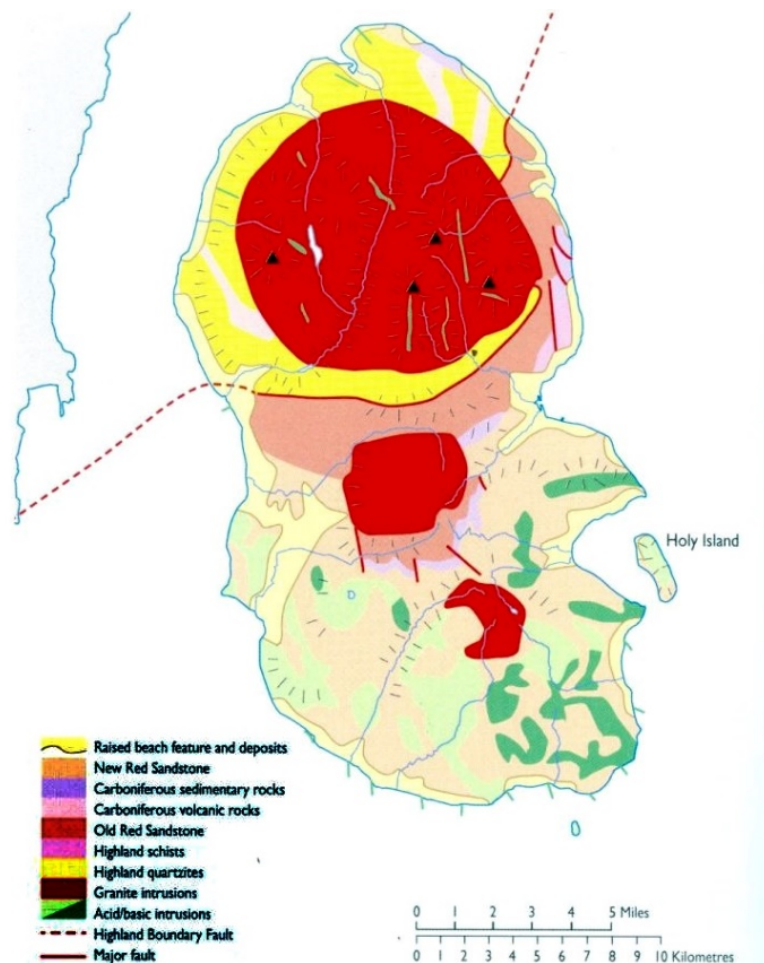
The Geology of Arran

The Isle of Arran is a world class geological location, with a superb range of rock types which can be viewed in the field. There are not many places on earth, where, in a 3km walk, you can span more than 100 million years.

Sitting astride of the Highland Boundary Fault, it's an excellent place to view the contrast between "Highland" and "Lowland" geology seen across Scotland

The oldest rocks are the Dalradian, which prior to erosion, extended the Caledonian mountains to the height of the Himalayas. Nowadays, these are only visible in the north of the island. Adjacent to these lies the Devonian sandstone, which was laid down in a desert environment, just south of the equator. As Scotland moved north, passing over the equator, great tropical forests developed, and their remains are visible as coal measures, alternating in layers of sandstone and mudstone, as the sea levels changed. As it continued moving north, it returned to desert conditions, resulting in the Permian sandstone.

This can be seen today in the sedimentary rocks on the north east coast. Conglomerate and sandstone are visible, deposited in braided channels during floods, followed by alternating layers of limestone, coal, sandstone and mudstone followed by desert sandstone, with the pattern of the dunes on display



In the 1870's, James Hutton visited the north of the island and discovered the junction between these sedimentary rocks, and the underlying even older, eroded metamorphic rocks of the Highlands. This was a significant find, as it highlighted a break in the depositional sequence, meaning that rocks of very different ages were found together as a result of erosion of the intermediate layers. This became known as the "Hutton unconformity", which he used to demonstrate the age of the earth and can be seen on Newton Shore.

After sandstone of Triassic and Permian ages were laid down, there is a wide gap in the geological record until widespread volcanic activity erupted around 60 million years ago. This is exhibited in the interior of north Arran, where a 10km wide granite pluton was formed by magma intrusion. This mass of hard igneous rock was in turn dissected by dykes and eroded by glaciers to form today's skyline.

In the south, at around the same time there were more varied and smaller scale intrusions that resulted in several interesting features. The Doon cliff in Drumadoon, is an intrusive sill that has resulted in 30m high columns, which are also visible on Holy Island

Situated on the coast between Lochranza and the mouth of the Sannox burn, carboniferous deposits host an extraordinary fossil of tracks made by a large Myriapod. There are 2 sets of tracks that can be seen, the longest being 6m long and a metre wide. The creature which made the tracks would have been like a centipede, but a metre long with 26 pairs of 10cm legs. They were common in Carboniferous times, but these represent the earliest recorded findings, and were featured by Sir David Attenborough in "Life on Earth". Early reptiles have also been recorded, including crocodile like prints in Triassic sandstone in the south of the island.

At the Arran Heritage Museum, there are displays of the rock types, which can be found on the island along with recovered fossils and palaeontological exhibits. There is also a short DVD that can be viewed giving a geological introduction, and microscopes to study thin sections of the rocks.

If you do intend exploring the island's geology, please respect the environment and follow the Geological Field Work Code.