

Highland Fault Line at Stonehaven

Highland Fault Line



The Highland Fault Line cuts through Scotland like a geological knife, severing Highlands from Lowlands as it slices from south-west to north-east. Although throughout most of the line the only sign showing which side you are on is whether there are mountains or not, in the vicinity of Stonehaven there are points where the fault can be seen much more clearly.

The rocks of the area are divided into three distinct groups: those of the Lowlands, those of the Highlands, and a third group sandwiched in the middle formed of sediment, known as the Highland Boundary Complex.

The rocks belonging to the Highland group are the older, being metamorphic rocks of the Dalradian period, while those of the Lowlands are Devonian sedimentary rocks, much younger in origin. The Highland rocks underwent a period of compression and uplift, forming the mountain ranges of the north - which in fact are still growing.

The effects of the change in rock structure is not only obvious here at the coast, if you take a look at the farms to the north and south of Stonehaven it becomes readily apparent how the geological upheaval of millions of years ago still has an impact today

. With the soils of the land south of Stonehaven formed from the red sandstone, agriculture is much more productive than on the land formed to the north from hard metamorphic rock.



The rocks to the northwest of the HBF are Dalradian metasediments of the Southern Highland Group. These are deep marine deposits metamorphosed to schists, phyllites and slates during the [Caledonian Orogeny](#). The HBF came about as the Highland and Midland Valley crustal

blocks came together during the orogeny. The last major movements at the fault took place in the Silurian and

Lower Devonian times. Overall, the Dalradian Supergroup underwent four main phases of deformation during this orogenic activity.

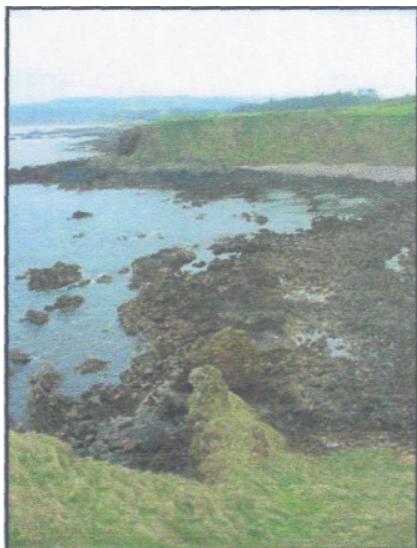
At Stonehaven, to the southwest of the HBF lie the steeply dipping Lower [Old Red](#)

Sandstone sandstones and shales of the Stonehaven Group and the sandstones and conglomerates of the younger Dunottar Group. These sediments unconformably overlie the Highland Border Complex.

The Highland Border Complex is a suite of rocks exposed in a series of lenses along the HBF. Exposed here between Ruthery Head and Garron Point are pillow lavas, shales and jasper (other lithologies exist at other sites).

The suite represents an ophiolite and associated marine sediments, obducted during the Caledonian Orogeny and containing no Dalradian source material.

The Complex is believed to have been deposited in early/pre-Arenig to Caradoc and partly deformed by the overthrusting of the Dalradian block by the end of the Silurian, i.e. prior to deposition of the Lower Old Red Sandstone sequences.



The Highland Boundary Fault at Craigeven Bay Stonehaven - the sea stacks and central point of the image mark the position of the fault. On the right there are the Dalradian rocks of the Grampian Highlands and on the left there is the Highland Border Complex. To the far left, seaward of the headland known as 'Slug Head', there is the Cowie Formation of Silurian age.