

# Trail 1: Quarff

The Caledonian mountains were a stark landscape of bare rock and steep, unstable slopes. The lowest **strata** in the Old Red Sandstone sequence were laid down directly on this terrain, and in places we can see the ancient topography beneath them.

390 million years ago, the area around Easter Quarff was a rocky slope in the Caledonian foothills. Wind and frost shattered the bedrock and the broken stones rolled and slid downhill, building up a **scree** slope on the lower hillside. Buried by younger sediment and cemented by minerals deposited from circulating water, the loose stones became solid rock again.

Scree slopes in Svalbard



Northeast of the voe (bay) this rock - **breccia** - stands out as a series of rugged crags **1**. The angular rock fragments are clearly visible, often weathered

red by the arid conditions in which the ancient scree accumulated. A little further to the east, the

Breccia



crags retreat inland and the underlying **metamorphic rocks** appear on the lower ground. They are mostly smothered by blanket bog but are exposed along the coastal slope where you can see silvery grey phyllite rock, very different in texture from the breccia. This was originally silt and mud, laid down in the shallows of an ancient ocean

about 650 million years ago, then folded and altered by the heat and pressure of the continental collision.

At the foot of one of the lower crags **2** steeply inclined phyllites can be seen beneath the breccia. The phyllite beds have been eroded over millions of years before being buried in scree. As a result, the breccia bed doesn't conform with the bedding of the phyllite beneath – this ancient land surface is an '**unconformity**' representing a 260-million-year gap in the geological record.

Below this, on the coast **3**, an outlier of breccia sits on the phyllite coastal slope. Here the ancient terrain was

Coastal outlier



only gently sloping and the bottom of the breccia is formed of phyllite that has shattered but remained in place, creating a transition from phyllite to breccia rather than a sharp break.

Further along the coast the breccia returns, forming a low cliff **4** that provides the best opportunity to study the unconformity. Here you can walk along the foot of the cliff on an ancient land surface that has been buried for 390 million years.

Unconformity





## Directions

By car / bike: Take the turning signposted to Casho, east from the main A970 in Quarff. Follow the road towards the coast, taking a left turn at the fork in the road, and park by the beach on the north side (HU432353). Follow the marked path from here, north along the coast-

## Access



- The coastal route can be wet and muddy in place.
- The route crosses a beach which is stony and uneven under foot
- The route includes several two-step stiles

## Interpretation

- On-site interpretation at **2**

## Glossary

**Stratum** (plural: strata): a layer of rock with characteristics that distinguish it from other layers.

**Scree**: a collection of broken rock fragments that form or cover a slope.

**Breccia**: rock consisting of angular fragments surrounded by smaller particles and a mineral cement that binds the rock together.

**Metamorphic rock**: rocks formed by changing existing rocks, through heat and/or pressure.

**Unconformity**: a boundary between rocks, caused by a period of erosion or a pause in sediment accumulation, followed by the deposition of new sediments. A gap in time in an otherwise continuous rock record.

**Bedding**: the arrangement of sedimentary rocks in beds or layers of varying thickness and character.

**Outlier**: an area of younger rock surrounded by older rocks. Typically formed when erosion of surrounding rocks severs the younger rock's original continuity with a larger mass of the same rock nearby.