

Fife Coastal Walk: St Monans to Ardross

Saturday 8th August 2015

Leader: Emma Fairley

Participants: 14

Reporter: Ben Browne

We assembled at St Monans on a falling tide to examine the foreshore south west to Ardross. Fluctuating conditions in the carboniferous of about 326Ma ago had resulted in a stratigraphy of sandstones, limestones and shales of contrasting hardness. These were subsequently folded, intruded by volcanic necks and dykes and faulted. The evidence for all of this is displayed most beautifully on a wave cut platform at low tide. All these structures can be previewed on Google Earth. In passing we were also to see a 9th century church, 13th century castles, a dovecot, 18th century salt works and a 20th century tidal swimming pool all relating to the local geology.

The excursion started at the tidal swimming pool at NO531017 which had been constructed by taking advantage of a trench eroded in softer shales representing a period of deep water deposition between upstanding walls of more resistant sandstone laid down in more energetic beach environments also indicated by the trace fossils teichichnus, planolites and diplocraterion they contain. The richer chemistry of the shales was indicated by nodule formation. The richly organic nature of this carboniferous environment had also been responsible for the development of salt works immediately to the north east where coal excavated from the adjacent Coal Farm had been used to evaporate sea water pumped up by a windmill, now restored, to extract salt so important in the preservation of fish.

On returning along the top of the low cliff we had a view from NO528016 just before the harbour of a clear exposure of the north east plunging St Monans Syncline.

In St Monans we noted crinoids in the dolomitised lime stone of the house Walls and the roofs of red pantiles not produced locally but traded for salt from the lowlands.



St Monans Church and shoreline .Taken from Google Earth

From the yard, NO522014, of the church of 9th century origin we had a view south west of the volcanic St Monans Neck clearly intruding the folded sediments and so postdating the folding. Then later it self being intruded by basaltic dykes. Closer inspection of the volcanics revealed the inclusion of coalified wood and subsequent calcite veining.

Just south west of the St Monans Neck is a promontory of resistant sandstone, the Lang Shank, stratigraphically just above the Upper Ardross Limestone. Further to the south west these and adjacent beds are folded into a north east plunging anticline intruded by the Davies Rock Neck. On passing this we found the dove cot and Newark Castle had been built on the Lang Shank sandstone repeated by a complementary syncline.

After lunch at the 13th century Newark Castle we examined from the cliff top at NO517012 the strictly linear Ardross Fault as it cut south west across the foreshore. Here it formed the south east margin of the extensive Coalyard Hill Neck with sediments to the south east showing apparent drag folding suggesting dextral movement. Here it was apparent that the sequence of events was no longer so clear and three theories of the relationship of the vent and the fault were discussed. The possibilities considered were that the fault post-dated the intrusion

and brought sediments into contact with the volcanics either by a large, 1200 meter, dextral displacement or by a lesser dextral combined with a vertical displacement or alternatively the fault pre-dated the intrusion which had then taken advantage of this plane of weakness. The latter process was thought unlikely to have preserved undisturbed the linear nature of the fault as seen.

Passing over much detailed structure of the Coalyard Hill Neck we arrived beyond it at a sandy bay at NO509007. Here the party split into two. One half walked seaward across the fault to one suite of rocks where lay the well-known shrimp beds and where recent discoveries had revealed a rich but fragmentary record of fish whilst the other half examined the sediments in a cliff under yet one more castle, Ardross Castle, as an exercise in stratigraphic logging with record sheets thoughtfully prepared by our leader Emma Fairley. In conclusion the party were reunited over ice-cream and strawberries purchased at the Ardross farm Shop where Emma was warmly thanked for her leadership.

The all-important Ardross farm shop...
and shoreline.
Taken from Google Earth



Reference MacGregor A R, Fife and Angus Geology, Pentland Press 1996. ISBN 1-85821-353-3