

Moine geology of the Ross of Mull. Itinerary

A. Eastern limb of the Assapol Synform (1) - an excursion

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By Tony Harris

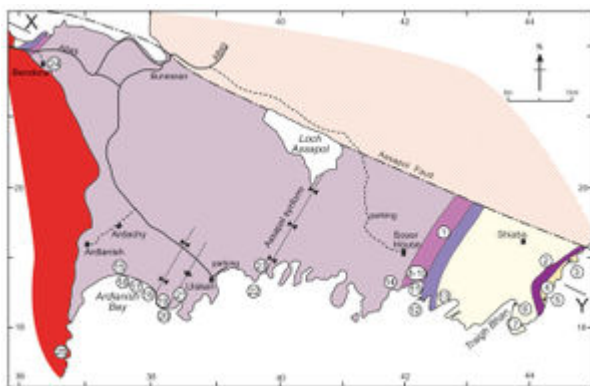


Fig. 1.1 Simplified geology map of the Ross of Mull, showing the localities described in the text.

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Excursion 1 Ross of Mull is composed of the following articles:

- [Excursion 1 Ross of Mull - introduction](#)

- Itinerary A. Eastern limb of the Assapol Synform (1). Localities 1.1 to 1.7.
- [Itinerary B. Eastern limb of the Assapol Synform \(2\). Localities 1.8 - 1.14.](#)
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Itinerary A - Eastern limb of the Assapol Synform

Eastern limb of the Assapol Synform (1); access via Scoor House. Total distance is c.7 km from Scoor House and return, taking 6-8 hours.

Follow the A849 from Bunessan towards Pennyghael for about 0.5km and turn right up the very minor road leading southeast towards Scoor House (signposted Scoor 3.5km). The road initially tarmacked, becomes a partly metalled track which is liable to potholes. Public parking is available about 3km from the main road beside the track ([\(Fig. 1.1\)](#); [NM 419 196]), above a graveyard with a ruined church (parking for about eight cars). Coaches should not be used on these roads without local advice. Continue along the track on foot as far as Scoor House [NM 419 191]. Passing the cottage and farm steadings on your right immediately before you reach Scoor House, you will note the low cliff cut into a dolerite sheet. This is a very extensive and persistent intrusion which you will come across on many places on this excursion, because it overlies or underlies much of the eastern part of the Moine inlier.

Locality 1.1 - Viewpoint of the regional and local geology ([Fig. 1.1](#)). [NM 4268 1931]

Follow the track that leads up the hill from Scoor House for about 300m as far as a gate into a field on the north side of which there is a sheep fank. Cross the field to a gate on the far side leaving the fank to your left. Passing through this gate, leave the track that heads off to the ENE and instead, walk up to the nearby (~100m) smooth glaciated crag from the summit of which [NM 4268 1931] there is a fine view that enables a perspective of the local and regional geology. BGS Sheet 43S and the BGS 1:625,000 North Sheet would be useful to refer to here. Looking to the south and southeast to the other side of the Great Glen Fault, the course of which runs several kilometres offshore, can be seen the low-lying islands of Islay and Colonsay, the latter comprising the enigmatic Colonsay Group rocks of uncertain affinity. In contrast, the island of Jura is dominated by prominent pale mountains of Dalradian Islay Quartzite. Further east on a clear day can be made out the low-lying Garvellach islands underlain by the Dalradian Port Askaig tillites. Looking west over the end of the Ross of Mull, both Coll and Tiree can be seen, both comprising Archaean Lewisian gneisses of the Caledonian foreland. Closer, Iona, itself largely comprising Lewisian gneiss, and probably also part of the foreland, rises up beyond the rocky exposures of the Ross of Mull Granite. To the northwest, the Treshnish Islands and Staffa and to the north and east the trap topography of the Wilderness of Burgh and of the eastern part of the Ross itself, are all formed of Tertiary basalts. These are separated from the Caledonian rocks by the Assapol Fault, the course of which can be easily seen trending west-northwest along the far shore of Loch Assapol. Nearer to hand, the position of the eastern margin of the Ross of Mull Granite can be made out with the help of Sheet 43S where rising ground to the west becomes much more rocky than that to the east, underlain by the Moine.

Locality .1.2 - Upper Shiaba Psammite with cross-bedding and heavy mineral bands [NM 4425 1893]

From Locality 1.1, proceed N40°E for about 400m along the side of the An Crosan ridge, staying above the extensive peaty area to the southeast which can be treacherously boggy. A rough track

leads to Shiaba from approximately [NM 4302 1967] and should be followed east-southeast for about 800m. This track crosses some boggy ground and rocky knolls that expose Upper Shiaba Psammite that display poorly preserved cross-bedding that youngs and dips $\sim 70^\circ$ northwest. Crossing the shallow burn Allt Cnoc na Fearnaiige, a well preserved though roofless croft house is conspicuous enough to serve as a landmark for positioning in an otherwise rather featureless landscape. Locality 1.2 lies some 500m southeast of the point where the track crosses the burn (Fig. 1.1). Here a number of crags comprise typical micaceous, laminated Upper Shiaba Psammite with cross-bedding and heavy mineral bands.

Locality 1.3 - Shiaba Group lithologies; Tertiary intrusions and faulting. [NM 4452 1898]

From Locality 1.2, walk south-southeast towards the shore via the slope just east of a gully and then via a rough scramble down a gully cut in steeply dipping Upper Shiaba Psammite starting at [NM 4425 1898] at about 35-40m OD down to about 20m OD. A line of somewhat rounded crags, trending east-northeast (055°) comes into view, on the other (south) side of an open hollow. These expose coarse garnetiferous Shiaba Pelite (e.g. [NM 4432 1888]). There are many exposures where this can be examined and searched for sparse occurrences of staurolite and kyanite, but it is recommended that the Shiaba Pelite is also studied at Locality 1.3 in a narrow fault gully where the contact with the Lower Shiaba Psammite can also be examined. Access is possible at all states of the tide, but several points of interest will be missed if the visit takes place above middle water.

Once on the foreshore, the high water mark (HWM) should be followed to Locality 1.3. Here, a few metres southwest of an old metal deer fence running across the Upper Shiaba Psammite on the foreshore, the gully that is Locality 1.3 trends 345° exposing garnetiferous Shiaba Pelite, locally containing granitic pegmatite, in both walls. There is a rapid transition of the steeply dipping Lower Shiaba Psammite contact into the Shiaba Pelite which is well displayed on the west-southwest side of the entrance to the gully and above and beyond the head of the gully. It can be demonstrated from cross-bedding in nearby exposures of the Upper Shiaba Psammite that it is younger than the Shiaba Pelite.

The whole width of the outcrop of Lower Shiaba Psammite is very well exposed to the south and west on the wave-cut platform and in seastacks for a distance of 600-700m. These exposures display well the coarse feldspathic, somewhat migmatitic nature of the Lower Shiaba Psammite, its heavy-mineral seams, lack of obvious clastic grains and of any obvious sedimentation structures; nevertheless, dubious cross-bedding in places does hint at younging towards the Shiaba Pelite. These contrasts with the Upper Shiaba Psammite are strikingly reminiscent of the distinctions between the Upper and Lower Morar psammites further north in the type localities.

Locality 1.3 is also an excellent place for examining the complex timing and displacement history of the fault within the gully: # the contact between the psammite below and the pelite above, dipping 60° towards $N30^\circ W$ is displaced, apparently sinistrally, across the fault to appear in the east-northeast wall of the gully some 25m from the HWM;

1. a steep, apparently concordant dolerite dyke trending 060° across the line of the gully and a few metres from its mouth on the seaward side is neither brecciated nor displaced;
2. an irregular, flat-lying basaltic sheet cutting the pelite/psammite boundary, and seen high up in the west-southwest wall of the gully, has been displaced down to the east to appear in its east-southeast wall;
3. on the rocky foreshore on the line of the gully, there is brecciated basalt and psammite.

Thus, this is an excellent locality to discuss the Tertiary history of intrusion and faulting in the area,

and it may well have some regional significance because the fault in the gully is probably a splay off the Tertiary Assapol Fault. The psammite/pelite contact can be followed along near the HWM, east-northeast from here for ~300m to the point where the Assapol Fault crosses the foreshore causing some brecciation of both pelite and basalt. From here and from the wave-cut platform at Locality 1.3, there are fine views of basaltic cliffs and spectacular waterfalls to the north-northeast.

Locality 1.4 - Folds within the Lower Shiaba Psammite. [NM 442 185]

En route southwestwards to Locality 1.4 along or near HWM, try to walk as close as possible to the Lower Shiaba Psammite/Shiaba Pelite boundary. Exposures frequently show elliptical doubly-plunging outcrop patterns of the psammitic banding. This is taken to imply the presence of highly curvilinear folds reflecting unusually high tectonic strains in this contact zone. At the western end of the wave-cut platform at Locality 1.4, large raised slabs of Lower Shiaba Psammite near HWM display many steeply plunging small-to-intermediate scale folds of M- and W- geometry. These probably lie in the hinge zone of the open fold around which the Shiaba Pelite passes, changing its strike from northeast-southwest to approximately north-northwest-south-southeast ([Fig. 1.1](#)).

Locality 1.5 - F₂ sheath folds within the Lower Shiaba Psammite. [NM 4410 1841]

Southwards from Locality 1.4, the coastline becomes more difficult and dangerous to access, but the nimble-footed and stout-hearted are rewarded by the sight of remarkable F₂ sheath folds, suggestive of very high strains in the Lower Shiaba Psammite adjacent to the Shiaba Pelite. To reach the most spectacular of these, on a falling tide below mid-tide, follow the Lower Shiaba Psammite/Shiaba Pelite boundary, trending S10°E towards the headland. Proceed a few metres within the psammite (the pelite generally occurs in the adjacent cliffs). Having crossed a small bay filled with large boulders, largely of garnetiferous pelite, follow a concordant Tertiary dyke (0.3m wide) southwards for some 25-30m. Locality 1.5 exposes metre-scale oval-shaped patterns of bedding/banding as a result of F₂ sheath folding (see Holdsworth *et al.*, 1987, figure 1.1). It is on a rock shelf sloping gently southwards above the narrow cleft, occupied by the dyke. Note that the psammite near the contact with the pelite has a generally flaggy habit, dipping at ~70° towards ~250°. The flags carry a down-dip lineation.

Return to Shiaba by walking from Locality 1.4 as far as the course of the Allt Cnoc na Fearnaiige stream, and follow the general line of the stream uphill as far as the track leading back to Scoor House. The paths leading up to Shiaba from the sea can be very obscured by vegetation in the summer.

Locality 1.6 - Sedimentary and tectonic structures within the Upper Shiaba Psammite. [NM 436 183]

If time permits, instead of following the burn up the hill, it can be followed down to Traigh Bhan which is Locality 1.6 ([Fig. 1.1](#)). On the south-east side of the bay, at mid-tide and below, there are good exposures of Upper Shiaba Psammite preserving northwest-younging cross-bedding and showing thin (~5mm) layers of dark semipelitic schist. These schists carry the regional S₂ foliation and skeletal porphyroblasts of white mica. Restored to the horizontal, S₂ cleavage/bedding relationships imply originally west-facing, very tight F₂ folds that pre-dated the regional-scale F₃ synform. Westwards across the bay can be seen the crags forming the lowest parts of Torr na Stallachhdach [NM 4325 1827], where they have been rendered very unstable and dangerous by the presence of an easily eroded sheet of Tertiary basalt.

Locality 1.7 - Upper Shiaba Psammite cut by Tertiary dolerite. [NM 4365 1805]

A difficult scramble to the south-southeast through and across very wet gullies, leads to Port na Eglaise [NM 437 181] where there are ruins, possibly of a small church. A small rocky bay comprises the roof of the basaltic sheet seen in the unstable crags on the northwest side of Traigh Bhan. This locality is the frequent haunt of a herd of feral goats that graze this part of the coast. On the headland beyond and to the southwest, a stack that comprises Locality 1.7 ([Fig. 1.1](#)) is formed of the dolerite sheet and from this vantage point can be seen that the same sheet on the opposite side of the bay [NM 4325 1827] cuts a camptonite dyke, probably of Permo-Carboniferous age. The country rocks all comprise Upper Shiaba Psammite.

References

At all times follow: [The Scottish Access Code](#) and [Code of conduct for geological field work](#)

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