

Moine geology of the Ross of Mull. Itinerary

D. Western limb and core of the Assapol Synform - an excursion

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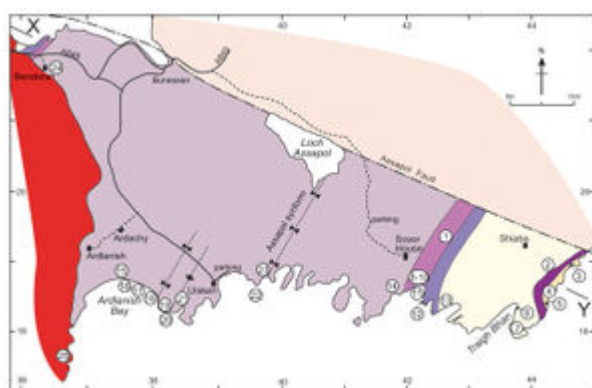


Fig. 1.1 Simplified geology map of the Ross of Mull, showing the localities described in the text.

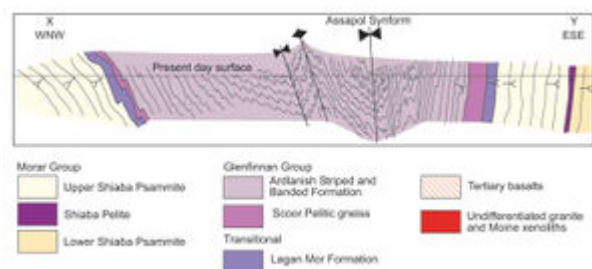


Fig. 1.2 NW-SE cross-section across the Moine rocks of the Ross of Mull (modified from Holdsworth et al., 1987).



Fig. 1.4 Garnetiferous amphibolite cutting obliquely across bedding within host Moine psammite at Locality 1.22.



Fig. 1.5 F_3 folds within the core of the Assapol Synform at Locality 1.23.

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

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- [Itinerary B. Eastern limb of the Assapol Synform \(2\). Localities 1.8 - 1.14.](#)
- [Itinerary C. Structure and lithologies within the Ardalanish Striped and Banded Formation, western limb of the Assapol Synform. Localities 1.15 - 1.20.](#)
- Itinerary D. Western limb and core of the Assapol Synform. Localities 1-21 - 1.25.

Itinerary D

Western limb, continued, and core of the Assapol Synform; access from Uisken. Distance from Uisken and return is c.3km, taking 3-4 hours.

For access to Uisken, proceed as for Ardalanish, but instead of turning right towards the Ardochy Hotel and Ardalanish Farm, continue on the road from Bunessan, past the telephone kiosk to the coast. Here, in the small scattered settlement of Uisken, at the head of a sandy bay with scattered rocky reefs and islands, there is limited parking (out-of-season!) for about eight cars and minibuses.

Locality 1.21 - Hinge and eastern limb of F_3 antiform. [NM 384 183] to [NM 398 188]

This locality requires mid- and falling tide. It is recommended that you do not follow the coast from Uisken, but instead walk cross-country over, in places, somewhat boggy terrain and largely raised beaches. To do this proceed southwest from the parking area (bearing approximately 235°) reaching the head of Slochd nam Ba [NM 385 184] after about 600m. If possible, it would be courteous to call at the house with outbuildings immediately above the road that led down to Uisken.

The northwest coast of Slochd nam Ba exposes, along the top of the crag, the most eastern of the intermediate-scale antiforms that comprise the major antiformal area mentioned in Itinerary C. Access is strictly for the physically capable. On the southeast side of the Slochd, walk ~150m south-southwest to the point where a substantial east-west-trending hollow feature cuts across the strike. En route there are small-scale paired folds that plunge shallowly south-southwest giving a clear indication of a larger scale synform to the east and an antiform to the west. Proceed eastwards along the hollow feature, noting the regular ~60° east-southeast dip of the strata and the more steeply inclined S3 foliation giving clear indications of a synform to the east.

Return to Uisken Bay and walk eastwards across the sands, using a small stile [NM 3945 1890] to gain access to the rocks to the east. The section along the coast from here to Slochd Mhi Chriscain [NM 3975 1880] requires some difficult scrambling and minor climbing. It would be easier to leave the shore area, walking away from the coast across the scrubby moorland, only returning to the coast to reach Localities 1.22 and 1.23.

Locality 1.22 - Discordant amphibolite and F_2/F_3 structures. [NM 3965 1864]

Locality 1.22 exposes a thick strongly cross-cutting garnetiferous amphibolite ([Fig. 1.4](#)). There is considerable structural complexity whereby garnetiferous amphibolite is repeated by an F_3 antiform that intervenes between the two amphibolite outcrops; the complexity is compounded by a further antiform, the hinge of which can be clearly seen to plunge steeply (~60°) seawards by looking over

the edge and to the east of a 10-20m cliff at the headland of the Slochd. Because the latter and the F3 antiform that repeats the amphibolite are adjacent, i.e. without an intervening synform, it is inferred that the inaccessible structure must be a F₂ fold.

Locality 1.23 - Hinge zone of the F₃ Assapol Synform (Fig. 1.2). [NM 3980 1885] to [NM 4100 1880]

Locality 1.23 comprises the coast between [NM 3980 1885] and [NM 4100 1880] (Fig. 1.1) The coast between Localities 1.22 and 1.23 at the head of Slochd Mhi Chriscain is very jagged and can be difficult to traverse especially at high water. It may be advisable to walk away from Locality 1.22 via the moorland and to drop down to the head of the bay to visit Locality 1.23 which comprises a set of low crags above and below HWM. This exposure lies in the core of the Assapol Synform (Fig. 1.2), (Fig. 1.5) and displays abundant upright minor folds with overall W-shaped vergence; they plunge shallowly south-southwest, although having somewhat curvilinear hinge lines. A rodding fabric, possibly a product of D₂, passes around the hinges of these folds. Eastwards from this locality, the F3 minor folds and the S₃ bedding/banding relationships consistently indicate a F3 synform core to the west. It is noteworthy that this persists at least as far east as Locality 1.14 where relationships between D₁, D₂ and D₃ structures and fabrics can be established.

Once east of the hinge zone of the Assapol Synform, the vergence of the F₂ folds and the F₃ folds is in the opposite direction, while the F₃ fold plunge becomes shallowly inland to the north-northeast. The F₃ folds are pointing to a synform to the west, while the F₂ indicate an antiform to the west. The F₂ and F₃ are normally easily distinguished; the axial planar fabric S₂ of the F₂ folds commonly appears penetrative, while the S₃ is unambiguously a crenulation fabric. The interference of the two sets of folds and fabrics is well seen in many localities along the coast section designated as Locality 1.23. Notably, these relationships can be studied on Eilean Dubh (e.g. [NM 4010 1875]) and on the unnamed headland [NM 403 187] to the east across Port Bheathain. Interference between the two sets of structures is common, e.g. on a north-facing crag [NM 4041 1886].

Two further localities are recommended to point the contrast between the phenomena in pelitic and psammitic rocks associated with the emplacement of the Ross of Mull Granite.

Locality 1.24 - Contact metamorphic phenomena within the aureole of the Ross of Mull Granite. [NM 365 217]

Contact metamorphic phenomena within the aureole of the Ross of Mull Granite. Distance is less than 1km, taking c.1 hour. [NM 365 217]

The locality is reached by means of the A849 towards Fionnphort from Bunessan, and lies ~2km west of Bunessan. The track leading to Bendoran Cottage has been gated near the roadside, and parking is limited. Walk to the cottage and turn left following paths up the craggy hill Torr na h-Annaid [NM 365 217], to the east of the cottage. This is Locality 1.24 (Fig. 1.1). Here you are in the contact zone of the granite where it has intruded striped and banded pelitic/semipelitic gneiss, reminiscent of the Scoor Pelite. Zones and veins of granite with rather diffuse margins, possibly the result of partial melting *in situ*, transect the banding. These commonly contain cm-scale xenoliths. The quartzofeldspathic gneissic lenticles are preserved in the country rocks. Sillimanite knots, possibly after kyanite, are locally well displayed. *These should not be hammered.* The rocks lie within Zone IV of Wheeler *et al.*, 2004 (figures 1, 6, 7) who recorded cordierite coronas around garnet, euhedral garnet, K-feldspar and prismatic sillimanite at this locality. The Moine country rocks here are strongly hornfelsed, but there is little or no sign of the forceful wedging of magma into planes of pre-existing fissility. This is in strong contrast to the granite relationships to the flaggy

Assapol Group psammites well displayed at Locality 1.25.

Locality 1.25 Margin of the Ross of Mull Granite. [NM 3680 1765]

Margin of the Ross of Mull Granite. Distance from Ardalanish and return is c.4km, taking 3 hours. [NM 3680 1765]

It would be advisable to seek permission from the farmers at Ardalanish Farm before visiting this locality. The locality is accessed by the same route as that leading to Itinerary C. However, from Locality 1.15 the excursion should turn westwards, making towards the western end of Ardalanish beach, while passing through rocks of Zones II and III of Wheeler *et al.* (2004, figure 1). At the end of the beach a path should be followed southwards across the low raised beach to Slochd na Beiste [NM 3683 1827] where a low stone dyke can be easily crossed, and a steep path can be followed a few tens of metres up the slochd, a gully with rocky walls, as far as a col on its west side (you are here at the granite margin). Drop down from here on to the low raised beach below and walk down to the shore, to which the approach can be very boggy in wet weather. Proceed along the coast southwards past Carraig Mhor with its offshore rocky island, and continue to the next headland to the south [NM 3680 1765]. This is Locality 1.25 ([Fig. 1.1](#)).

A great range of igneous features can be studied at this locality, although the spectacular wedging of the granite between the psammitic flags is the most obvious (see also Zaniewski *et al.*, 2006). The precise contact of the pluton is not easily determined, because there is a gradual transition from granite with xenoliths and psammite essentially *in situ* with abundant granite wedges. This is in marked contrast to the contact with the pelite at Bendoran (Locality 1.24). Additional features of interest at this locality include an excellent example of a graphic granitic pegmatite dyke cutting a large hornfelsed metabasic body, a porphyritic felsite sheet about 4m thick, dipping 15°-20°N and displaying feldspar phenocrysts having cores of fresh microcline and red, heavily altered sodic plagioclase rims, as well as rounded, heavily corroded quartz xenocrysts, and a northwest-trending Tertiary dolerite dyke

References

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

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