

GLEN OYKEL SOUTH

OS Grid Reference: NC327136

Description

The site, in slabs in the bed of the River Oykel c. 750 m north of its confluence with the Allt Sail an Ruathair (Figure 7.8), shows an unusually thick (c. 4 m) dyke of reddish-brown 'gorudite', trending E–W and cutting the S2 syenite member of the Loch Ailsh intrusion. The dyke very probably corresponds with a similar large dyke in the Allt Sail an Ruathair. This dyke is a member of a swarm that cuts both the Loch Ailsh intrusion and its envelope on Sgonnan Mór, where the dykes run undeviated across the Sgonnan Mór Syncline (Milne, 1978) and end abruptly at the Ben More thrust plane. These age relationships are discussed by Elliott and Johnson (1980).

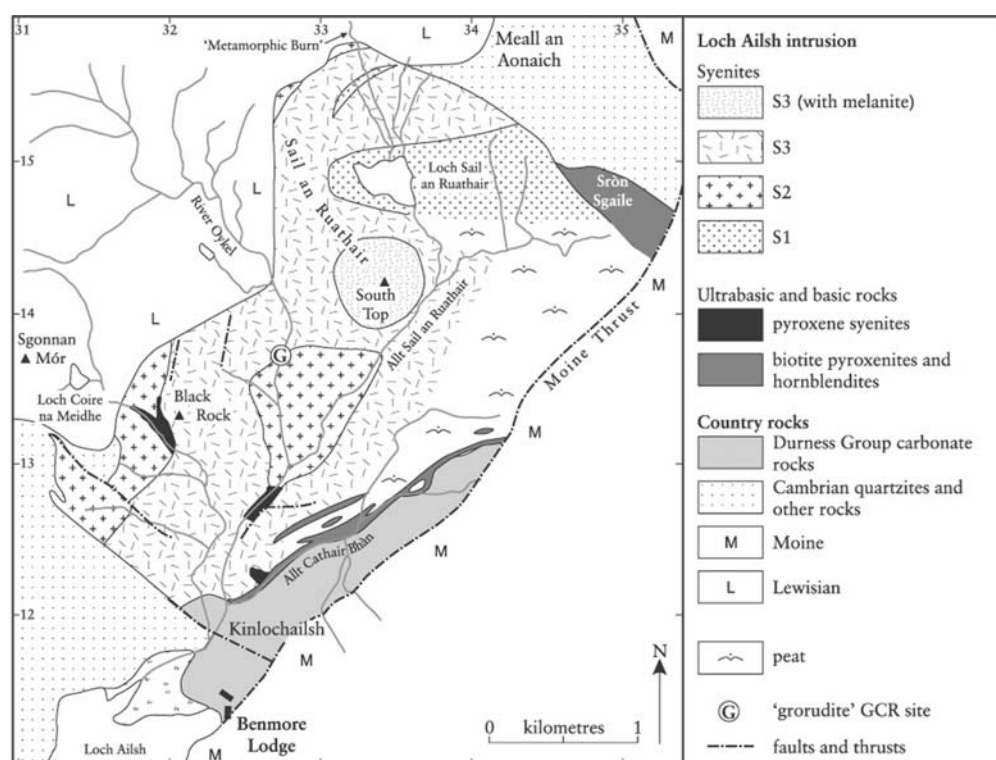


Figure 7.8: Map of the Loch Ailsh intrusion. The extent of the pyroxenites in the Allt Cathair Bhan is based largely on magnetic anomalies. (After Johnson and Parsons, 1979, fig. 15.)

Interpretation

The 'gorudites' are restricted to the Ben More Nappe (Figure 7.2). As this example cuts the Loch Ailsh pluton the syenites must pre-date the 'gorudites'. The pluton must therefore have moved from what is now the east on the Ben More thrust plane. As the Loch Ailsh syenite was emplaced at 439 ± 4 Ma, and the Loch Borralan syenite was emplaced after the movements on the Ben More Thrust at 430 ± 4 Ma these dates bracket both the age of movements on the Ben More Thrust and the time of emplacement of the 'gorudites'. Conclusions concerning the relationship of the Loch Borralan complex to the Ben More Thrust were reached from observed cross-cutting relationships (see the Loch Borralan GCR site report, Interpretation), but the interpretation is supported by the absence of 'gorudites' from the Loch Borralan mass. The presence of a swarm of 'gorudite' dykes cutting both the Loch Ailsh mass, and nearby Lewisian gneiss on Sgonnan Mór, was considered by Bailey (1935) to throw doubt on the existence of the Sgonnan Mór Thrust postulated by Peach *et al.* (1907).

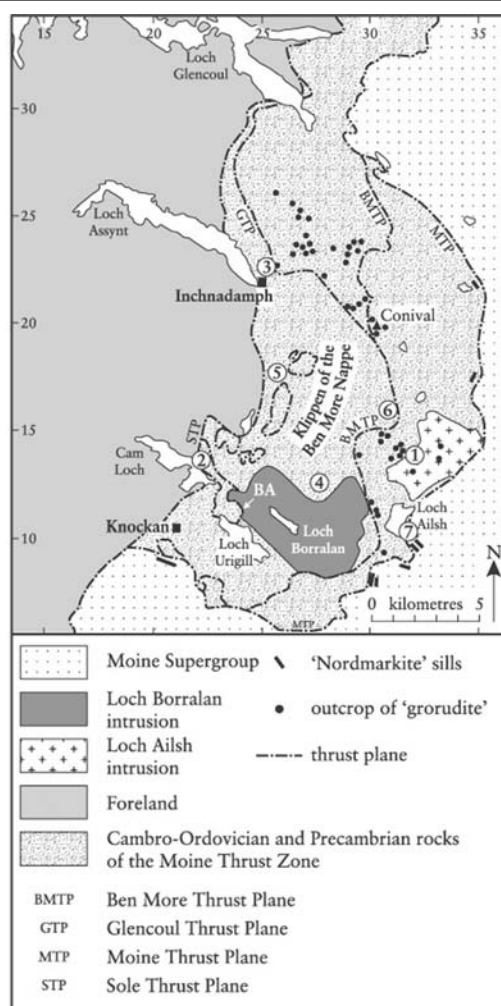


Figure 7.2: Map of the Assynt district showing the major thrusts, the two major alkaline intrusions, and the distribution of two of the six types of minor intrusive rocks. BA is the critical locality, at Bad na h-Achlaise, where nepheline-syenites and pyroxenites of the Loch Borralan intrusion are intruded into one of the klippen (the Cam Loch Klippe) of the Ben More Nappe. GCR sites in the thrust zone related to minor intrusive rocks are shown by circled numbers. 'Grorudite': 1, Glen Oykel South; 2, Creag na h-Innse Ruaidhe. 'Hornblende porphyrite': 3, Cnoc an Droighinn; 4, Luban Croma. 'Vogesite': 5, Allt nan Uamh; 6, Glen Oykel North (diatrema). 'Nordmarkite': 7, Allt na Cailliche. (After Sabine, 1953 and Johnson and Parsons, 1979, fig. 3.)

Conclusions

The Glen Oykel South GCR site provides a thick example of a 'grorudite' dyke, an unusual rock type that is unique in the British Caledonides. At this locality it cuts the Loch Ailsh syenite, demonstrating that the Loch Ailsh intrusion was emplaced in the Ben More Nappe prior to movements on the Ben More thrust plane. The cross-cutting relationships are extremely important for the understanding of the timing, absolute and relative, of events in the Moine thrust zone.

Reference list

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- Elliott, D. and Johnson, M. R. W. (1980) Structural evolution in the northern part of the Moine thrust belt, NW Scotland. *Transactions of the Royal Society of Edinburgh: Earth Sciences* **71**, 69–96.
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- Peach, B. N., Horne, J., Gunn, W., Clough, C. T., Hinxman, L. W. and Teall, J. J. H. (1907) The

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