Creag na Croiche

[NC 721 040]

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Introduction

The migmatitic envelope of the Rogan Complex is widest to the east of the central granodioritic intrusion to the north of Strath Fleet, where glaciated crags provide excellent exposure. The Creag na Croiche site includes the contact of the outer quartz-monzodiorite component of the central intrusion with migmatitic granodiorite, and displays a selection of migmatite types and structural features of the inner migmatite zone (Figure 6.42), (Figure 6.43).

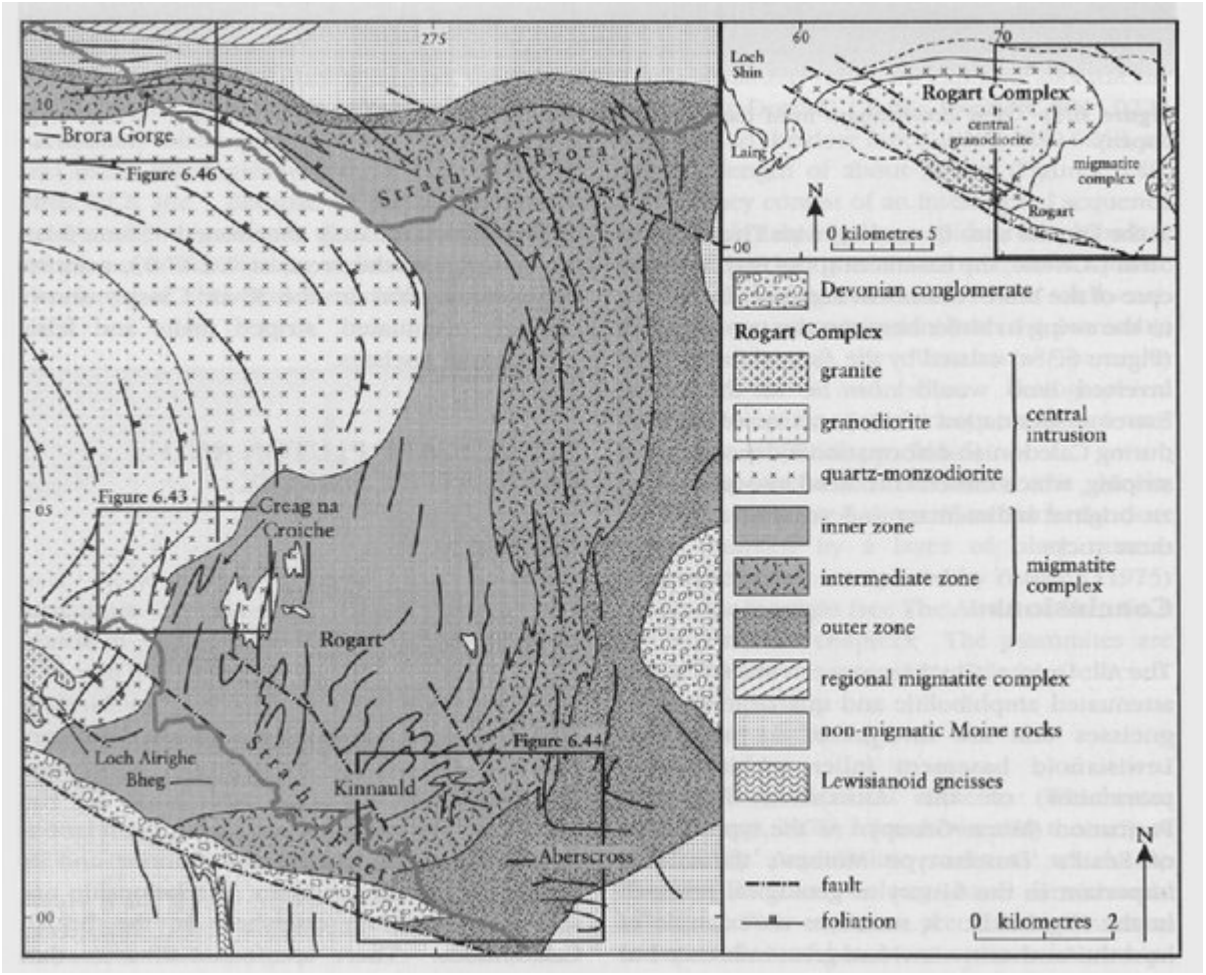
Description

Crags at the western end of the site [NC 716 040] consist of the outer quartz-monzodiorite, whose modal composition is: plagioclase $An_{22–24}$ (48–53%), quartz (14–19%), perthitic K-feldspar (7–13%), biotite (9–13%), hornblende (7–14%), sphene and other accessory minerals (1–2%). The quartz-monzodiorite carries a weak NE-trending planar fabric defined by hornblende and biotite with a subhorizontal alignment of amphibole. There are numerous elongate appinitic xenoliths whose long axes generally lie within the quartz-monzodiorite foliation. The interdigitated sinuous contact with migmatitic biotite granodiorite is gradational, over a few tens of metres and is marked by a loss of hornblende and the incoming of a streaky or nebulitic appearance. The migmatitic granodiorite carries small, partly assimilated appinitic xenoliths, and larger more-angular fragments of psammite, many of which are only weakly migmatitic. Eastwards, the nebulitic granodiorite contains an increasing proportion of interleaved psammitic palaeosome, forming typical stromatic (formerly 'lit-par-lit') migmatite. The foliation strikes NNE and is folded around an antiform–synform pair. Towards the eastern end of the site area around Little Rogart, a sheeted intrusion of quartz-monzodiorite is present within the nebulitic and stromatic migmatites.

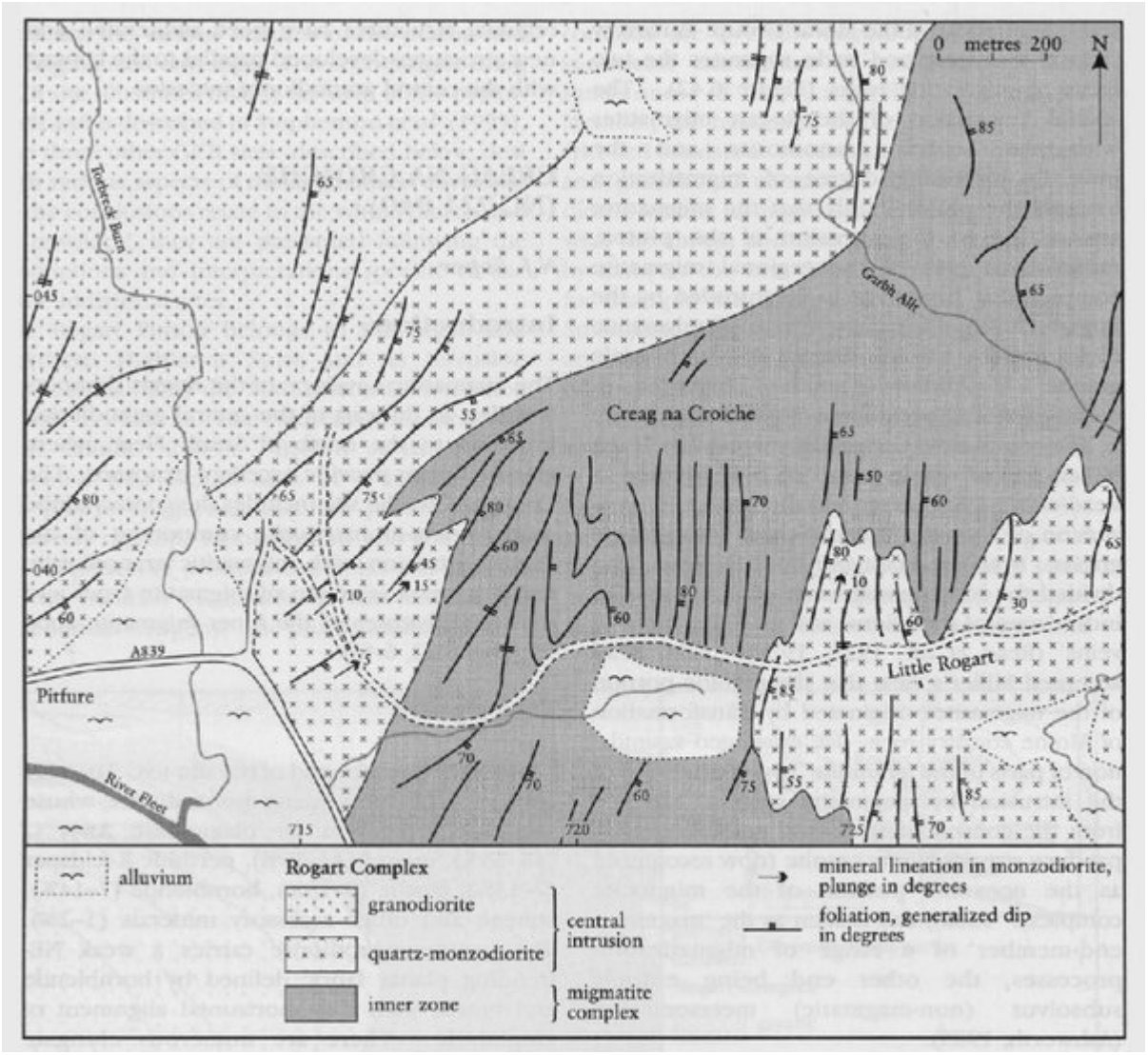
Interpretation

It is inferred that the migmatites formed an envelope around the central granodiorite-quartz-monzodiorite intrusion during its ascent and were deformed as the pluton distended its envelope during final emplacement. The parallelism of fabrics in the outer quartz-monzodiorite and in the migmatites, and the folds in the migmatites that trend parallel to the contact, both support this interpretation. An intrusive origin for the central granodiorite is supported by the sheets of quartz-monzodiorite within the migmatites, to the east of and separate from the main body. The granodiorite does not represent metasomatized Lewisianoid basement, as was suggested by D.L. Reynolds (see discussion of Soper, 1963). No petrogenetic investigation of the migmatites has been undertaken since the advent of rapid analytical methods. Hence the geochemical and mineralogical processes involved in the formation of the migmatitic granodiorite remain unclear. Possibilities include Read's suggestion of reaction between residual liquid and psammite; partial melting (anatexis); subsolvus meta-somatism; or some combination of these processes. The site, together with the others designated in the Rogart Complex, would provide an excellent basis for future textural and geochemical studies that could throw light on this problem.

References



(Figure 6.42) Geological map of the eastern part of the Rogart Complex.



(Figure 6.43) Geological map of the Creag na Croiche area.