20 Slatich

[NN 632 477]–[NN 641 486]

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20.1 Introduction

The Slatich GCR site, on the low slopes of middle Glen Lyon, provides exceptional exposures across the hinge-zone of a major F2antiform. It also exhibits minor structures of both the preceding D1phase and the succeeding D3phase. These exposures also give a rare, accessible section across three formations of the Argyll Group, from the calcareous schists of the Ben Lawers Schist Formation up through the Farragon Volcanic Formation into the kyanite-garnet schists of the Ben Lui Schist Formation (Table 1).

The major F2 fold, the Ruskich Antiform, is the correlative of the Ben Lui Fold of the South-west Grampian Highlands, one of the major structures of the Grampian fold-belt. This correlation was first made by Bailey and McCallien (1937) and observations of the minor structures and development of the major structural context have been made by Nell (1984) and by Treagus (1987, 1999).

20.2 Description

The Ruskich Antiform in the area of the GCR site is represented by the zig-zag outcrop pattern of three formations of the Argyll Group, which define its hinge-zone (Figure 3.47).

The Ben Lui Schist can be characterized generally as a semipelitic garnet-quartz-mica schist, alternating with pelites and psammites on scales from centimetres to several metres. The formation is typically garnetiferous but, unusually for the area, also contains local kyanite, best seen in crags around [NN 635 480], north of Slatich. The Farragon Volcanic Formation is well exposed in the crags above and east of Slatich around [NN 640 477], where it comprises a delicately striped, centimetre-scale, alternation of amphibolite and quartzite. A good section of the Ben Lawers Schist is seen above Roromore, where virtually the whole formation may be examined in a small burn from [NN 6385 4686] to [NN 6404 4642]; it is typically a chloritic calcareous schist with a hundred metres or so of dolomitic quartzite at its base, and with concordant amphibolites above. This section allows the junctions with the Farragon Formation below and the Ben Eagach Schist above to be seen.

The principal interest of the site is in the closure of the Farragon Volcanic Formation around the Ben Lui Schist in the core of the Ruskich Antiform [NN 640 487]. In the south of (Figure 3.47), around [NN 638 468], the regional dip of this boundary is 40° to the south-east; farther north, the same boundary on the opposite limb, around [NN 634 484], has a regional dip of 60° to the south; the major hinge plunges almost due east at 30°. Minor structures (minor folds and bedding/schistosity relationships) with opposed vergence on the two limbs, sympathetic to the major antiform, can be seen at these two localities.

The limb south-east of the hinge is considerably corrugated by co-axial intermediate-scale folds (tens of metres limb length), which are well exposed on the hillside north-east of Slatich, around [NN 640 477]. Some of these folds are sympathetic to the major antiform but other intermediate-scale folds, with upright axial planes and a crenulation cleavage, are superimposed. This locality therefore offers the opportunity to examine three generations of minor folds–F1, F2 and F4 of the regional phases. Not only are minor, metre-scale, structures of the latest generation (F4) superimposed on the dominant phase of minor folds (F2) (all plunging east), but also rare refolded minor isoclinal folds of the earliest generation (F1) are developed in the finely-bedded quartzites and amphibolites of the Farragon Volcanic Formation

(Figure 3.48).

20.3 Interpretation

The Ruskich Fold was first recognized by Bailey and McCallien (1937) in their perceptive paper on the Schiehallion–Glen Lyon district. They interpreted the fold as a major primary nappe closure below that of the 'Iltay Nappe' (now the Tay Nappe) and thus equivalent to the Ben Lui Fold of the Dalmally district in the South-west Grampian Highlands (Bailey, 1922). However, the fold has been re-interpreted from a subsequent investigation of the associated minor structures by Nell (1984) and Treagus (1987) as a major F2 fold. The dominant penetrative schistosity is axial planar to the abundant minor folds which are sympathetic in vergence to the major fold. This schistosity is associated with the growth of garnet and can be correlated with the S2 fabric, which dominates the pelitic rocks of the South-west and Central Grampian Highlands. Only rare examples of F1 minor folds are seen, such as the isoclinal folds in the finely banded amphibolites of the Farragon Formation, which are clearly refolded by F2 minor folds (Figure 3.48).

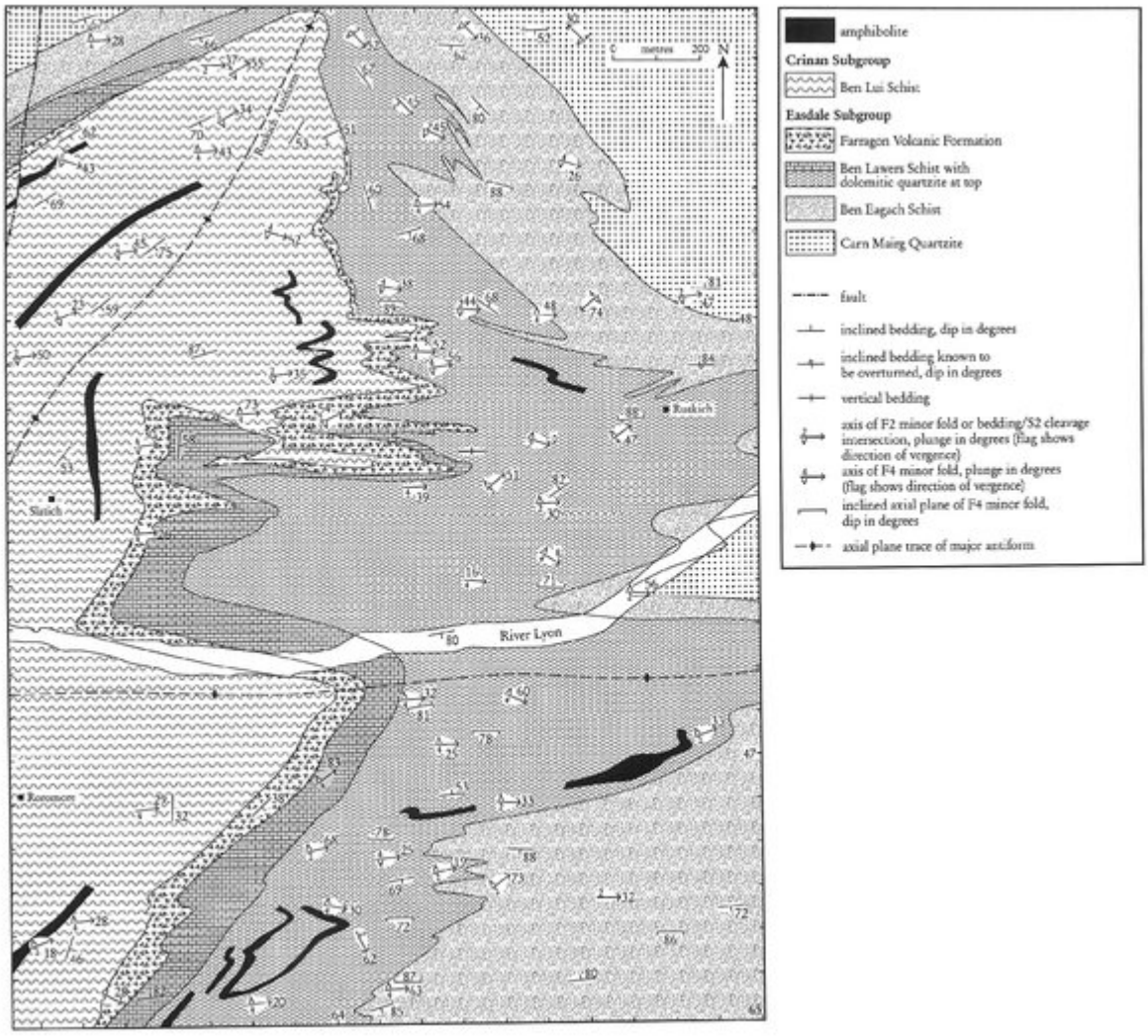
It has been confirmed that the Ruskich Fold has a similar geometry and position in the structural pile to the Ben Lui Fold, which has also now been established as a D2 structure by Roberts and Treagus (1975). Although separated by several major, cross-strike faults (Treagus, 1991) the axial traces of the Ruskich and Ben Lui folds have been correlated on the ground (Roberts and Treagus, 1979). The Ruskich Fold can be shown to have been superimposed on major F1 folds related to the early, F1 Tay Nappe, which can be identified in Glen Lyon to the north of this GCR site (Nell, 1984; Treagus, 1987). The fold is seen as a major component of the zone of D2 complication in the Schiehallion area, which marks the northern limit of the dominantly inverted rocks of the Flat Belt to the south.

A further feature of this GCR site, not seen in the Ben Lui area, is the superimposition on the Ruskich Fold of a later fold-set, both intermediate and small scale, with an associated crenulation cleavage. These structures belong to the regional F4 set, related to the major Ben Lawers Fold to the south (Treagus, 1964b) (see the *Ben Lawers* GCR site report).

20.4 Conclusions

The Slatich GCR site provides a rare example of almost continuous exposure across the hinge-zone of a major fold, the Ruskich Antiform. The fold hinge can be traced from the detailed mapping of three of the principal formations of the Argyll Group in easily accessible exposures on either side of Glen Lyon. Observations of small-scale folds and cleavages have revealed that the major fold belongs to the second (D2) phase of the four important episodes of deformation that affect the Dalradian rocks. Unusually, small-scale folds of the first generation (F1) can also be identified, clearly pre-dating those of the second generation. The second-generation folds themselves have small-scale structures of a still later generation (the regional F4 phase) superimposed upon them. Thus the small-scale structures can be used not only to establish the sequence of deformation events but also to identify the relative age of a major fold. The Ruskich Antiform is equated with the Ben Lui Fold of the Dalmally area (see the *Ben Oss* GCR site report), and can be followed for several tens of kilometres across the Central Grampian Highlands. It is one of the most significant structures involved in the building of the Grampian Fold Belt.

References



(Figure 3.47) Map of the hinge-zone of the Ruskich Antiform in the Slatich area based on mapping of P.A.R. Nell (BGS 1:10 000 sheet NN64NW). Adapted from Treagus, 2000, figure 7.

(Figure 3.48) Cut surface of finely bedded quartzite and amphibolite of the Farragon Formation, c. 800 m east-north-east of Slatich, Glen Lyon [NN 6407 4778]. Isoclinal F1 folds (arrowed) are refolded by more-open F2 folds. Scale bar in centimeters. (Photo: J.E. Treagus.)