
6 Stob Ban

[NN 138 658]–[NN 149 668]

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Published in: The Dalradian rocks of the central Grampian Highlands of Scotland. PGA 124 (1–2) 2013

<https://doi.org/10.1016/j.pgeola.2012.07.009>. Also on [NORA](#)

6.1 Introduction

This GCR site, on the northern side of Stob Ban, one of the highest mountains in the Mamore range, contains the magnificently exposed core of one of the major F2 folds of the Loch Leven area, the Stob Ban Synform. This upright, SW-plunging fold is responsible for the change from the downward-facing D1 structures of the *Nathrach* and *Rubha Cladaich* GCR sites, to the south-east of this site, to the upward-facing D1 structures of the *Tom Meadhoin and Doire Ban* and *Onich* GCR sites to the south-west. At the Stob Ban GCR site, the Stob Ban Synform refolds the Ballachulish Syncline, which, along with the underlying Kinlochleven Anticline (seen in the *Tom Meadhoin and Doire Ban* GCR site) is one of the major, originally flat-lying, F1 nappe structures of the western part of the Grampian fold-belt. The interpretation of the structure is dependant upon Bailey's (1960) interpretation of the stratigraphical succession, which in this area is very abbreviated and is also hornfelsed by a granitic pluton. This interpretation was supported by Roberts (1976) but doubted by Hickman (1978). It is clear from Bailey's description (in Bailey, 1960) that the realization of the existence of this refolding was central to his interpretation of the whole regional structure.

6.2 Description

This remote and poorly known GCR site extends from Coire an Lochain, the north-western coire of Stob Ban, across the mountain's north ridge and down the eastern flank into Coire a' Mhusgain. According to Bailey (1960, pp. 47–49), and as recorded by him on the Geological Survey's 1" Sheet 53 (1948), the GCR site contains the isoclinal core of the recumbent Ballachulish Syncline, folded by the upright secondary Callert Synform (now known as the Stob Ban Synform). As (Figure 3.13) shows, the right-way-up sequence of thick Leven Schists and 30 m of Ballachulish Limestone on the lower limb of the syncline (equivalent to the upper limb of the Tom Meadhoin Anticline, as seen in the *Tom Meadhoin and Doire Ban* GCR site) is followed upwards by 30 m of the Ballachulish Slates in the core and then the reverse sequence of Ballachulish Limestone–Leven Schists on the upper limb. The two limbs of this once-recumbent F1 fold have subsequently been folded into the tight upright SW-plunging F2 Stob Ban Synform. All of the lithologies have been hornfelsed by the granitic Mullach nan Coirean Pluton.

Further details have been given by J.L. Roberts (1976 and in Roberts and Treagus, 1977b). The first penetrative cleavage (S1) is everywhere parallel to bedding; it has steep south-east dips of 75° to the south-east on the north-west limb of the Stob Ban Synform and near vertical dips on the south-east limb. The closure of the F2 synform is well exposed on the steep eastern slopes of the north ridge of Stob Ban (at about [NN 146 666]). The outcrop of the Leven Schists in the core terminates some 20 m below the crest of the ridge and the underlying thin Ballachulish Limestone can be traced around the hinge. Below this, the Ballachulish Slates in the core of the early F1 syncline and the lower, repeated Ballachulish Limestone and Leven Schist sequence, now right-way-up, can be traced from the hinge both to the north-west and south-east along the ridge (between about [NN 147 663] and [NN 144 668]). Minor F2 folds are symmetrical in the hinge-zone and become increasingly north-west vergent to the north-west and increasingly south-east vergent to the south-east, thus demonstrating the D2 age of the major fold.

Another well-exposed section is along the Allt Coire an Lochain which drains north-west from the lochan at [NN 141 662] just south-east of the synformal fold core. The two outcrops of Ballachulish Limestone (now calcisilicate hornfels) and the intervening Ballachulish Slates are well seen in the gorge (at about [NN 140 663]), with the upper part of the Leven Schists (now pelitic hornfels) seen at the lip of the corrie [NN 1407 6624]. Throughout this section F2 folds, with steeply

dipping axial planes, are seen plunging to the south-west and verging to the north-west on the north-west limb of the major F2 synform. The Ballachulish Limestone can be seen on the south-east limb of the synform midway along the north-east shore of the lochan, followed uphill to the east (to about [NN 143 661]) by the Ballachulish Slate–Ballachulish Limestone–Leven Schist sequence, in which the minor folds verge south-east on the south-east limb of the major F2 synform.

6.3 Interpretation

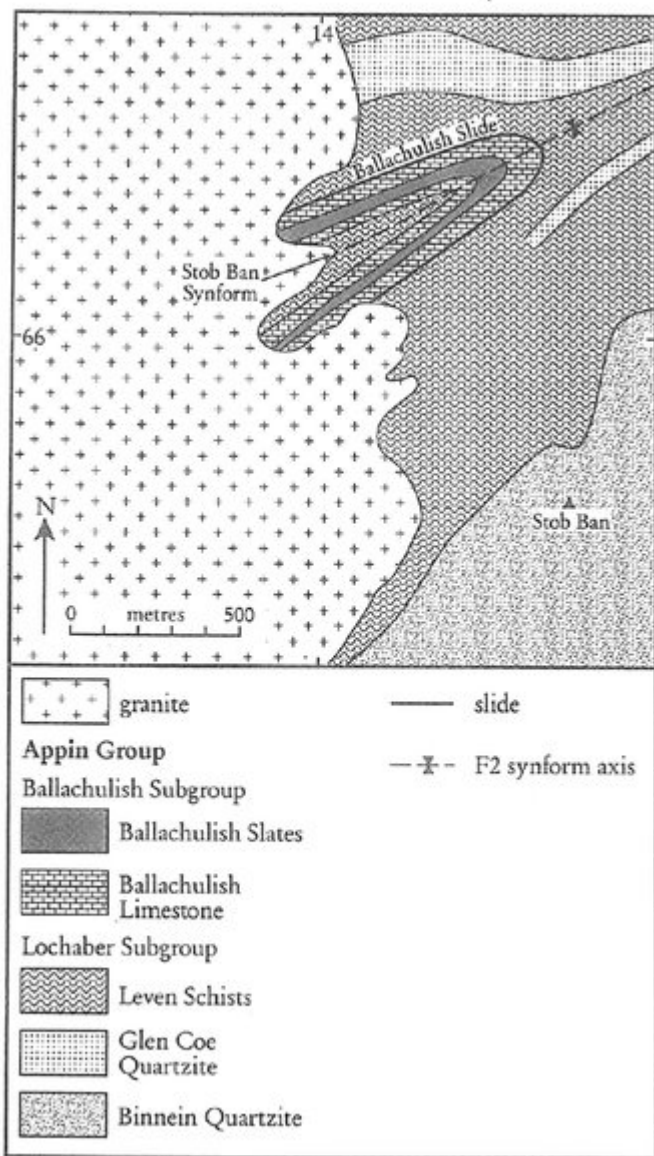
The existence and identity of the Ballachulish Syncline was deduced by Bailey (1960) from the apparent repetition of the Leven Schists and Ballachulish Limestone about the core of Ballachulish Slates. The identities of these formations is made difficult both by their great abbreviation from their thicknesses at their type localities and from their severe hornfelsing by the adjacent granite. Roberts (1976) confirmed the folding of the regional S1 cleavage, parallel to bedding, around the major F2 synform, but he regarded Bailey's interpretation of the stratigraphy and D1 structure to be a working hypothesis, being unable to provide any way-up evidence or D1 minor structure evidence to add to Bailey's observations. Hickman (1978) suggested that the supposed Leven Schist and Ballachulish Limestone sequences are local facies variations within the Ballachulish Slates, although such variations have not been reported elsewhere. In fact, the reality of the stratigraphy of the inverted limb of the major F1 syncline is better demonstrated to the south of the Stob Ban GCR site, between Tom Meadhoin and Callert House (Figure 3.12), where the Ballachulish Slates are succeeded upwards by a large expanse of Ballachulish Limestone and Appin Quartzite occurs in the fold core.

The sympathetic relations of the S2 crenulation cleavage and F2 minor folds to the major Stob Ban Synform in the area of the GCR site, as reported by Roberts (1976), support Bailey's (1960) identification of that structure as a major component of the secondary deformation in the Loch Leven area.

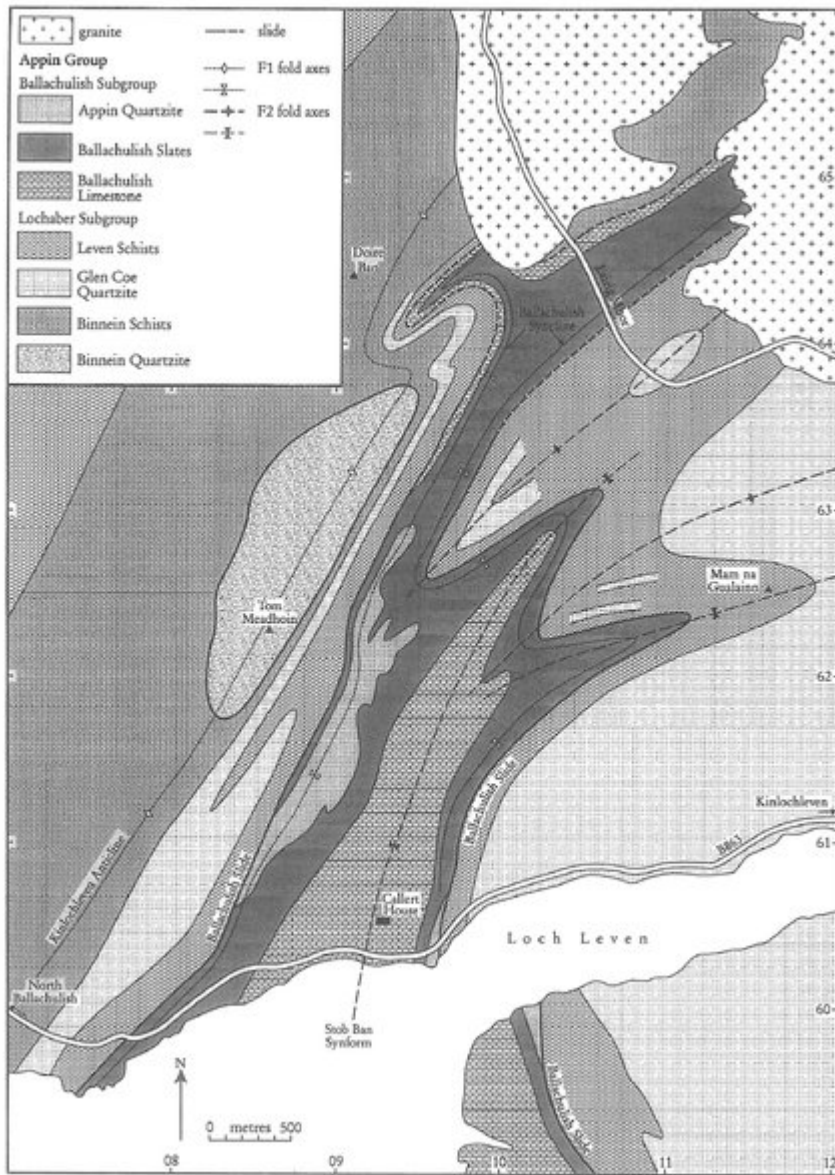
6.4 Conclusions

The Stob Ban GCR site not only provides sections across one of the major early folds seen in the western Grampian fold-belt (the F1 Ballachulish Syncline), but also contains the hinge of one of the major later folds (the F2 Stob Ban Synform). Later folds such as this are responsible for major variations in attitude of the early folds throughout the Loch Leven area. Despite considerable reductions in thickness of some of the lithological units, relative to their type areas and despite contact metamorphism in the aureole of an adjacent granite, the stratigraphy within the GCR site is clear enough for the repetition of formations on the two limbs of the early fold to be unusually well seen. Moreover, the striking manner of the changing geometry of minor folds across the site can be used to demonstrate perfectly the existence and age of the later, F2 fold. The detailed structural relationships at this GCR site are only poorly known and there is considerable scope for further study.

[References](#)



(Figure 3.13) Map of the Stob Ban GCR site. After Roberts and Treagus (1977b, figure 5).



(Figure 3.12) Regional geological context of the Tom Meadhoin and Doire Ban GCR site. After Roberts and Treagus (1977b, figure 5).