
The Scar, Herefordshire

[SO 354 444]

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Introduction

The Scar GCR site is a river cliff on the north bank of a large meander loop of the River Wye 2 km north-west of the village of Monnington-on-Wye, Herefordshire (Figure 5.11). The cliff provides one of the largest vertical and lateral inland sections of the Flidoli Series Raglan Mudstone Formation in the Anglo-Welsh Basin.

Description

Clarke (1952) gave a brief description of the section and later (Clarke, 1955) described the geology of the area immediately to the west of the site on the Merbach Ridge. Brandon and Hains (1979) and Brandon (1989) gave details of the lithologies of the Raglan Mudstone Formation in the Hereford area to the east. Other good sections are present downstream near Breinton [SO 4518 3994], where about 11 m are exposed, and at Redbank Cliff, Holme Lacy [SO 5560 3614]–[SO 5552 3604], where about 32 m are exposed (Brandon and Haim, 1979). The Scar GCR site lies about 3 km to the east of a NW-trending, NE-facing escarpment that is capped by basal sandstones of the St Maughans Formation. The section is estimated to lie approximately 140 m below the top of the Raglan Mudstone Formation, which is marked by the Bishop's Frome Limestone.

Clarke (1952) noted that it was possible to see the cliff (named 'Brobury Scar') from the Deepwell (a source of tufa) on the opposite bank of the Wye. He noted somewhat lyrically that 'this is one of the biggest as well as one of the most beautiful exposures of the Old Red Sandstone in Herefordshire. There are some hundred feet of solid rock exposed and this consists of purple shales at the river level with two persistent green bands followed by a massive sandstone. There is then a great thickness of marl with a thinner sandstone band near the top. The shales show sun cracking and also worm casts.'

The river cliff is of Raglan Mudstone Formation. It is largely inaccessible and dangerous, Clarke presumably making most of his observations from the Deepwell. The base of the eastern sector is accessible with difficulty by descending from the cliff-top path east of the cliff and working back westwards through thick vegetation to the base of the cliff. The cliff exposes a 30 m-thick succession dominated by red and purple mudstones and siltstones, all of which are pedogenically altered to some degree. The beds dip about 5°–6° to the north-east. Thin lenses and tabular sheets of sandstone up to a maximum thickness of about 1 m occur sporadically.

Pale green, leached mottling and layers occur throughout the succession. The siltstones/ mudstones are dull red, purplish and red-brown and micaceous. Lamination is evident at the bases of the units, but upwards they become massive, blocky and pedogenically disrupted. Incipient calcretization is ubiquitous in the topmost parts of the argillaceous layers, with prismatic vertisol fabrics and calcrete glaebule formation. All of the mudstones are distinctly calcareous. Locally, the calcrete nodules attain walnut-size. The most pedogenically altered horizons are clearly distinguished by their purple colour and pale green, prismatic vertisol mottling.

The sandstones are largely confined to the basal part of the section (Figure 5.12). The highest sandstone seen lies about 10 m above the base of the section. The sandstones are red-brown and purple, fine- to medium-grained and highly micaceous. They have gradational tops and sharp bases resting on erosion surfaces on the underlying mudstones. Some intraformational mudstone clasts are present in the bases of the sandstones. Cross-bedding seen is mostly planar, with minor syndepositional deformation of the foresets seen at one point. One set of foresets indicates currents from the NNE. One bedding plane of a fallen block is littered with burrow traces.

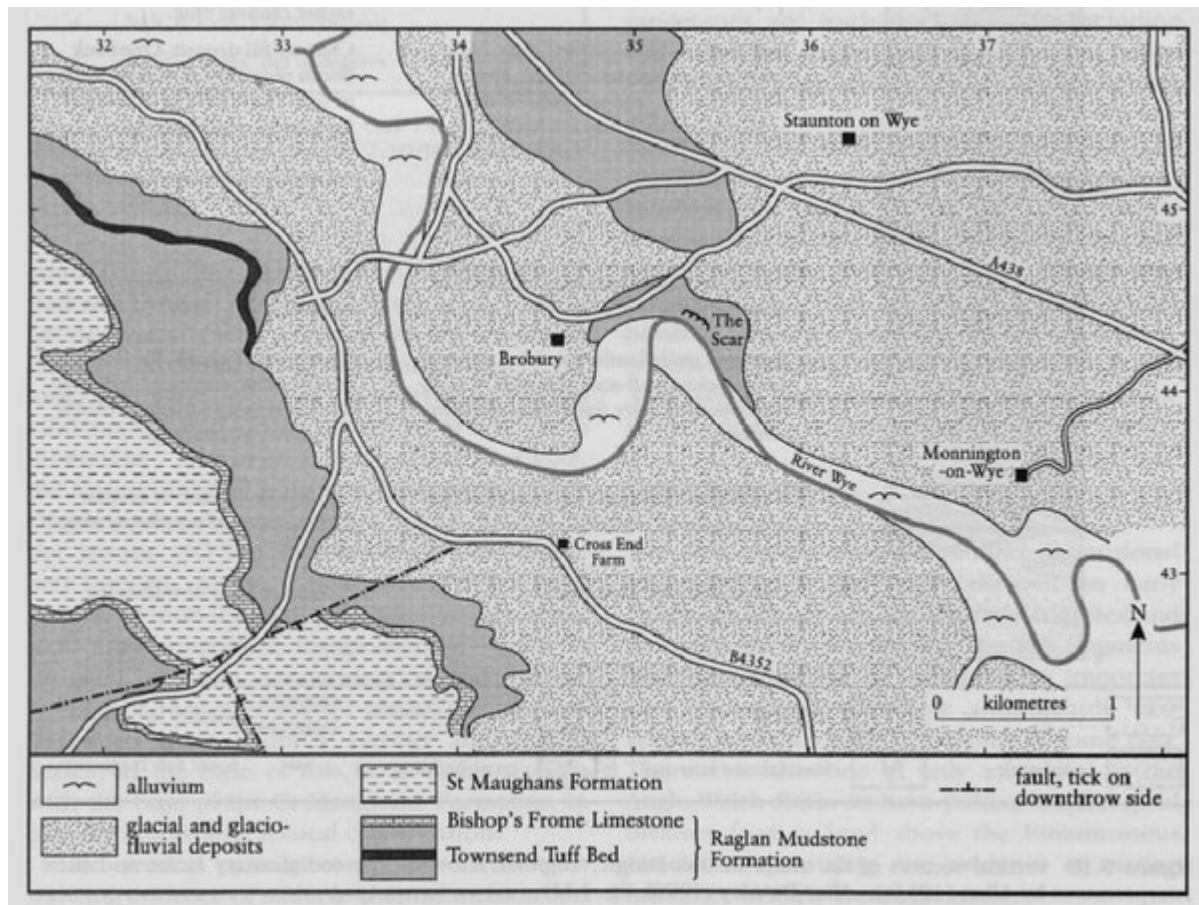
Interpretation

The succession of strata of the Pridoli Raglan Mudstone Formation exposed at Monnington (or Brobury) Scar is interpreted as the deposits of an alluvial floodplain, formed under semi-arid tropical conditions and subject to seasonal wetting (e.g. Allen, 1974d; 1986; Brandon, 1989). Purple horizons are interpreted as cyclic pedogenic soil horizons, with incipient vertisol and calcrete formation. The deposits show a cyclicity typical of alluvial-floodplain deposits. The sandstones were either the channel-fills of shallow braided streams, perhaps subject to sporadic crevassing, or sheet-flood deposits. Detailed examination will refine the sedimentological interpretation. The environment was not entirely hostile to animal life, burrow traces being preserved locally.

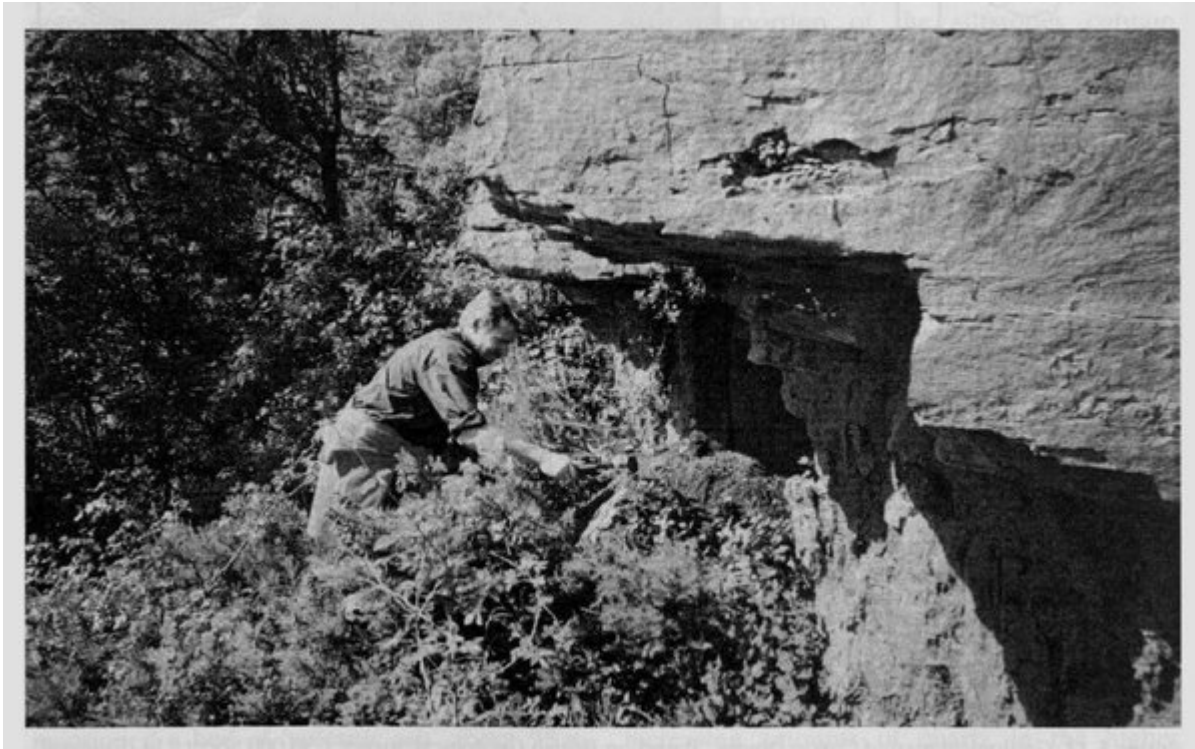
Conclusions

The Scar GCR site provides one of the best inland exposures of Pridoli red-bed strata in the Anglo-Welsh Basin. About 30 m of beds mainly comprise a stacked succession of cyclic mudstone/siltstone-dominated units, which show evidence of soil formation in a semi-arid, seasonally wet climate.

References



(Figure 5.11) Geological map showing location of The Scar GCR site. After British Geological Survey 1:50 000 Sheet 197 (England and Wales), Hay-on-Wye (in press).



(Figure 5.12) Sandstone overlying mudstone at the base of The Scar. (Photo: WJ. Barclay.)