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New graptolite collections from Garpol Linn and Bill's Cleuch

Evolution of the Southern Uplands Terrane

Internal Report IR/02/118

BRITISH GEOLOGICAL SURVEY

INTERNAL REPORT IR/02/118

New graptolite collections from Garpol Linn and Bill's Cleuch

Mark Williams

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Parent Body

Natural Environment Research Council, Polaris House, North Star Avenue, Swindon, Wiltshire SN2 1EU

☎ 01793-411500 Fax 01793-411501
www.nerc.ac.uk

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Summary

The base of the sandstones overlying the Moffat Shale Group at Garpol Linn (National Grid Reference NT 0657 0311) yield *Metaclimacograptus scalaris* in swarm proportions. The taphonomic setting suggests an epipelagic fauna carried oceanwards by turbidites from a more inshore setting. Although typical of the Telychian *guerichi* Biozone in Wales, *M. scalaris* is reckoned to range as low as the *convolutus* Biozone of the Aeronian Stage and does not provide a precise age assignment.

The Moffat Shales at Bill's Cleuch (NT 0994 1213) yield a diverse Rhuddanian graptolite fauna which is of *acinaces* or *cyphus* Biozone age.

Biostratigraphy

Two localities from the Moffat district are described, at Garpol Linn (item 1) and Bill's Cleuch (item 2).

(1) Garpol Linn: graptolites in the base of the sandstones overlying the Moffat Shales at National Grid Reference NT 0657 0311. An earlier review of graptolite collections from the Birkhill Shales at Garpol Linn suggested none younger than the *sedgwickii* Biozone s.l. (see Rushton, 1995).

The fauna from the sandstones are registered as BGS 18E35 - 18E45 and comprise:

Metaclimacograptus scalaris (Hisinger, 1837) (abundant)

fragment of monograptid

Age. Although typical of the Telychian *guerichi* Biozone in Wales (see Loydell, 1993), *M. scalaris* is reckoned to range as low as the *convolutus* Biozone of the Aeronian Stage and does not provide a precise age assignment. The monograptid fragment suggests additional collecting might yield more age-diagnostic graptolites.

Taphonomy. The sedimentological setting, within sandstone turbidites, suggests that the graptolites are epipelagic forms carried oceanwards by turbidites from a more inshore setting. The fauna contrasts markedly with the richly diverse graptolite faunas of the Birkhill Shales (Moffat Shale Group), which preserve the 'climax' graptolite community for this palaeogeographic setting.

(2) Bill's Cleuch: graptolites from the Moffat Shale Group (Birkhill Shale Formation) at National Grid Reference NT 0994 1213. The fauna is registered as BGS 18E46 – 18E64 and comprises:

'*Lagarograptus*' *acinaces* (Törnquist, 1899)

Pristiograptus fragilis (Rickards, 1970) s.l.

Cystograptus vesiculosus (Nicholson, 1868)

Normalograptus rectangularis (M'Coy, 1850)

Rhaphidograptus toernquisti (Elles & Wood, 1906)

Metaclimacograptus spp. (*slalom*-, *undulatus*- and *hughesi*-like)

Normalograptus miserabilis (Elles & Wood, 1906)

'*Orthograptus*' *mutabilis* Elles & Wood, 1907

Glyptograptus sp.

Coronograptus? sp.

Pribylograptus? sp.

Age. The fauna is indicative of the *acinaces* or *cyphus* Biozone of the Rhuddanian Stage, lower Llandovery.

Selected references

Most of the references listed below are held in the Library of the British Geological Survey at Keyworth, Nottingham. Copies of the references may be purchased from the Library subject to the current copyright legislation.

References for individual graptolite species cited above are not given, but these can be found in Hutt (1974, 1975).

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