

SHIEL BURN

OS Grid Reference: NS777291

Highlights

A rich fauna of up to ten species of fishes, including representatives of three major groups, occurs in two horizons. Silurian fishes are very rare globally, and this is the best and richest fish site in the Hagshaw Hills area, Strathclyde.

Introduction

Shiel Burn on Shiel Hill drains into Monks Water in the Hagshaw Hill inlier (Figure 2.12). Several exposures of a fish-bearing bed have been discovered in the Fish Bed Formation (Rolfe, 1960, 1961). One occurs on the bank of Glenbuck Loch, and the other on Shiel Burn. The Fish Bed Formation is part of the Glenbuck Group, dated as perhaps early Wenlock in age (Cocks *et al.*, 1992). Discoveries there date back to the 19th century. In 1896 Macconochie found fragments of fishes in the Lesmahagow and Hagshaw Hills inliers for the Geological Survey, between 1897 and 1899 he and Tait collected much of the material described by Traquair (1898b, 1899b, 1905a). This material included the first known anaspids and the first articulated thelodonts.

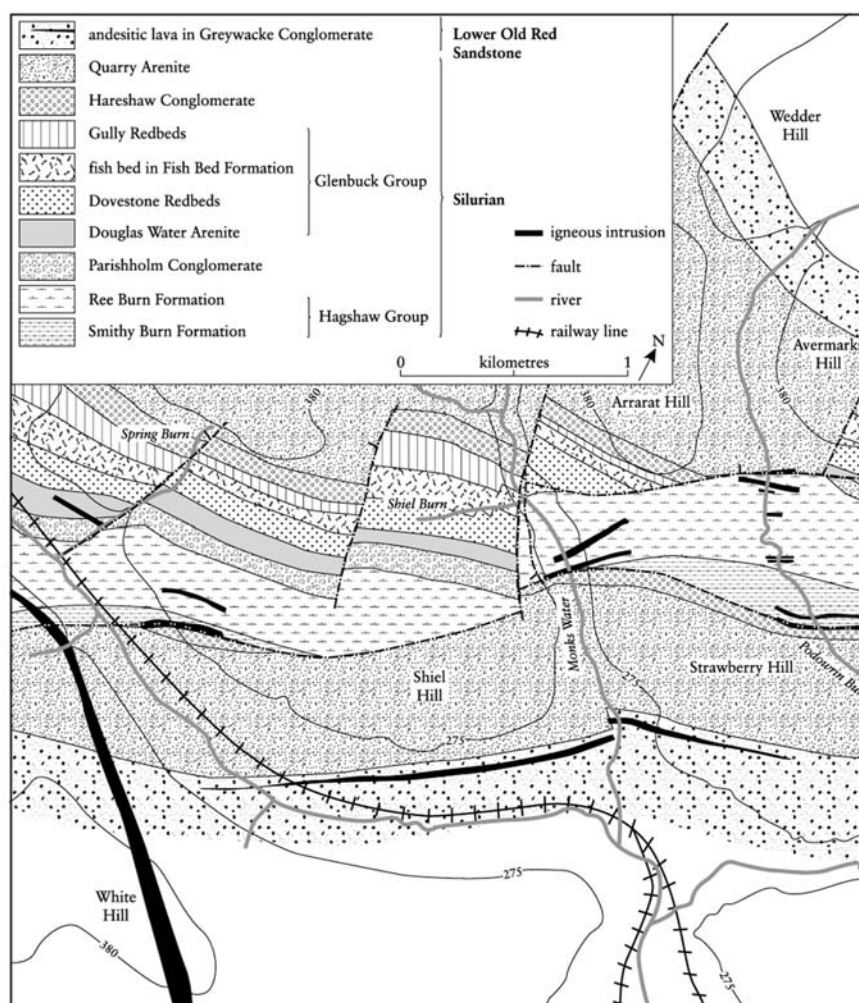


Figure 2.12: Map of the geology in the vicinity of Shiel Burn (after Rolfe, 1961).

Description

On Shiel Burn the two units of the fish bed are 18 m apart (Figure 2.13), exposed at the head

of a waterfall above an excavated slot, in the north bank of the burn. The lower, poorly fossiliferous unit is 0.6–0.9 m thick; the upper unit is 1.2–1.5 m thick and is subdivided into an upper laminated part with common anaspids and thelodonts and a lower, poorly laminated part with only a few fish remains which are commonly disarticulated but may otherwise be well preserved (Ritchie, 1963). The fish specimens occur in a dark grey finely laminated siltstone, and they are initially hard to detect since they are preserved flat. After some weathering, however, the fossils appear ochreous, and detail can be highlighted by immersion in water.

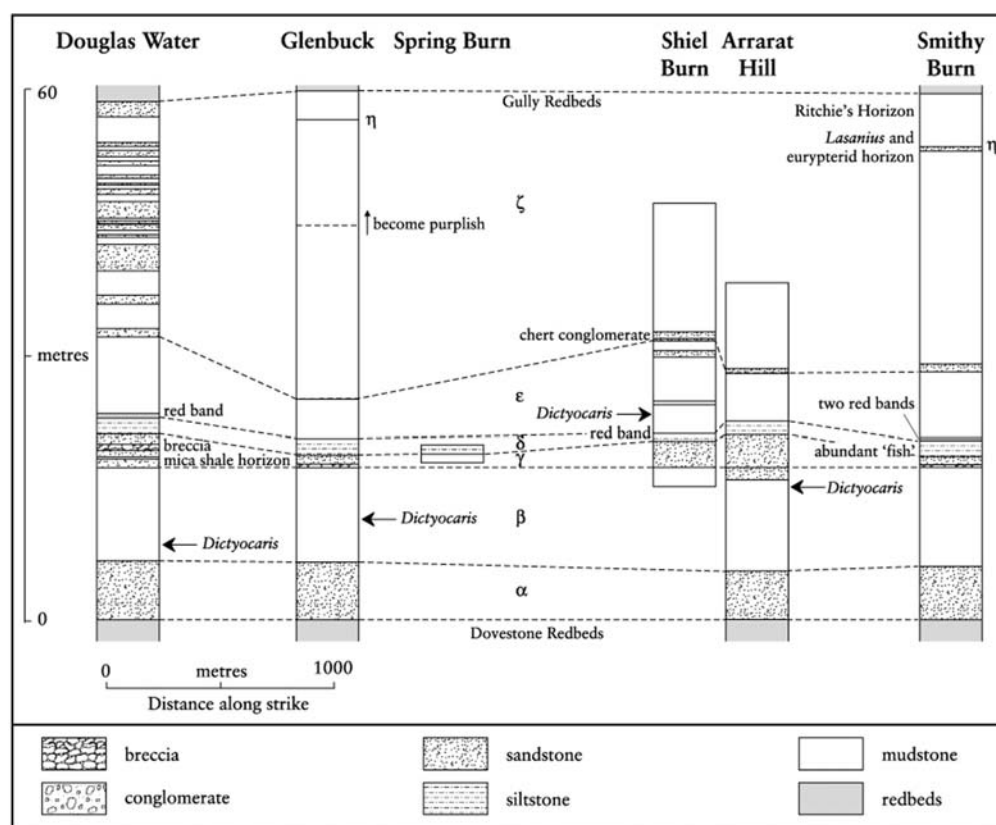


Figure 2.13: Stratigraphical sections in the Hagshaw Hills Silurian inlier to show the Fish Bed Formation (after Rolfe, 1961). The Greek letters refer to six divisions distinguished by Rolfe (1961).

The fishes include a number of thelodonts, anaspids and cephalaspids, as described below (Slot Burn), since this site and Slot Burn (q.v.) in many ways are comparable. Märss and Ritchie (1998) recently completed a detailed study of rare articulated Thelodonts from Shiel Burn.

Fauna

AGNATHA

Thelodonti: Thelodontida: Loganellidae

Shielia taiti (Stetson, 1931)

Lanarkia horrida Traquair, 1898

L. spinosa Traquair, 1898

L. spinulosa Traquair, 1898

Anaspida: Birkeniiformes: Birkeniidae

Birkenia elegans Traquair, 1898

Anaspida: Birkeniiformes: Lasaniidae

Lasanius problematicus Traquair, 1898

L. alatus Smith, 1958

L. armatus Traquair, 1899

Osteostraci: Ateleaspidiformes: Ateleaspididae

Ateleaspis tessellata Traquair, 1899

Incertae sedis Monkolepis maculatus Ritchie, 1963

Interpretation

The strata on Shiel Burn are coarsely varved light and dark fine clastics, which may suggest deposition in lake waters, where oxygen levels were low. The fish specimens are preserved in abundance, and in good condition, which suggests mass mortality events, as found in many later Old Red Sandstone localities. The good quality of the preservation suggests that there were no scavenging or burrowing organisms in the anoxic sediments.

The Fish Bed Formation is exposed on the shore of Glenbuck Loch nearby. Its basal unit consists of 6.5 m of light grey sub-greywacke, and continues as cycles of grey-green sandstones, sometimes with breccias at their bases, grading up into siltstone or mudstone. Several fish beds have been found here, one immediately above the basal sub-greywacke and another 12 m above this. The fossils include fishes, eurypterids, *Spirorbis* and a possible calcareous alga. These are all marine fossils. The environment of deposition is interpreted as a relatively deep body of water, perhaps a lagoon or basin partly separated from open water by a sill.

Conclusions

The conservation value of this site lies in its faunal diversity and relatively fossiliferous strata. This is a rich fish site, which has produced ten species of thelodonts, anaspids and cephalaspids. It has been productive for 100 years, and still yields abundant material.

Reference list

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