

Hawsker Bottoms, North Yorkshire

[NZ 937 080]

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Introduction

The site comprises a c. 350 m-long section along the Oakham Beck at Hawsker Bottoms, c. 5 km south-east of Whitby. It extends from just south of the ford where the Oakham Beck crosses Bottom Lane to a point c. 240 m south-west of Maw Wyke Hole where the beck reaches the coast. The section runs along the north-western boundary of the Northcliffe Holiday Park. It is said to be one of the best inland exposures of the Scarborough Formation (Ravenscar Group), which is better known on the coast (see Iron Scar–Hundale and Hundale Point–Scalby Ness GCR site report, this volume), and to have yielded one of the most varied faunas from this interval, including the only corals so far recorded from the Scarborough Formation (English Nature files).

Description

The site comprises a c. 20 m-deep wooded gully. The best exposures are at the southern end, on either side of Bottom Lane. The following section is based on that of Bate (1965) who investigated the ostracod faunas; the lithostratigraphical classification has been updated by the present author following Parsons (1977b) and Gowland and Riding (1991) but this must be considered provisional pending more detailed logging of the section.

	Thickness (m)
Scarborough Formation	
13: Sandstone, grey, well bedded, coarse grained; becoming chocolate-brown below and shelly in part	seen to 1.57
12: Limestone, sandy, weathering rather fissile; crowded with shells near base	0.74
?Ravenscar Shale Member	
11: Shale, sandy, chocolate-brown, very fossiliferous	0.46
10: Shale, chocolate-brown	0.51
9: Shale, crowded with fossils at top	0.91
?Spindle Thorn Limestone Member	
8: Shale, grey; large limestone nodules	0.61
7: Shale, grey, fossiliferous	0.91
?Hundale Sandstone Member	
6: Sandstone, calcareous, fossiliferous	0.61
?Hundale Shale Member	
5: Shale, sandy, dark-grey, fossiliferous along bedding planes	0.51
Helwath Beck Member	
4: Shale, pale-grey; sandstone lenses	0.20
3: Shale, sandy, laminated grey and white; sandstone lenses	0.63
2: Shale, sandy, grey, carbonaceous with plant remains; 0.33 m-thick sandstone lens at top	0.91
Cloughton Formation	
Gristhorpe Member	
1: Sandstone, grey	seen 1.37

Interpretation

Bate (1965) assigned beds 1–4 to the 'Middle Deltaic Series' and beds 5–13 to the 'Grey Limestone Series'. These stratal names were subsequently replaced respectively by the Cloughton Formation and the Scarborough Formation (Hemingway and Knox, 1973). However, following Livera (1981), beds 2–4 have been reclassified as the basal member of the Scarborough Formation, called the 'Blea Wyke Member' by Livera (1981) and Gowland (1987) but renamed the Helwath Beck Member by Gowland and Riding (1991).

The Helwath Beck Member is the only part of the succession at Hawsker Bottoms that has been discussed in detail in recent literature. Gowland (1987) recognized four sedimentary facies within it. He described Bed 2 of the above section as being dominated by 'pinstriped' argillaceous siltstones cut by a lens of very fine-grained sandstone with a sharp basal erosion surface and a basal lag of coarse, coalified, woody debris. Within the sandstone, medium-scale trough cross-stratification, comparable to that produced by the migration of subaqueous dunes, is the dominant sedimentary structure; bedforms indicate transport towards the northwest. Wave-modified current-ripples with E–W-orientated crestlines are also reported towards the top of the sandstone unit. He perceived the overlying strata (Bed 3 of the above section) as burrow-mottled sands and silts that probably originated as lenticular and wavy bedded units; he recorded the trace fossils *Teichichnus* and *Thalassinoides*. The topmost part of the member (Bed 4 of the above section) shows a predominance of hummocky cross-stratification and displays a well-developed, wave-rippled zone; between the hummocks, lags of shelly material, notably disarticulated valves of the small oyster *Nanogyra*, were reported by Gowland (1987). Overall, the Helwath Beck Member is believed to represent both fair-weather and storm-sedimentation (Knox *et al.*, 1991) in a shallow, brackish-water, marine embayment open to the east (see also Iron Scar–Hundale and Hundale Point–Scalby Ness GCR site report, this volume).

Recognition of the other members of the Scarborough Formation away from the coastal sections (see Iron Scar–Hundale and Hundale Point–Scalby Ness GCR site report, this volume) must be considered as speculative. Bate (1965) correlated his Bed 6 with the 'Crinoid Grit' elsewhere, presumably because it contained an abundance of crinoid debris. However, Gowland and Riding (1991) replaced Parsons' (1977b) 'Crinoid Grit Member', as developed in coastal outcrops, by the term 'Hunsdale Sandstone Member' because they considered that there was 'no lithostratigraphical continuity or clear time correlation' with the true Crinoid Grit of Richardson (1911c), which is well developed and readily mappable inland (Gowland, 1987). The beds exposed in the waterfall north of the ford at Bottom Lane (Figure 5.34) are presumed to be the next youngest Spindle Thorn Limestone Member and overlying Ravenscar Shale Member. Fox-Strangways' (1892) record of ironstones at the top of a section in 'Gate Holm Beck just where the lane to Hawsker Bottoms crosses that stream' is suggestive of the next youngest White Nab Ironstone Member but the top of the formation has not been reported hereabouts.

Conclusions

The sections at the Hawsker Bottoms GCR site are some of the best inland exposures of the Scarborough Formation near its northern limit and, together with the coastal sections at Hundale Point (see Iron Scar–Hundale and Hundale Point–Scalby Ness GCR site report, this volume) contribute to an understanding of the palaeogeography and depositional environments of this area in Bajocian times.

[References](#)



(Figure 5.34) Waterfall exposure of the Scarborough Formation north of Bottom Lane, Hawsker Bottoms. (Photo: M.G. Sumbler.)