

Knipe Scar Limestone Formation

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Knipe Scar Limestone Formation ([KNL](#)), Carboniferous, Northern England Province

Knipe Scar Limestone Formation is part of the [Great Scar Limestone Group](#)

Name

The name is derived from Knipe Scar, Bampton, Cumbria. See Mitchell (1978)^[1].

Lithology

The Knipe Scar Limestone Formation is wholly dominated by rhythmically bedded limestone, comprising mostly thick-bedded, pale to mid grey, wackestone and packstone, with some grainstone. Palaeokarst horizons and conspicuous stratiform mottled calcrete textures in beds up to 1 m thick are present. Significant beds of fine-grained sandstone, siltstone and mudstone punctuate the upper part of the succession, but are rarely seen at outcrop. The formation is the equivalent of the Melmerby Scar Limestone Formation of the Alston Block and the Danny Bridge Limestone Formation of the Askrigg Block and forms spectacular scenery of terraced topography and limestone pavements.

Genetic interpretation

Shallow marine. The palaeokarst horizons and stratiform mottled calcrete textures indicate emergence of the unconsolidated carbonate substrate.

Stratotype

The formation is exposed in its entirety on the pavements of Great Asby Scar (NY 650 100) and

Knipe Scar (NY 528 193). The type area is Great Asby Scar (NY 6592 0917 to 6630 0969) where some 50 m of largely thick-bedded and mostly bioclastic limestone is exposed. Major new exposures are available in quarries at Hardendale (NY 587 138) and Shap Beck (NY 550 183), where continuous sections show thin sandstone and mudstone interbeds in the limestone sequence (see Pattison, 1990^[2]).

Lower and upper boundaries

In Ravenstonedale and the Stainmore Trough the formation conformably overlies the packstones of the Potts Beck Limestone Formation (Figure 9, Column 16). It disconformably overlies the 'Bryozoa Band' at the top of the Ashfell Limestone Formation on the northern Stainmore Trough margin.

The top of the formation is disconformably overlain by a variable sandstone and mudstone unit known locally as the Wintertarn Sandstone Member (WTRS) at the base of the Tyne Limestone Formation, Yoredale Group (Figure 9, Column 16; Figure 14, Column 3).

Thickness

The formation is up to 50 m thick at Knipe Scar, but thickens to 100 m at Ravenstonedale.

Distribution and regional correlation

Ravenstonedale and the Stainmore Trough.

Age and biostratigraphical characterisation

Late Ashian. The formation is not abundantly fossiliferous in the Stainmore Trough, but includes *Siphonodendron pauciradiale*, *Davidsonina septosa* and *Delepineia* sp. In the Eamont Valley (NY 490 260) it is conspicuously fossiliferous containing large broken stromatolite colonies, *Hexaphyllia* sp., *Lithostrotion* sp. and *Siphonodendron* sp. and *Gigantoproductus* sp.

References

- [↑] Mitchell, M.1978.Dinantian.168-177 in The geology of the Lake District. Moseley, F (editor).*Occasional Publication of the Yorkshire Geological Society*, No. 3
- [↑] Pattison, J.1990.Geology of the Orton and Sunbiggin Tarn districts: 1:10 000 sheets NY60NW and NE.*British Geological Survey Technical Report*, WA/90/12

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