
Dun Skudiburgh, Isle of Skye

[NG 374 648]

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Introduction

The GCR site at Dun Skudiburgh, on the west coast of Trotternish, northern Skye, is the type locality of the Skudiburgh Formation, the youngest formation in the Great Estuarine Group of the Hebrides. The site comprises the cliffs and intertidal zone immediately north of Dun Skudiburgh and on the north side of the Stack of Skudiburgh (Figure 6.24). The Skudiburgh Formation is consistently represented by mottled silty clays and, prior to Harris and Hudson (1980), was known as the 'Mottled Clays' (Anderson, 1948; Anderson and Dunham, 1966; Anderson and Cox, 1948). As elsewhere in Trotternish, the clays at Dun Skudiburgh contain sandy and silty intercalations (Andrews, 1985). The formation is nowhere fully exposed in Trotternish, and the exposed section at the GCR site is relatively short. It has been cited by Macgregor (1934), Anderson and Dunham (1966), Harris and Hudson (1980), Andrews (1985) and Morton and Hudson (1995).

Description

The following details are compiled from the references given above. The cliffs on the north side of Dun Skudiburgh, by the boat slip at Poll an Staimh, expose c. 3.5 m of intercalated buff-red, occasionally green, mottled, silty shales with two intervening lenticular sands up to c. 1.0 m thick (Figure 6.25). The lower sand shows low-angle cross-bedding and ripple marks. At the base of the upper fining-up sand, which shows trough cross-bedding, ripple marks and slump structures, there is a basal conglomerate with lenses of small reworked carbonate concretions. The strata are slightly metamorphosed owing to an overlying picrite–dolerite sill (a fine example of its kind) (Figure 6.26). The mottled shales are also well exposed on the beach at low tide, when the bay to the north of the GCR site exposes an unmetamorphosed succession.

Interpretation

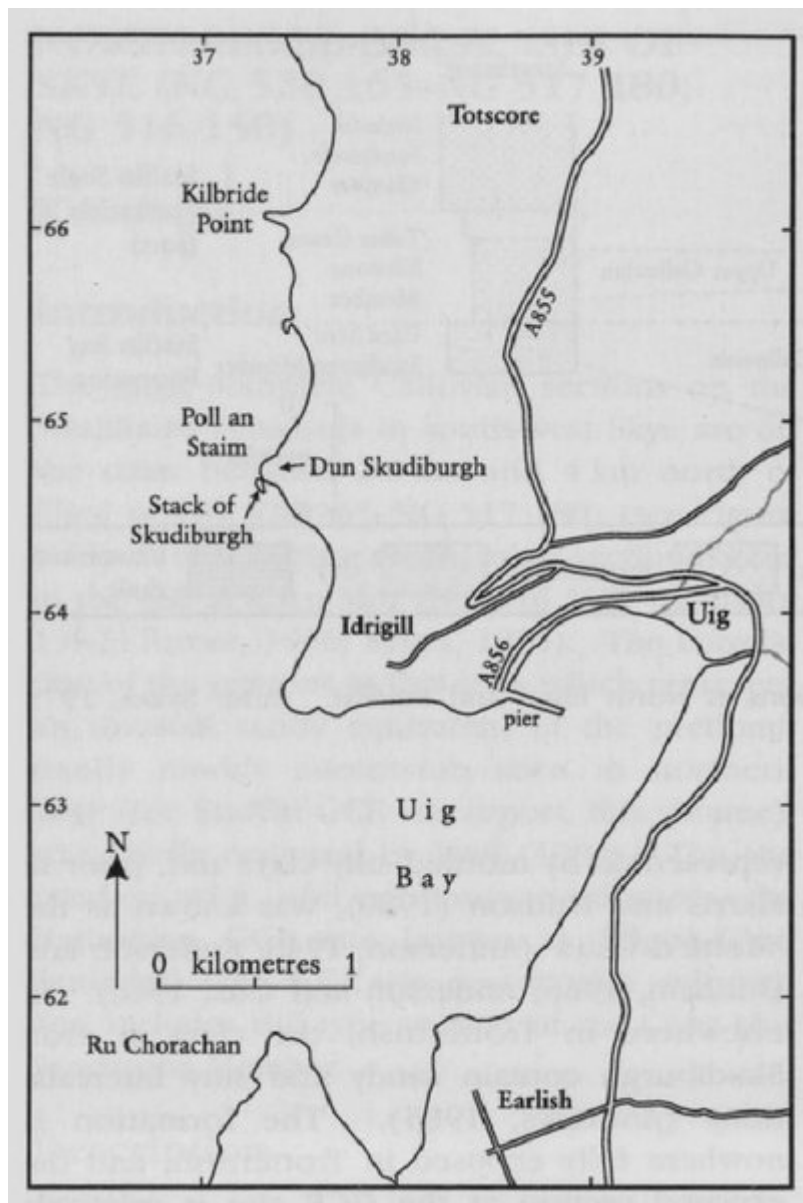
The depositional environments represented by the rocks of the Skudiburgh Formation have been investigated by Andrews (1985) on which the following notes are based. The succession is interpreted as alluvial in origin. The mottled, red, silty clays represent floodplain sediments with a water table, at the time of deposition, close to the surface. The red colouration, representing dehydrated iron hydroxides, could well have developed almost straight after deposition, the mottled horizons representing alternations between partial dehydration and reduction. In general, mottling is thought to occur only below the water table.

The coarse sandstone units seen at Dun Skudiburgh display the classic fining-upwards cycles and vertical transition of bedforms associated with river-channel deposits. The reworked carbonate concretions, which form a basal conglomerate to the upper channel sand, are believed to have been exhumed from the alluvial plain during channel migration. Carbonate concretions are usually sparsely and randomly distributed within the Skudiburgh Formation. They represent fossil nodular calcretes or caliches that occasionally coalesced to form more extensive, hardpan horizons. They are not algal nodules as suggested by Anderson (1948). Calcrete development requires a source of calcium carbonate and a low floodplain sedimentation rate; the formation of recent calcrete is favoured in a warm climate where there is limited seasonal rainfall. Their presence in the Skudiburgh Formation appears to indicate at least seasonal aridity. The appearance of reworked carbonate concretions at Dun Skudiburgh led Macgregor (1934) and Anderson and Dunham (1966) to describe them as 'pebble beds'. Macgregor (1934) thought they were sufficiently different from other rocks in the area that he suggested they might be Cretaceous in age. The only fossil reported from the site is the freshwater bivalve *Unio* (Harris and Hudson, 1980); Andrews (1985) recorded plant debris in his lithological log of the section.

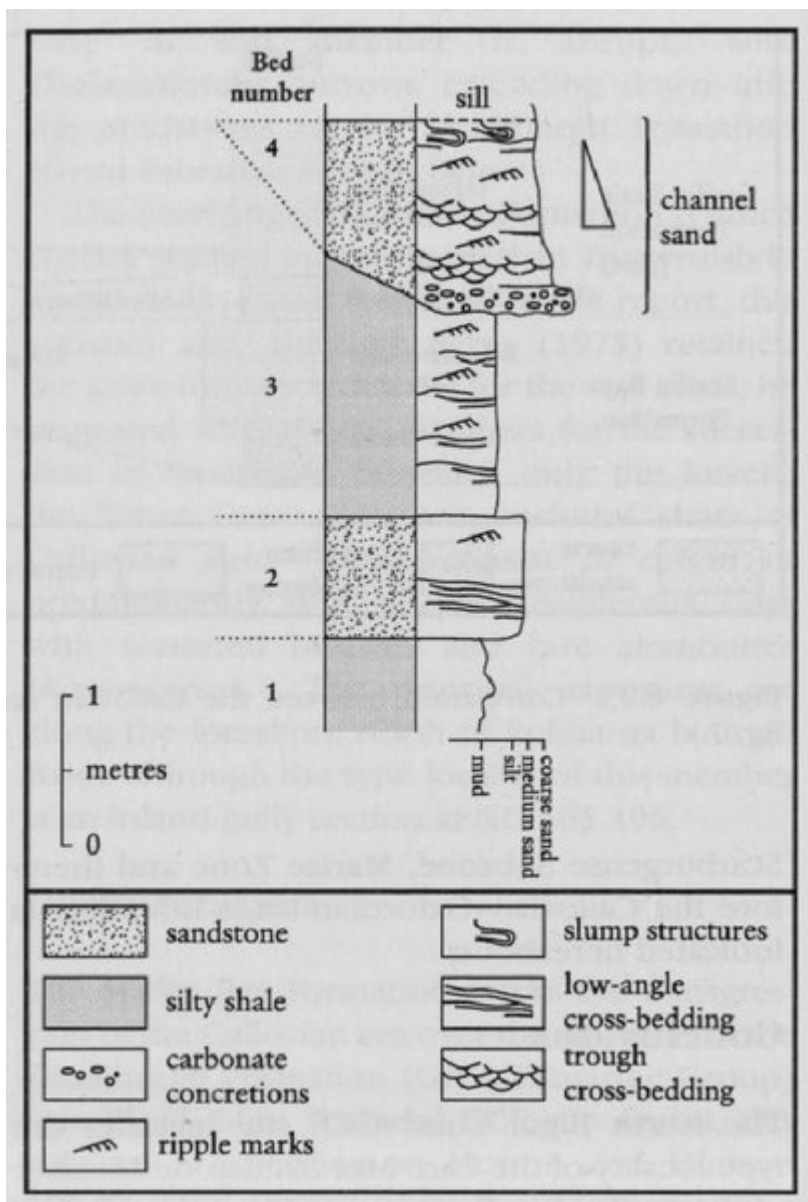
Conclusions

Although not complete, the Skudiburgh Formation is better developed at Dun Skudiburgh, its type locality, than at any other location in the Hebrides. The facies that can be studied there are of considerable palaeogeographical and sedimentological importance. The red-bed lithologies represent an alluvial plain, mudflat environment, which is unique within the onshore British Middle Jurassic succession; the sandstone with its basal conglomerate is indicative of a meandering river channel. Preceded by the oyster-dominated marine to brackish-water lagoonal sediments of the Duntulm Formation (see Duntulm GCR site report, this volume) and the lagoonal and mudflat sediments of the Kilmaluag Formation (see Elgol–Glen Scaladal GCR site report, this volume), the alluvial mudstones and sandstones of the Skudiburgh Formation represent the last part of the highest of the three major upward-regressive cycles that are recognized in the Great Estuarine Group of the Hebrides. These coastal plain, terrestrial environments were subsequently transgressed by the sea during Callovian times.

References



(Figure 6.24) Locality map for the Dun Skudiburgh GCR site.)



(Figure 6.25) Graphic section of the Skudiburgh Formation at Dun Skudiburgh. (After Andrews, 1985, fig. 7.) Bed numbers follow Andrews (1984, 1985).)



*(Figure 6.26) Low cliff exposure of the Skudiburgh Formation beneath the picrite–dolerite sill at Dun Skudiburgh.
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