
Eyre Burn, Island of Raasay, Skye and Lochalsh

[NG 577 342]

Introduction

The raised beach at the mouth of Eyre Burn shows an excellent succession within the Stornoway Formation. The sequence rests unconformably on the Torridonian Sandstone Formation and comprises a sequence of alluvial fanglomerates sandwiched between red sandstones with calcrete. The conglomerates are very poorly sorted; sedimentary structures such as imbrication and cross-bedding are poorly developed. Maximum particle size shows a significant correlation with bed thickness and this, along with the lack of basal erosion surfaces, suggests these sediments were the product of debris flows. This is an important site for the elucidation of sedimentary processes in the alluvial fan environment.

The Triassic sediments of Raasay and other nearby locations have been described by Judd (1878), Peach *et al.* (1910), Lee (1920), Lee and Pringle (1932), Bruck *et al.* (1967), and Bell and Harris (1986).

Description

In Eyre Burn, and along the cliffs of the raised beach to the east, seen behind the track that runs parallel to the sea, about 76 m of sediments of the Stornoway Formation are exposed (Figure 3.13). These dip towards the north-west, and are commonly cut by small, vertical, inclined, or curving dykes (Peach *et al.*, 1910).

The lowest unit exposed in the vicinity of Eyre Burn comprises arenaceous sediments of the Torridonian Sandstone Formation (Precambrian). The boundary between this unit and the overlying sediments is slightly irregular. The Stornoway Formation (Figure 3.14) falls naturally into three units, a basal, mainly sandstone, unit, overlain by a thick succession of conglomerates and sandstones, which are succeeded by more sandstones.

The basal sandstones, some 9 m thick, are generally coarse-grained, have a calcareous matrix, and include a 0.07 m thick pebble band that contains clasts of quartzite, and Torridonian Sandstone and Durness Limestone Formation sediments (Figure 3.13)a. The upper 3 m of this basal unit contains calcretes and extensive developments of a fine-grained carbonate (Figure 3.13)b.

This unit is overlain conformably by conglomerates seen below and above a break in exposure, which may correspond, by comparison with the surrounding area, with a medium-grained sandstone unit. Below this break, 16m of conglomerates are seen; above it c. 21m are seen, but only in the Eyre Burn (Bruck *et al.*, 1967). The top of the Eyre sequence consists of sandstones, many of which are white or very pale in colour. The sandstones are overlain by reddish sandstones and clays, followed by the Jurassic Broadford Beds (Bruck *et al.*, 1967).

The Stornoway Formation on Raasay has been sampled in an attempt to recover palynomorphs, but without success (Warrington and Pollard, 1985); it is assumed here to be Triassic in age (see above).

Interpretation

The sediments at Eyre resemble the sequences of Rudha na' Leac (Figure 3.14) and Suisnish Hill on Raasay and Eilean Leac na Gainitnh on Scalpay. The Stornoway Formation was deposited on the eastern margins of the Inner Hebrides Trough (as defined by McQuillin and Binns, 1973; Hudson, 1983; Morton, 1992). The basin was infilled by braided channels down the south-west palaeoslope, and by alluvial fans towards the north-east and north-west. The Raasay sediments were deposited in a small extension of the Inner Hebrides Trough. The source for these sediments was the higher relief areas of central Skye. The Eyre sediments are thought to be younger than comparable facies on Skye (Steel *et al.*, 1975).

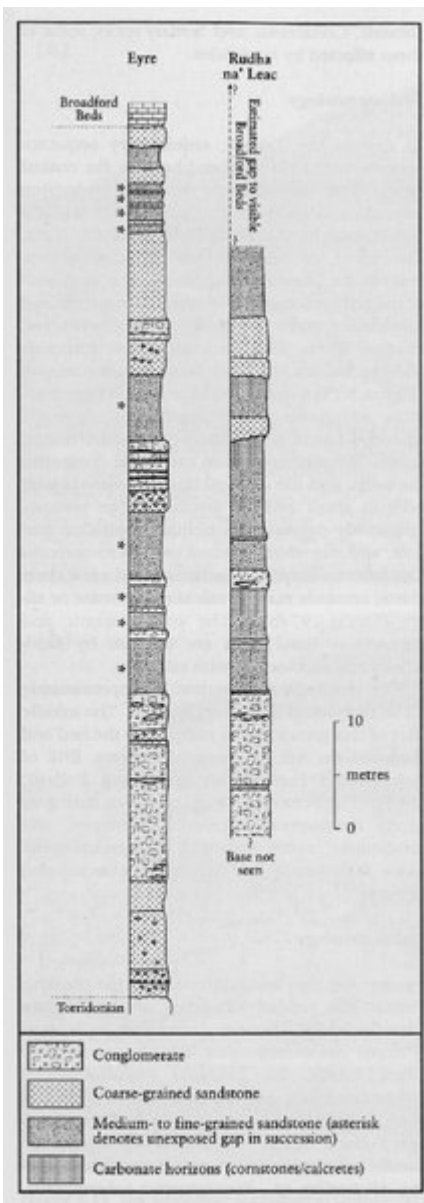
Conclusions

The Stornoway Formation around Eyre Point and Eyre Burn is dominated by conglomerates, red siltstones and calcretes, and was deposited on large alluvial fans. The conglomerates at Eyre Point are spectacular, being thick and displaying varied textures; they are critical for establishing the nature of Triassic deposition in western Scotland, and in demonstrating the relationships of sedimentation to relief and tectonic activity.

References



(Figure 3.13) Triassic sediments at the Eyre Burn GCR site; (a) a conglomerate deposited as a sheet flood on an alluvial fan; and (b) a palaeosol, comprising a siltstone with calcretes. (Photos: C. MacFadyen.)



(Figure 3.14) The Triassic section in the GCR site at Eyre Burn (left), and through the neighbouring site at Rudha na' Leac (right), showing the transition upwards from conglomerates deposited by braided rivers in alluvial fans at the base, through fine sandstones and palaeosols. (After Bruck et al., 1967.)