
Broom Covert, Butley, Suffolk

[TM 370 494]

Potential GCR site

Highlights

The pit at Broom Covert exposes an excellent section in shallow water, possible intertidal Red Crag sediments overlying subtidal cross-bedded sands.

Introduction

This pit has been excavated on the flanks of a small hill close to a minor road that connects Cape! Green with Butley, passing north of Butley Abbey. It was recorded by the Ordnance Survey in 1881 and may be the pit 'half a mile west of Butley Abbey' figured by Prestwich (1871b, fig. 11) and illustrated by Boswell (1928, plate 1B).

Description

Boreholes in the area have proved up to 17.4 m of Red Crag (Hollyer and Allender, 1982). The pit exposes approximately 7 m of Red Crag (Figure 11.14). The base of the section shows up to 1.5 m of planar-tabular, cross-bedded sand with foresets alternately of shelly and shell-free sand (unit 1). At this locality foreset dip orientations indicate movement of the bedform towards the west. The unit is sharply truncated at the top by a surface which dips at 2° towards the east.

This unit is overlain by a complex cross-bedded unit (unit 2) (Figure 11.15). The shell content is less and the shells more comminuted than in unit 1. In the simplest section stacked sets of ripple cross-laminated sand pass up into larger-scale trough cross-bedded sand. Set boundaries are parallel. Clay–silt drapes are conspicuous, spaced at regular lateral intervals. Numerous scours filled with trough cross-bedded sands cut down into the rippled sands.

An undulatory boundary separates unit 2 from the uppermost, generally shell-free, unit 3 (Figure 11.16) which consists of an interlamination of horizontally bedded sands with indistinct ripple cross-lamination and mud partings. The mud forms thin laterally impersistent layers which drape ripple forms. The mud partings are typically spaced 10–20 cm apart, but where they are more closely packed they impart a flaser or wavy bedded appearance. Local pebble layers occur.

Conspicuous clay-lined burrows occur in unit 3. These are discrete, often with Y-shaped branches, with the main shaft and branches oriented normal to bedding. Although the shafts are comparatively narrow, averaging c. 1 cm in diameter, they can be traced vertically for over 40 cm.

The foresets seen at the base of the section (unit 1) are similar to those exposed in Bawdsey Cliff. The bedding thus probably records migration of a large sandwave, in a subtidal, possibly estuarine, environment. The numerous scours and cross-bedding on various scales which characterize unit 2 are reminiscent of the sediments produced by strong current action in a tidal channel environment such as those described by Terwindt (1971), De Raaf and Boersma (1971) and Nio *et al.* (1980).

The beds at the top of the section (unit 3), comprising alternations of flat-bedded sand laminae and mud partings or drapes, are the product of deposition under a regime of fluctuating current strength. The sand layers were deposited during periods of active bedload transport, whilst the intercalated muds document repeated periods of slack water with deposition from suspension. Holocene siliciclastic tidal flats fringing the margins of the southern North Sea are good modern analogues of sequences of thinly interbedded sand–mud layers with many of the structures described above (e.g. Evans, 1965).

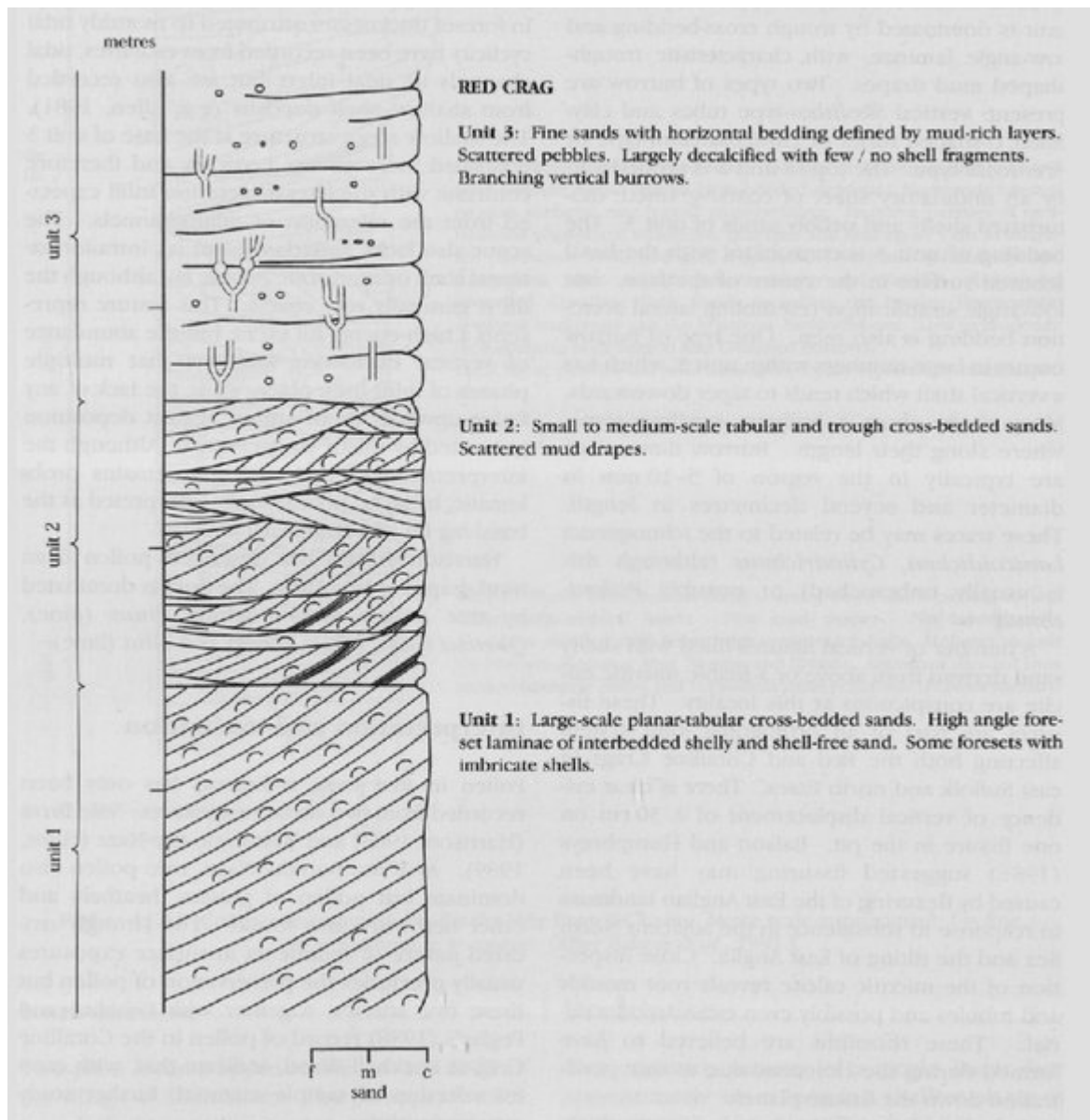
Interpretation and evaluation

The pit at Broom Covert is an important site within a network of sites which expose the shallow water, possibly intertidal sand flat facies of the Red Crag, overlying subtidal cross-bedded facies (see also Orford Lodge, Vale Farm).

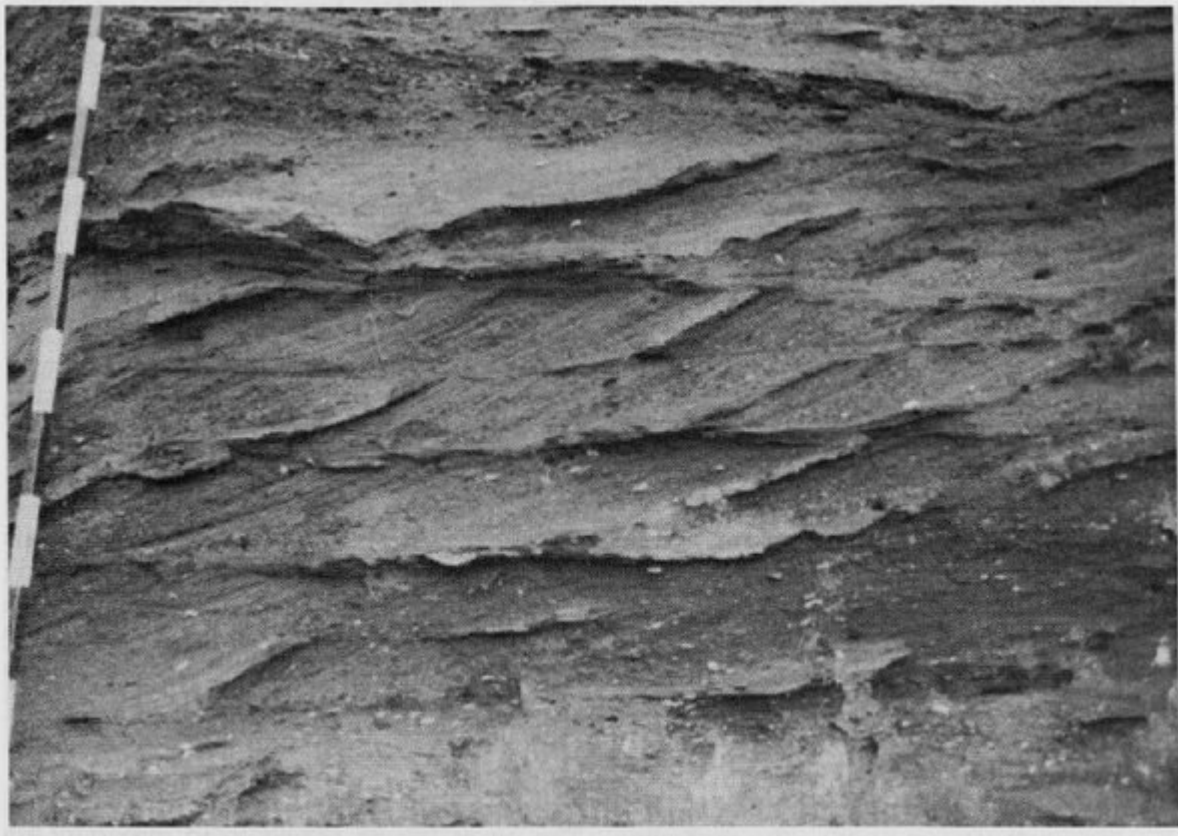
Conclusions

The pit at Broom Covert is an important site for the study of the vertical and lateral variations in sedimentary facies within the Red Crag.

References



(Figure 11.14) Composite summary log of Red Crag section at Broom Covert. Metre scale approximate; f = fine, m = medium, c = coarse. (After Balson et al., 1991.)



(Figure 11.15) Small-scale cross-bedding in unit 2 at Broom Covert, showing regular mud drapes reflecting tidal rhythms. Graduations on scale = 10 cm)



(Figure 11.16) Vertical burrows in unit 3 at Broom Covert. (Graduations on scale = 10 cm.) (Photograph: P Balson.)