Buckanay Farm, Alderton, Suffolk

[TM 356 424]

Highlights

This large pit exposes an excellent section of the Red Crag with cross-bedding which shows the influence of tidal cyclicity through rhythmic alternations of grain-size and foreset thickness within the cross-bedded sets.

Introduction

This pit, which lies approximately 1.5 km NE of the village of Alderton, was recorded as a 'sand pit' by the Ordnance Survey in 1880 but appears to have received relatively little interest from geologists until recently. In 1911, Reid Moir claimed to have discovered human flint implements in material from a crag pit at 'Buckanay' although it is extremely unlikely that, if genuinely of human manufacture, they originated from within the Red Crag (Moir, 1911, p. 19). More recently, the pit has been described by Zalasiewicz *et* al. (1988).

Description

The pit presently exposes about 7.5 m of Red Crag. A borehole adjacent to the pit [TM 3559 4232] proved 11.9 m of Red Crag resting on London Clay at −2.8 m OD (Hollyer and Allender, 1982). Large-scale cross-bedding is present with foresets which dip towards the west-south-west (Figure 11.4). On the western side of the pit the uppermost part of the face consists of a single, large cross-bedded unit 4.8 m thick. The uppermost part of this unit is apparently decalcified but the lower part is very shelly with both fragmentary and complete shells, particularly those of *Neptunea, Nucella, Haustator, Arctica, Spisula* and *Cerastoderma.* A more extensive faunal list is given by Zalasiewicz *et al.* (1988). The base of this unit is marked by a thin lag gravel, mostly of flint pebbles up to 30 mm diameter (Figure 11.5). Below this unit is another, less shelly, cross-stratified unit with very clear alternations between finer-and coarser-grained foreset laminations (Figure 11.6). Such alternations are probably due to deposition by tidal currents with a marked diurnal inequality.

Several vertical fissures infilled by a soft, powdery white calcite are found at this site. These fissures were interpreted by Balson and Humphreys (1986) as tectonically induced joints. On the north-western face at this locality is an oblique fracture which appears to offset adjacent sedimentary laminae as a reverse fault.

Interpretation and evaluation

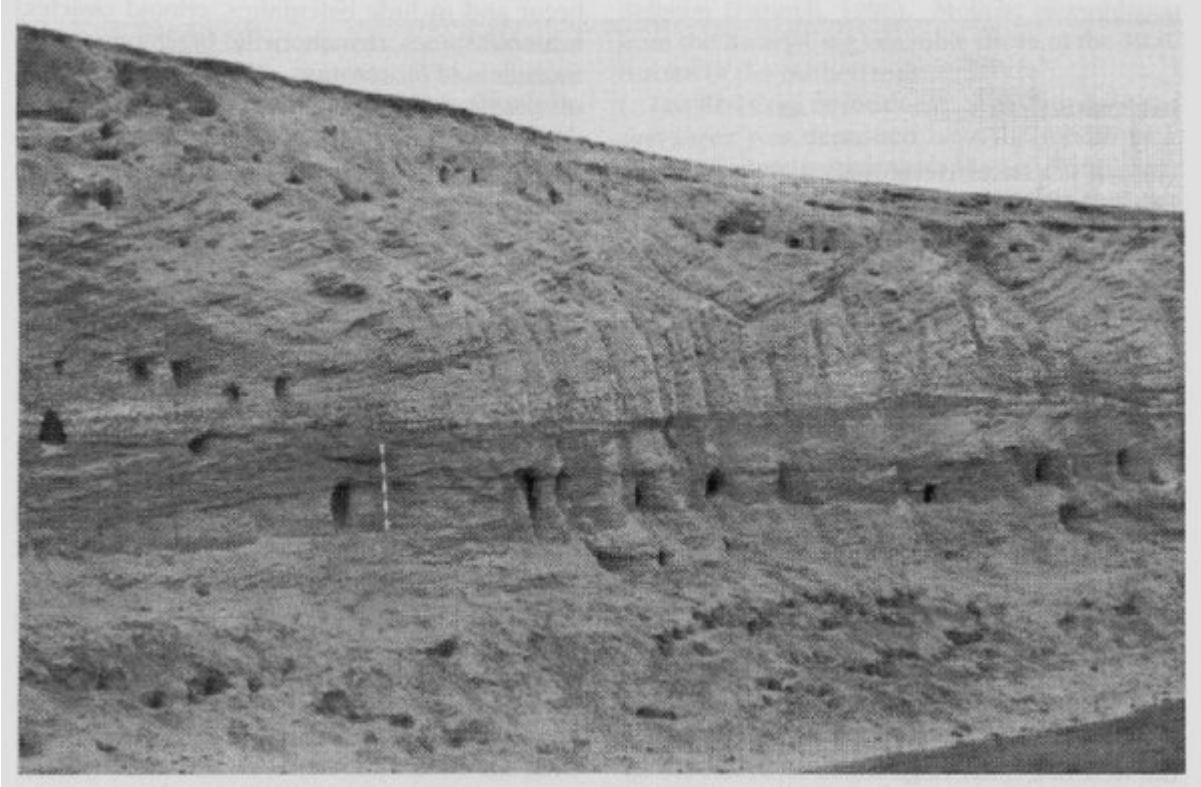
The pit at Buckanay Farm provides an excellent opportunity to examine a variety of features of cross-bedding in a tide-dominated shallow marine deposit. The direction of sand transport indicated by the dip direction of foresets is to the west-south-west, which is the dominant direction seen at many other Red Crag localities. At Bawdsey Cliff [TM 345 385]–[TM 350 39] just over 4 km to the south, the dominant direction is to the north-north-east although smaller structures show subordinate transport to the west-southwest. These opposing directions are probably due to the dominance of either flood or ebb currents at each site. Evidence of tidal rhythms in the form of alternations in grain size and layer thickness in the foresets of the cross-bedded units is well shown at Buckanay Farm and is present at many Red Crag sites. The evidence of regional transport paths together with tidal cyclicity gives the opportunity to reconstruct the tidal regime within the Red Crag sea.

Non-marine molluscs are very rare in the Red Crag but have been recorded from this site and at Neutral Farm, Butley and Walton-on-the-Naze.

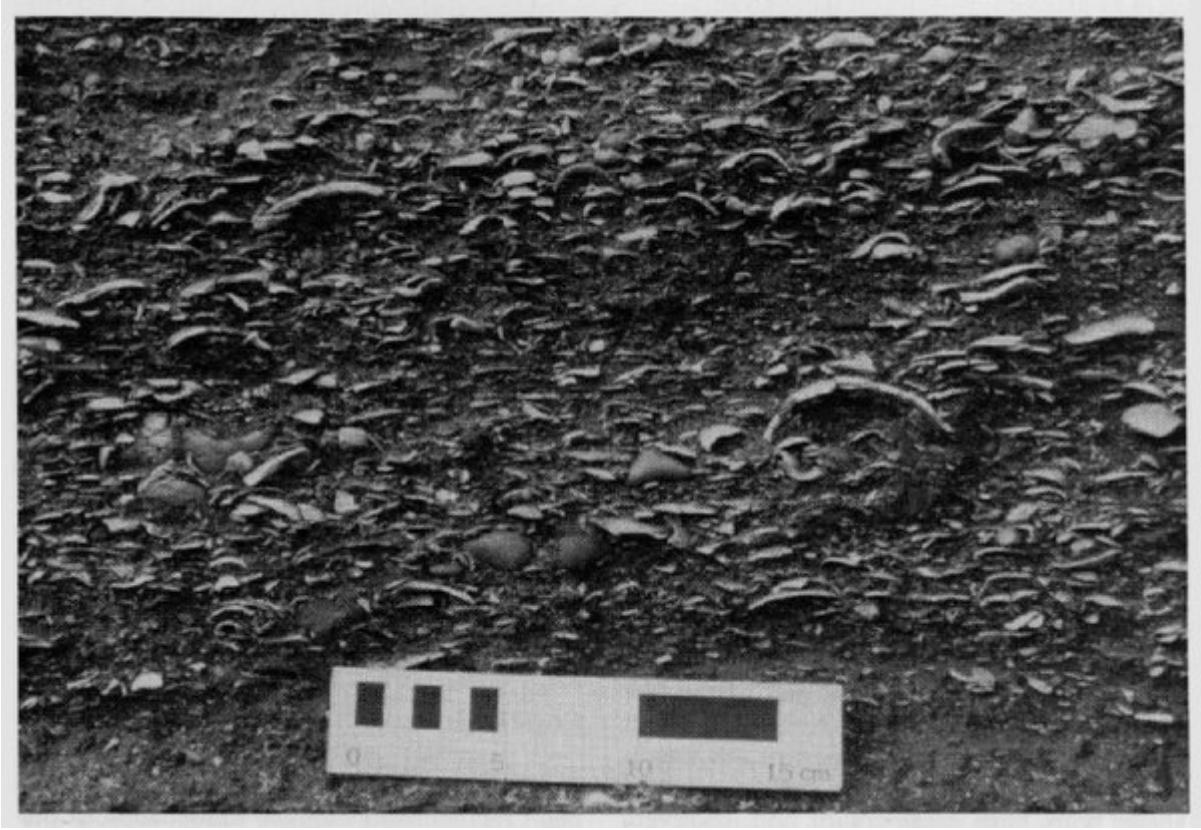
Conclusions

The Buckanay Farm pit is one of the best inland Red Crag exposures for the examination of the sedimentary structures associated with the cross-bedded tidal sandwave facies of the formation.

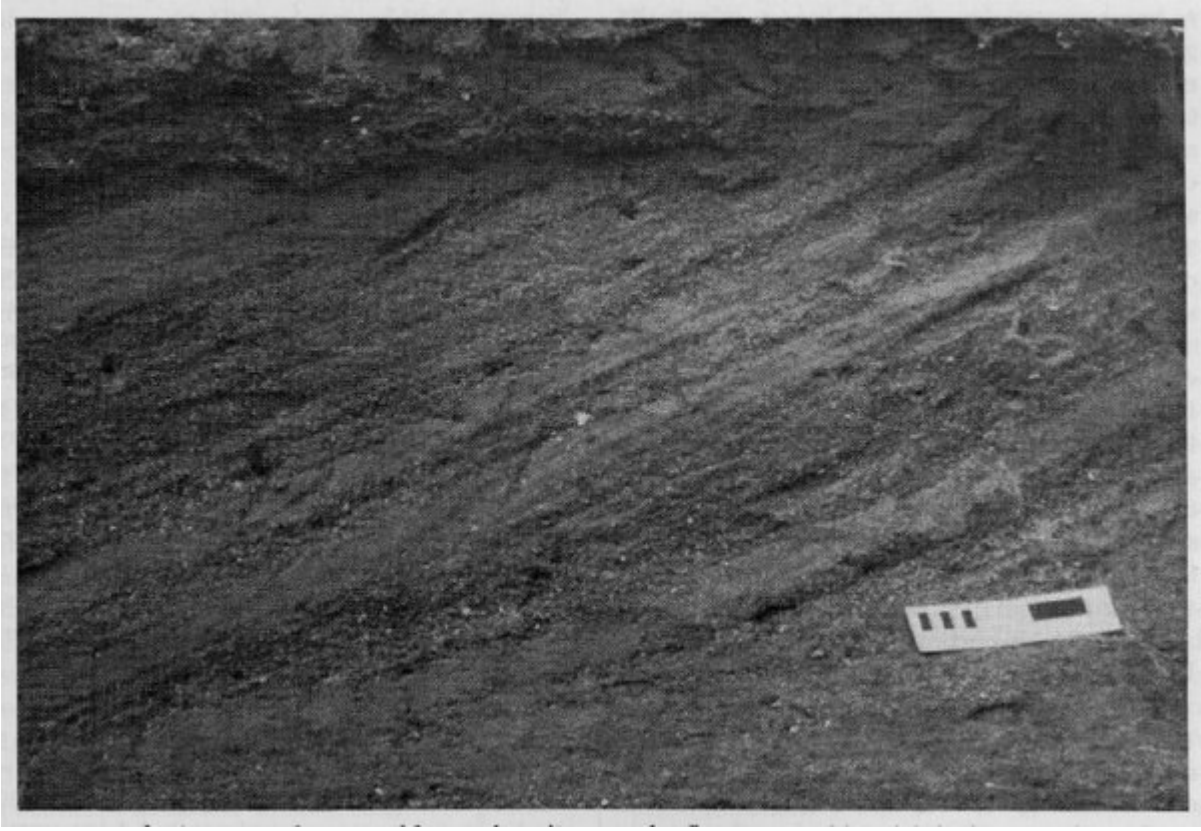
References



(Figure 11.4) Face at Buckanay Farm showing the cross-bedded unit with abundant shell material (see (Figure 11.5)) overlying a smaller-scale cross-bedded unit depicted in (Figure 11.6). Scale is 1 m long. (Photograph: P Balson).



(Figure 11.5) Coarse shelly sediment with pebbles near the base of the large cross-bedded unit shown in (Figure 11.4). (Photograph: P Balson.)



(Figure 11.6) Alternating foresets of fine and medium sand reflecting possible tidal rhythms. Scale is 15 cm long. (Photograph: P Balson.)