
Waldringfield Heath, Suffolk

[TM 257 447]

Highlights

The large working pit at Waldringfield Heath exposes the largest and most spectacular section in the uppermost parts of the Red Crag which consist of horizontally-bedded sands with abundant vertical burrows indicative of nearshore or intertidal sandflats.

Introduction

Although pits at Waldringfield are mentioned in the literature of the 19th century (e.g. Wood and Harmer, 1877; Reid, 1890), the pit at Waldringfield Heath 2 km west of the village of Waldringfield is more recent. The pit does not appear on the Ordnance Survey map of 1928 and appears as only a long and narrow incision after the remapping of 1938–1953. At present the pit is being backfilled as extraction continues, with active excavation concentrated in the south-west corner of the site. The Red Crag here is overlain by Glacial Sands and Gravels which are being exploited for building sands and aggregates. The Red Crag is being extracted primarily for use as constructional fill. Using the stratigraphical terminology of Harmer (1900a), this pit exposes the Red Crag 'Newbournian' Stage, named after the village of Newbourne which lies approximately 2 km to the south-south-east of this site.

This site was also independently selected for its Quaternary stratigraphy content, a more detailed account of which can be found in the GCR series volume *Quaternary of East Anglia and the Midlands* (Allen *et al.*, in prep.).

Description

Evidence from nearby boreholes (Allender and Hollyer, 1972) indicates that the Red Crag is approximately 13 m thick at this location, resting unconformably upon the London Clay at approximately +7.3 m OD. The record of a thin bed of Coralline Crag 6 inches (0.15 m) thick beneath the Red Crag at 'Waldringfield' relates to a former pit north-east of Waldringfield Church (Whitaker, 1885; Reid, 1890) approximately 3 km east of this site. The base of the Red Crag cannot be seen in the pit but has been reached by the excavation beneath the water table. In some places spoil material derived from excavations into the floor of the pit contains irregular lumps of London Clay and abundant material from the basal conglomeratic lag deposit. This material includes small well-rounded phosphatic pebbles, phosphatized shark teeth and flint cobbles. The flints are commonly more than 40 cm in diameter and are subangular with fracture surfaces which may be encrusted with barnacles of Red Crag age indicating that the fractures are not due to damage during excavation. The presence of such large flints at the base of the Red Crag has formerly been interpreted as due to transport by ice (e.g. Lankester, 1912). Lye (1852) described similar large flints encrusted by barnacles at Wherstead approximately 10 km to the west and observed that the distribution of barnacles indicated that the flints could not have been overturned during Red Crag deposition. The source of the flints and the time of their transportation into the area are unknown; the nearest outcrop of Chalk is 12 km to the north-west. In exposures above the water table the Red Crag can be seen to consist of cross-bedded shelly sands (Figure 11.20) from which a large fauna of molluscs can be obtained. Large *Neptunea contraria* and *Glycymeris glycymeris* are particularly conspicuous. Other common molluscs include *Hinia* spp., *Natica multipunctata*, *Scaphella lamberti*, *Haustator incrassata*, *Arctica islandica*, *Cerastoderma edule*, *Aequipecten opercularis*, *Mya arenaria*, *Mytilus edulis*, and *Spisula* spp. A more extensive list of the fauna is given by Markham (1966).

Decalcification which has removed all calcium carbonate from the sediments affects the upper parts of the Red Crag. The decalcification front is extremely irregular, often undulose, but may interfinger down individual foreset units so that there may be an alternation of decalcified and non-decalcified layers. Where decalcified, the cross-bedded Crag appears as a ferruginous, medium to coarse, poorly sorted sand with small rounded pebbles up to 20 mm diameter. In some of the more iron-cemented bands, moulds of mollusc shells are clearly visible. Silt drapes along foreset planes are locally

present. On the south-eastern face of the pit these coarser sands are overlain by a cross-bedded unit of fine sand with thin silty drapes and scattered thin ripple drapes which may reflect tidal rhythms (Figure 11.21). This unit is overlain by trough cross-bedded medium to coarse sands, often with lenses of gravelly sand with abundant flint and quartz pebbles. The uppermost part of these trough cross-bedded sands is penetrated by large numbers of vertical burrows which descend from individual bedding planes (Figure 11.22). The burrows may exhibit complex upward-branching patterns (Figure 11.23). Occasional U-shaped burrows are also seen.

The upper surface of the Red Crag is cut by a number of shallow channels over 10 m across and with a sandy infill and gravelly channel lag at the base. It is not clear whether these channels are contemporaneous with Red Crag deposition or whether they are a later feature associated with deposition of the overlying Pleistocene Sands and Gravels. These overlying deposits are designated as the 'Waldringfield Gravels' and considered to be part of the middle Pleistocene fluvialite Kesgrave Sands and Gravel Formation by Allen (1984). Nearby boreholes have proved an average thickness of just over 4 m for this formation (Allender and Hollyer, 1972).

Interpretation and evaluation

The pit at Waldringfield Heath exposes large, laterally continuous sections in a shallowing-upward sequence in the Red Crag which can be compared to those exposed further north at Vale Farm and Broom Covert.

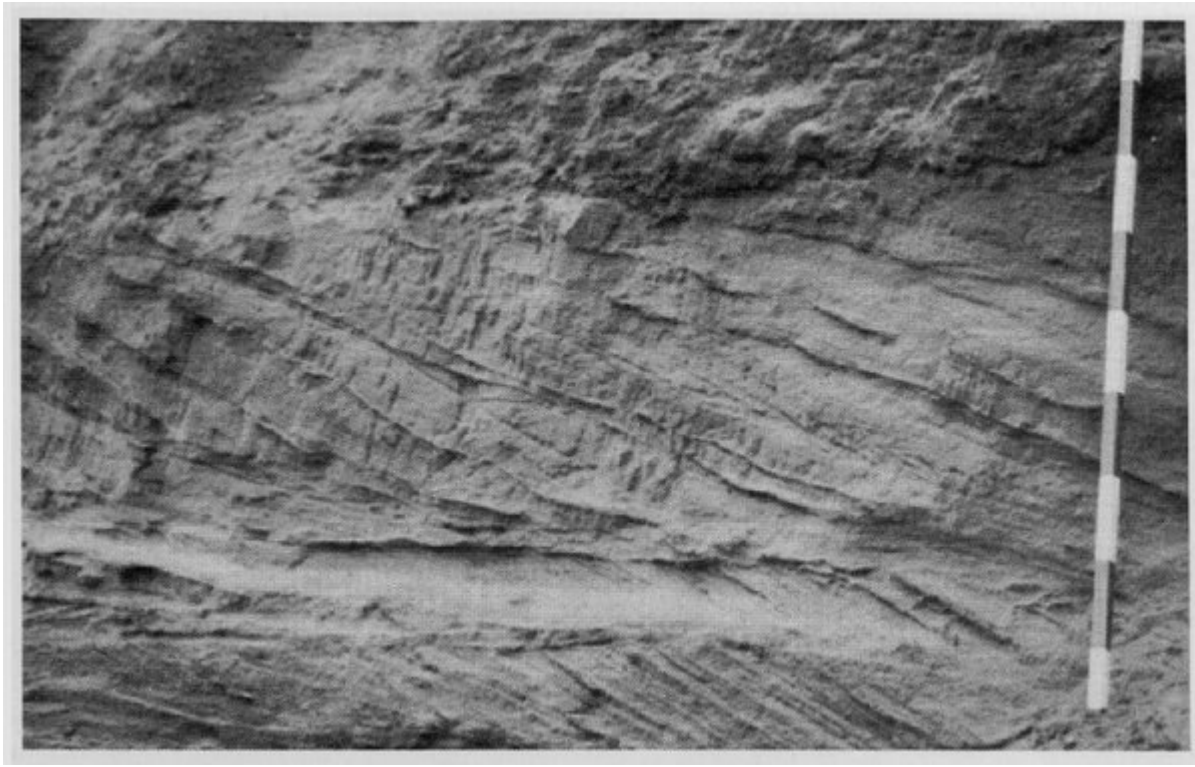
Conclusions

The section at Waldringfield Heath is an important site for the study of sedimentary environments in the Red Crag and, because of the active working, is continually exposing fresh sections. Excavations beneath the water table mean that material from a vertical sequence of over 13 m of Red Crag can be collected, making this one of the thickest available sequences for study.

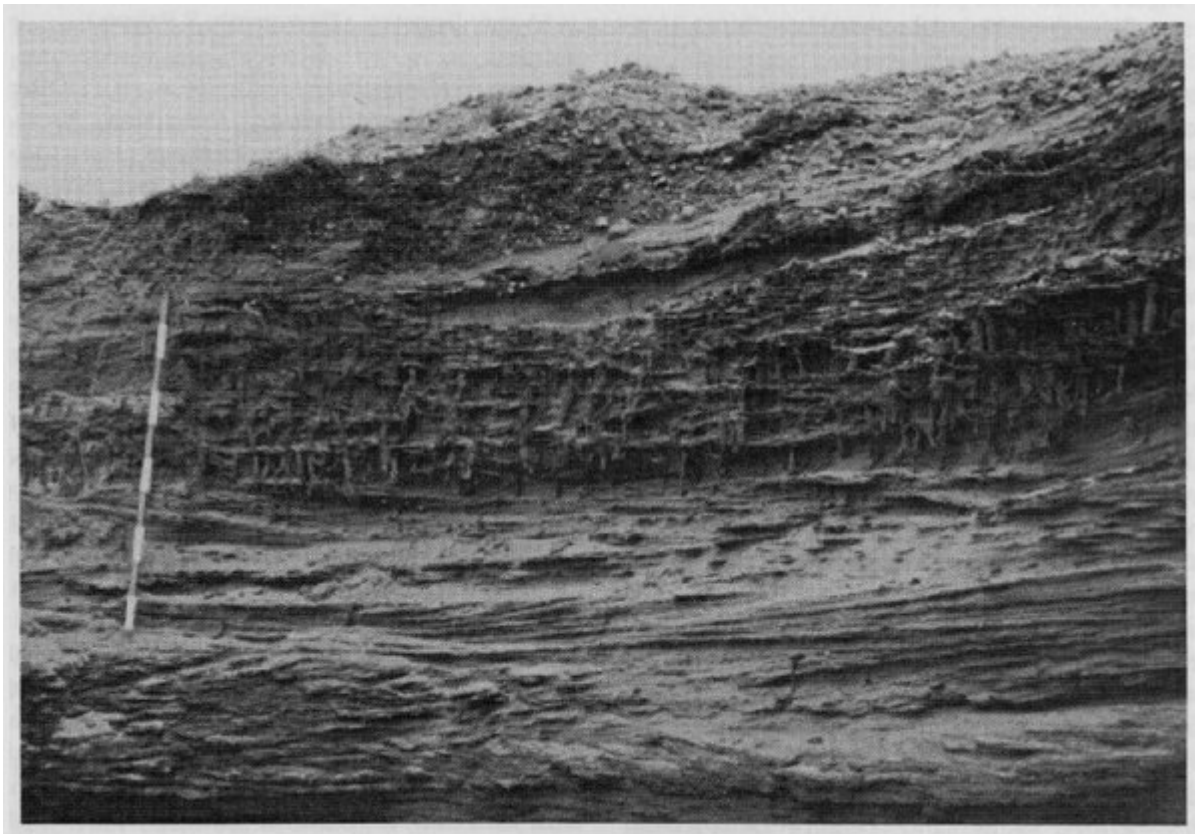
[References](#)



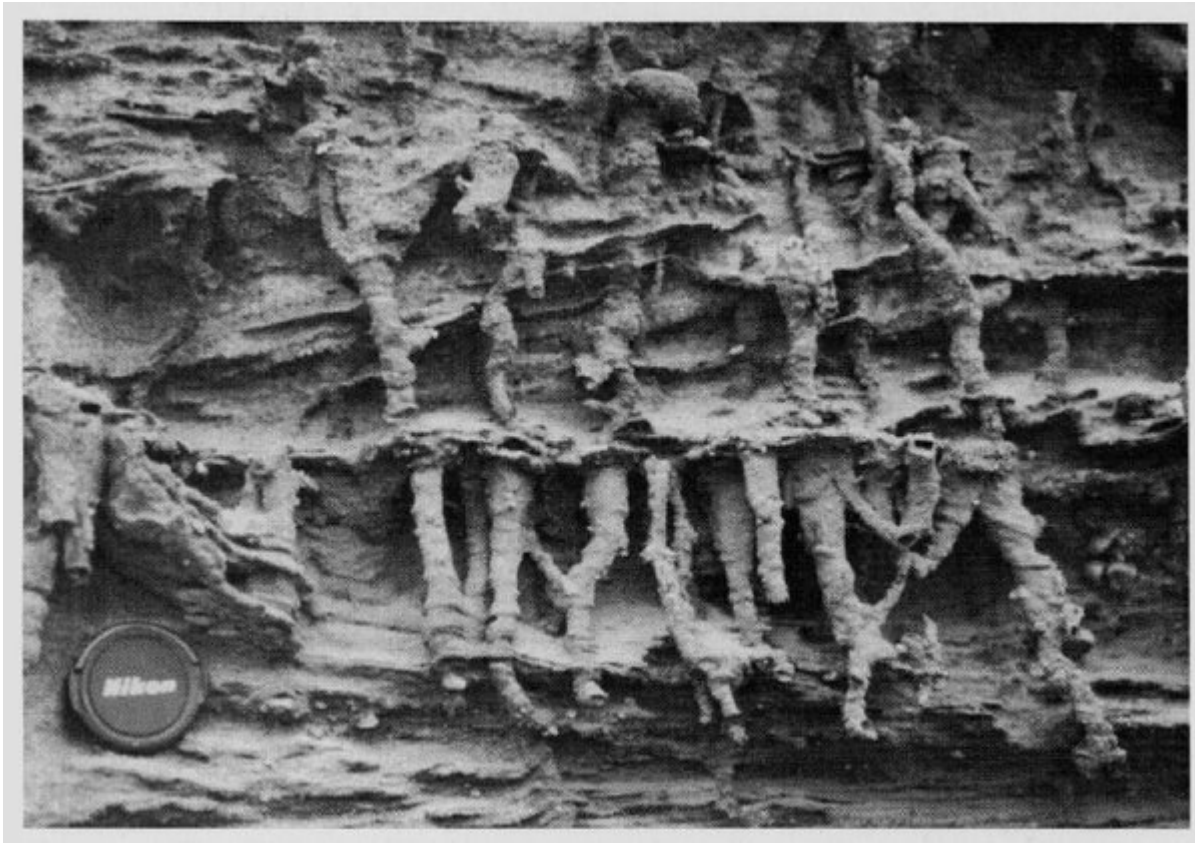
(Figure 11.20) Large-scale cross-bedding in the lower part of the Red Crag section at Waldringfield Heath. (Photograph: P Balson.)



(Figure 11.21) Cross-bedding with mud drapes in decalcified Red Crag, Waldringfield Heath. Scale is 1 m long. (Photograph: P Balson.)



(Figure 11.22) Trough cross-bedded possible tidal flat sands with abundant vertical burrows near the top of the Red Crag section at Waldringfield Heath. Scale is 1 m long. (Photograph: P Balson.)



(Figure 11.23) Well-preserved vertical burrows in decalcified Red Crag sediments at Waldringfield Heath. Note the occasional upward branching. Lens cap is 53 mm diameter. (Photograph: P Balson.)