Case study 34: A Buried Soil from Castle Rising, Norfolk

Matthew Canti

This case study is based on Canti, M. *A Buried Soil from Castle Rising, Norfolk* Ancient Monuments laboratory Report 71/89, English Heritage

Introduction

Samples of a buried soil from excavations at the Castle Rising Ticket Office site were sent for laboratory description and analysis. The buried soil (or buried A horizon) had formed on dark yellow brown sand (possibly decalcified boulder clay, which in turn lies above chalky boulder clay). The soil is buried by redeposited chalky boulder clay.

If the parent dark yellow brown sands were calcareous, then a gradual process of decalcification would have slowly reduced the pH and altered the biological activity to a point where podsolisation ensued. Since no bleached layer or relic Bs horizon exists, it can be assumed that the point had not been reached at the time of burial. However, evidence of grain bleaching and the dark colour of the humus in the buried A horizon suggests that this soil was on the turn from a brown sand to a brown podsolic soil. Such soils do not usually have a depth of A horizon (190 to 360mm) that was found here, so the possibility of artificial deepening and disturbance must be borne in mind.

Methodology

Samples were taken from: the interface between the top of the buried soil and overlying redeposited chalky boulder clay using a kubiena tin; the interface between the base of the buried soil and the underlying dark yellowish brown sand also using a kubiena tin; and the whole of the buried soil, with both underlying and overlying deposits using a monolith tin.

The kubiena tin samples were impregnated, sectioned and examined microscopically. The monolith was described and sampled for particle size analysis to provide information on likely horizon relationships (Figure 1).

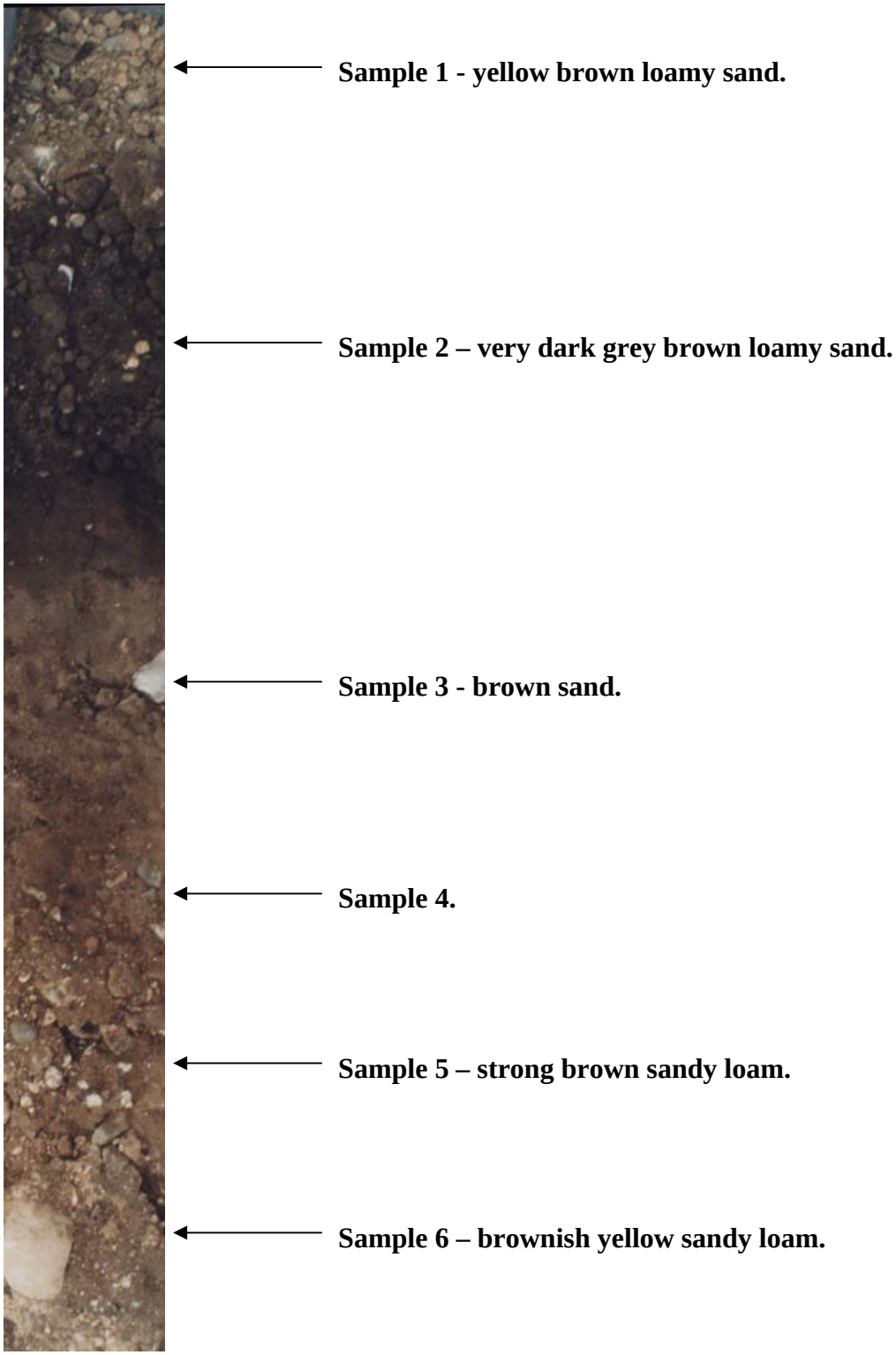

Figure 1: The soil monolith.

Samples for particle size analysis were dried, disaggregated and sieved to determine the size distribution in the sand and stone fraction. Fine material was analysed with a sedigraph 5000ET.

Results

Four of the deposits are related in terms of particle size (Figure 2). These are the immediate overburden, the dark buried soil and the two samples of subsoil. Their essential similarity is in the degree of sorting (steep slope) in the central (600 to 100μm) part of the curve. The >4mm fractions are reasonably well matched, which vindicates the suggestion that the dark soil is *in situ*, and shows that its overburden is likely to be natural subsoil transported from nearby.

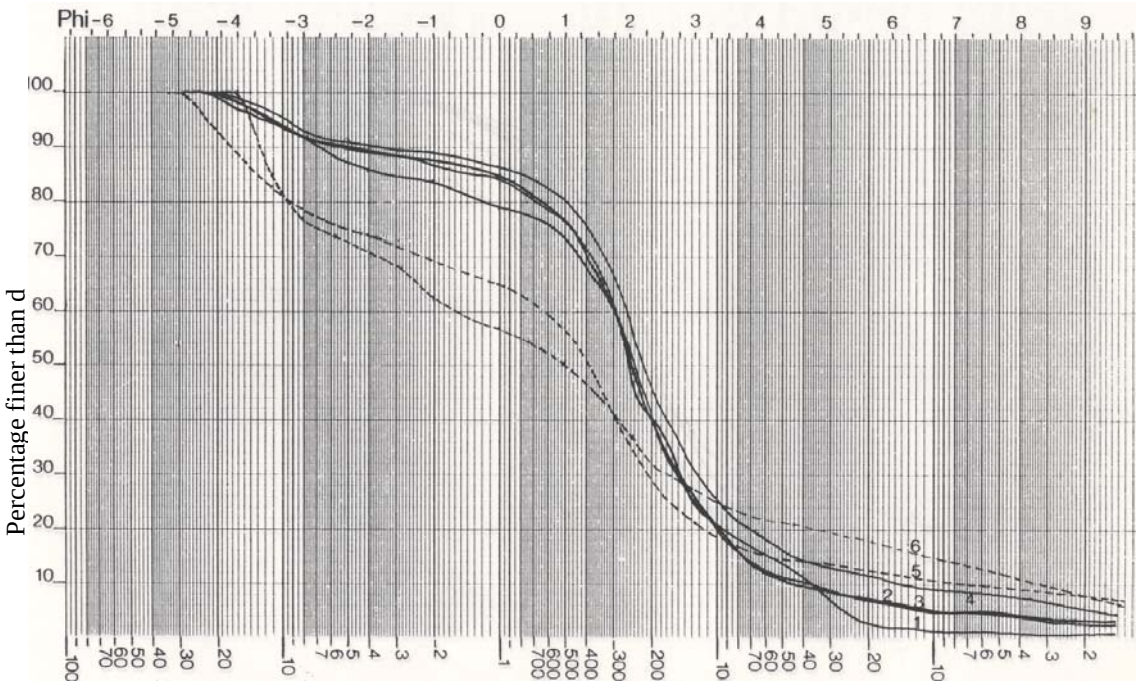

Figure 2: Particle size analyses.

The remaining two samples on Figure 2 (dotted lines), from the base of the monolith have higher stone content but still show a degree of sorting in the medium sand fraction. The implication is that well sorted sand has been mixed with an unsorted material in varying proportions. Castle Rising is lying on the border of the Cretaceous Sandringham sands and boulder clay, which would have provided these materials.

Material from the base of the monolith is largely boulder clay influenced. The middle and upper parts, including the buried soil and its overburden, are composed more of well-sorted sand. The overburden was found to be mostly near-identical origin to the subsoil and the buried soil.

Discussion

Micromorphology showed the fabric of the buried soil to consist largely of bleached quartz grains, pellety humus and dense angular fragments of mor-type humus. Throughout the soil are scattered grains of chalk, which are anomalous within such a soil regime. Further evidence of exotic input can be found at both the top and bottom of the buried soil including chalky mortar and a piece of pot.

The juxtaposition of mor-type humus with occasional chalk grains and anthropogenic inputs would suggest a degree of disturbance to the natural acid soil, which may or may not be associated with the actual burial. The unusual depth of the A horizon would therefore seem to be artificial. The amounts of exotic contamination is insufficient to indicate dumping, but their depth in the profile suggests considerable topsoil upheaval, for example raking. The burial proper was initiated with a layer of very local subsoil material.