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## Chapter 5 Essex

### Introduction

Several sites in the extreme south-west of Essex have been described already, in Chapter 4, as they fall within the Lower Thames valley. Pleistocene fluvial deposits are widespread in the remainder of the county and their study has been of great importance in reconstructing the evolution of the Thames drainage system. The succession in Essex comprises not only the deposits of the River Thames (both pre- and post-diversion), but also of its major right-bank tributary, the Medway. A number of more recently formed left-bank Thames tributaries, which now drain the northern part of the county (Figure 5.1), are also represented. Pleistocene sites in this area included in the Geological Conservation Review invariably reflect aspects of drainage development. At a few sites, interbedded glacial sediments are included, from which can be demonstrated the advance of the Anglian ice sheets into the area. Buried soil layers form an important part of the interest at some sites. There are also a number of important Palaeolithic localities, the most notable of which is at Clacton, the type locality for the Clactonian Industry and a site of great importance to Pleistocene geology.

A large part of Essex is covered by Pleistocene deposits. In addition to fluvial sediments, a widespread covering of till dominates the higher land in the north-western half of the county ((Figure 5.1); Whiteman, 1987). Considerable spreads of mostly fluviatile gravel both underlie and overlie much of the till and extend over large parts of the remaining, unglaciated districts. In addition to the Lower Thames deposits, described in Chapter 4, these gravels can be separated into three main divisions (Figure 5.1): (1) the Kesgrave Sands and Gravels of central and northern Essex, which are pre-diversion Thames deposits laid down prior to the Anglian glaciation, (2) the East Essex Gravels, Medway and Thames-Medway deposits that form terraces running parallel to the Essex coast, and (3) the deposits of local rivers that have developed as tributaries of the Thames-Medway system following the Anglian glaciation. This chapter is divided into three parts, corresponding to these three categories of fluvial deposits.

Both the Kesgrave and East Essex Gravel Groups are made up of several component (terrace) gravel formations; High-level and Low-level Subgroups can be recognized within both groups (Table 5.1).

Research in this area has been less extensive than in the present Thames valley, although the fluvial record in Essex is now acknowledged as critical for reconstructing the development of Thames drainage during the Pleistocene. Prior to the definition of the Kesgrave Sands and Gravels by Rose and Allen (1977; Rose *et al.*, 1976), few authors regarded any of the gravels in Essex outside the Lower Thames valley as products of that river. Because the pre-  diversion (Kesgrave) Thames gravels are overlain by Lowestoft Till over a wide area (Figure 5.1), they were commonly attributed to glaciofluvial processes, an interpretation that has continued to receive support (Wilson and Lake, 1983). Recent work in north-eastern Essex has revealed remnants of temperate-climate deposits interbedded with the various formations of the Low-level Kesgrave Subgroup (Bridgland, 1988a; Bridgland *et al.*, 1988). These promise to facilitate both the dating of the pre-diversion Thames formations and correlation of the Thames sequence as a whole with the established Pleistocene stratigraphy of East Anglia and that of north-west Europe (Gibbard *et al.*, 1991).

The East Essex Gravels have been variously attributed to marine processes, to the River Medway, to the Thames-Medway, or to glaciofluvial sedimentation (see Part 2 of this chapter). Recent work (Bridgland, 1980, 1983a, 1983b, 1988a) has shown that Medway and Thames-Medway deposits are represented by the High-level East Essex Gravel and Low-level East Essex Gravel Subgroups, respectively. The change from the former to the latter coincided with the diversion of the Thames (by Anglian ice) into its modern valley and, thereby, into the old Medway valley, which was already in existence across eastern Essex. The Low-level East Essex Gravel is represented in GCR sites at Clacton, East Mersea and Southminster.

Relatively little information has come from the deposits of the more recently formed tributary rivers, those which now have separate estuaries on the North Sea coast. Their deposits have yielded occasional artefacts and fossils, but interglacial sediments have rarely been recorded. However, these rivers provide the only fluvial record of the Late Pleistocene in Essex, as a combination of subsidence of the North Sea Basin and the low base level of the main river

during the Late Pleistocene have resulted in Thames deposits of this age being confined, east of London, to the buried channel beneath the modern floodplain (see Chapter 4). The complex GCR site at East Mersea includes the only sediments within the GCR Thames coverage that can be ascribed with any confidence to the Ipswichian Stage (*sensu* Trafalgar Square); these are the Blackwater deposits described in Part 3 of this chapter, not the complex Thames-Medway sequence at Cudmore Grove, which appears in Part 2. Another Blackwater site, at Great Totham, provides probably the only example of Devensian fossiliferous deposits in the present volume (see, however, Chapter 3, Brimpton).

(Table 5.1) Lithostratigraphy of fluvial gravels in Essex.

### Central and northern Essex

Deposits of local rivers

Anglian glacial deposits

Low-level Kesgrave Subgroup

High-level Kesgrave

Subgroup

Kesgrave Sands and Gravels  
Group

### Eastern Essex

Deposits of local rivers

Low-level East Essex Gravel

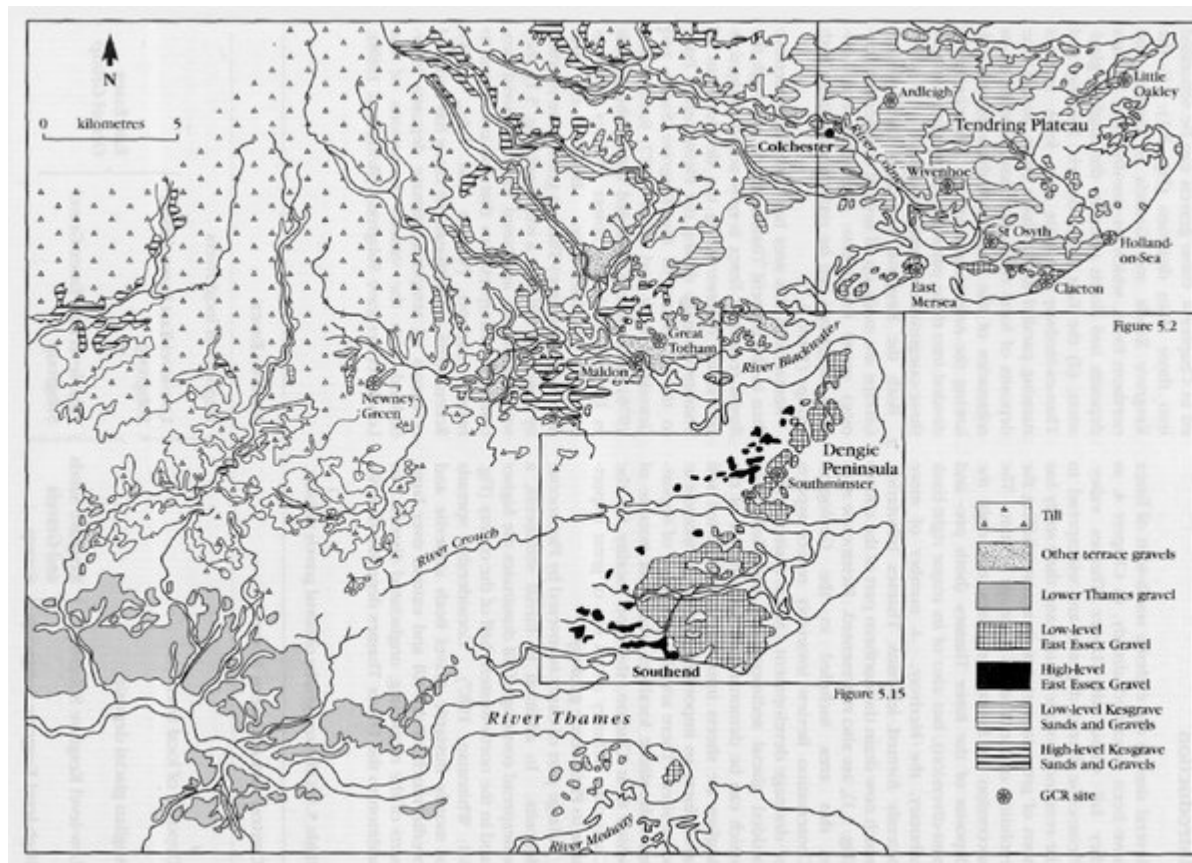
Subgroup

East Essex Gravel Group

High-level East Essex Gravel

Subgroup

### References



(Figure 5.1) Pleistocene geology of Essex, showing the various types of gravel described in this chapter, the extent of the Anglian till sheet and the relation of these to the existing drainage systems (modified from Bridgland, 1988a).

Central and northern Essex		Eastern Essex	
Deposits of local rivers		Deposits of local rivers	
Anglian glacial deposits		Low-level East Essex Gravel Subgroup	} East Essex Gravel Group
Low-level Kesgrave Subgroup	} Kesgrave Sands and Gravels Group	High-level East Essex Gravel Subgroup	
High-level Kesgrave Subgroup			

(Table 5.1) Lithostratigraphy of fluvial gravels in Essex.