
3 Pakefield cliffs

Grid reference [TM 537 885]

Close to the built-up areas of Pakefield and Kessingland, the beach and cliffs offer an escape into a wilderness of sand, sea, wind and tides. The cliffs present a broad, impressive front to the North Sea here; an array of greys, browns, whites and yellows draw the eye.

Visitors will see a dark bed of dense, grey-brown mud at the base of the cliffs south of Lighthouse Gap. This is the Rootlet Bed of the famous Cromer Forest-bed Formation, named after deposits of roughly the same age found in north Norfolk. It tells a story of life on the forested floodplain of a big river during one of the warm periods of the Pleistocene Ice Age. The river was huge, and probably drained much of central England. The mud is compacted, organic-rich sediment containing plant and animal fossils, evidence of life in conditions similar to southern Europe today. On drier ground, the forest was mostly pine and alder, with spruce, birch, oak and hazel. There were marshy grasslands and reed swamps on the valley floor, with bulrushes and warmth-loving water fern. Animals included familiar species such as wild boar, fallow deer, hippopotamus, lion and spotted hyena; extinct animals included straight-tusked elephant, giant beaver and sabre-toothed cat. We can also add early humans to the fauna.

In 2005, the scientific journal 'Nature' announced that finds of human flint tools at Pakefield were the earliest recorded human activity in northern Europe. These included worked flakes and choppers made of black flint. They were found in the Rootlet Bed and overlying river gravel known as the Unio Bed, named after the mussel shells found in it. Magnetic analysis of the sediment along with information derived from the evolution of vole teeth suggested that it could be dated to over 680,000 years ago. The human species was likely to be *Homo heidelbergensis*, thought to be the common ancestor of both modern humans and Neanderthal Man. Heidelbergers in Europe typically averaged about 170cm (5ft 7") in height and were robustly built, with powerful jaws. They made hand-axes and hunted with sharpened wooden spears.

The overlying strata in Pakefield Cliff are evidence for later environmental change. Sea levels rose, depositing a sequence of mostly shallow marine sands and gravels. At the top of the cliff, the solid-looking grey clay containing chalk pebbles is a till, laid down beneath a massive ice sheet during the Anglian glaciation about 450,000 years ago. It is known as the Lowestoft Till Formation, a major component of the geology of Suffolk.

Figure

(Figure 7) The brown sediments of the Rootlet Bed can be seen at the base of the cliffs between Pakefield and Kessingland.

(Figure 8) A scene at Pakefield during a warm interglacial period 680,000 years ago. © Beverly Curl

(Figure 9) The antlers of *Dama roberti*, a newly discovered species of fallow deer, from Pakefield. © Norfolk Museums Service (Norwich Castle Museum and Art Gallery). Photograph by Dr Marzia Breda.



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A scene at Pakefield during a warm interglacial period 680,000 years ago. © Beverly Curl



The antlers of Dama roberti, a newly discovered species of fallow deer, from Pakefield. © Norfolk Museums Service (Norwich Castle Museum and Art Gallery). Photograph by Dr Marzia Breda.