Wicklesham Pit, Faringdon, Oxfordshire

[SU 292 943]

Highlights

Wicklesham Pit, Faringdon is a productive Greensand site where the abundant isolated bones and teeth of reptiles are found reworked from older levels. Remains of turtles, crocodilians, ichthyosaurs, plesiosaurs and dinosaurs have been reported.

Introduction

The Lower Greensand (Late Aptian) of Faringdon, Oxfordshire has been known as a source of fossil reptile bones for many years. Wicklesham Pit is the best current source of such bones. The bones occur in the Faringdon Sponge Gravels, beds famous for their invertebrate fossils (Arkell, 1947a; Casey, 1961; Krantz, 1972). The Lower Greensand occurs as several outliers south and east of Faringdon which are surrounded by Late Jurassic (Kimmeridge Clay, Corallian, etc.). Arkell (1947a, pp. 155–60) reviewed the occurrence and geology of the Faringdon Lower Greensand. Fossil reptile specimens from Faringdon have been noted by several authors, but the fauna has never been described.

Description

The sequence of the Faringdon Sponge Gravels has been given by Krantz (1972):

	Thickness (m)
Iron-rich sands	0–15
Laminated clays	0.9–16.8
Clay-rich sands, with two Fuller's earth bands	15–33
Red Gravels: quartz-rich sandstones, conglomerates with bioclasts, and cross-bedded coarse sands with sponges	2–8.7
Yellow gravels: fine- to medium-grained quartz-rich sandstones, with well-preserved sponges, brachiopods, bryozoa and echinoids	0–10

The Red Gravels and Yellow Gravels together are generally referred to as the Sponge Gravels, but the term is occasionally reserved for the Yellow Gravels alone. The Sponge Gravels are a basal conglomerate of the Lower Greensand which rest unconformably on Kimmeridge Clay or Corallian, and the unit is laterally extensive, extending 10 km or more south-east from Faringdon, according to borehole evidence (Krantz, 1972).

Arkell noted that Wicklesham Pit (photograph: 1947a, pl. 5) exposed an 8 m section of the Red Gravel. At 2–3 m from the bottom, he noted a pebble bed, about 0.3 m thick, 'full of bored mudstone nodules, and black phospathic fragments of ammonites (*Prionodoceras*) derived from the basal Kimmeridge [sic] Clay and Upper Calcareous Grit'. The pit has recently been reworked, and it displays an 8–10 m section of red-brown and brown unconsolidated sands with limestone beds and lenses. The exact localities of the older Faringdon fossils are uncertain — there were several pits operational at one time, including Little Coxwell Pit [SU 285 943] and Faringdon Pit [SU 288 943], both of which still exhibit sections (Krantz, 1972).

Fossils occur in consolidated and unconsolidated coquinas. These are all stained brown by iron oxide and phosphate, and include bryozoans, sponges, echinoderm spines, brachiopods, bones, phosphatic pebbles, ammonites, belemnites and fish teeth. The invertebrates are generally in good condition — brachiopod valves may still be articulated (though not in life position) — but the colonial organisms, such as sponges, are clearly not in growth position.

Fauna

On a brief visit to Wicklesham pit in 1983, M.J.B. collected fragments of vertebrae and ribs, proba bly from large marine reptiles. Similar specimens, as well as teeth, have been collected by field parties from Oxford University and Oxford Brookes University, among others (H.P. Powell, A. Kearsley, pers. comm., 1983). Reptile specimens from Faringdon are housed in the BGS(GSM), BMNH, CAMSM and OXFPM.

Testudines:

'turtle' CAMSM B58645 (scute)

Archosauria: Crocodylia

Dakosaurus CAMSM B58636, B58707–9 (teeth)

Ichthyosauria

'Ichthyosaurus' CAMSM B58640–2 (teeth); CAMSM B58643–4, B58696 (vertebrae)

Sauropterygia: Plesiosauria

Colymbosaurus CAMSM Zr 2240–5, 2250–3, 52368–9; CAMSM B58703–6 (teeth); BMNH 11901, 46382; CAMSM B5871 (vertebrae; limb bones)

Pliosaurus: CAMSM B58638–9, (teeth); CAMSM B58695 (vertebra)

Archosauria: Dinosauria

?sauropod, stegosaur, or ankylosaur: OXFPM (3 unnumb. teeth)

Interpretation

Arkell (1947a) suggested that the Faringdon Sponge Gravels collected as a sand-and-gravel bank on the sea bed some distance offshore in pre-existing hollows in the Kimmeridge Clay. Krantz (1972) noted that, although the unconsolidated sands and gravels accumulated within a channel during a transgressive episode, the contained invertebrate fossils are frequently very well preserved. She resolved this apparent paradox by suggesting that the fossils accumulated mainly on the protected western side of the channel where only the upper layers of the Sponge Gravels were reworked, and that the waters were rich in $CaCO_3$, which prevented the dissolution of calcareous fossils. Krantz (1972) argues that the sponges and bryozoans were torn up from their life positions on neighbouring hardgrounds formed on exposed areas of Corallian rock and were then mixed with previously abraded and sorted shell material. The overall palaeogeographic setting seems most comparable with a forereef deposit (Krantz, 1972). The vertebrate fossils appear to derive mainly from the Kimmeridge Clay, whereas the invertebrates are coeval with the time of deposition.

The reptile remains consist of teeth and vertebrae, which are usually identifiable at least as 'ichthyosaur' or 'plesiosaur'. Fragments of ribs and limb bones are hard to identify. The fauna, as far as can be assessed, is typical of the Kimmeridge Clay, from which most of the fossils apparently derive; marine ichthyosaurs, plesiosaurs and pliosaurs predominate. Some giant marine crocodilians (*Dakosaurus*) are also represented. The 'turtle' scute is more of a rarity, although several Kimmeridge Clay turtles are known. The dinosaur teeth are rather like the sculptured peg-like teeth of stegosaurs or ankylosaurs, but they lack the 'frilled' cutting edge, possibly as a result of abrasion; they seem very small for sauropod teeth. Woodward and Sherborn (1890, p. 219) note the plesiosaur genus *Cimoliasaurus latispinus* (Owen, 1854) from Faringdon. This is based on a vertebra (BMNH 11901) referred to a species originally described from the Lower Greensand of Maidstone (Lydekker, 1889a, pp. 222–3), but the species is likely to be a *nomen dubium,* being founded on scrappy material. *Cimoliasaurus* may be the same as *Colymbosaurus* (Brown, 1981), a long-ranging genus known especially from the Late Jurassic and Early Cretaceous of England, but with some earlier and later records.

Conclusions

The best available Greensand-type mid-Cretaceous site in Britain. A moderately diverse fauna of turtles, crocodilians, ichthyosaurs, plesiosaurs and dinosaurs is present. The site provides crucial evidence on the reworking of material from the Kimmeridge Clay locally and this important remanie fauna and the continuing availability of the site for collection substantiate its conservation value.

References