
BURNHAM-ON-CROUCH

OS Grid Reference: TQ921967

Highlights

An extraordinarily rich assemblage of fish taxa is present in the London Clay here. It is almost exclusively of elasmobranchs, and the potential for collecting remains very high.

Introduction

The tidal river cliffs (known as 'The Cliff'; Figure 14.11) and foreshore exposures at Burnham reveal a section through the clay-rich sediments of the London Clay, Division D. The foreshore at this locality is littered with large cementstone nodules that originate from the low cliff section. However, unlike Sheppey, these are largely unfossiliferous.

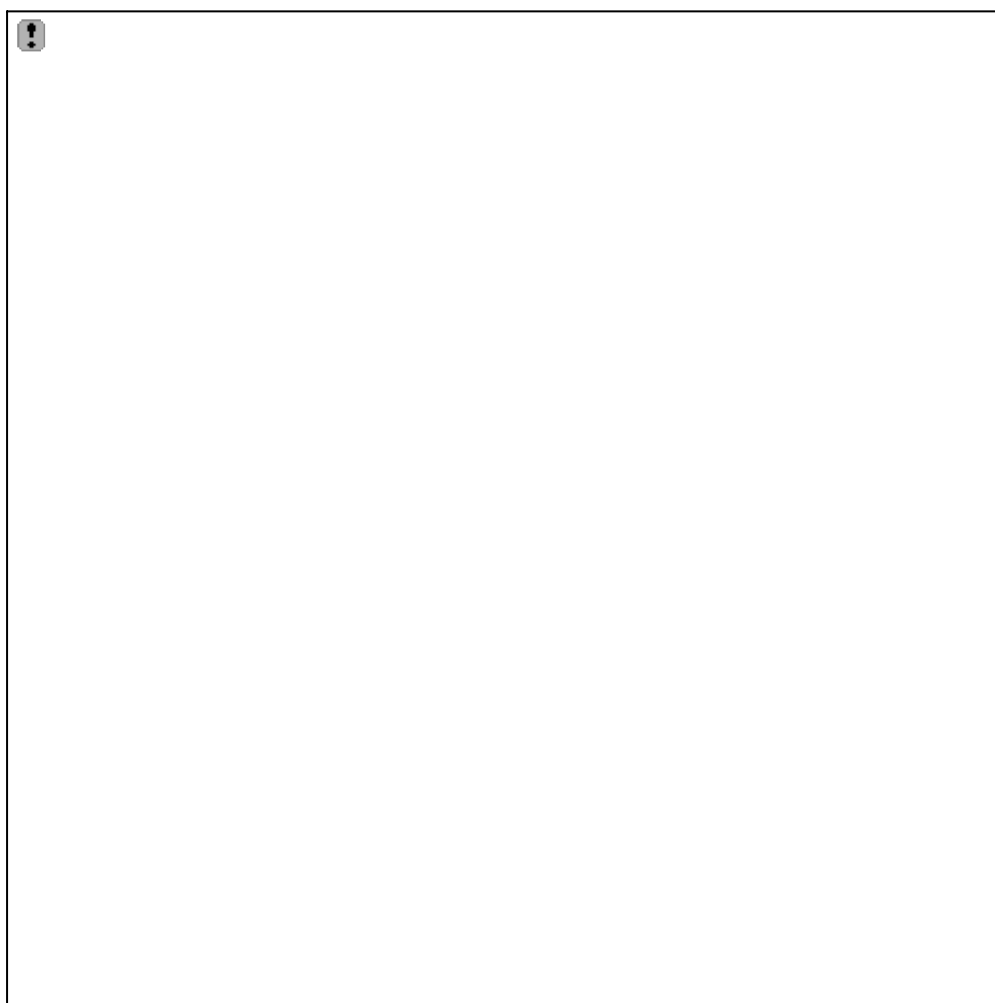


Figure 14.11: 'The Cliff' section, looking east, soil on London Clay, Burnham-on-Crouch, (photo: S.J. Metcalf).

A rich biotic assemblage can be collected loose from the foreshore, and it is possible to bulk sample the clay matrix for further microfossil remains. The fish fauna consists mainly of sharks, and in particular hexanchids, and Burnham is the type locality for several species.

Description

The 2–3 m thick outcrop of London Clay exposed in 'The Cliff' at Burnham is calculated to be about 26 m below the base of the Claygate Beds, and the strata falls within the top part of

Division D (King, 1981), at a palaeontological level defined as Unit P13 by Lake *et al.* (1986) for the Southend area.

Fauna

Chondrichthyes: Elasmobranchii: Neoselachii: Squalomorphii

Hexanchus agassizi Cappetta, 1976

H. hooker Ward, 1979

H. collinsonae Ward, 1979

Isistius trituratorus (Winkler, 1874)

Notorhynchus serratissimus (Agassiz, 1844)

Squalus minor (Leriche, 1902)

Weltonia burnhamensis Ward, 1979

Chondrichthyes: Elasmobranchii: Neoselachii: Squatinomorphii

Squatina prima (Winkler, 1874)

Chondrichthyes: Elasmobranchii: Neoselachii: Galeomorphii **Alopias crochardi** Ward, 1978

Anomotodon sheppeyensis (Casier, 1966)

Carcharias hopei (Agassiz, 1843)

Galeorhinus lefevrei (Daimeries, 1891)

G. minor (Agassiz, 1843)

G. recticonus (Winkler, 1873)

Heterodontus vincenti (Leriche, 1905)

H. woodwardi Casier, 1946

Isurus praecursor (Leriche, 1904)

Isurolamna affinis (Casier, 1946)

Jaekelotodus trigonalis (Jaekel, 1895)

'*Lamna*' *lerichei* Casier, 1946

Megascyliorhinus cooperi Cappetta and Ward, 1977

Mustelus whitei Cappetta, 1976

Odontaspis winkleri (Leriche, 1905)

Otodus obliquus Agassiz, 1836

Palaeohypotodus rutoti (Winkler, 1874)

Palaeorhincodon wardi (Herman, 1975)

Pararhincodon ypresiensis Cappetta, 1976

Physogaleus secundus (Winkler, 1874)

P. tertius (Winkler, 1874)

Scyliorhinus gilberti Casier, 1946

S. burnhamensis Cappetta, 1976

S. casieri Cappetta, 1976

S. pattersoni Cappetta, 1976

S. woodwardi Cappetta, 1976

'*Scyliorhinus*' *minutissimus* (Winkler, 1873)

'*S.*' *biauriculatus* (Casier, 1950)

Synodontaspis macrotus (Agassiz, 1843)

S. striatus (Winkler, 1874)

Triakis wardi Cappetta, 1976

Xiphodolamia eocaena (Woodward, 1889)

Chondrichthyes: Elasmobranchii: Neoselachii: Batomorphii

Burnhamia daviesi (Woodward, 1889)

Dasyatis davis Casier, 1966

Myliobatis raouxi Arambourg, 1952

M. dixon Agassiz, 1843

M. latidens Woodward, 1888

M. toliapicus Agassiz, 1843

Myliobatus sp.

Raja harrisae Ward, 1984

Raja sp.

Interpretation

Much that has been said for the Sheppey site can be repeated here, although the overall number and variety of elasmobranchs is smaller (Figure 14.12). Active galaeomorphs were the most abundant, but squalomorphs and batomorphs were common in the middle and lower (bottom) waters respectively. *Squatina prima* again is present.

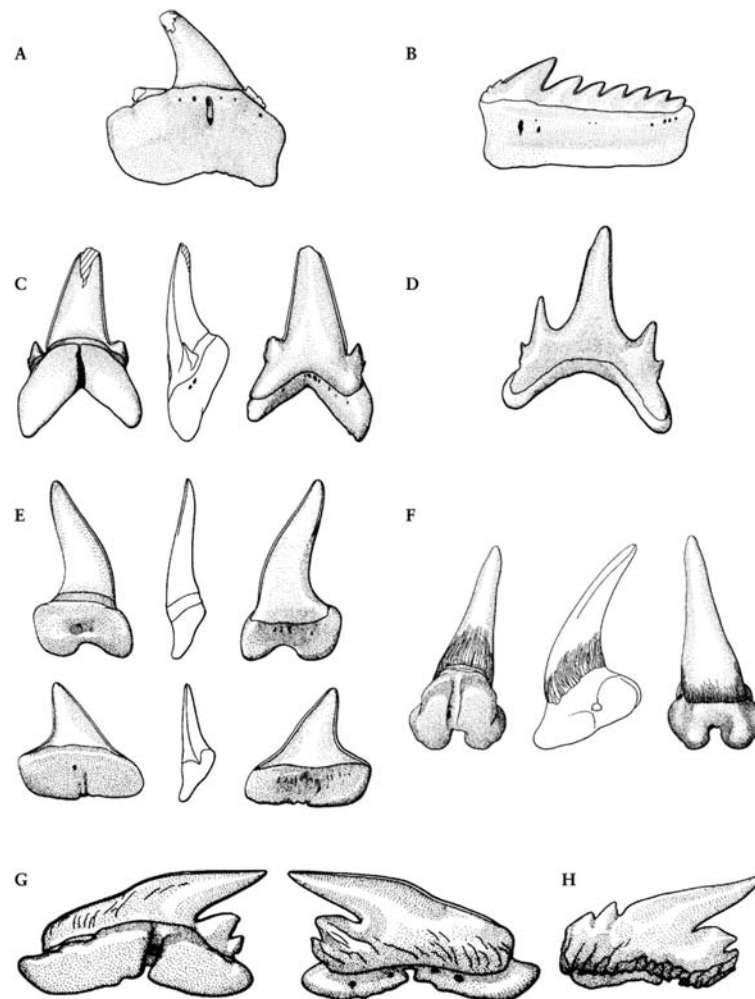


Figure 14.12: Chondrichthyes from Sheppey and Burnham-on-Crouch. Sheppey: (A) *Notorhynchus serratissimus* upper anterolateral tooth, $\times 5$. Burnham-on-Crouch: (B) *Hexanchus agassizi*, lower lateral tooth, $\times 5$; (C) *Hypotodus verticalis*, lower anterior tooth, $\times 4$; (D) *Odontaspis winkleri*, lower lateral tooth, $\times 4$; (E) *Xiphodlamia ecocaena*, $\times 3$; (F) *Megascyliorhinus cooperi*, $\times 10$; (G) and (H) *Triakis wardi*: (G) lower lateral tooth, $\times 2$; (H) upper lateral tooth, $\times 2$. (All figures after Cappetta, 1987.)

Comparison with other localities

Burnham-on-Crouch yields a similar fauna, in terms of composition and age, to that from the London Clay series (Division D) of Sheppey (q.v.). However, at Burnham the fish fossils occur free within the clay matrix and can be extracted by bulk sampling methods. Therefore, although whole fossil fishes are not found in nodules, the scattered bones and teeth are recovered in a much better state than similar remains recovered from Sheppey exposures.

Conclusions

Although the London Clay at this site is no more than 3 m thick, the conservation value of the site is derived from its very large fauna of macrofossils, both vertebrate and invertebrate. The vertebrate material corresponds to that of the London Clay, division D, at Sheppey. The fact that many taxa are poorly known, despite being first recorded many years ago, should stimulate collecting from a site which is relatively accessible and easy to work.

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