
Late Cretaceous (The Chalk)

The Late Cretaceous Chalk facies of Britain (Cenomanian–Maastrichtian) have produced rather sparse remains of mainly marine reptiles, and these are usually represented by isolated elements. However, examples have been found of most reptiles representative of the time, particularly of mosasaurs which had evolved during the Late Cretaceous as top carnivores in the Chalk sea. Ichthyosaurs, by Late Cretaceous times, had dwindled in significance, and the last specimens date from the Cenomanian. Plesiosaurs, in the form of elasmosaurids and pliosaurids, survived through the Late Cretaceous to the end of the period, but in reduced diversity and mainly in the southern hemisphere. Other marine tetrapods of the Late Cretaceous include turtles, notably the giant protostegids of the Niobrara Sea in Kansas and the marine diving hesperornithid birds of the same region. Pterosaurs are found occasionally in marine sediments, and Late Cretaceous forms were essentially the large to very large pteranodontids and azhdarchids. Terrestrial reptiles are rare in the Chalk, which is a marine deposit, so there is little evidence in Britain of the dramatic changes which occurred elsewhere during the Late Cretaceous. Dinosaurs burgeoned, with hadrosaurs, ceratopsians and ankylosaurs becoming especially diverse. Lizards, snakes and crocodilians also radiated, and rare examples have been found in the Chalk.

Reptiles have been found at 50 Chalk localities, based on literature references and museum specimens. These are listed below by county from the south-west to north-east, with zones indicated, where known:

DORSET: Weymouth (Lower Chalk; ?exact locality; *Rhinochelys*; Delair, 1958, p. 54).

SOMERSET: Frome ([ST 77 47]?; *Polyptychodon*).

WILTSHIRE: Norton Ferris (Lower Chalk, *varians* Zone; [ST 79 36]; unidentified bones); Porton Railway Cutting (Upper Chalk, *coranguinum* Zone; [SU 19 36]; *Leiodon*; Jukes-Browne and Hill, 1904, pp. 83–4); Highfield (Upper Chalk, *marsupites* Zone, ?[SU 00 38]; plesiosaur; Jukes-Browne and Hill, 1904, pp. 83–4); Harnham (Upper Chalk, *quadratus* Zone; ?[SU 14 28]; *Leiodon*, plesiosaur; Jukes-Browne and Hill, 1904, pp. 83–4).

HAMPSHIRE: Horsebridge (Upper Chalk, *quadratus* Zone; [SU 34 30]; mosasaur); Shawford waterworks, Southampton ([SU 47 25]; *Rhinochelys*, *Mosasaurus*); Portsdown (Upper Chalk, *mucronata* Zone; [SU 64 06]; *Leiodon*, Jukes-Browne and Hill, 1904, pp. 59–60).

ISLE OF WIGHT: Shanklin ([SZ 58 81]; *Polyptychodon*).

WEST SUSSEX: Charlton (Upper Chalk; [SU 88 12]; *Chelone*); Arundel, ([TQ 01 07]; *Chelone*); Houghton (Lower Chalk; [TQ 01 11]; '*Cimoliosaurus*', *Polyptychodon*); Washington, near Worthing ([TQ 12 12]; *Coniasaurus*; White, 1928, pp. 36, 40); Steyning (Lower Chalk; [TQ 17 11]; '*Cimoliosaurus*', *Polyptychodon*; White, 1928, p. 36).

EAST SUSSEX: Saddlescombe (Middle–Upper Chalk, [TQ 2700 1162]; '*Cimoliosaurus*'; White, 1928, pp. 38, 40, 44; Young and Lake, 1988, p. 68); Brighton (?exact locality; *Chelone*); Kemp Town, Brighton ([TQ 33 03]; *Leiodon*; White, 1928, pp. 32, 42, 50, 53, 56–7, 59); Clayton Pit, Falmer (Upper Chalk; [TQ 35 08]; *Coniasaurus*, *Polyptychodon*; White, 1928, pp. 35–6, 38); Balcombe Pit, Glynde (Lower Chalk; [TQ 4605 0850]; *Chelone*, *Polyptychodon*; White, 1928, pp. 48, 51; Lake and Shephard-Thorn, 1987, pp. 69–70); Southerham Grey Pit, Lewes (Lower–Middle Chalk; [TQ 4280 0900]; *Chelone*, *Protostega*, *Rhinochelys*, *Dolichosaurus*, *Mosasaurus*, *Polyptychodon*, '*Cimoliosaurus*', *Ornithocheirus*; Jukes-Browne and Hill, 1904, pp. 46–58; Lake and Shephard-Thorn, 1987, p. 68).

SURREY: Dorking (L. Chalk; [TQ 160 503]/[TQ 200 510]?; *Protostega*, *Mosasaurus*, *Polyptychodon*; Owen, 1860); Betchworth (Lower Chalk, *subglobosus* Zone, [TQ 205 515]; *Ornithocheirus*).

KENT: Folkestone (Lower Chalk etc., ?*naviculare* Zone; TR 2438 and east; *Rhinochelys*, *Polyptychodon*, *Ophthalmosaurus*, *Acanthopholis*; Huxley, 1867b; Etheridge, 1867; Jukes-Browne and Hill, 1904, pp. 135, 137; Smart *et al.*, 1966, pp. 118–19, 128–9); Lidden Spout, near Folkestone ([TR 281 387]; *Dolichosaurus*); Dover ('Chalk Marl', 'Grey Chalk', Lower Chalk, [TR 31 41], ?exact locality; some from Round Down Tunnel at [TR 297 395]; *Chelone*, *Rhinochelys*,

Polyptychodon, *Ophthalmosaurus*; Jukes-Browne and Hill, 1904, pp. 135–43); Ramsgate (Upper Chalk; [TR 38 65]; *Mosasaurus*); Northfleet ([TQ 62 74]; *Chelone*); Gravesend (Upper Chalk, *coranguinum* Zone; ?[TQ 64 74]; *Polyptychodon*; Jukes-Browne and Hill, 1904, p. 166); Offham ([TQ 65 57]; *Polyptychodon*); Snodland (?[TQ 697 625]; *Ornithocheirus*); Hailing (Lower–Middle Chalk; TQ 7064, various quarries; *Chelone*, *Lytoloma*, *Polyptychodon*, *Leiodon*, *Coniasaurus*, *Ornithocheirus*); Cuxton (Middle Chalk; ?[TQ 70 66]; *Polyptychodon*, *Mosasaurus*; Jukes-Browne and Hill, 1904, pp. 159–60; Woodward, 1906); Wouldham ([TQ 71 64]; *Chelone*, *Mosasaur*, *Polyptychodon*); Borstal (Lower/Middle Chalk, 'Terebratulina Zone'; ?[TQ 73 66]; *Polyptychodon*; Jukes-Browne and Hill, 1904, p. 160); Rochester (?[TQ 72 68]; *Chelone*, *Trionyx*, *Polyptychodon*); Maidstone (Lower-Upper Chalk; ?[TQ 76 55]; *Chelone*, *Polyptychodon*, *Ornithocheirus*); Charing (?[TQ 942 506]; *Polyptychodon*, *Coniasaurus*; Worssam, 1963, p. 79, etc.).

HERTFORDSHIRE: Hitchin (Lower Chalk, *subglobosus* Zone; [TL 1829], ?exact locality; '*Iguanodon*', *Ornithocheirus*).

CAMBRIDGESHIRE: Barrington ([TL 39 49]; *Ophthalmosaurus*); Haslingfield ([TL 40 52]; *Polyptychodon*); Hauxton al 4352; *Polyptychodon*); Trumpington ([TL 44 54]; *Ophthalmosaurus*); Cambridge [TL 46 58], various localities; *Ophthalmosaurus*); Cherry Hinton (Lower Chalk; [TL 483 557], [TL 485 558]; *Cimochelys*, *Dolichosaurus*, *Polyptychodon*); Coldham's Common, Cambridge ([TL 48 58]; turtle); Swaffham Fen ([TL 54 64]; *Ophthalmosaurus*); Isleham ([TL 64 34]; *Ophthalmosaurus*).

NORFOLK: Hunstanton (?Upper Chalk; [TF 67 40]; *Ophthalmosaurus*, *Polyptychodon*); Marham (Lower Chalk, *subglobosus* Zone; [TF 712 092]; *Ophthalmosaurus*); Norwich (Upper Chalk; St James' Pit, Lollard's Pit, Catton Grove Chalk Pit, Whitlingham; [TG 242 094], [TG 241 089], [TG 228 108], [TG 272 087]; *Mosasaurus*, *Leiodon*; see below).

HUMBERSIDE: Sewerby Cliff, Bridlington (Upper Chalk, *quadratus* Zone, [TA 17 66]; '*Tylosaurus*').

Of these sites, the only significant ones, which have yielded more than a few bones, are Glynde, Southerham, Dorking, Folkestone, Dover, Hailing, Burham, Rochester, Charing, Cherry Hinton, Hunstanton and Norwich.

Two sites are selected as GCR sites on the basis of their important Chalk reptile faunas. The first, at Culand Pits, Burham, is well known for its content of exceptionally well-preserved terrestrial reptiles (e.g. pterosaurs and lizards) which are associated with more typical marine mosasaurs and plesiosaurs. The second, at St James's Pit, Norwich, is Britain's best mosasaur locality.

1. Culand Pits, Burham, Kent [TQ 738 617]. Late Cretaceous (Cenomanian–Turonian), Lower Chalk–Upper Chalk.
2. St James's Pit, Norwich, Norfolk [TG 242 094]. Late Cretaceous (Campanian), Upper Chalk Norwich Chalk).

[References](#)