

Upper Cretaceous.

Upper Cretaceous deposits are found from Massachusetts and the islands off the south coast of New England to the Gulf. They consist of gravels, sands, clays, and marls, the latter frequently glauconitic. The lower portions of the Upper Cretaceous series, although unconformable everywhere so far as known to the underlying Lower Cretaceous formations, are not unlike the older deposits in many respects, although in general less arkosic. The fossils are chiefly the remains of dicotyledonous types of plant life.

The higher beds are widely glauconitic, are rarely cross-bedded and at times contain such a large admixture of shell remains as to be highly calcareous, such deposits in places becoming indurated to form limestone ledges. The fossils in these upper beds consist largely of the remains of dinosauria, mollusca, bryozoa, brachiopoda, echinodermata, and foraminifera. At some points an intergradation of the lower into the upper type of deposit appears, while at other points the change is clearly marked.

The Upper Cretaceous deposits in North Carolina have been divided into two formations known under the names of Black Creek and Pee Dee, the former consisting of sands and clays thinly laminated, with interstratified beds of marl in the upper portions, and the latter consisting largely of argillaceous sands, more or less glauconitic, and with beds here and there highly calcareous. The fossils of the Black Creek formation consist of plant remains, especially of conifers and dicotyledons, and in the upper beds also of dinosaurian bones and coprolites, fish teeth and molluscan shells. The fossils of the Pee Dee sand consist of reptilian bones and fish teeth and the remains of mollusca, bryozoa, echinodermata, foraminifera, and other groups, showing a distinctly marine facies.

CENOZOIC.

The Cenozoic deposits overlie the Mesozoic formations, and although collectively possessing less thickness than the underlying Mesozoic, are much more conspicuous in surface outcrop than the older beds. Like the latter, they consist chiefly of sands, clays, and marls; but as their origin is in most instances different, they are commonly distinct in lithologic character. The older Cenozoic beds are in places strikingly similar to the later Mesozoic, but the later Cenozoic deposits are quite different. The sands, except in the very latest Cenozoic formations, are rarely cross-bedded and the arkosic character is absent. The beds, however, are prevailingly unconsolidated, although ferruginous and calcareous strata now and then occur.