



Berriasian, Valanginian, Hauterivian, Barremian (BER-BAR)

Block Description

Visit <https://jncc.gov.uk/gcr-site-list>, for more information on GCR blocks and sites
For Mesozoic-Tertiary Stratigraphy GCR block descriptions and GCR site lists,
visit <https://jncc.gov.uk/gcr-blocks-mesozoic-tertiary-stratigraphy>

Introduction

The GCR sites selected for this GCR Block represent the British marine geological record of Earth history from about 142 to 121 million years ago (Ma). This interval is the first part of the Early Cretaceous Epoch, which spans from 142 to 99 Ma. Rocks that formed during the Early Cretaceous Epoch (part of the Cretaceous Period) constitute the Lower Cretaceous Series (part of the Cretaceous System).

The geology of the local non-marine facies of the 'Wealden' is afforded its own GCR Block (**see Wealden (WDN)**); 'Portland beds' and 'Purbeck beds' (uppermost Jurassic to Berriasian age) are also afforded their own GCR Block that spans the Jurassic-Cretaceous boundary (see **Portlandian - Berriasian (PTL-BER)** for discussion).

The Berriasian (142–137 Ma) Valanginian (137–132 Ma), Hauterivian (132–127 Ma) and Barremian (127–121 Ma) strata, which constitute the Neocomian Series, are included in one GCR Block together because they are commonly closely associated in general lithology and palaeontology; these four stratigraphical stages precede the deposition of Aprian-Albian strata, rocks formed during the second part of the Early Cretaceous Epoch.

GCR site selection

For the purposes of site evaluation and selection, the GCR sites can be grouped into themes or 'networks', reflecting depositional setting, which was largely controlled by deep-seated structural features.

Although the relatively common invertebrate fossils do not have a separate selection category in the GCR in their own right, the scientific importance of many stratigraphy sites lies in their fossil content. Therefore, some of the GCR sites are selected specifically for their fossil fauna, which facilitates stratal correlation and enables the interpretation of the environments in which the animals lived. Moreover, some sites have international significance because they have yielded fossils that are the 'type' material for a taxonomic group.

Palaeontology, fauna and flora

The traditional means of subdividing the Cretaceous System is by means of ammonites, abundant and diverse nektonic cephalopod molluscs that, because of their rapid evolution, prove to be almost ideal 'zone fossils', enabling the correlation and division of the rocks into relative ages by way of a distinct fossil 'signature'.

The British fossil record for the Berriasian–Barremian ages is rich and varied. Invertebrate faunas included simple and compound corals, calcareous sponges and bryozoa, abundant bivalve molluscs, such as oysters, smooth terebratulid and ribbed rhynchonellid brachiopods, gastropods (snails), asteroids (starfish), echinoids (sea urchins) and crinoids (sea lilies). Microscopic organisms included foraminifera, ostracods and phytoplankton (dinoflagellates and coccolithophorid algae).

Lobster- and shrimp-like crustaceans often produced burrows within sediments, preserved as trace fossils.

Belemnites, relatives of the ammonites, were abundant and along with fish were probably the main food of the aquatic reptiles, which were the largest vertebrate animals in the sea. These included ichthyosaurs, plesiosaurs, pliosaurs, crocodiles and turtles. The fish included both holostean and teleostean bony fishes, and sharks and rays.

On land, dinosaurs were advanced; mammals formed a minor but increasingly important part of the fauna. Land plants of particular prominence were the gymnosperms, notably conifers, cycads, ginkgoes, ferns and horsetails. Insect life included dragonflies.

In contrast to the manner in which most invertebrate fossils are represented in the GCR, fossils of vertebrates, arthropods (except trilobites) and terrestrial plants do have their own

dedicated selection categories, owing to the relative rarity of the fossil material.

See Arthropoda (APD); Jurassic - Cretaceous Reptilia (JUR-CRE-RP); Mesozoic Mammalia (MES-MAM); Mesozoic Palaeobotany (MES-PALBOT); Mesozoic - Tertiary Fish/Amphibia (MZ-TR-FI-A); Palaeoentomology (PALENT).