Arthropoda (APD)

Block Description

Visit https://jncc.gov.uk/gcr-site-list, for more information on GCR blocks and sites
For Palaeontology GCR block descriptions and GCR site lists,
visit https://jncc.gov.uk/gcr-blocks-palaeontology

Introduction

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 GCR Blocks, because of the relative rarity of the fossil material. The GCR sites selected for the arthropods [except trilobites] GCR Block represent the British fossil record of the rarer arthropds from the emergence of the group during the Cambrian Period (which ranged from about 540 to 510 million years ago (Ma)). Triloibites are not specifically included in this block owing to the relative abundance of fossils of this group, which are used extensively in stratigraphy for the relative dating and correlation of Lower Palaeozoic rocks; sites important for trilobites are therefore included with the Stratigraphy GCR Blocks. Trilobites became extinct at the end Permian (= end Palaeozoic) mass extinction event (c. 230 Ma), although the group had been in decline well before this. Fossil insects are afforded their own GCR Block, Palaeoentomology. **See Palaeoentomology (PALENT).**

Palaeontological characteristics

Today, creatures as seemingly diverse as barnacles, beetles, fleas, flies, crabs, trilobtes and woodlice can all be recognised as arthropods and share a unifying body plan –a tough exoskeletal cuticular covering (carapace) to a segmented body and paired jointed legs. In order to grow, arthropods need to shed the carapace periodically. The body materials of most arthropods is purely organic and generally has a low preservation potential, except where they have been mineralised as in triliobites and many crustaceans.

After the emergence of the group about 500 Ma, by 400 Ma the arthropods were not only well-established in the marine environment but had made the difficult transition to life on land. By around 320 Ma, the arthropods had already made the transition to the air – the first creatures on Earth to do so. The subsequent success of flying insects had a huge impact of life on land, their ‘hand-in-hand’ evolution with flowering plants in late Mesozoic times led to a tranformation fo terrestrial vegetation.

Taxonomically the arthropod group has been recognised since the mid 19th century and includes insects (Devonian–Recent range), crustaceans (Cambrian to Recent), myriapods (centipedes and millipedes), chelicerates (spiders and scoprions), ostracods (Cambrian–Recent), and extinct groups such as trilobites (Cambrian–Permian), and eurypterids (Ordovician–Permian).

As well as being preserved as body fossils (including fossils of shed carapaces), trace fossils are also important, with both rare trackways and more-common burrows occurring.

Palaeogeography

The long fossil record of the group and the wide range of different depositional environments in which the fossils occur (marine, freshwater and terrestrial) has been useful in helping elucidate palaeoclimatic and palaeoenvironmental reconstructions. The palaeogeography of each relevant geological stage can be found elsewhere on the pages of this website.

GCR site selection

Owing to the rarity of fossil arthropod material, this GCR Block represents something of a special case with regard to including all of the sites yielding, or that have yielded, significant types and quantities of scientifically important material that help elucidate the evolution of the main arthropod groups, and help elucidate the characteristic assemblages of arthropods through time.