

NEW RESULTS ABOUT THE ARTHROPOD FAUNA FROM THE LOWER CRETACEOUS CRATO FORMATION OF BRAZIL

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The Crato Formation of NE Brazil is one of the most diverse fossil localities from the Lower Cretaceous and yields fossil plants, arthropods and vertebrates of exceptionally good preservation, sometimes even showing soft tissues and colour pattern. This fossil locality is especially important because of the combined occurrence of early flowering plants and putative early pollinating insects, so that there is direct fossil evidence available from the first stages of the co-evolution of insects and angiosperms which is one of the major events in the history of evolution on our planet. The insect fauna from the Crato Formation is represented by several ten-thousand specimens of most modern insect orders, except for tiny ground-dwelling and parasitic groups. However, the complete absence of any larval and adult Plecoptera still represents an unsolved mystery. Several very interesting new discoveries are presented, such as the first records of Mecoptera and the odonate suborder "Anisozyoptera", new termite species of the most primitive family Mastotermitidae as well as the oldest record of Kalotermitidae and the most derived termite clade (incl. Rhinotermitidae), the first New World record of the enigmatic Mesozoic Chresmododea, the first fossil record of the stick-insect-like orthopteran family Proscopiidae, and a strange new family of roaches related to Umenocoleoidea. Finally, a new order of neuropteroid insects and two new undescribed insect orders of paleopterous insects have been recently discovered, including a relic group that still has features otherwise only known from Paleozoic insects! A statistical analysis of the relative abundance of the various orders of terrestrial arthropods is presented, which is completed by an overview of about 25.000 fossil arthropods from this locality. The insect orders Orthoptera, Blattodea and Hemiptera each constitute about one quarter of the fossil arthropods, while all other orders (except Ephemeroptera with 7 %) are only represented by 1-4 % of the fossils. The most frequent group is Orthoptera, followed by Heteroptera, followed by Blattodea (incl. Umenocoleidae), and finally followed by Auchenorrhyncha. Human bias in the studied fossil collections is very low. Such an assemblage is characteristic for an semiarid environment with xerophytic vegetation, which is also suggested by the other available data.

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