

THE ORIGIN OF THE BURMESE AMBER WILDLIFE – HOW THE FOSSIL RECORD OF ARACHNIDS SHEDS A LIGHT ON CRETACEOUS PALEOGEOGRAPHY

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Late Cretaceous Burmese amber, also referred to as burmite, is one of the richest known sources of fossil arachnids, such as spiders and scorpions. Arachnids generally have a very sparse fossil record in the Mesozoic, but Burmese amber has provided an anoxic milieu that preserved many species and fine details of morphology at an exceptional level. Indeed, the study of Burmese amber allows deep insights into patterns of arachnid evolution and diversity in the Cretaceous. Besides evolutionary patterns, the palaeogeography of the West Burma Terrane and hence the origin of the Cretaceous Burmese amber flora and fauna is still unclear. There presently are two main hypotheses on the palaeogeography of this terrane with one suggesting a Laurasian origin for the fossil flora and fauna of the Burmese amber and the other putting the origin of the preserved ecosystem on Gondwana. Here we address this knowledge gap by extensive morphological studies and taxonomic descriptions of fossil arachnids, namely pseudoscorpions and schizomids. The detailed description of 49 specimens, in total providing seven new genera and ten new species, shows that all newly described fossil pseudoscorpion and schizomid genera display a distinct similarity to related recent genera that today exclusively occur in areas that are considered former parts of Gondwana. Therefore, we suppose that the fossil wildlife documented in Burmese amber originated on Gondwana rather than Laurasia. Thus, our results contribute significantly to the ongoing research and shed a further light on the palaeogeographical history of the West Burma Terrane as well as on the palaeobiogeography of its well-preserved fossil content.