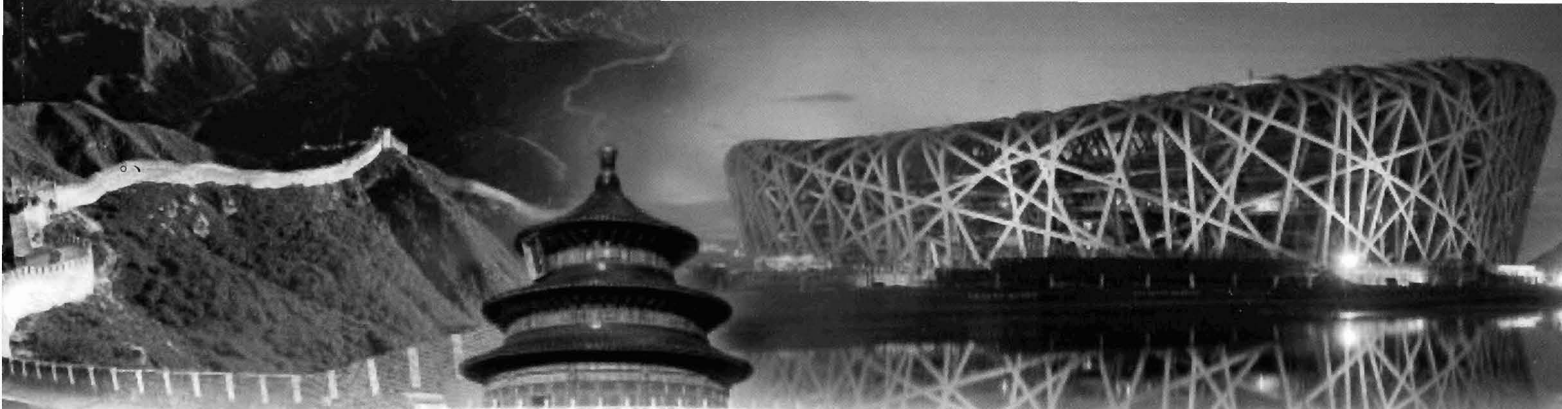




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PROGRAM & ABSTRACT



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EARLY EVOLUTION OF APOCRITA (INSECTA, HYMENOPTERA) AS INDICATED BY NEW FINDINGS IN THE MIDDLE JURASSIC OF DAOHUGOU, NE CHINA

Alexandr P. RASNITSYN^{1,2} and *ZHANG Haichun*³

¹ Palaeontological Institute, Russian Academy of Sciences. rasna36@yahoo.com

² Natural History Museum, London

³ State Key Laboratory of Palaeobiology and Stratigraphy (Nanjing Institute of Geology and Palaeontology, Chinese Academy of Sciences). hc Zhang@nigpas.ac.cn

The classification and phylogeny of the basal Vespina (=Orussoidea + Apocrita) are reconsidered based primarily on rich and well preserved material from the Middle Jurassic of Daohugou in Inner Mongolia, China. Comparatively smooth morphological transitions are traced from a Xiphydriidae-like ancestor toward Orussoidea via the Jurassic family Karatavitidae, and through Karatavitidae and the Jurassic and Early Cretaceous family Ephialtitidae independently to Stephanidae, to Evanioidea, and, via the extinct Jurassic Kuafuidae fam. nov. to the remaining Apocrita. New hypothesis is proposed concerning development of the characteristic wasp-waist of Apocrita which is supposed to appear independently and in different ways in Evanioidea and in the rest of Apocrita. As a result, six infraorders are proposed for the suborder Vespina with the following taxonomic structure: infraorder Orussomorpha including the only superfamily Orussoidea (Karatavitidae + Paroryssidae + Orussidae), infraorder Stephanomorpha with the only superfamily Stephanoidea (Ephialtitidae + Stephanidae), infraorder Evaniomorpha with the only superfamily Evanioidea of traditional composition, infraorder Ceraphronomorpha with the superfamilies Ceraphronoidea s. str. and monotypical Megalyroidea and Trigonoidea, and the infraorders Proctotrupomorpha, Ichneumonomorpha, and Vespomorpha of traditional composition. The family Kuafuidae is unplaced to infraorder because it is putatively paraphyletic with respect to Ceraphronomorpha, Proctotrupomorpha, Ichneumonomorpha and Vespomorpha. Fossil record implies origin of the infraorders Orussomorpha, Ceraphronomorpha and, by inference, Evaniomorpha, as well as superfamilies Orussoidea, Stephanoidea, and Megalyroidea, by the later Early Jurassic, of infraorders Vespomorpha and Proctotrupomorpha as well as superfamilies Evanioidea, Proctotrupeoidea, and Bethyloynoidea by the Middle Jurassic, and of the remaining infraorders (Ichneumonomorpha) and superfamilies only by or during the Cretaceous.