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Protoliupanshania wangi, a new genus and species from the Chinese Early Cretaceous (Odonata: Aeshnoptera: Liupanshaniidae)

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Abstract

Protoliupanshania wangi, new genus and species, is described from the Lower Cretaceous Yixian Formation of western Liaoning, China. It is probably the sister genus of the clade that comprises all other liupanshaniid genera, based on current knowledge of the wing venation of *Paramesuropetala*.

Key words: Insecta, Odonata, Aeshnoptera, Liupanshaniidae, new genus, new species, Early Cretaceous, China

Mesozoic aeshnopteran dragonflies had a higher morphological diversity than those from the Cenozoic and recent faunas, with groups having very unusual body or wing venation structures (Cymatophlebiidae Handlirsch, 1906 or Enigmaeshnidae Nel *et al.*, 2008) (Nel *et al.*, 2008). Among these unusual dragonflies, Liupanshaniidae is a small family known from seven species allocated among five genera from the early to early late Cretaceous of China, Brazil, England, and Russia (Bechly *et al.*, 2001; Lin *et al.*, 2002). They are characterized by some spectacular structures of the discoidal triangles but they also occupy a basal position in the aeshnopteran phylogeny, due to the absence of Rspl, Mpsl, and presence of a rudimentary anal loop.

The present study of a new genus and species related to liupanshaniids but showing several 'plesiomorphic' features is of interest in better understanding the diversity of this group.

Systematic palaeontology

Wing venation terminology follows Riek & Kukalová-Peck (1984), as amended by Kukalová-Peck (1991), Nel *et al.* (1993) and Bechly (1996). The higher classification of fossil and extant Odonatoptera, as well as familial and generic characters follows the phylogenetic system proposed by Bechly (1996) and Bechly *et al.* (2001) for the Mesozoic Aeshnoptera.

Suborder Anisoptera Selys, 1854

Family Liupanshaniidae Bechly *et al.*, 2001

Genus *Protoliupanshania* gen. nov.

Derivation of name. This name is a combination of the Greek word *protos*, for its inclusive position in the family, combined with *Liupanshania*, a related genus. Gender feminine.

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