



## A new genus of isophlebioid damsel-dragonflies (Odonata: Isophlebioptera: Campterophlebiidae) from the Middle Jurassic of China

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### Abstract

*Sinokaratawia prokopi* **gen. nov., sp. nov.** is the fifth representative of the Campterophlebiidae from the Chinese Middle Jurassic Jiulongshan Formation, which corresponds to one of the most diverse fauna of isophlebioid damsel-dragonflies. The synapomorphies for the Campterophlebiidae and Isophlebiidae are discussed.

**Key words:** Insecta, Odonata, Campterophlebiidae, **gen. nov., sp. nov.**, Middle Jurassic, Daohugou fauna, Inner Mongolia, China

### Introduction

The Isophlebioptera Bechly, 1996 is an insect clade that flourished during the Triassic, Jurassic and Early Cretaceous in Europe and Central Asia (Fleck & Nel 2002). More than fifty species have been described (Nel *et al.* 1993; Bechly 1997), but many are based mainly on isolated, sometimes fragmentary, fossil wings. This clade was unknown in the Chinese Mesozoic before the works of Fleck and Nel (2002) and Zhang *et al.* (2006) who described several complete isophlebioid specimens of great importance for the morphology and paleobiogeography of this group. Here we describe new well-preserved specimens attributable to a new genus and species, collected from the Daohugou Village, Wuhua Twon, Ningcheng County, Inner Mongolia, China; Jiulongshan Formation, Middle Jurassic (Aalenian-Bajocian). The Daohugou fauna includes more than one hundred adult or larval Isophlebioptera and Aeshnoptera (dragonflies). The present discovery is the fifth species of this isophlebioid fauna, which becomes one of the most diverse for the Middle Jurassic.

The geology and stratigraphy of the Jiulongshan Formation was extensively studied in Zhang *et al.* (2006). Wing venation nomenclature used in this paper follows Riek (1976) and Riek and Kukalová-Peck (1984), as amended by Nel *et al.* (1993) and Bechly (1996). We use the following standard abbreviations: AA anal vein, AP anal posterior, Ax0 Ax1 Ax2 primary antenodal cross-veins, CuAa distal branch of cubitus anterior, CuAb proximal branch of cubitus anterior, IRi intercalary radial veins, MAa distal branch of median anterior, MAP posterior branch of median anterior, MP median posterior, N nodus, O oblique vein, Pt pterostigma, RA radius anterior, RP radius posterior.

Although a phylogenetic revision of the whole clade Isophlebioptera *sensu* Bechly (1996) is necessary, it should be based on the discovery of new better preserved fossil material for numerous taxa. It is not the subject of the present work. We follow the taxonomic results of the phylogenetic system of Bechly (1996) concerning the Isophlebioidea, with some restrictions concerning some of the synapomorphies he proposed (see discussion below).