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A new Jurassic carnivorous cockroach (Insecta, Blattaria, Raphidiomimidae) from the Inner Mongolia in China

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Abstract

Fortiblatta cuspicolor **gen. et sp. nov.**, a carnivorous cockroach of the family Raphidiomimidae Vishniakova, 1973, is described from the Middle Jurassic Jiulongshan Formation of Daohugou, Eastern Inner Mongolia, China. Fifty complete specimens reveal morphological details, including prognathous head and distinct, protected eyes. Internalized outer valves of female ovipositor suggest that their reproduction was advanced, with eggs laid in conglomerates. The wide abdominal segments, long palps, and wing characteristics support their origin from representatives of the family Caloblattinidae. The asymmetrical long wings (different shape, length, width and number of veins in a pair of wings of the same individual) and low coefficient of venation variability of forewing (7.70) indicate the new species was active but not excellent flyer.

Key words: fossil cockroach, Blattaria (=Blattodea), Raphidiomimidae, predation, variability, new genus, new species, Daohugou, Middle Jurassic, Jiulongshan Formation

Introduction

The Raphidiomimidae, originally a small family of Mesozoic carnivorous cockroaches, was established by Vishniakova (1973), who described three Late Jurassic species from Karatau in South Kazakhstan: *Raphidiomima chimaera* Vishniakova, 1973, *R. cognata* Vishniakova, 1973, and *Cameloblatta variegata* Vishniakova, 1973. For a long time, it was thought the family had an endemic distribution. Recently, the Early Jurassic *Liadoblattina* Handlirsch, 1906 (Vršanský and Ansorge 2007) and Late Jurassic *Rhipidoblattina* Vishniakova, 1968 (Vršanský in press) were also attributed to this family and it became apparent that the family was widely distributed in Eurasia during most of the Jurassic.

The family, represents an early example of carnivory - a unique deviation from the conservative detritivore (pollinivory) of all living and presumably of the vast majority of fossil cockroaches. They appear to have become extinct during the Early Cretaceous, possibly as a consequence of the radiation of more effective pursuing and ambushing predatory mantises (Vršanský 1999a).

Although the Late Mesozoic non-marine sedimentary strata from North China have provided a massive quantity of fossil insects, there was no record of this family. The new species, including well preserved complete specimens with visible details of head and terminalia, were collected from Jiulongshan Formation in

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