



A new family of Cavilabiata from the Lower Cretaceous Yixian Formation, China (Odonata: Anisoptera)

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Abstract

A new genus *Nodalula* **gen. nov.** and species *Nodalula dalinghensis* **gen. et sp. nov.** is described on the basis of a nearly complete specimen from the Lower Cretaceous of North-east China. Its special pattern of wing venation differs from those of the known Mesozoic Cavilabiata genera and allows us to include it in the new family Nodalulidae within the Neobrachystigmata.

Key word: Odonata, Anisoptera, Cavilabiata, fam. nov., Early Cretaceous, Jehol biota, China

Introduction

The morphological disparity of the Cavilabiata (formerly Cordulegastroidea + Libelluloidea) was very important during the Late Jurassic/Early Cretaceous, even greater than nowadays, with about 10 extinct families, representing numerous stages of the wing venation evolution of this clade. Nearly all these Mesozoic forms became extinct before the Late Cretaceous, probably during the Cenomanian-Turonian, probably in relation with the important changes in the lake water quality correlated to the rise and diversification of the Angiosperms (Fleck and Nel, 2003). The present discovery of a new taxon representing a new family, somewhat 'intermediate' between the Hemeroscopidae and the more modern Neobrachystigmata (a clade to which belong the recent families Corduliidae and Libellulidae, among others) is of great interest for our knowledge on the evolution of the whole group and its past diversity.

The wing venation terminology follows Bechly *et al.* (2001).

Systematic palaeontology

Order Odonata Fabricius, 1793

Suborder Anisoptera Selys, 1854

Clade Cavilabiata Bechly, 1996

Family Nodalulidae fam. nov.

Type genus. *Nodalula* gen. nov.