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A new fossil jewel beetle (Coleoptera: Buprestidae) from the Early Cretaceous of Inner Mongolia, China

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Abstract

A new fossil buprestid, *Trapezitergum grande* Yu, Ślipiński et Shih, **gen. et sp. nov.**, from the Early Cretaceous Yixian Formation of Liutiaogou Village, Tianyi County, Inner Mongolia, China, is described and placed in the subfamily Buprestinae.

Key words: Buprestidae, Buprestinae, jewel beetle, fossil, Early Cretaceous, Yixian Formation, China

Introduction

With about 15,000 valid species and nearly 520 genera (Bellamy 2008, 2009), Buprestidae is one of the largest families of Coleoptera. The fossil record of this family is quite extensive and currently includes about 260 described species from the Late Triassic to Miocene (Bellamy 2012), while only 11 fossil species in 6 genera have been described from Middle Jurassic, Lower Cretaceous and Miocene of China.

In this paper we describe a new genus and new species, based on a large and well-preserved specimen with a particular combination of characters, from the Yixian Formation of Liutiaogou Village, Tianyi County, Inner Mongolia, China. The Yixian Formation consists of grey tuff, siltstone and mudstone. The age is controversial and dated as the Late Jurassic (Ren *et al.* 1997; Zheng *et al.* 2003), transition from the Late Jurassic to Early Cretaceous (Chen *et al.* 2004; Wang *et al.* 2004, 2005) or the Early Cretaceous (Swisher *et al.* 1999; Zhou *et al.* 2003). Here, we tentatively consider it as the Early Cretaceous, Late Barremian–Early Aptian age (125 Mya). A number of fossil insects have been described from the Liutiaogou locality already, such as Odonata (Zhang *et al.* 2008), Chresmodidae (Zhang *et al.* 2008), Coleoptera (Nikolajev *et al.* 2011), which contributed to the understanding of the evolution of the respective groups.

The subfamily classification varies considerably among the authors (Holynski 1993; Kolibac 2001; Bellamy 2002) with some of these authors suggesting Schizopodinae, and sometimes Julodinae, should be recognized as independent families (Bellamy 2002). Most of the fossil species of Buprestidae are relatively small or medium sized beetles, classified in the extinct subfamily Parathyreinae Alekseev (1993), diagnosed by a straight or weakly arched transverse metaventral (= katepisternal, paracoxal) suture that is often trapeziform at the middle in the extant taxa. This character has never been phylogenetically examined, defining potentially paraphyletic or even polyphyletic group. Our cursory examination of the descriptions of many genera of Parathyreinae and several undescribed fossil species in the Capital Normal University collection, revealed very high diversity of prosternal characters, exceeding expected variability of this important character set within one subfamily of jewel beetles. Relatively few Jurassic and Early Cretaceous buprestids are classified in extant subfamilies, and these are mostly based on body fragments or isolated elytra and placed in Buprestidae *incertae sedis*, like *Andhkhdukia* Alexeev (2008) or *Metabuprestium* Alexeev (1995, 1996, 2000, 2008).