Cretaceous Research 57 (2016) 289–293

Contents lists available at ScienceDirect

Cretaceous Research

journal homepage: www.elsevier.com/locate/CretRes

First record of fossil comb-clawed beetles of the tribe Cteniopodini (Insecta: Coleoptera: Tenebrionidae) from the Jehol Biota (Yixian formation of China), Lower Cretaceous

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ARTICLE INFO

Article history:
Received 14 April 2015
Received in revised form
3 August 2015
Accepted in revised form 3 September 2015
Available online 22 September 2015

Keywords:
Tenebrionidae
Alleculinae
New genus and species
Lower Cretaceous
Jehol Biota
China

ABSTRACT

A new genus and species *Platycteniopus diversoculatus* is described from the Lower Cretaceous (Yixian Formation, Laoning, China). The new genus belongs to the tribe Cteniopodini as shown by six visible abdominal ventrites (ventrite 6 is sternite VIII), in comparison with other Alleculinae which have five abdominal ventrites; epistomal canthus of eyes not emarginate; anterior margin of first abdominal ventrite not bordered. On the other hand, *Platycteniopus diversoculatus* has some characters not typical for Cteniopodini: bifid mandibles and serrate antennae. The oldest representative of the tribe has combination of characters of tribes Alleculini and Cteniopodini. Recent representatives of Cteniopodini are associated with flowers of angiosperms, while other groups of Alleculinae, especially Gonoderini and Alleculini are mainly saprophagous and lichenophagous. Age of *Platycteniopus* finding coincides with the beginning of the angiosperms heyday.

1. Introduction

The Yixian Formation (Liaoning, China) is very well known in the field of palaeontology for yielding feathered dinosaurs, mammals, birds, angiosperm plants and a great number of insects that have contributed significantly to our understanding of the evolution of those groups (Chang, 2003) (Fig. 1).

The age of this formation is the subject of incessant disputes and is believed by many researchers to be Lower Cretaceous, ~125Ma (Swisher, Wang, Wang, Xu, & Wang, 1999). Some evidence suggests an Upper Jurassic age (Lo, Chen, Tsou, Sun, & Lee, 1999). Other opinions, based on both radiological methods (Wang et al., 2005) and biostratiographical comparisons of beetles and other insects (Kirejtshuk et al., 2010, 2011 etc.), more probably point to the boundary between the Jurassic and the Cretaceous.

The coleopterofauna of Yixian Formation is diverse. More than sixty species of beetles from 12 families are known in this formation (Kirejtshuk et al., 2010). In the latter publication numerous representatives of the family Tenebrionidae (subfamilies Alleculinae and Diaperinae) were mentioned. Later the oldest and currently the only known representative of the tenebrionoid branch (the subfamily Tenebrioninae) *Alphitopsis initialis* Kirejtshuk et al., 2011 was described (Kirejtshuk et al., 2011). The genus *Alphitopsis* demonstrates that at the Rubicon of the Jurassic and Cretaceous Yixian the tribe Alphitobiini was represented by forms that were rather similar to the recent ones.

Recently the second fossil representative (new genus and species) of Tenebrionidae from the subfamily Alleculinae (the tribe Gonoderini) was described from the Yixian Formation (Nabozhenko et al., in litt).

In this paper the third representative (new genus and species) of Tenebrionidae is described from Yixian Formation. The new species belongs to the subfamily Alleculinae, tribe Cteniopodini, of which fossil representatives were known only from Baltic Amber.

2. Material and methods

Material is deposited in Henan Geological Museum, Zhengzhou, China with registration number 41HII0137 PC (P: Part; C: Counterpart). The specimen was studied using a stereomicroscope MOTIC SMZ-168. Photographs were made with and without

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http://dx.doi.org/10.1016/j.cretres.2015.09.001
0195-6671/

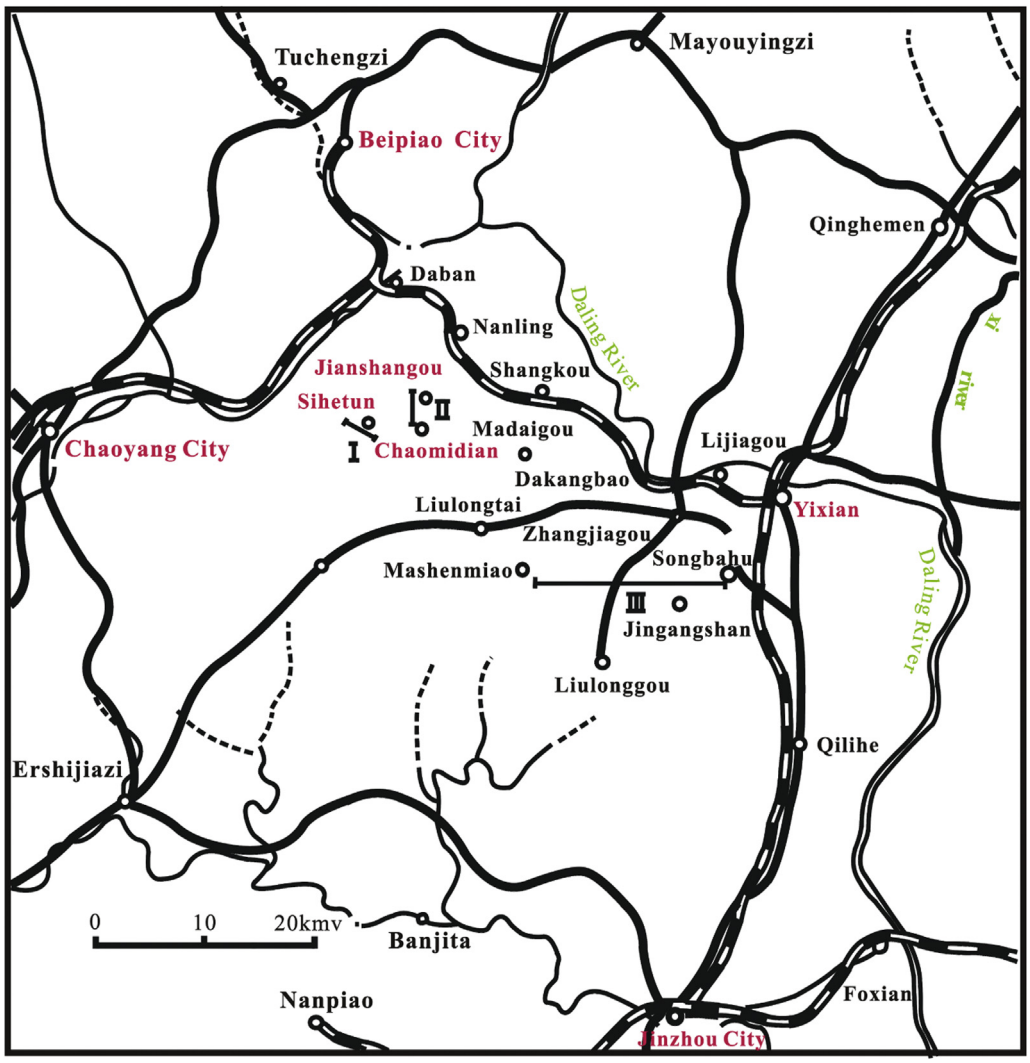

Fig. 1. Index map showing section localities of the Yixian Formation in Jinzhou – Yixian area, western Liaoning (after Ren et al., 1997) I. Sihetun section; II. Jianshangou section; III. Mashenmiao – Songbahu section.

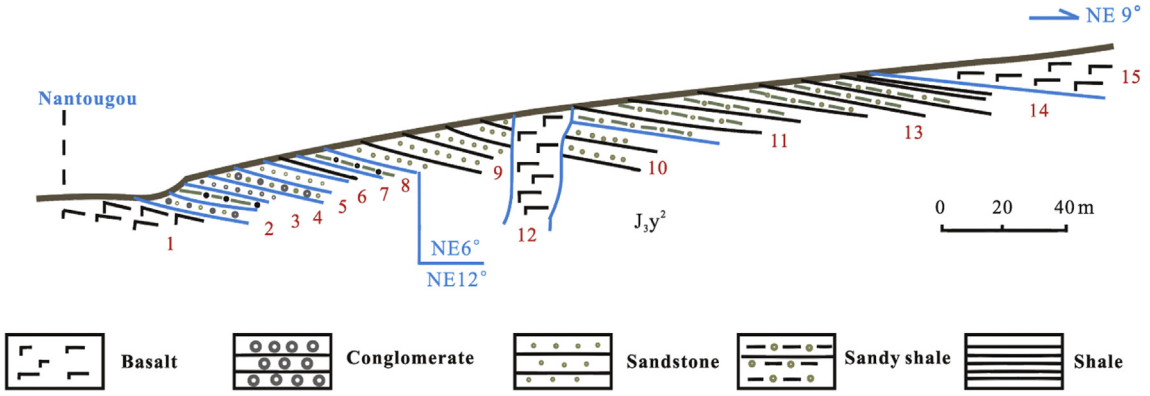

Fig. 2. Stratigraphic section measured at the base part of Yixian Formation near Jianshangou, Chaomidian (after Ren et al., 1997).

ethanol using a Nikon D90 camera with Nikkor 105 mm lens. We used the ocular index of Campbell and Marshall (1964) in the description.

3. Systematic palaeontology

Order Coleoptera Linnaeus, 1758.