A new genus of Scolebythidae (Hymenoptera: Chrysidoidea) from the Early Cretaceous of China

YAPING CAI¹, YUNYUN ZHAO¹, CHUNGKUN SHIH¹ & DONG REN¹,²
¹College of Life Sciences, Capital Normal University, 105 Xisanhuanbeilu, Haidian District, Beijing 100048, China.
E-mail: caiyaping6@163.com, yunyunzhao@hotmail.com, chungkun.shih@gmail.com, rendong@mail.cnu.edu.cn
²Corresponding author: E-mail: rendong@mail.cnu.edu.cn

Abstract

A new genus Mirabythus Cai, Shih et Ren, gen. nov. (type species, M. lechrius Cai, Shih et Ren, sp. nov.) and M. liae Cai, Shih et Ren, sp. nov. from the family Scolebythidae are described from the Early Cretaceous Yixian Formation of Huangbanjigou Village, Liaoning Province, northeastern China. These findings extend the existence of Scolebythidae to the Early Cretaceous of China, while providing evidence to support Engel and Grimaldi’s hypothesis that the family was widely distributed throughout the Cretaceous. Our two new species with clear venation also provide a comprehensive understanding of the venational changes from the Early Cretaceous to now. A key to the fossil and extant genera of Scolebythidae is provided.

Key Words: Hymenoptera, Chrysidoidea, Scolebythidae, Early Cretaceous, fossil, Yixian Formation, China

Introduction

Scolebythidae is a very small family of the basal aculeate superfamily Chrysidoidea. Currently, only nine genera with 13 species have been described, comprising six extant species and seven fossil species preserved in amber (Table 1). The scolebythids have a primitive biological strait, like most apocritans, that they are gregarious ectoparasitoids of wood-boring beetles in the families of Cerambycidae and Anobiidae (Brothers 1981; Melo 2000). The Scolebythidae can be readily and easily identified by its unique apomorphy of large, exposed, diamond-shaped pro sternum (Carpenter 1986, Prentice et al. 1996).

The family was proposed by Evans (1963) based on two extant wasps, Clystopsenella longiventris Kieffer, 1911 from Brazil and Scolebythus madecassus Evans, 1963 from Madagascar. The third genus was added by Nagy (1975) for a species from South Africa and Australia, Ycaploca evansi Nagy, 1975, as well as the first description of a male scolebythid. With the discovery of Pristapenesia stricta (Azevedo, 1999) in South America and Ycaploca fijianus Beaver, 2002 in Fiji, both well below the equator, all the extant species are from Southern Hemisphere—e.g. South Africa, Australia, Fiji, southern South America (Nagy 1975; Day 1977; Evans et al. 1979; Azevedo 1999; Beaver 2002), supporting the notion that the family has a distribution entirely Austral. Later on, numerous scolebythids, all of C. longiventris, were recorded in north of the equator, challenging the notion that chrysidoid wasps are a Southern Hemisphere family (Gauld 1995; Fernandez et al. 2002; Cambra & Azevedo 2003; Engel 2005). The sixth extant species, Pristapenesia asiatica Azevedo, Xu et Beaver, 2011 was discovered in China and Thailand, which is also against the notion of only Austral distribution. Furthermore, the fossil records of the family obviously indicate a Northern Hemisphere distribution, such as the occurrence of scolebythids in the Mid-Eocene Baltic amber (Brues 1933; Brothers & Janzen 1999).

The first fossil scolebythid Pristapenesia primaeva Brues, 1933 in the Mid-Eocene Baltic amber was wrongly identified as a species of Bethylidae. Prentice et al. (1996) described two fossil scolebythid genera and species Libanobythus milki Poinar, 1996 and Dominibythus inopinatus Prentice et Poinar, 1996 (currently in Pristapenesia Brues, 1933) respectively, from the Early Cretaceous Lebanese amber (Barremian).