Cretaceous Research 106 (2020) 104261

Contents lists available at ScienceDirect

Cretaceous Research

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

Short communication

Burmochlus gen. nov., the first Cretaceous member of the *Archaeochlus* cluster (Diptera: Chironomidae: Podonominae)

Wojciech Giłka [a], Marta Zakrzewska [a, *], Eugenyi A. Makarchenko [b, c]

[a] University of Gdańsk, Faculty of Biology, Department of Invertebrate Zoology and Parasitology, Laboratory of Systematic Zoology, Wita Stwosza 59, 80–308, Gdańsk, Poland
[b] Russian Academy of Sciences, Far East Branch, Federal Scientific Center of the East Asia Terrestrial Biodiversity, 100 Let Vladivostoku Avenue 159, Vladivostok, 690022, Russia
[c] Far Eastern State Technical Fisheries University, Lugovaya 52b, 690087, Vladivostok, Russia

ARTICLE INFO

Article history:
Received 10 May 2019
Received in revised form
13 September 2019
Accepted in revised form 16 September 2019
Available online 23 September 2019

Keywords:
Diptera
Chironomidae
Podonominae
Systematics
Mesozoic
Burmite
Myanmar

ABSTRACT

A fossil genus, *Burmochlus* gen. nov., with a species *B. madmaxi* sp. nov. (Diptera, Chironomidae, Podonominae) is described from mid-Cretaceous amber of northern Myanmar (~100 Ma). The adult male of the new species/genus displays an interesting wing structure with a trace of the vein R_{2+3} (or R_3 alone), the character unique in the subfamily Podonominae. The wing squama with a process bearing a bunch of setae, the wing membrane covered with bi- or trifid spinulae-like microtrichia, the gonostylus with a collar-like ring and a pear-shaped distal part, the robust anal point and the extensive superior volsella are also characters defined as exclusive for *Burmochlus*. The antenna, thorax and several hypopygium structures found in male *Burmochlus* clearly resemble those known from *Archaeochlus* Brundin, here defined as the closest relative, as well as from *Afrochlus* Freeman and *Austrochlus* Cranston – both previously referenced to or derived from *Archaeochlus*, hence being postulated as close or sister taxa. In a view of several hypotheses on the time of divergence of the Podonominae and other related subfamilies, this is the oldest fossil record of a true Podonominae chironomid based on definition of male characters, and dated back to the "mid-Cretaceous". Along with *Furcobuchonomyia* Baranov, Góral *et* Ross (Buchonomyiinae) and *Myanmaro* Giłka, Makarchenko, Pankowski *et* Zakrzewska (Orthocladiinae), *Burmochlus* is the third genus described from Burmese amber, and the first known Podonominae chironomid described from this deposit.

1. Introduction

According to the most recently updated checklist by Ross (2019), 1,117 species of arthropods in 814 genera, 488 families and 67 orders were recorded in Burmese amber. Insects, as the most diverse group, are represented by 29 orders, 363 families, 646 genera and 823 species, including Diptera with 143 species, 110 genera and 49 families (Ross, 2019). The Chironomidae, one of the most species-rich dipteran families, however, is known only from three species described from this deposit until now. They are placed in the subfamily Buchonomyiinae and the genus *Furcobuchonomyia* Baranov, Góral *et* Ross, 2017 (Baranov et al., 2017; Giłka and Zakrzewska, 2017), and in the subfamily Orthocladiinae and the genus *Myanmaro* Giłka, Makarchenko, Pankowski *et* Zakrzewska, 2019 (Giłka et al., 2019). The new genus *Burmochlus* is thus the first representative of the chironomid subfamily Podonominae found in mid-Cretaceous Burmese amber.

In a view of several hypotheses on the time of divergence of the subfamily Podonominae (estimated from the Jurassic to the Cenozoic) (Kalugina and Kovalev, 1985; Veltz et al., 2007; Azar et al., 2008; Azar and Nel, 2010; Cranston et al., 2012), often difficult to separate from fossil chironomids of other related subfamilies, e.g. the Tanypodinae, and therefore referred to as "Podonominae or Tanypodinae" (e.g. Lukashevich and Przhiboro, 2018), an aim of our study is to evidence that true Podonominae existed in the Cretaceous.

2. Material and methods

2.1. Origin, processing and deposition of the type material

The specimen examined (Fig. 1A) is the inclusion preserved in Burmese amber, often referred to as "Burmite", mined in the

* Corresponding author.
E-mail address: marta.zakrzewska@biol.ug.edu.pl (M. Zakrzewska).

https://doi.org/10.1016/j.cretres.2019.104261
0195-6671/