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New short-horned flies (Diptera: Eremochaetidae) from the Early Cretaceous of China

KUIYAN ZHANG[1], DING YANG[2] & DONG REN[3,4]

[1]*Key Laboratory of Zoological Systematics and Evolution, Institute of Zoology, Chinese Academy of Sciences, Beijing 100101, China. E-mail: zhangkuiyan@ioz.ac.cn*
[2]*Department of Entomology, China Agricultural University, Beijing 100193, China. E-mail: dyangcau@126.com*
[3]*Key Laboratory of Insect Evolution and Environmental Changes, Capital Normal University, Beijing 100048, China. E-mail: rendong@mail.cnu.edu.cn*
[4]*Corresponding author*

Abstract

Eremochaetidae is a rare family found from the Late Jurassic to the Early Cretaceous. So far, only 8 genera with 12 species have been recorded. Herein, we describe a new species, *Dissup clausus* **sp. nov.**, and the first male of *Eremomukha* (*E.*) *tsokotukha* Mostovski, 1996, from the Yixian Formation, the Early Cretaceous of Northeastern China. Additionally, *E.* (*E.*) *insidiosa* Mostovski, 1996 is considered as a new synonym of *E.* (*E.*) *tsokotukha*. An updated list of all known Eremochaetidae is presented.

Key words: Eremochaetidae, Diptera, new species, new synonym, Cretaceous, Yixian Formation

Introduction

Eremochaetidae is an endemic Mesozoic family, which has been found from the Late Jurassic to the Early Cretaceous of China, Kazakhstan, Mongolia and Russia. This family possesses a special combination of characters: the crossvein r-m is absent, causing the vein R_{4+5} (sometimes veins R_{2+3} and R_{4+5}) to arise from cell d; the wings are weakly sclerotized, thus the apex of the wings is always obscure; and the ovipositor is needle-shaped. Up to date, only 8 genera with 12 species have been formally described in the past 40 years. Eremochaetidae consists of two subfamilies, Eremochaetinae Ussatchov, 1968 (including 7 genera and 8 species) and Eremomukhinae Mostovski, 1996 (including 1 genus and 4 species) (Table 1). In China, 2 genera with 3 species, including *Alleremonomus xingi* Ren *et* Guo, 1995, *Alleremonomus liaoningensis* Ren *et* Guo, 1995 and *Lepteremochaetus lithoecius* Ren, 1998, have been reported (Ren *&* Guo 1995; Ren 1998a). All of them, from the Yixian Formation of Liaoning Province, China, should be assigned to the subfamily Eremochaetinae. Herein, we introduce two new Chinese record genera, *Dissup* and *Eremomukha*.

Dissup Evenhuis, 1994 is a replacement name for *Eremonomus* Kovalev, 1989. Prior to our study, only one species, *Dissup irae* (Kovalev, 1989) found in Chita Region (Turga Formation, Hauterivian (136.4–130.0 Ma)), Siberia, Russia, was recorded in this genus. The geological ages of the new species should be slightly younger than the known one.

Eremomukha (*Eremomukha*) *tsokotukha* Mostovski, 1996 was proposed based on a well preserved female specimen and a single wing. Herein, we report a first male specimen, collected from the Yixian Formation, the Early Cretaceous of Beipiao City, China, having similar characters to the holotype. In our opinion, the character differences between this male and the holotype are very probably caused by intra-specific sexual dimorphism. Thus, we tentatively assign the new male specimen to *E.* (*E.*) *tsokotukha*, which is the first record of subfamily Eremomukhinae in China. Unfortunately, the venation of our new specimen is not clear enough. We are still searching for more and better specimens (especial the female ones) to support our conclusion.

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Genus *Eremomukha* Mostovski, 1996

Subgenus *Eremomukha* Mostovski, 1996
FIGURES 3–4

***Eremomukha* (*Eremomukha*) *tsokotukha* Mostovski, 1996**
Eremomukha (*Eremomukha*) *tsokotukha* Mostovski, 1996: 118.
Eremomukha (*Eremomukha*) *insidiosa* Mostovski, 1996: 118. **syn. nov.**

New material. Body with a pair of wings in dorsal view. No. CNU-DB-LB2011026, housed in Key Lab of Insect Evolution & Environmental Changes, Capital Normal University, Beijing, China.

Additional description. Male, body length 14.7 mm; wing length 10.2 mm, width about 2.3 mm; hind femur about 5.7 mm. Head narrower than thorax. Eyes bare, approaching holoptic in dorsal view. Antennae 3 segments, arista bristle-like, arising from the top of flagellum.

Thorax black. Hind legs femora and tibiae obviously slender with apical part not swollen. Wing long, almost as long as abdomen; veins not well-developed. Vein Sc extending over half length of wing. Vein R_1 long, ending nearly at apical 1/7 of wing; vein R_{2+3} originating from middle of Rs; R_4 present, short; vein R_{4+5} arising from apical part of cell d. Crossvein r-m absent. Vein M with 3 branches, M_1 and M_2 approaching each other at base. Vein CuA, straight, and vein A_1 converged with a short petiole; vein CuP visible. Cell sc wide open; cell br slightly longer than cell bm; cell cup closed, longer than cell br.

Abdomen elongate with 9 visible segments. Segment I shortest and widest. Segments II to VI rectangle, segments VII and VIII shorter than formers, sub-square. Segment IX smallest, details of anatomic structure undistinguished, because of the preserved state.

Locality and horizon. Collected from near Chaomidian Village, Beipiao City, Liaoning Province, China. Early Cretaceous Yixian Formation outcrop.

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