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# A blood sucking biting midge from Upper Cretaceous Burmese amber with a key to the determination of fossil species in the relictual genus *Leptoconops* Skuse (Diptera: Ceratopogonidae)

Ryszard Szadziewski*, Wojciech Giłka, Aleksandra Urbanek*

*Department of Invertebrate Zoology and Parasitology, University of Gdańsk, Wita Stwosza 59, 80-308 Gdańsk, Poland*

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ABSTRACT

*Leptoconops ellenbergeri* Szadziewski sp. nov., a new blood sucking biting midge from Upper Cretaceous Burmese amber is described and illustrated. A key for the determination of 18 named fossil species of *Leptoconops* reported from Lower and Upper Cretaceous and Eocene ambers is provided. Fossil records show that *Leptoconops* is an old relictual pantropical genus that was distributed worldwide in the Cretaceous, and also indicate that in the tropical ecosystems of Burmese amber forests sea shore environments (coastal or estuarine) were present.



## 1. Introduction

The genus *Leptoconops*, which contains about 140 extant species, has a relictual pantropical distribution (Szadziewski, 2008). Most species occur in tropical and subtropical regions; during the Cretaceous, however, the distribution of the genus was broader, virtually worldwide. The extant larvae live in moist and usually saline desert sand and in coastal or inland beaches. They burrow in soil or sand feeding on microorganisms. Adults of the genus *Leptoconops* are active by day. The females of all extant species feed on the blood of vertebrates: man, large and small mammals including bats, birds and reptiles (lizards, turtles) (Auezova, 2008). This old genus of haematophagous biting midges has left rich fossil record with 18 named extinct species. To date, however, there are no evidences that blood sucking females are vectors of pathogens in man and animals. According to our experience, the record of trypanosomes in the abdomen and proboscis of the Late Cretaceous female *Leptoconops nosospheris* in Burmese amber by Poinar (2008) is doubtful and needs confirmation. Inclusions, especially in Burmese amber, are poorly preserved. Normally, the internal organs and tissues of the trapped insects are missing or have been greatly altered during decay and fossilisation processes in the resin. Sometimes artifacts in amber inclusions are very similar to real objects and their interpretations, particularly of internal bodily remnants demand great caution.

The purpose of this paper is to describe a new blood sucking species, to provide a key for the determination of all fossil *Leptoconops*, to discuss the geographical distribution and palaeoecology of this genus.

## 2. Materials and methods

*Leptoconops ellenbergeri* sp. nov. (male) in one piece of Burmese amber deposited in the Museum of Amber Inclusions, University of Gdańsk (MIB 5613) was studied. This amber piece is small, about 10 × 6 × 2 mm, well-preserved, transparent and not cracked. A well-preserved specimen of an undetermined Psocoptera is also embedded as a syn inclusion. In addition, a male specimen of *L. myanmaricus* Szadziewski from the collection of the National Museums Scotland, NMS G.2010.20.25(60) was examined. The morphological terms and abbreviations used in the paper follow Szadziewski (1988, 1996). All photographs were taken using a LAS Montage multifocus with a Leica DM6000.

## 3. Results

### 3.1. Systematic paleontology

Order: Diptera Linnaeus, 1758
Family: Ceratopogonidae Newman, 1834

* Corresponding authors. Tel.: +48 58 523 61 84.
*E-mail addresses:* ryszard.szadziewski@biol.ug.edu.pl (R. Szadziewski), aleksandra.urbanek@biol.ug.edu.pl (A. Urbanek).

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