

**The first fossil species in the predaceous midge tribe Sphaeromiini
(Diptera: Ceratopogonidae)**

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ABSTRACT. *Mallochohelea martae*, a new fossil species from Eocene/Oligocene Baltic amber is described, illustrated and compared with extant congeners. This is the first record of a fossil predaceous ceratopogonid in the tribe Sphaeromiini.

KEY WORDS: Diptera, Ceratopogonidae, Sphaeromiini, Predaceous Midge, *Mallochohelea*, new species, Baltic amber, Eocene/Oligocene.

INTRODUCTION

The fossil record of Ceratopogonidae is one of the best known of all Diptera and the family is well documented from the Lower Cretaceous to the Tertiary (SZADZIEWSKI 1988, 1996, 2004, BORKENT 2000, BORKENT & CRAIG 2004). Within the subfamily Ceratopogoninae the tribes Culicoidini and Ceratopogonini are reported from Upper Cretaceous while the tribes Heteromyiini and Palpomyiini are known only from the Tertiary. No predaceous midge fossils in the tribes Sphaeromiini and Stenoxenini have been reported until now.

COCKERELL (1919) briefly described the well-preserved male of *Johannsenomyia swinhoei* from Lower Cretaceous Burmese amber, which he assigned to the tribe Sphaeromiini. Recently, this species was placed in the extinct genus *Atriculicoides* REMM, tribe Atriculicoidini, subfamily Forcipomyiinae by SZADZIEWSKI (2004). *Johannsenomyia hotchkissae* PIERCE (1966) described from a pupa, from California Miocene nodules is of doubtful generic and tribal position (SZADZIEWSKI 1988, BORKENT & WIRTH 1997).

It is therefore, surprising that after many years of collecting inclusions of biting midges from Baltic amber an unexpected large and beautifully preserved female of the tribe Sphaeromiini was found and described below. It is a typical member of the extant genus

Mallochohelea WIRTH of worldwide distribution.

Special morphological terms and abbreviations used in the paper follow those explained by SZADZIEWSKI (1988, 1996).

Acknowledgements

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SYSTEMATICS

Family: Ceratopogonidae NEWMAN, 1834

Tribe: Sphaeromiini NEWMAN, 1834

Genus *Mallochohelea* WIRTH, 1962

Type species: *Johannsenomyia albibasis* MALLOCH, 1915. By original designation.

Range. Tertiary to Recent.

Diagnosis

The only genus within the tribe Sphaeromiini with females having femora with or without ventral spines; fifth tarsomeres with 5-8 pairs of batonnets; claws long, equal, bent at base, nearly straight distally, each claw with short basal external tooth; wing with two (rarely one) radial cells, costa short, extending to 0.8 of wing length; abdominal segment 8 with pair of ventral hair tufts.

Mallochohelea martae sp. n.

(Figs. 1, 2)

Diagnosis

The only species within the tribe with females having the following unique combination of characters: wing length 3.3 mm; all femora armed with ventral spines; wing with two radial cells; claws long, equal, each ventrally swollen at mid length, and narrowed at base with basal outer tooth.

Description

Female. A large slender species, body 4.5 mm long (without antennae). Well preserved, complete (Fig. 1). Eyes distinctly separated above antennae for a moderate distance. Flagellum with all 13 flagellomeres cylindrical, total length 2.02 mm, AR 1.60. Flagellomeres very slender (Fig. 2A) with length of 20-12-12-12-12-12-12-13-30-30-33-35-40. Proboscis short; palpus 5-segmented, 5th palpal segment with rounded apex.

Anterior lateral cervical sclerite triangular. Prothoracic basisternum shield-shaped. Scutum shining black without anterior spine or tubercle, with some stout supraalar setae. Scutellum with some marginal bristles. Paratergite broad, triangular, bare. Wing length 3.31 mm, CR 0.76. Two well developed radial cells; 2nd 2x longer than 1st. Wing membrane without macrotrichia, media broadly sessile. Anal angle not broadened. Legs slender. Each femur armed with long, almost parallel subapical ventral spine-like expansion and some short perpendicular spines (Fig. 2A); fore femur with 9, mid and hind femora each with 2 ventral spines. TR(I) 2.5, TR(II) 3.0, TR(III) 2.7. Two rows of palisade setae on 1st and 2nd tarsomeres of hind leg well developed, subbasal spine absent. Fifth tarsomeres armed ventrally with 6-7 pairs of stout, black, blunt spines (batonnets); claws similar on all legs, long, equal, bent at base, almost straight distally; each claw with short basal tooth on external side, ventral surface swollen at midlength and narrowed at base. Abdominal segment 8 with pair of ventral hair tufts. Cerci short.

Male. Unknown.



Fig. 1. *Mallochohelea martae* sp. n., photograph of holotype female.

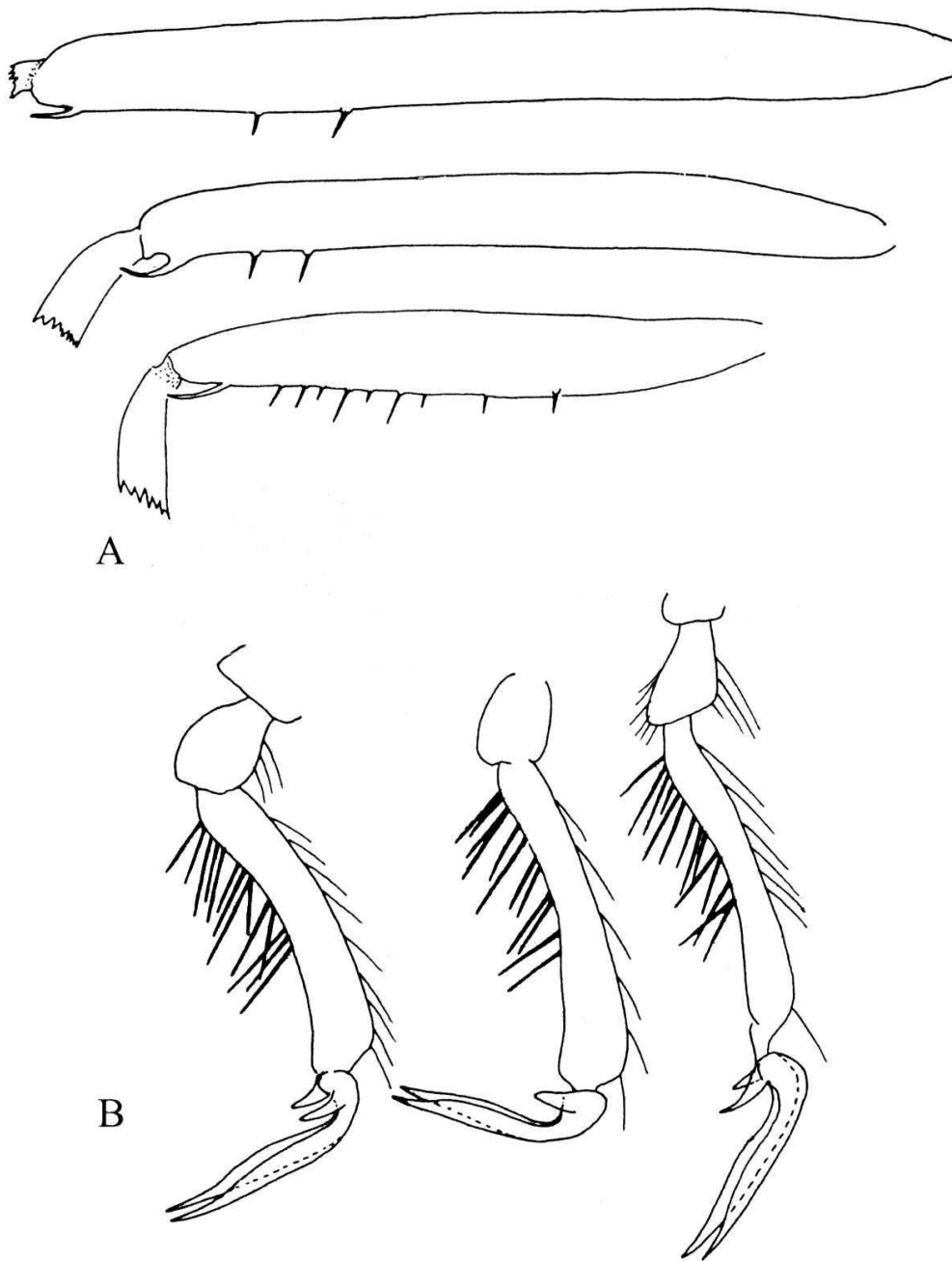
Material examined

Holotype female, Inventory No. 4901 Museum of Amber Inclusions, Department of Invertebrate Zoology, University of Gdańsk. The amber piece containing this midge was

cleared at high temperature (cooked) with some stellate hairs. The specimen was donated by Marta Gwizdalska who selected it from inclusions offered by amber dealers from Kaliningrad, Russia

Etymology

The species is dedicated to Marta Gwizdalska of Sopot, Poland, a student of biology, in recognition of her discovery of this large and unexpected predaceous midge of the tribe Sphaeromiini and her generous donation of this specimen into a public scientific collection.



Figs. 2A-B. *Mallochohelea martae* sp. n., holotype female. A – femora of hind, mid and fore leg (from top to bottom), B – tarsomeres 5 of fore, mid and hind leg (from left to right).

Discussion

Mallochohelea is a worldwide distributed genus including 52 species (BORKENT & WIRTH 1997). The new species is similar to the extant *M. atripes* WIRTH (1962) from North America in having ventral spines on all femora (WIRTH & GROGAN 1979). All 11 extant Palaearctic species have female femora without ventral spines. The redundant females of *M. atripes* are smaller (wing length 2.8 mm) and their fore femur is armed with 10 ventral spines while their mid and hind femora are armed with 4-5 ventral spines. This new species is larger than *M. atripes*, and its mid and hind femora are armed with 2 ventral spines.

The holotype female of *M. martae* with a wing length of 3.3 mm is the largest predaceous midge among all known amber inclusions of Ceratopogonidae now. As a rule, biting midges preserved as inclusions in Tertiary and Cretaceous ambers are much smaller than their extant relatives. Prior to this, the largest known fossil biting midges are from Baltic amber and their wings are up to 2.8 mm (*Metahelea serafini* SZADZIEWSKI, 1998, tribe Heteromyiini) or to 2.85 mm (*Palpomyia jantari* SZADZIEWSKI, 1988, tribe Palpomyiini).

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