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Balticoleria michaeli, gen. et spec. nov. from Eocene Baltic amber (Diptera: Heleomyzidae)*

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Abstract. The new genus and new species *Balticoleria michaeli* from Baltic amber is described and illustrated. Its systematic position is discussed. A key for identification of heleomyzine genera from Baltic amber is provided.

Key words: Diptera, Heleomyzidae, *Balticoleria*, new genus, new species, phylogeny, Eocene, Baltic amber.

INTRODUCTION

The family Heleomyzidae is a remarkable group of acalyptrate flies, having probably appeared in the late Cretaceous or Early Palaeogene. Fossil representatives of the family are known from amber, compression and copal. Thus far, seven species representing seven genera have been described from Baltic amber only (Woźnica 2006). Five of these genera are extinct and only three of them belong to the subfamily Heleomyzinae in the sense of Gorodkov (1972) (Woźnica 2005, 2006) and are keyed below. During examination of a personal collection of amber heleomyzid flies of Michael von Tschirnhaus (Bielefeld, Germany) an undescribed species representing an unknown heleomyzid genus has been found and is described herein. Similarily to other representatives of the subfamily Heleomyzinae, the frontal plate is parallel to eye margin, central cheek bristle is absent, proepimeral bristle well developed, more than one ventral bristle on mid tibia is present, and anal vein distinctly reaches the wing margins. The fossil genus *Electroleria* Hennig 1965, which lacks the proepimeral bristle, is not included in the key presented herein (Woźnica et Palaczyk 2005), because it belongs to another subfamily (Woźnica in prep.).

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MATERIAL AND METHODS

The holotype specimen is housed in a private collection of Michael von Tschirnhaus (Bielefeld, Germany). The figures are based on original drawings of the specimen and photographs taken using a Canon EOS 350D digital camera to a Nikon SMZ800 microscope in conjunction with the computer program Designer 4.1 and Corel Photopaint X3. In order to protect against damage, the amber piece is embedded in an artificial resin. The size of the cuboid is as follows: 15,33x11,00x8,33 (all in mm).

Specimen was measured (with accuracy of to 0.01mm), and the results were used to calculate the various indices defined below. The morphological terminology and abbreviations follow those proposed by Woźnica (2003).

Acknowledgements

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SYSTEMATIC PALAEONTOLOGY

Order Diptera Linnaeus, 1758
Family Heleomyzidae Bezzi, 1911
Subfamily: Heleomyzinae Bezzi, 1911

DESCRIPTION

Balticoleria Woźnica gen. nov.

Type-species: *Balticoleria michaeli* spec. nov. Present designation.

Etymology

Gender: feminine. The name derived from the name of the locus typicus (Baltic sea region) and the generic name *Leria* (=*Heleomyza*).

Diagnosis

Balticoleria is a unique genus, which differs distinctly from other fossil and recent genera in the following combination of character states: one proepimeral and one distinct stigmatal bristles present, no prescapullars, only 3 postsutural dorsocentrals (0+3), one well developed katepisternal, one pair of prescutellars, 2 pairs of variable-length scutellar bristles, and mid tibia with one preapical bristle and few ventral setulae. The characters of the mesonotal chaetotaxy and the distinct stigmatal bristle constitute the autapomorphies of *Balticoleria*. The chaetotaxy is similar in number of dorsocentrals to those in *Tephrochlamys* Loew (Heteromyzini), but the lack of the central cheek bristle and the absence of prescapulars, distinguish from it as well.

***Balticoleria michaeli* spec. nov.**

(Figs 1-2)

Etymology

The name of the species is dedicated to Dr. Michael von Tschirnhaus, for his passion in collecting inclusions of the acalyptrate flies in amber.

Diagnosis

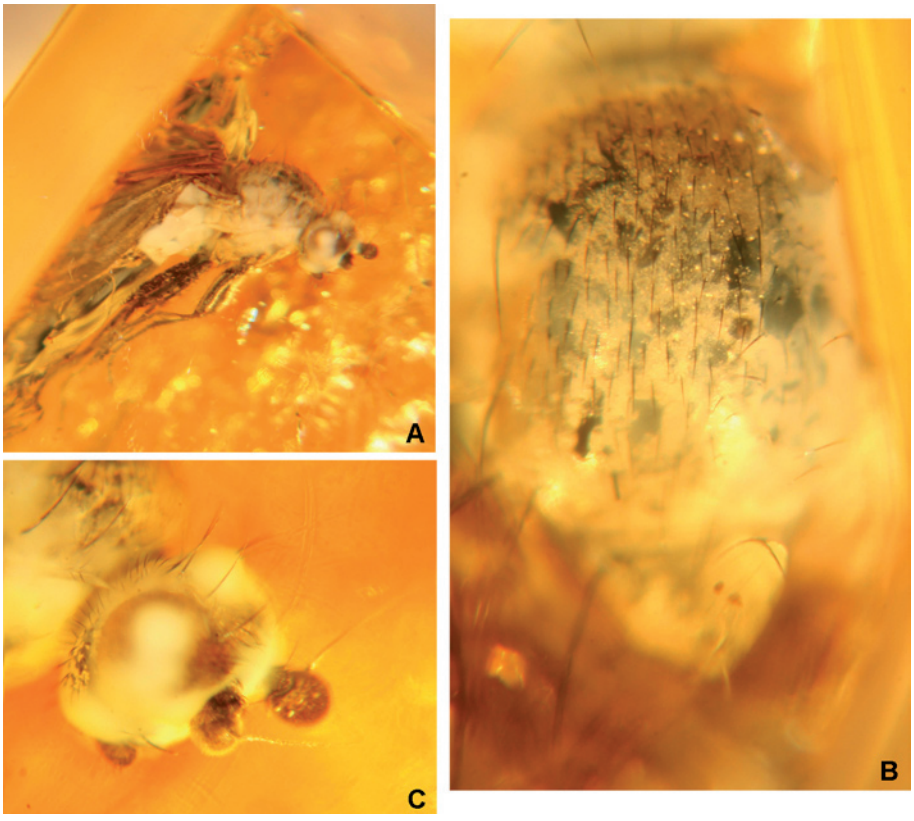
As for the genus.

Description

Body colour greyish-brown and a great part of mesonotum silver greyish dusted (Fig. 1A). Body length: ca. 3.4 mm (without antennae).

Head:

Head ratio: ca. 1.1. Face slightly depressed under antennae. One big vibrissa present, genal setulae well developed, situated in one or two irregular rows (Fig. 2B).



1. *Balticoleria michaeli* Woźnica sp. n:. A - total habitus, B - mesonotum, C - head

Central cheek bristle absent. Eyes round and big. Cheeks broad and greyish (cheek-eye ratio ca. 0.45).

Face similar in colour to the cheeks area. Hypostom orange-brownish, palpus dark brown, corpulent, regularly broad and rounded apically. The distance from anterior to posterior orbital bristle equal to the distance from anterior frons margin to anterior orbital and equal to the distance from posterior orbital to first vertical bristle. Frons slightly brownish.

Antenna between scape and pedicel not deflexed. Scape and pedicel and first flagellomere brown. Pedicel with big apical seta in the anterodorsal part. First flagellomere large, round and brown (first-flagellomere to cheek ratio ca. 1.0). Arista slightly shorter than height of head and minutely pubescent, brownish in colour, with typically swollen basal part. Frons covered by some black setulae. Frontal plate elongated, parallel to eye margins. Two orbital bristles present, the anterior one ca. 0.9 of the posterior one and both not reclinated. A pair of strong ocellar bristles present. Vertical bristles welldeveloped, both similar in length. Postocellar bristles mediumsized and cruciate. Between outer postocellar and inner vertical a small additional seta present (smaller in size than the postocellar bristle).

Thorax:

Mesonotum (Fig. 1B, 2C) with chaetotaxy typical of Heleomyzini sensu Gorodkov, except for the number of dorsocentrals (0+3). One well developed postpronotal bristle, two notopleural bristles, one presutural, one supra-alar and two post-alar bristles present. Mesonotum is sparsely setulose with a few irregular rows (5-6) of acrostichal setulae. Three pairs of dorsocentral bristles present, all of them not arising from spots. Dorsocentral bristles variable in length, first ca. 0.35 of the second and the second ca. 0.56 of the third one (1,0:2,8:5,0). The distance between first and second dorsocentrals shorter than the distance between second and third one. A pair of well developed prescutellar bristles present (Fig.1B). Scutellum slightly elongated and bare, except for two pairs of scutellars (the anterior pair slightly longer than the posterior bristles). Proepimeron setulose with one well developed proepimeral bristle. One distinct stigmatal bristle with no additional setae in anterior corner of anepisternum. Anepisternum and meron entirely bare. Katepisternum bare, with one distinct katepisternal bristle, and with a few additional but hair-like setulae anteriorly.

Wing much longer than body length, ca. 4.3 mm, width ca. 1.0 mm. Wing membrane transparent with pale brown veins. Costa with short and weak costal spines dorsally, especially in the anterior part. Costal spines slightly longer than the costal width. Subcostal cell ending at the level of anterior crossvein. Longitudinal veins pale-brown. Anterior crossvein not darkened. Apical part of both veins enclosing posterior crossvein plucked off and destroyed. Halter whitish with triangular-like knob.

Legs normal, short setulose and brown in colour. Fore femur with a row of nine strong and long bristles anterodorsally (less than the width of the femur) (Fig. 2A) and greyish externally (Fig. 1A). Mid and hind femora sparsely and shortly setulose. All tibiae short setulose, each with small and thin single preapical bristles. Fore tibia and fore tarsomere paler in colour than fore femur (more yellowish-grey). Mid tibia with a row of small anterodorsal setae and few ventral apical setulae. Mid and hind

leg (including tarsomeres) more greyish. First tarsomere of all tarsi much longer than the second segment.

Abdomen:

The abdomen is barely visible, almost totally moulded, rather short and sparsely setulose with weak lateral marginal bristles. Cerci well separated and haired.

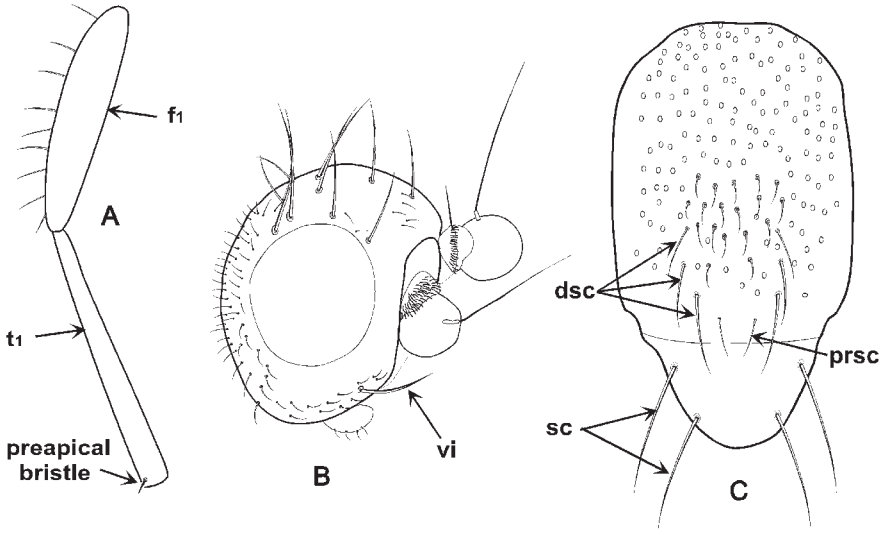
TYPE MATERIAL

Holotype, female, deposited in the collection of Dr. MICHAEL von TSCHIRNHAUS (Bielefeld, Germany). Labelled: *Balticoleria michaeli* WOŹNICA gen. et sp. n. [♀] (red framed).

DISCUSSION

The newly described genus (Plate 1-2) is a typical representative of the subfamily Heleomyzinae in having distinct preapical bristles present on all tibiae, wings with well developed costal spines and sereral ventral setulae on mid tibia. *Balticoleria* is a unique genus within the tribe Heleomyzini. Like other extant genera*, Balticoleria* has two orbitals, but almost equal in length (and not extending from the frontal plate and not as long as in *Paleoheleomyza* WOŹNICA et PALACZYK). Its thoracic chaetotaxy is unique in the scope of all known genera of Heleomyzinae.

The presence of one katepisternal, distinct stigmatal seta, three postsutural dorsocentrals and a bare prosternum distinguishes *Balticoleria* well from other Heleomyzinae as well. However, the taxonomic position of *Balticoleria* within the subfamily is rather unclear. The chaetotaxy is similar in number of dorsocentrals to those of extinct *Chaetohelomyza* HENNIG, but the lack of the prosternal setae, one katepisternal bristle



2. *Balticoleria michaeli* WOŹNICA sp. n. A - fore femur and fore tibia; B - head; C - mesonotum and scutellum

(three in *Chaetohelomyza*) and the absence of posterodorsal setulae on mid tibia distinguish from it as well.

Unfortunately, the important abdominal and postabdominal characters are invisible, so further implications are not allowed. However, it is probably impossible to demonstrate the most expected relationship between various taxa of Heleomyzid flies using only standard cladistic methods (McAlpine 1985).

Key to the identification of fossil genera of the subfamily Heleomyzinae Bezzi, 1911

1. Presutural dorsocentral bristles present ……..……..…… 2.
-. Presutural dorsocentral bristles absent ……..…..…... 3.
2. More than four pairs of dorsocentral bristles and a pair of welldeveloped prescapular setae present …… *Paleoheleomyza* Woźnica & Palaczyk 2005
-. Four pairs of dorsocentral bristles present and prescapular setae absent …….....…….....…… *Protoorbellia* Woźnica 2006
3. Three katepisternal and two dorsocentral bristles present; mid tibia setulose posterodorsally ……..……..…… *Chaetohelomyza* Hennig 1965
-. One katepisternal and three dorsocentral bristles present; mid tibia without posterodorsal setulae ..... *Balticoleria* Woźnica gen. nov.

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