

**Description of a new species *Eopseudopomyza szadziewskii* sp. n.
and redescription of *E. kuehnei* HENNIG, 1971
from Eocene Baltic amber (Diptera: Pseudopomyzidae)**

CHRISTEL HOFFEINS¹ & ANDRZEJ J. WOŹNICA²

¹Christel Hoffeins, Liseistieg 10, 22149 Hamburg, Germany,
e-mail: chw.hoffeins@googlemail.com;

²Institute of Biology, Wrocław University of Environmental and Life Sciences,
Kozuchowska 5b, 51-631 Wrocław, Poland, e-mail: andrzej.woznica@up.wroc.pl

ABSTRACT. *Eopseudopomyza szadziewskii* sp. n. is described from Baltic amber. A series of *Eopseudopomyza kuehnei* is examined and the male is described for the first time. A key to the fossil species is presented. The taxonomic position and relationship of the genus *Eopseudopomyza* HENNIG, 1971 within the Pseudopomyzidae is discussed.

KEY WORDS: Diptera, Pseudopomyzidae, *Eopseudopomyza*, taxonomy, new species, Eocene, Baltic amber.

INTRODUCTION

Among Muscomorpha the Pseudopomyzidae in the sense of MCALPINE, 1996 are small Nerioid-like flies, found in all zoogeographic regions except the Afrotropics, although species richness is highest in the subtropical and tropical areas of the Southern Hemisphere. The pseudopomyzid flies have been treated as a subfamily within the Cypselosomatidae (GRIFFITHS 1972, MCALPINE D.K. 1966, MCALPINE J.F. 1987) and recently reassigned to family rank by BUCK & MCALPINE (2010). To date, 10 recent and 1 fossil genera of this family are known (EVENHUIS 1994, PAPE & EVENHUIS 2013). The pseudopomyzid flies are widely distributed in the Palaearctic (*Pseudopomyza* STROBL, *Polypathomyia* KRIVOSHEINA and *Tenuia* MALLOCH). *Tenuia* is also known from the Oriental Region as the monotypic genus *Macalpinella* PAPP (2005), described from Taiwan.

In the fossil record *Eopseudopomyza kuehnei* is described from Baltic amber (HENNIG 1971: 7) as a typical representative of the Pseudopomyzidae. MCALPINE (1996) has placed *Eopseudopomyza kuehnei* in one generic-group together with the recent *Pseudopomyzella* HENNIG, 1969.

The new fossil species belongs to the fossil genus *Eopseudopomyza* HENNIG including *Eopseudopomyza kuehnei* described from female.

MATERIAL AND METHODS

Specimens representing an unknown Pseudopomyzid fly have been found among acalyptate inclusions studied from the collections of C. and H.W. Hoffsins (Hamburg, Germany) and M. von Tschirnhaus (Bielefeld, Germany); they are described herein. All the material studied is embedded in GTS-polyester resin (Voss Chemie) (HOFFSINS 2001). The morphological terminology and abbreviations follow WOŹNICA (2003, 2006). The photographs were taken with a Nikon Coolpix 4500 digital camera attached to Wild M3Z and Leica DMLS stereomicroscopes, and with a Leica JVCKYF75 digital camera attached to a Leica M205C stereomicroscope using computer graphic techniques (Photoshop and Corel Draw).

The inclusions of the Hoffsins Collection (CCHH) will be deposited at the Senckenberg Deutsches Entomologisches Institut, MÜNCHENBERG, Germany (SDEI).

SYSTEMATICS

Order Diptera LINNAEUS, 1758

Family Pseudopomyzidae MCALPINE, 1966

Genus *Eopseudopomyza* HENNIG, 1971

Type species

Eopseudopomyza kuehnei HENNIG, 1971.

Gender: feminine.

Diagnosis

Eopseudopomyza appears to be closely related to *Pseudopomyzella* HENNIG, 1969 and *Tenuia* MALLOCH, 1926, but differs distinctly from *Pseudopomyzella* by the absence of an epimeral bristle and from *Tenuia* by having four orbital bristles. In contrast to *Tenuia*, the genus *Eopseudopomyza* has a reduced basal cross-vein (bm-cu).

Eopseudopomyza szadziewskii sp. n.

(Figs 1-5)

Diagnosis

Closely related to *E. kuehnei* but differs by 3 bristles along the anterodorsal surface on the hind tibia in both sexes and in the male and female terminalia.

Description

Inclusion embedded in a rectangular polyester block 10x10x6 mm; cuticle of pseudopomyzid fly slightly modified by autoclave processing of the amber sample; surrounded by multiple fissures making observation of morphological details difficult; body colouration light-brown to golden brown. Generally, inclusions in amber are discoloured and rarely show vivid colouration or colour pattern (Fig. 1). Body length: 2.66 mm (without antennae).

Head. Eyes elliptical, bare, cheek narrow near vibrissae and regularly broadened to hind margin of eyes; vibrissae strong, row of 7 genal setulae present, irregular in length, near vibrissae slightly longer; cheek with 2 long bristles in hind lower part. Clypeus and palpus hidden by surrounding fissures. Frons below ocellars with a few small scattered hairs, irregularly arranged and somewhat inclined. Frontal plate broad, with four orbital bristles, anterior one about half length of posterior and with interjacent short setae. Ocellar triangle dark brownish, with pair of strong ocellar bristles. Vertical bristles well developed, the inner one longer than outer one and slightly inclined. Pair of small, thin paraverticals present, postocellars strong and cruciate apically, and seriate postocular setulae present. Antennae porrect, scape small, pedicel broad, with entire circlet of setulae apically including some longer ones; postpedicellus medium sized and rounded, short pubescent, arista inserted mid-dorsally, longer than height of head, short pilose along entire length.

Thorax. Prosternum linear. Thoracic chaetotaxy: 1 postpronotal bristle, 2 notopleurals, 1 strong presutural supra-alar, 1 short anterior supra-alar (pre-alar), 1 posterior supra-alar, pair of post-alars with inner one shorter; row of small intra-alar bristles present; dorsocentrals 4+1, acrostichals short and irregularly arranged, short prescutellar bristles present; scutellum trapezoid-like, with a few scattered hairs, the basal one shorter than the lateral one, apicals bent backwards, strong. Pleuron bare except for katapisternum, 1 proepisternal bristle and 2 katapisternals of equal length present.

Wing. Wings partly overlapping, about 1.9-2.0 mm. Costa with well-developed costal spine-like setulae in second sector, subcostal cell short, ending before anterior cross-vein (r-m). Wing with normal complement of cross-veins, but bm-cu reduced to a stub (Fig. 2); anal vein not reaching wing margin. Haltere yellowish, with large knob. Alula small.

Legs. Legs long, mainly short setulose. Fore femur with 2 rows of strong bristles antero-

and postero-dorsally; mid femur with 2 rows of medium sized bristles anterodorsally; hind femur with 2 subapical dorsolateral bristles. Fore tibia short haired only, without preapical bristle; mid tibiae with 2 long and 2-3 shorter apical bristles; hind tibia with 1 apical, 1 preapical and 3 long bristles along anterodorsal surface (Fig. 3). All first and second tarsomeres with rows of spines, claws simple with black tips, pulvilli inconspicuous.

Abdomen. Male. Syntergosternites 7+8 distinctly shorter than epandrium, with rows of long, slender setae. Epandrium elongate covered with numerous setae, and with pair of long outstanding bristles dorsally near base and another pair of shorter setae posterior. Cercus setulose, surstylus elongated and rounded apically and short setulose only (Fig. 5). Female paratype 1549-3. Segment 7 longer than preceding segments, with fused sternites 7 and 8 forming the oviscapae typical of the family (Fig. 4). Cerci not visible, probably reduced. The length of the oviscapae corresponds to the length of the epandrium in the male holotype.

Type material

Holotype: male in Baltic amber. Inclusion embedded in polyester block 10x10x6 mm. Labelled: 696-11/ CCHH// Baltic Amber// *Eopseudopomyza szadziewskii* HOFFEINS et WOŹNICA sp. n. ♂.

Paratype 1: female in Baltic amber. Inclusion embedded in polyester block 14x12x5 mm. Labelled: 1285-1/ CCHH// Baltic Amber// *Eopseudopomyza szadziewskii* HOFFEINS et WOŹNICA gen. et sp. n. ♀. Inclusion well preserved, wing margin partly destroyed by impurities of pyrite crystals, body length: 2.66 mm, wing length: 2.43 mm.

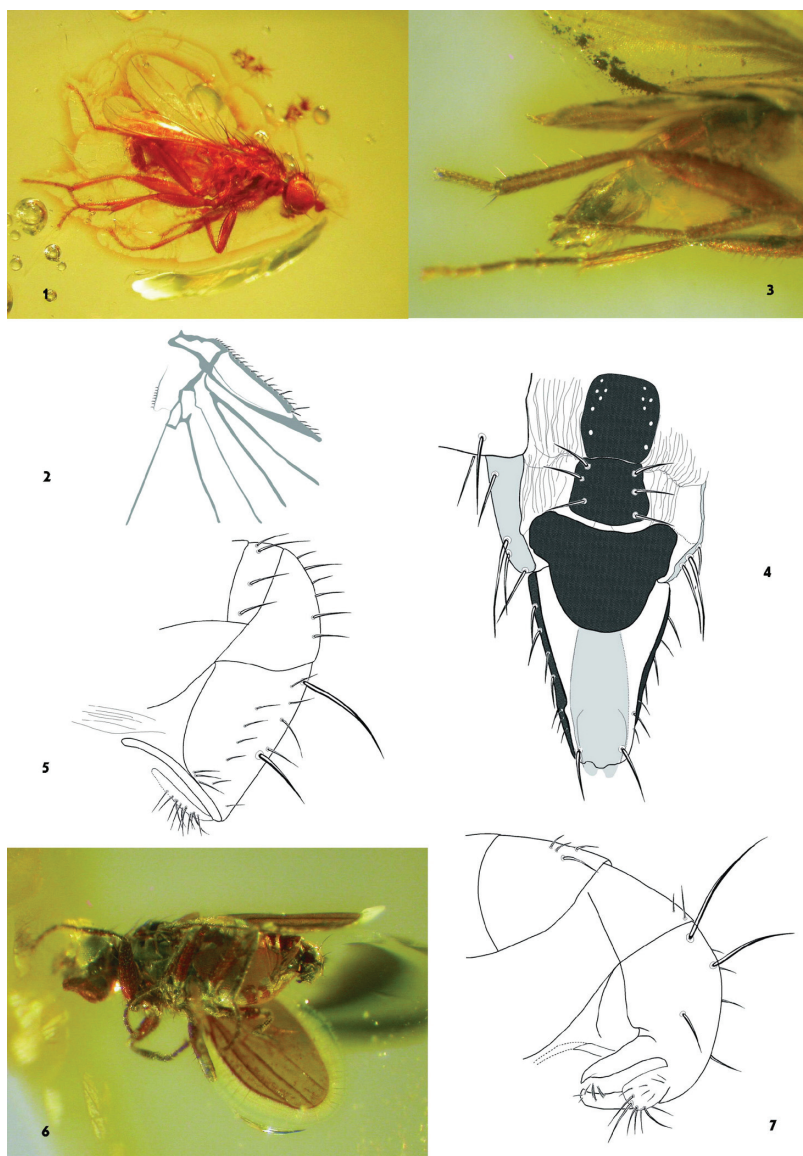
Paratype 2: male in Bitterfeld amber. Inclusion embedded in polyester block 12x10x5 mm. Labelled: 670-3/ CCHH// Bitterfeld Amber// *Eopseudopomyza szadziewskii* HOFFEINS et WOŹNICA sp. n. ♂. Inclusion partly distorted and obscured by milky clouds, but all important characters visible. Body and wing length about 2.33 mm.

Paratype 3: male in Baltic amber. Inclusion embedded in polyester block 17x14x7 mm. Labelled: 17a-A-1/ Coll. M. von Tschirnhaus// Baltic Amber// *Eopseudopomyza szadziewskii* HOFFEINS et WOŹNICA sp. n. ♂. Inclusion is well preserved but partly obscured by a fissure; body length: about 2.9 mm, wing length: ca 2.75 mm, width: 1.1 mm.

Paratype 4: female in Baltic amber. Inclusion embedded in polyester block 15x10x5 mm. Labelled: 1549-3/ CCHH// Baltic Amber// *Eopseudopomyza szadziewskii* HOFFEINS et WOŹNICA sp. n. ♀. Inclusion slightly modified caused by autoclave processing of the amber. Body length: 3.67 mm, wing length: 3.33 mm, width: 1.2 mm.

Etymology

The new species is named in honour of our friend Prof. Ryszard Szadziewski, the Polish dipterist working on extant and fossil Diptera, especially on inclusions in amber.



Figs 1-7. 1 – *Eopseudopomyza szadziewskii* sp. n., male holotype, habitus, lateral; 2 – *Eopseudopomyza szadziewskii* sp. n., female paratype 4, base of wing; 3 – *Eopseudopomyza szadziewskii* sp. n., female paratype 1, right hind tibia and postabdomen; 4 – *Eopseudopomyza szadziewskii* sp. n., female paratype 4, postabdomen, ventral; 5 – *Eopseudopomyza szadziewskii* sp. n., male holotype, postabdomen, left; 6 – *Eopseudopomyza kuehnei* HENNIG, male, habitus; 7 – *Eopseudopomyza kuehnei* HENNIG, male, postabdomen.

Redescription of *Eopseudopomyza kuehnei* HENNIG, 1971

(Figs 6, 7)

In the course of the description of the new taxon, we decided to examine the inclusions identified as *Eopseudopomyza kuehnei* kept in the Hoffeins Collection (CCHH).

HENNIG (1971) described *Eopseudopomyza kuehnei* based on a single female (the holotype) housed in the Staatliches Museum für Naturkunde in Stuttgart. Subsequently VON TSCHIRNHAUS & HOFFEINS (2009) reported 23 (including the type) inclusions in Baltic and Bitterfeld amber from private collections.

At present, the Hoffeins Collection contains 22 inclusions of Pseudopomyzidae, 12 of which were collected from the Bitterfeld deposit.

For this study we examined 3 males, 2 females, and 2 specimens with an obscured postabdomen; 1+4 dorsocentrals were present in all specimens. Inclusions which showed a variation of 1+3 and 2+3 dorsocentrals were excluded; these require further studies. Insufficient preservation or bad position in amber or modifications caused by autoclave processing of the amber samples, caused that details of important morphological characters are not clearly visible in all specimens. However, this series allowed a comparison with the female holotype.

Characters in the *Eopseudopomyza kuehnei* series examined:

Body length (measured without antenna to end of postabdomen): the body length varies from 1.44 to 2.66 mm in males, in females from 1.67 to 2.12 mm.

Scutellum. 3 pairs of scutellars are present in all examined specimens, the basal shorter than the lateral. In HENNIG's figure (8) the basal one is not different from other hair-like bristles on the scutellar disc. The apicals are directed backwards and convergent except in one female specimen with a distinct divergent orientation.

Mid femur. The number of short spine-like median bristles on front of mid femur varies from 2-3 or 4, 5-6 including 1 longer, outstanding bristle. Hind femur. 1 subapical dorsal bristle present whereas 2 subapicals are present in 1 female and 1 male. HENNIG illustrated 2 long bristles near the base of the mid femur; these bristles are absent in all specimens but are present near base of hind femora. This was probably a mistake on HENNIG's part. Hind tibia. Outstanding, long bristles absent.

Wing base mostly flexed or obscured, a stub of bm-cu seems to be present in two males and one female at least.

The size and chaetotaxy of these inclusions seem to be within the limit of species variation. The presence of a basal scutellar bristle is added to the diagnostic chaetotaxy in *Eopseudopomyza kuehnei*.

Female

Size 2.15 mm, including ovipositor 2.45 mm.

Chaetotaxy (partly amended based on HENNIG's Figures 2-11, 1971): frons densely haired, 4 orbital bristles reclining, anterior shorter than posterior, with interjacent short setulae; postocellar bristles cruciate medially, short paravericals; vibrissae well developed; thorax with 1 humeral, 1 presutural, 2 notopleurals, 1 supraalar, 2 postalars (ipa shorter than epa), pair of prescutellars, 1+4 dorso-centrals, acrostichals irregularly arranged and sized, 1 long proepisternal, 2 katepisternals; scutellum with 2 pairs of scutellars, the apical pair upright and longer than laterals, scattered short setulae on disc of scutellum; fore femur with anterodorsal and ventral rows of spine-like bristles, mid femur ventrally with 2 bristles near base, hind femur dorsally with 1 subapical bristle, mid and hind tibiae with apical spines; abdomen bloated; wing with costa densely haired near base, interruption close to ending of R1, subcosta in distal part faint (according to Fig. 9 in original description).

Male

Male in Baltic amber (Fig. 6). Inclusion embedded in polyester block 16x10x6 mm.

Labelled: 696-1/ CCHH// *Eopseudopomyza kuehnei* HENNIG, 1971 ♂.

Body length. 1.52 mm, wing length 1.2 mm; colour light-brown, partly covered with a silvery coating caused by thin air film, abdomen bloated on right side. Head situated near cracklings of the amber crust, thus observation of frontal part difficult. Chaetotaxy of head and body as in the female holotype but with a basal scutellar bristle present.

Postabdomen. Dorsal side obscured by the left wing and a mirror-like fissure making observation difficult. Syntergosternites 7+8 shorter than epandrium, with a few sparsely scattered setae. Epandrium slightly elongate, with pair of long bristles near base, and with pair of shorter median bristles dorsally. Cercus short, densely covered with tuft of differentiated hairs. Surstylus with narrowed tip bent inward, covered with some short spine-like setae on dorsal surface (Fig. 7).

DISCUSSION

The newly described species (Fig. 1), is a typical representative of the family Pseudopomyzidae with well-developed costal spines and anal vein nearly reaching the wing margin. *Eopseudopomyza* is similar to recent *Tenuia* species (by the typically elongated legs), and to *Pseudopomyzella* HENNIG (with the number of orbital and dorsocentral bristles). From the latter it differs by lacking the anepisternal bristle and by having two well-developed katepisternal bristles (one in *Pseudopomyzella* only). From *Tenuia* it differs in the not fully developed bm-cu not reaching M vein and in the number of orbitals. The new fossil species *Eopseudopomyza szadziewskii* shares some characters with

Eopseudopomyza kuehnei HENNIG, matching it in the groundplan but differing in some details. An amended key to the fossil species of Pseudopomyzidae is given.

HACKMANN & VÄISÄNEN (1985) noted the specific type of wing chaetotaxy in *Rhinopomyzella nigrimana* (HENNIG 1969) as type B₁ with hairs rather stout but without a typical spine-like tip. The examined fossil representatives agree in wing chaetotaxy with the type B₁ proposed as a groundplan for all Micropezoids (=Nerioidea) flies.

It should be mentioned that the newly redescribed taxon, like other representatives of this family, has an incompletely sclerotized subfrontal plate and a vibrissa (absent in the Cypselosomatidae), the proepisternal bristle is well developed, and the anal-cubital cross-vein (bm-cu) is not totally closed and looks like a stub. All these taxa, including *Polypathomyia* KRIVOSHEINA, 1979, proposed for a single species *Polypathomyia stackelbergi* (KRIVOSHEINA 1999, MCALPINE & SHATALKIN 1998), are known from the Old World only and are probably more closely related, as suggested earlier by MCALPINE D.K. (1996). The relationships within the Pseudopomyzid flies, especially in the *Pseudopomyza* species-complex, are still not clearly explained and need revision (BUCK & MCALPINE 2010). HENNIG (1971) was the last reviser who presented the hitherto known distribution of Pseudopomyzidae and suggested that most living species (and consequently the genera also) are more widely distributed in the Southern than in the Northern Hemisphere. Fossil representatives are known from Baltic amber (V. TSCHIRNHAUS & HOFFEINS 2009), including amber from the Bitterfeld area. No fossils have been reported from the Rovno area.

Key to fossil species of *Eopseudopomyza* HENNIG

1. Hind tibia short setulose only *kuehnei* HENNIG, 1971
- Hind tibia long setulose, with 3 protruding bristles *szadziewskii* sp. n.

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