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A new genus and species of Ernobiinae (Coleoptera: Ptinidae) from Eocene Baltic amber of the Sambian Peninsula

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Based on a well-preserved inclusion in Eocene Baltic amber (Kaliningrad region), *Eocenobius praestigitator* gen. et sp. nov. is described and illustrated as new to science. A key to species of the subfamily Ernobiinae of Baltic amber (10 species in 5 genera) is provided.

Key words: palaeontology, beetles, Ernobiini, Paleogene, fossil resin, new taxa

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INTRODUCTION

Numerous fossils of Ptinidae have been reported from Cenozoic deposits (Bukejs & Alekseev 2015). The majority of described extinct species are known from Eocene Baltic amberinclusions (Abdullah & Abdullah 1967; Kuśka 1992; Bellés & Vitali 2007; Hawkeswood et al. 2009; Alekseev 2012, 2014; Zahradník & Háva 2014, 2017; Bukejs & Alekseev 2015; Bukejs et al. 2017, 2018a, 2018b, 2021; Alekseev & Bukejs 2019a, 2019b, 2021; Alekseev et al. 2019; Háva & Zahradník 2020a, 2020b, 2020c, 2022). The first description of a ptinid beetle in Baltic amber was made more than 100 years ago (Quiel 1909), while other extinct ernobiine taxa within Baltic amber were described during last decade, anda number of species still remain undescribed. Among the seven subfamilies of Ptinidae with described representatives known from this fossil resin to date (in total 53 described species within 24 genera),

Ernobiinae are represented by nine species within three extant and one extinct genus: *Episernus palvenikensis* Alekseev, 2014; *Ernobius arturi* Háva et Zahradník, 2020; *E. barticus* Alekseev, 2014; *E. electrinus* Quiel, 1909; *E. nadravicus* Alekseev, 2014; *E. notangicus* Alekseev, 2014; *E. varmicus* Alekseev, 2014; *Tuberernobius ambericus* Zahradník et Háva, 2014; and *Xestobium michalskii* Háva et Zahradník, 2020. The diversity of the subfamily in the past is difficult to appreciate based on the material that is currently described, and the placement of fossil representatives requires extra care, especially specimens with insufficient preservation.

In the currentpaper, a new Eocene genus and species of Ernobiini, *Eocenobius praestigitator* gen. et sp. nov. is described based upon a well-preserved specimen. A key to species of Ernobiinae known from Baltic amber is also provided.

MATERIAL AND METHODS

The material examined is currently deposited in the private collection of Vitalii Alekseev (Kaliningrad, Russia) [CVIA]. The amber piece was polished manually with emery papers of different grit sizes, allowing improved views of the included specimen. The amber piece was not subjected to any supplementary fixation.

Measurements of the holotype were made using an ocular micrometer on a MBS-9stereomicroscope. The photographs of the specimen were taken using a Canon EOS 4000D camera mounted on a Zeiss stereomicroscope. Extended depth of field at high magnifications was achieved by combining multiple images from a range of focal planes using Helicon Focus v. 6.0.18 software, and the resulting images were edited to create figures using Adobe Photoshop 7.0.

SYSTEMATIC PALEONTOLOGY

Family PtinidaeLatreille, 1802
Subfamily Ernobiinae Pic, 1912
Tribe Ernobiini Pic, 1912

Remarks. The fossil specimen under consideration is placed in the tribe Ernobiini within the subfamily Ernobiinae (Ptinidae) based on: having antennae that are 11-segmented, with a loose, 3-segmented club; tarsal formula 5-5-5; antennal insertions widely separated; head free, prognathous, not extended posteriorly; elytra with irregular punctation; legs not received in thoracic cavities; prothorax not excavated beneath for reception of profemora; and pronotum with lateral margins.

Genus *Eocenobius* gen. nov.

Type species:*Eocenobius praestigitator* sp. nov., by present designation.

Differential diagnosis. *Eocenobius* gen. nov.is characterized by the following combination of characters:(1) antennae 11-segmented withfiliform antennomeres 3–8, and elongate, three-segmented club; (2) lateral margins of pronotum complete; (3) elytra short and forming oval outline; (4) dorsal pubescence thin, sparse, long, and erect; (5) meso- and metacoxae widely separated; (6) elytral punctation relatively sparse; and (7) metatrochanters angulate.

The newly described genus can be distinguished from the genus *Ernobius* in having shorter elytra (1.5× longer than wide in the new genus and 1.9–2.9× longer than wide in *Ernobius*), sparser elytral punctation (distance between punctures usually less than diameter of one puncture in *Ernobius*), erect dorsal pubescence (recumbent in *Ernobius*), as well as comparatively wide separated meso- and metacoxae. *Eocenobius* gen. nov. can additionally be distinguished from extinct *Tuberernobius*

Zahradník et Háva, 2014 in the absence of knob-like tubercles on the pronotum; from *Paralobium* Fall, 1905 in possessing filiform antennomeres 3–8;and from the genera *Episernus* Thomson, 1863 and *Episernomorphus* Roubal, 1917 in having 11-segmented antennae. For comparison with extinct Ernobiinae taxa of Baltic amber, also see the key presented below. Additionally, *Eocenobius* gen. nov. shows similarity to extant *Ochina* Dejean, 1821 in having comparatively short elytra. However, *Ochina* differs from the new genus in having weakly serrate antennomeres 3–8.

Etymology. The name of the new genus is a compound word and combines "Eocene" (the name of the type species' geological epoch) and "*-bius*" (the Latin root of the type genus of the tribe to which the genus belongs). Gender is masculine.

Remarks. The new genus is monotypic. Therefore, the generic diagnosis is currently identical to that of the type species.

***Eocenobius praestigitator* sp. nov.**
(Figs. 1–2)

Type material. Holotype: No AWI-165 [CVIA]; adult, sex unknown. Almost complete beetle (right antenna absent) included in a transparent, yellow, flat amber piece of irregular form with dimensions of 21×13 mm and a maximum thickness of 4 mm; preserved without supplementary fixation. Syninclusions: several detrital particles, two plant trichomes, two legs of an insect (likely Diptera: Tipuloidea).

Type stratum. Baltic amber; Middle–Late Eocene.

Type locality. Yantarny village (formerly Palmnicken), the Kaliningrad Region, W Russia.

Description. Measurements: body length (from anterior margin of pronotum to elytral apex along midline) 2.43 mm, body maximum width across both elytra 1.36 mm; head length 0.57 mm, head maximum width across eyes 0.69 mm; pronotal length 0.43 mm, pronotal maximum width 1.14 mm; elytral length 2.04mm, elytral maximum width 1.36 mm. Body moderately convex; integument dark brown (as preserved); pubescence conspicuous, long, thin, erect.

Head prognathous, mostly hidden in dorsal view, almost as long as wide (including eyes); finely punctate, with distance between punctures 1.0–1.5× diameter of one puncture. Compound eyes protruding, large, finely facetted, hemispherical, weakly impressed near antennal bases. Ommatidial setae absent. Antennae inserted at inner margin of eyes; antennal insertions widely separated, distance between antennal insertions equal to length of antennomeres 1–5. Antennae 11-segmented, with loose, 3-segmented club; antennae moderately long, reaching abdominal ventrite 1 in ventral position. Antennomere 1 subcylindrical, elongate, 2.0× longer than wide; antennomere 2 subovate, slightly dilated apically, 1.5× longer than wide; antennomere 3 elongate, 2.5× longer than wide; antennomeres 4–8subequal in length, elongate, 1.5–1.8× longer than wide; antennomeres 9–10 elongate, slightly flattened, about 3.3× longer than antennomere8; antennomere 11 spindle-shaped, with acute apex, 3.0× longer than wide. Relative length ratios of antennomeres 1–11 equal to 6:4:5:3:3:3:3:3:10: 10:11. Apical maxillary palpomere short, cylindrical, slightly longer than wide, truncated apically. Apical labial palpomere triangular in outline.

Fig. 1. *Eocenobius praestigitator* sp. nov., holotype, No AWI-165 [CVIA]: A – habitus, dorsal view; B – habitus, ventro-lateral view. Scale bar = 1 mm.

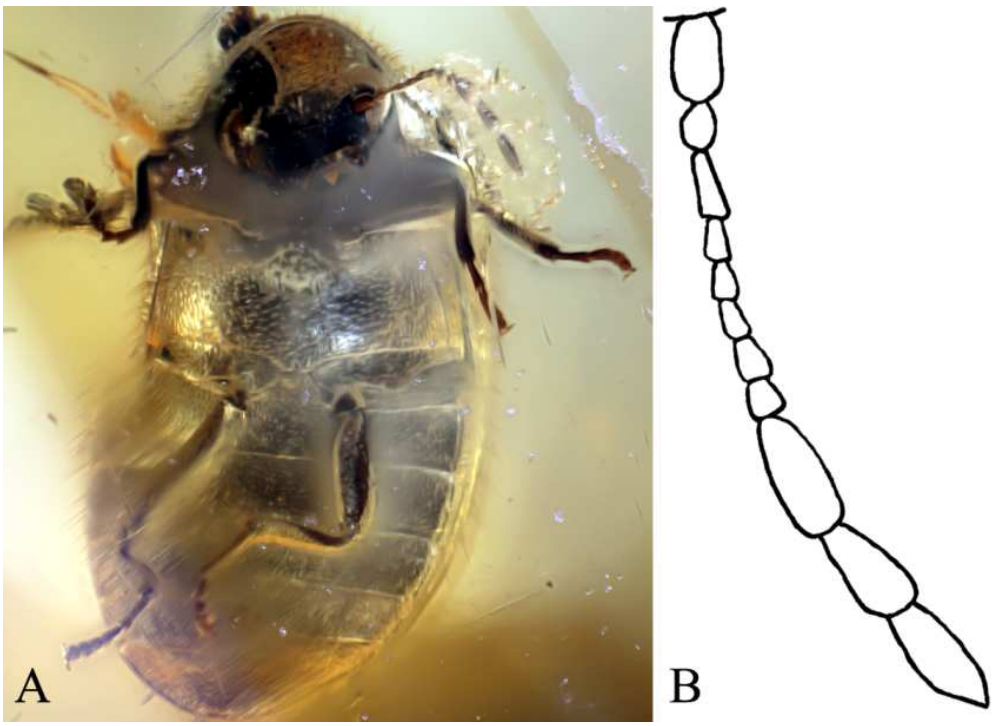

Fig. 2. *Eocenobius praestigitator* sp. nov., holotype, No AWI-165 [CVIA]: A – habitus, ventral view; B – antenna (reconstruction).

Pronotum slightly narrower than elytra at base, strongly transverse, 2.65× wider than long, with maximum width at base; lateral sides and anterior edge finely margined. Pronotal punctation fine, denser at base, about as large as punctation of head; distance between punctures equal to 1.0–2.0× diameter of one puncture. Pronotal pubescence fine, erect, comparatively short, with setae inconspicuous on disc and longer laterally. Posterior pronotal angles obtuse, rounded; anterior angles rectangular with rounded apices. Anterior pronotal margin rounded, without excision, and not raised; posterior edge bisinuate; lateral sides almost straight, smooth, reflexed.

Scutellar shield small, semicircular, transverse. Elytra short and oval, moderately convex, with maximum width occurring near mid-length, 1.5× longer than wide, 4.74× as long as pronotal length; humeri rounded, distinct. Elytral punctation irregular, fine, with punctures slightly larger than punctation of pronotum and head; distance between punctures equal to 1.5–2.0× diameter of one puncture. Elytral pubescence fine, semierect and shorter on disc, erect and longer laterally. Epipleura narrow extending to abdominal ventrite 1. Metaventrite with disc convex; covered with coarse, rather dense punctation; posterior margin between metacoxae straight, with small triangular notch in middle. Mesocoxaeoval, separated by distance equal to 1.5× their transverse diameter. Metacoxae strongly transverse, separated by distance equal to their length.

All legs are relatively consistent in shape, and finely punctate. Mesocoxaeoval, transverse; metacoxae strongly transverse,

grooved for reception of metatibiae. Metatrochanters large, transverse, angulate. Femora elongate-oval, flattened. Tibiae thin, almost straight, nearly as long as femora. Meso- and metatibiae with one apical spur. Tarsal formula 5-5-5. Tarsi withtarsomeres not lobed; tarsomere 1 the longest; tarsomeres 3–5 widened, short, equal in length. Relative length ratios of metatarsomeres 1–5 equal to 10:5:3:3:3. Pretarsal claws strongly curved, thickened at base.

Abdomen with five visible, freely articulated ventrites, covered with rather densepunctation; ventrite 5 rounded apically. Relative length ratios of ventrites 1–5 equal to 12:15:12:10:13 (measured medially).

Note. Procoxal area and prothorax not visible in type specimen due to head position and milky covering of inclusion within surrounding amber.

Etymology. Specific epithet is Latin word *praestigitator*, used as noun in apposition and meaning "trickster, juggler, deceiver, impostor".

DISCUSSION

In Baltic amber, Ptinidae in general and Ernobiinae in particular are represented mainly by extant genera (Bukejs & Alekseev 2015). Out of 24 genera with described species, only 4 genera are extinct: *Xylasia* Zahradník et Háva, 2014 within Xyletininae; *Tuberernobius* Zahradník et Háva, 2014 within Ernobiinae; *Dignoptinus* Alekseev, Bukejs et Bellés, 2019 and *Sucinoptinus* Belles et Vitali, 2007 within Ptininae. The paleobiodiversity of Baltic amber Ptinidae is insufficiently studied, with many taxa awaiting description or additional attention in terms of their systematics. For example, *Ernobiuselectrinus* Quiel, 1909 was originally assigned to *Ernobius* with reservations and doubts. Quiel (1909: 50) wrote "ichstelle das Tier nur mitgrossem Zweifel zu *Ernobius*" [*i.e.*, "I place the animal only with great doubt into *Ernobius"*]. He also noted the similarity in habitus of the studied beetle with *Catorama* (=*Tricorynus* Waterhouse, 1849 in the modern sense of this taxon) and qualified his use of *Ernobius*with a question mark. Some external similaritiesbetween the examined specimen and the subfamily Mesocoelopodinae allow us to tentatively suggest that the previously described species *Ernobius*(?) *electrinus* may also be a representative of the newly described genus, *Eocenobius* gen. nov. (*Ernobius*(?) *electrinus* shares antennae with 11 antennomeres, and external similarities with genus *Tricorynus* are indicated.). For a more definitive conclusion about the systematic position of *Ernobius electrinus*, it would be necessary to study the type specimen, which was probably lost during WWII together with most of the collection from the Westpreußisches Provinzial-Museum in Danzig. Alternatively, the search fornew conspecific material from Baltic amber, may help to shed additional light on the boundaries and relationships between these taxa.

Robust conclusions about Ptinidae in Baltic amber are premature based on the limited data that are currently available. However, the tenth species of the subfamily Ernobiinae described here in adds further support to the idea that the Baltic amber Coleoptera assemblage had a more complex composition in the past, with significant contributions from extinct groups. Systematic research on Baltic amber ptinids is not yet close to its final stage, judging from the large number of reported genera (*e.g.*, Klebs 1910; Spahr 1981) with previously undescribed extinct species. To facilitate future work with specimens from Baltic amber, we present an identification key for the described species of Ernobiinae (Quiel 1909; Alekseev 2014; Zahradník & Háva

2014; Háva & Zahradník 2020a; the present study) from this fossil resin. It should be noted that most species are known from single specimens (holotypes) only. Body lengths in the key refer to the body length of each holotype, and since body size may varyintraspecifically, the lengths given are merely indicative.

KEY TO ADULT ERNOBIINAE KNOWN FROM BALTIC AMBER

1. Antennae 10-segmented, antennomeres 4–9 elongate, triangular; pronotum with impressions; lateral pronotal margin distinct in basal half only; elytra finely punctate-striate; body length 1.7 mm . . . . . *Episernus palvenikensis* Alekseev
– Antennae 11-segmeneted, antennomeres 4–9 cylindrical; pronotum without impressions; lateral pronotal margins complete 2

2. Habitus widely oval, total body length/maximum body width less than or equal to 2.0…… 3
– Habitus elongate, cylindrical, total body length/maximum body width more than 2.0 …… 4

3. Antennomeres 9–11 longer than antennomeres 1–8 combined; abdominal ventrite 1 with keel, abdominal ventrite 5 with pit-like impression; total body length/maximum body width equal to 2.0; body length 5.0 mm. . . . . ‘*Ernobius*’ *electrinus* Quiel
–Antennomeres 9–11 about as long as antennomeres 1–8 combined; abdominal ventrites simple; total body length/maximum body width equal to 1.8; body length 2.4 mm. . . . . *Eocenobius praestigitator* gen. et sp. nov.

4.Elytralpunctationcompletely irregular 5

–Elytra with punctures arranged in fine rows (more pronounced apically and laterally); pronotum coarsely and densely punctate; setation of dorsum very short and decumbent; body length 2.0 mm. . . . . *Xestobium michalskii* Háva et Zahradník

5. Pronotum without tubercles. . . …. 6
–Pronotum with two symmetrical knob-like tubercles; antennomeres 9–11 longer than antennomeres 1–8 combined; body length 2.6 mm. . . . . *Tuberernobius ambericus* Zahradník et Háva

6. Body length less than 2.0 mm; antennomeres 9–11 about as long as antennomeres 1–8 combined. 7
–Body length more than 2.0 mm; antennomeres 9–11 longer than antennomeres 1–8 combined 8

7. Anterior pronotal margin not raised; antennomere 10 shorter than antennomere 11, antennomere 11 pointed apically; body length 1.8 mm. . . . . .
Ernobius barticus Alekseev
–Anterior pronotal margin slightly raised; antennomere 10 as long as antennomere 11, antennomere 11 rounded apically; body length 1.4 mm …….*Ernobius arturi* Háva et Zahradník

8. Antennomeres 9–11 more than 1.5× longer than antennomeres 1–8 combined; pronotal lateral sides narrowly explanate. . . …. 9
–Antennomeres 9–11 about 1.1× longer than antennomeres 1–8 combined; pronotal-lateral sides more widely explanate; body length 2.2 mm. . . . . . .
Ernobius nadravicus Alekseev

9.Antennomeres 9–11 1.7× longer than antennomeres 1–8 combined; body length 2.4 mm .. . . *Ernobius notangicus* Alekseev

–Antennomeres 9–11 2.9× longer than antennomeres 1–8 combined; body length 3.2 mm .. . . *Ernobius varmicus* Alekseev

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