

Palorus platycotyloides sp. n., the Second Fossil Representative of the Tribe Palorini (Coleoptera: Tenebrionidae) from Baltic Amber

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Abstract: Based on a well-preserved specimen from Eocene Baltic amber (Kaliningrad Region, Russia), *Palorus platycotyloides* sp. n. is described, illustrated and compared. It is the second fossil species of the tribe Palorini after *Vabole triplehorni* and the first fossil species of the genus *Palorus*. This new species is similar to the representatives of the genus *Platycotylus* by the slender, relatively flattened body, relatively long legs and antennae and convex eyes, but distinctly differs by other combined characters of the genus *Palorus*. Among *Palorus* spp., the new species can be compared with two species: *P. nanus* Halstead, 1967 and *P. euphorbiae* (Wollaston, 1862), which also have long antennae. Life forms of the imago in the tribe Palorini are considered.

Key words: Tenebrioninae, *Palorus*, new species, Tertiary, Eocene, fossil resin

Introduction

The tribe Palorini Matthews, 2003 includes nine recent genera widespread in the Old World (HALSTEAD 1967). The New World contains only introduced species. The greatest generic diversity of the tribe is seen in the Oriental Region, Australia and Africa (HALSTEAD 1967, MATTHEWS & BOUCHARD 2008). The largest genus *Palorus* Mulsant, 1854 includes 40 species distributed in Asia and Africa (HALSTEAD 1967, 1977). Two species, *Palorus ratzeburgii* (Wissman, 1848) and *P. subdepressus* (Wollaston, 1864) are commonly found in stored products and have a cosmopolitan distribution. Some species of the genera *Palorus*, *Ulomina* Baudi di Selve, 1876 (= *Coelopalorus* Blair, 1930) and *Palorinus* Blair, 1930 are also known as pests of food stocks but they are less widespread (HALSTEAD 1967). The second-largest genus *Palorinus* includes eight species distributed in the Oriental region and the Eastern Palaearctic (GRIMM 2003). The third most diverse group of Palorini is the genus *Platycotylus* Oliff,

1883, with five African species and two species from South-eastern Asia and Queensland (SCHAWALLER 2014). Other genera from Madagascar and Australia include no more than four locally distributed species (MATTHEWS & BOUCHARD 2008) (except for introduced species of the genus *Ulomina*). Fossil Palorini were known after the work of KLEBS (1910), who listed *Palorus* sp. from Baltic amber. Recently, the new fossil genus and species *Vabole triplehorni* was described from Baltic amber (ALEKSEEV & NABOZHENKO 2015). In the present paper, we provide a description of a new species of the genus *Palorus* from Eocene Baltic amber.

Material and Methods

The examined inclusion was originally borrowed from the private collection of Christel and Hans Werner Hoffeins (Hamburg, Germany). The type is deposited at the Senckenberg Deutsches

Entomologisches Institut in Müncheberg, Germany (DEI), as part of the institutional amber collection for permanent preservation.

Photographs were taken with a Zeiss AxioCamICc 3 digital camera mounted on a Zeiss Stemi 2000 stereomicroscope. The measurements were made using an ocular micrometer in a stereoscopic microscope.

Results

Systematic Palaeontology

Family Tenebrionidae Latreille, 1802

SUBFAMILY TENEBRIONINAE LATREILLE, 1802

TRIBE PALORINI MATTHEWS, 2003

Genus *Palorus* Mulsant, 1854

Palorus platycotyloides sp. n.

(Figs. 1–3)

Type material. Holotype (DEI): Nr. 1229-2 [CCHH]; sex unknown (abdominal pits absent). A complete beetle is included in a small, yellow amber piece embedded in a block of GTS-polyester resin with dimensions 18 x 6 x 6 mm. Syninclusions absent.

Type strata. Baltic amber, Upper or mid-Eocene.

Type locality. Yantarny settlement (formerly Palmnicken), Sambian (Samland) Peninsula, Kaliningrad Region, Russia.

Etymology. The species name is derived from the name *Platycotylus* because the body form of the species is similar to that of representatives of this genus.

Differential diagnosis. This new species is similar to the representatives of the genus *Platycotylus* by the slender, relatively flattened body, relatively long legs and antennae and convex eyes, but distinctly differs from it by the shorter body (less than 3 mm unlike in *Platycotylus* species), the different pronotal form (without separately produced and acute anterior and posterior angles), antennomeres not all elongate and reduced venation of hind wings (especially absence of radial cell).

The species belongs to the genus *Palorus* by the following characters: head not densely or very densely punctured, without longitudinal rugosity on vertex; anterior margin of frontoclypeus straight, not obtusely angled laterally; elytral interstriae flat and not carinate; maxillary palps attenuate and not securiform; dorsal margin of eyes level with side margin of gena. Tarsal formula 5-5-4 but basal pro- and mesotarsomeres very short, difficult to see.

Among *Palorus* spp., the new species can be compared with *P. nanus* Halstead, 1967 and *P. euphorbiae* (Wollaston, 1862), which also have the simple (not petaloid, not forming horns) genae and

antennal length equal to or greater than pronotal length. *Palorus platycotyloides* sp. n. differs from the first species by the absence of a fovea towards the base of the pronotum and coarser punctation of the pronotum; from *P. euphorbiae* by the indistinct supra-orbital carina, cordiform pronotum and longer antennae (*P. euphorbiae* has antennae as long as pronotum, *P. platycotyloides* sp. n. has antennae 1.14 times longer than pronotum).

The newly described species could be compared with the extinct *Vabole triplehorni* Alekseev et Nabozhenko, 2015 from Baltic amber, but is clearly distinguished from the latter by the absence of spines on the inner side of the metatibiae, different tarsal formula (4-4-4 in *V. triplehorni*), non-reduced antennomere 11 and the distinct periscutellar stria.

Description. Body length about 2.2 mm, maximal width 0.79 mm; elongate, nearly parallel-sided, flattened dorsally, shining, without visible pubescence; body and appendages uniformly rufous.

Head: transverse (1.75 times wider than long); densely punctured (distance between points 0.5-1.0 diameter of each puncture). Eyes lateral, rounded,

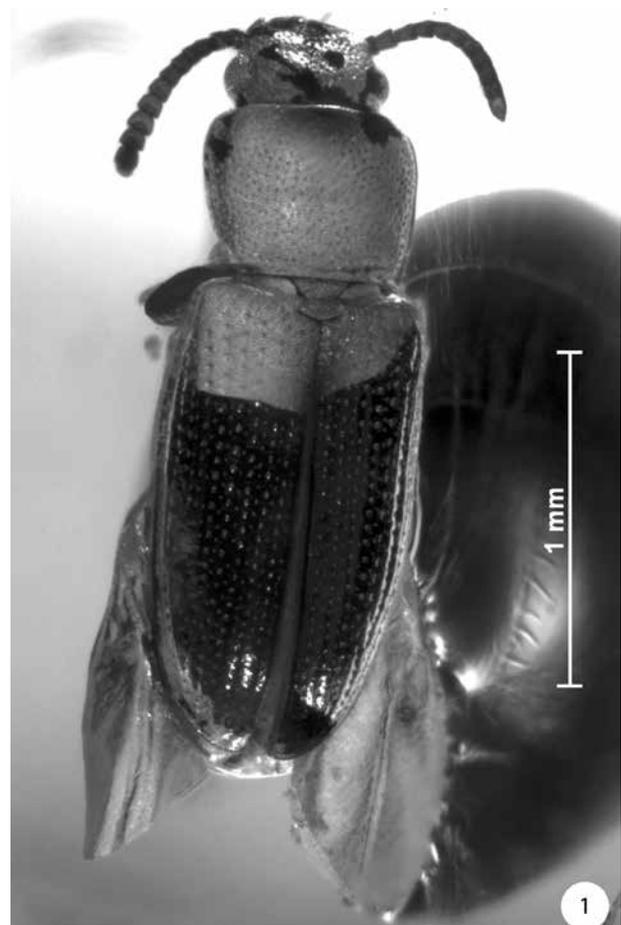


Fig. 1. *Palorus platycotyloides* sp. n. from Baltic amber. Holotype, habitus. Dorsal view

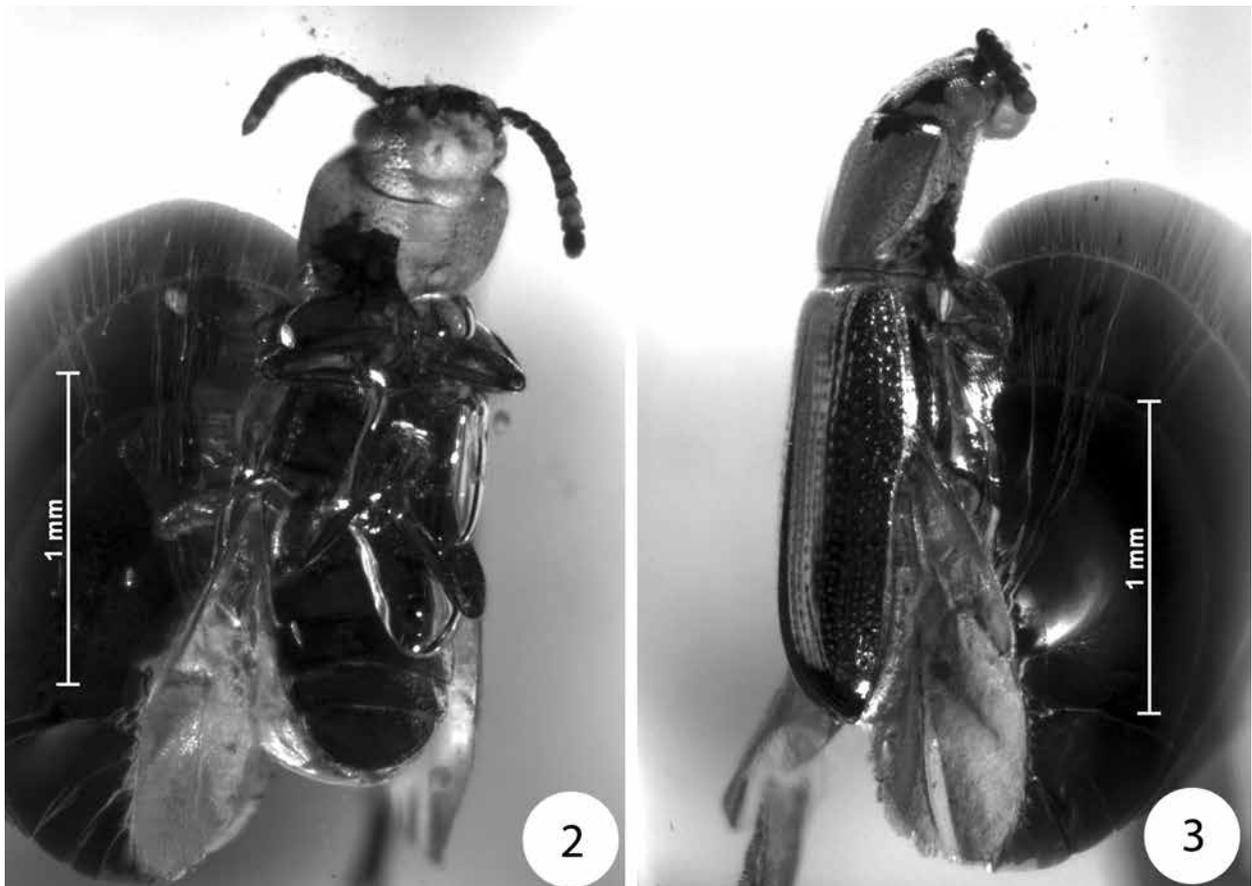


Fig. 2–3. *Palorus platycotyloides* sp. n. from Baltic amber. Holotype, habitus. 2. Ventral view. 3. Lateral view

not emarginated, diameters of facets larger than diameters of punctures on vertex. Antennae 11-segmented; slightly flattened; reaching middle of pronotum; 1.14 times longer than pronotum; without distinct club. First antennomere partially hidden from above; relative lengths of antennomeres 3-4-5-4-4-4-4-5-5-5-6, antennomeres 1-3 and 11 elongate; antennomeres 4-7 as long as wide; antennomeres 8-10 slightly transverse. Terminal maxillary palpomere elongate, pointed, longer than penultimate palpomere. Head without longitudinal rugosity on vertex. Vertex smooth, with coarse deep sparse punctures.

Thorax: pronotum transverse (1.24 times wider than long); widest before middle at anterior third; lateral margins weakly rounded, sinuate at base; anterior margin and base straight; disc of pronotum very weakly convex, finely bordered laterally and basally, distinctly punctured (distance between punctures 1–3 times longer than their diameter). Posterior pronotal angles acute, right; anterior angles widely rounded. Prothoracic hypomera with coarse and sparse round punctures. Prosternal process gradually expanded apicad, twice wider at apex than between procoxae. Scutellum transverse (2.5

times wider than long), trapezoid, narrowed to base.

Wings: well developed; elytral length (along elytral suture excluding scutellum) 1.3 mm; venation reduced, radial and cubital veins well developed, radial cell absent; elytra comparatively short (twice as long as pronotum); with nine striae and one additional periscutellar stria consisting of six punctures. Striae 6 and 7 shortened, not reaching elytral apices. All striae weakly impressed apically. Distance between striae equal to 2-3 diameters of strial punctures at disc and equal to diameter of strial punctures laterally (lateral strial punctuation coarser and denser than medial = discal strial punctuation). Elytral interstriae flat on disc, with single row of small punctures (distinctly smaller than strial punctuation). Interstriae 5, 6, 7 and 8 slightly elevated on basal one-third of elytra.

Legs: procoxae separated from each other by distance equal to procoxal diameter. Tibiae simple, with flattened outer margin; tarsal formula 5-5-4; basal tarsomeres of pro- and mesotarsi small and short, poorly visible; ultimate tarsomere longer than two previous tarsomeres combined; claws long (about one-third of length of ultimate tarsomere), simple, acute.

Abdomen: with five ventrites; relative lengths of ventrites 1.5-1.2-1.0-1.0-1.5; ventrites shallow and densely punctured (distance between points 0.5-1.0 diameter of each puncture); ventrite 5 finely bordered marginally. Abdominal intersegmental membranes between 3–5 ventrites visible.

Remarks. The meso- and metathorax of the examined specimen are obscured by a longitudinal gas bubble. The mouthparts are also invisible because of a milky-white coating and opacity of the amber matrix. Genitalia are internal and could not be examined in this specimen.

Discussion

Three life forms are characteristic for Palorini species:

1. Winged species with subcylindrical body, short legs and antennae, characteristic for most genera (including *Palorus*) of the tribe Palorini. They live under bark of dead or dying trees often using galleries of bark beetles in the phloem.

2. Winged taxa with flattened slender body, long legs and antennae longer than pronotum; tarsal formula 5-5-4 or 4-4-4. This life form is typical for the genera *Platycotylus* and *Austropalorus* Halstead, 1967 with species living under hardly loosened bark of dead trees, similar to beetles of the families Laemophloeidae, Salpingidae or Silvanidae (SCHAWALLER 2014). The fossil species *Vabole triple-*

horni also hypothetically had this life form.

3. Wingless beetles with subcylindrical body, sometimes with carinate pronotum and elytra; short legs and antennae (sometimes 10-segmented); tarsal formula 5-5-4 or 4-4-4. Only two termitophilous genera, *Eutermicola* Lea, 1916, *Pseudeba* Blackburn, 1903, and one undescribed palorine genus (MATTHEWS & BOUCHARD 2008) have this life form.

The new fossil *Palorus* possesses a flattened body similar to that of *Platycotylus* with relatively long legs and antennae. However, the overall diagnostic characteristics of the new taxon completely correspond with that of the genus *Palorus*. We suppose that the newly described species can be assigned to the second group of the above life forms: the similarity in habitus of the new taxon with the species of *Platycotylus* and *Vabole* is an example of evolutionary parallelism and adaptation to similar ecological niches.

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