



## *Protomauroania mikhailovi*—a new species of malachite beetles (Coleoptera, Dasytidae) in Rovno amber

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### Abstract

A new species of malachite beetles, *Protomauroania mikhailovi* Tshernyshev & Perkovsky, **sp. n.** is described from late Eocene Rovno amber. The new beetle is the second species of the Eocene fossil genus *Protomauroania* Tshernyshev, 2021 that was first recorded in Rovno amber and shows fauna similarity of dasytids in Baltic and Rovno amber. The new species is typical owing to the following characters: antennae with 5-segmented wide club, surface covered with dark-brown long semi-erect thin setae, and the ultimate ventrite (apical sternite) simple, narrow, not depressed. Digital high resolution pictures of the beetle are provided.

**Keywords:** Danaceinae, Amaurionidini, *Protomauroania*, late Eocene, fossil, Ukraine

### Introduction

The monotypic genus *Protomauroania* Tshernyshev, 2021 with the type species *P. chaetophorata* Tshernyshev, 2021, was recently described from Baltic amber (Tshernyshev & Shcherbakov 2021). Belonging to the tribe Amaurionidini of the subfamily Danaceinae, the genus differs by the scalloped lateral side of pronotum, antennae with 6-segmented club, surface covered with red-brown long semi-erect strong setae, and the strongly elongate basal tarsomeres in the hind tarsi. This extinct genus in the present fauna substituted by *Mauroania* Majer, 1997 and *Amauronia* Westwood, 1839 distributed in Southern Europe and Asia, and North Africa.

Recently a new species of the genus was found in Rovno amber. Well-preserved male specimen which demonstrates strong differences from *P. chaetophorata* Tshernyshev, 2021, from Baltic amber by the following characters: antennae with 5-segmented widened club, surface covered with dark-brown long semi-erect thin setae, and the ultimate ventrite (apical sternite) simple, narrow, not depressed. Thus, a new species, *Protomauroania mikhailovi* Tshernyshev & Perkovsky, **sp. n.**, is described below.

The presence of two species in the genus *Protomauroania* Tshernyshev both in the Baltic and the Rovno amber evidence wide range of the genus distribution in Eocene, and also the similarity of these amber faunas. Differences between these two faunas are more prominent in the family Malachiidae, that has species of tribe Troglolini strictly in Rovno amber, whereas representatives of the tribe Palpatalini are present only in Baltic amber (Tshernyshev 2012, 2016, 2019, 2020, 2021). The present find is one of the first for the family Dasytidae in Rovno amber, due to weak knowledge regarding this family occurrence in the Rovno amber.

Most beetles from Rovno amber as well as greater proportion of all Rovno inclusions that have been studied, were mined in Klesov (Sarny district, Rovno region) (Lyubarsky & Perkovsky, 2011; Bellés & Perkovsky 2016; Jałoszynski & Perkovsky 2016; Nadein *et al.* 2016; Nazarenko & Perkovsky 2016; Perkovsky 2016; Legalov *et al.* 2018, 2019; Petrov & Perkovsky 2018; Kazantsev & Perkovsky 2020; Kupryjanowicz *et al.* 2021).

The new finds come from the former Zarechnoye and Vladimirets districts of the Rovno Region (Perkovsky & Olmi 2018; Jaloczynski & Perkovsky 2019, Mamontov *et al.* 2019, 2020; Martynova *et al.* 2019; Perkovsky & Makarkin 2019, 2020; Lyubarsky & Perkovsky 2020; Makarkin & Perkovsky 2020; Perkovsky & Vasilenko 2020; Perkovsky *et al.* 2020; Radchenko & Khomich 2020; Simutnik *et al.* 2020; Matalin *et al.* 2021; Perkovsky & Nel 2021), as well of from nearby Manevichi district of Volyn region (Perkovsky & Anisyutkin 2021).

Of the combined beetle fauna of Rovno and Baltic, only 13% of the species occur in both deposits (Legalov *et al.* 2021). None of the Rovno amber beetles from either Zarechnoye or Vladimirets have been detected in Baltic amber.

## Material and Methods

Terminology of terminalia morphology is according to Lawrence *et al.* (2010), namely (in comparison with previously used terms): pygidium for apical tergite, ultimate abdominal ventrite for apical sternite.

The amber here studied was found in the Voronki locality (former Vladimirets district, Rovno region). The photographs were taken with a Leica M165C stereo microscope at the Animalia Research Center for the Sharing of Scientific Equipment at the I.I. Schmalhausen Institute of Zoology of the National Academy of Sciences of Ukraine, Kiev. The type is deposited in the Schmalhausen Institute of Zoology of the National Academy of Sciences of Ukraine in Kiev (SIZK).

## Order Coleoptera

### Suborder Polyphaga

### Superfamily Cleroidea Latreille, 1802

### Family Dasytidae Laporte de Castelnau, 1840

### Subfamily Danaceinae C.G. Thompson, 1859

### Tribe Amauroniodini Majer, 1987

### *Protomauroania mikhailovi* Tshernyshev & Perkovsky, sp. n.

Figs 1–6

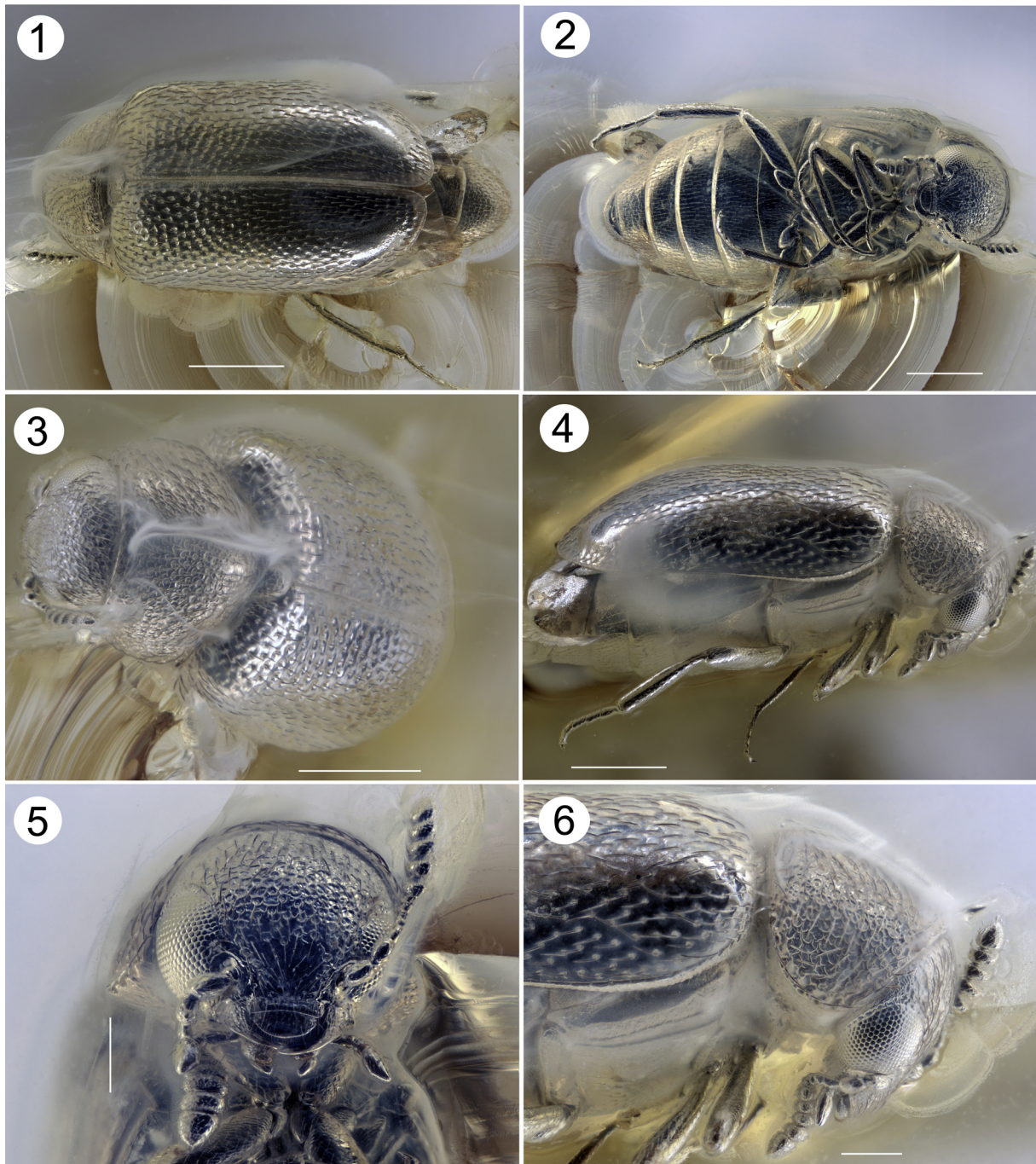
urn:lsid:zoobank.org:act:78E0C4F4-BC0B-46A1-9EC9-D0D4DB4B8D06

**Etymology.** The species is named in honour of the famous Russian arachnologist and publisher of scientific literature, Dr Kirill Glebovich Mikhailov, our good friend who made outstanding contribution to development of scientific studies, and is dedicated to his 60s anniversary jubilee.

**Material.** Holotype. SIZK L-589, male (sex is confirmed by a pronounced antenna club, characteristic apical abdominal sternite (the 8th ultimate ventrite) with elevated and slightly curved distal margin, and a pygidium wide, elongate and dome-shaped providing movement for curved aedeagus during copulation); Rovno amber; late Eocene. A rectangular piece of amber.

**Description.** Body black-brown, without metallic lustre; dorsal setae are dark brown. Labial palpi yellow-brown, antennal club black. Body elongate and oval, narrowed posteriorly and looks inversely egg-shaped (Figs. 1, 2). Head prognathous, slightly deflexed, small, rounded, not protruding distally and not wider than pronotum at the level of eyes; eyes round, large, weakly convex, bare, frons and interocular area slightly convex and lacking impressions. Surface of head evenly and strongly punctured, microsulpture distinct, surface evenly covered with adpressed strong elongate hairs (Figs. 3, 5). Antennae 11-segmented, attached the head near the lower edge of eyes above clypeus, distinctly clavate, short, reaching but not extending over the posterior margin of the pronotum; club 5-segmented, not compact (Fig. 5). First antennomere slightly swollen, oval, the second antennomere is twice as





**FIGURE 1.** *Protomauroania mikhailovi* sp. n., holotype SIZK, no. L-589: (1) upperside (1); underside (2); head pronotum, upperside (3); lateral view, right (4); head, frontal (5); pronotum, lateral view (8). Scale bars 1–4 – 0.5 mm, 5, 6 – 0.2 mm.

narrow and shorter, as the 1<sup>st</sup>, oval, 3<sup>rd</sup> antennomere elongate, subcylindrical, 1.5 times as short as the 2<sup>nd</sup> and twice as long as the 4<sup>th</sup>, 4<sup>th</sup> to 6<sup>th</sup> antennomeres short, transverse and equal in length, 7<sup>th</sup> to 11<sup>th</sup> antennomeres wide and transverse, subtriangular, forming club, 7<sup>th</sup> antennomere twice as wide as the 6<sup>th</sup> and 1.4 times as narrow as the 8<sup>th</sup>, 8<sup>th</sup> to 11<sup>th</sup> equal length, apical antennomere flattened and rounded apically; surface of antennae sparsely covered with short semierect fine hairs. Clypeus narrow, with incrassate and eleviate distal margin, labrum small, transverse, rounded apically, with distal margin thin and slightly eleviate, labrum is twice as long as the clypeus. Palpi (Figs. 5, 6) elongate, narrow, 1<sup>st</sup> and 2<sup>nd</sup> palpomeres sub-cylindrical, the 1<sup>st</sup> palpomere of the same length as the 3<sup>rd</sup> and twice as long as the 2<sup>nd</sup>, apical palpomere weakly flattened and truncate at apex, looks sub-triangular, four labial palps of equal shape, short, with apical palpomeres narrow and cylindrical. Mandibles bidentate, rounded, not protruding. Pronotum convex, slightly wider than long, evenly rounded laterally and with rounded angles. All sides finely

marginate, the laterally with a typical scalloped edge (Fig. 6). Surface evenly and finely punctured, with distinct microsculpture, covered with adpressed strong long hairs. Scutellum is clearly visible (Figs. 1, 3), transverse, triangular at apex with rounded angles, with the same puncturation and pubescence as on pronotum; disc of scutellum on sides finely marginate, slightly shining. Elytra simple, oval, slightly convex and parallel, evenly rounded posteriorly, slightly wider than pronotum at base (Figs. 1, 3); probably not covering the abdomen (Fig. 1). Shoulders small, not protruding; epipleura distinct at basal quarter and thin along the posterior part of elytra and coarsely punctured. Elytra with suture entire for whole length of elytra, surface densely and evenly punctured, with smooth microsculpture, faintly shining; evenly covered with strong, adpressed long hairs (Figs. 1, 6). Legs short, simple, not thickened (Figs. 2, 4), finely sparsely punctured and covered with short adpressed hair, surface of tibiae with short erect setae, tarsomeres compressed, with adhesive hairs on pedal part. Femora of all legs somewhat flattened and widened, not curved; tibiae straight, evenly dilated to the apex, two spicular short spurs are visible on apices of tibiae of intermediate and posterior legs; all tarsi 5-segmented, 1st posterior tarsomere is the longest, while the claw tarsomere is the longest in intermediate and anterior legs; in intermediate and posterior legs 1<sup>st</sup> and 4<sup>th</sup> tarsomeres are equal in length, 2<sup>nd</sup> and 3<sup>rd</sup>, are equal length, claw segment is 1.5 times as long as 2<sup>nd</sup> or 3<sup>rd</sup>, and twice as long as 1<sup>st</sup> of 4<sup>th</sup> tarsomeres, in posterior legs claw tarsomere is 1.5 times as long as 2<sup>nd</sup> or 3<sup>rd</sup> and twice as long as 4<sup>th</sup> tarsomere, claws small, short and sharp, with a tooth at base. Wings normally developed. Underside weakly shining, finely and densely punctured and evenly covered with fine short adpressed hairs, mesepimeres longitudinal, with smoothed fine punctures, pygidium (apical tergite) domed, slightly curved ventrally inward, ultimate ventrite (apical sternite) simple, narrow, not depressed, with elevate and slightly curved distal margin (Fig. 2).

Measurements: length 2.75 mm width (in the area of the base of the elytra) – 1.0 mm.

**Differential diagnosis.** The new species is small (about 2.75 mm) and, unlike most representatives of the subfamily Danaceinae, it is covered with long, strong, brown, semi-erect setae instead of scales or hairs. The presence of scalloped lateral margin of the pronotum in the genus *Protomauroania* Tshernyshev, 2021 makes it similar to the genus *Mauroania* Majer, 1997, but unusually elongated basal tarsomere in posterior legs and a distinct antenna club, which is atypical in the species of the tribe Amauroniodini are distinguish this fossil genus.

The new species differs from *P. chaetophorata* Tshernyshev, 2021 described from Baltic amber by the following characters: antennae with 5-segmented widened club, surface covered with dark-brown long semi-erect thin setae, and the 8<sup>th</sup> ultimate ventrite (apical sternite) simple, narrow, not depressed.

Several apical antennomeres in Danaceinae can be widened and considered as a “clava”. Number of the antennomeres is varying in different species and even subspecies of one genus, for example it is 3-segmented in *Danacea sardoa mancini* Pic, 1927 and 4-segmented in *Danacea sardoa renosensis* Constantin & Liberti, 2006, or 4-segmented in *D. ambigua* Mulsant & Rey, 1868 and 5-segmented in *D. denticollis* Baudi di Selve, 1861 (see Constantin *et al.* 2011). The term “clava” in Dasytidae is not analogues to clava of apical segments in antennae of the other beetle groups such as Cucujoidea or Byrrhoidea, and means somewhat more strongly widened apical antennomeres, which could be more strongly elongate in some species, for example, *Dolochosoma lineare* (Rossi, 1794).

*Protomauroania* is a single extinct Cenozoic genus of the family; in Santonian of Taimyr the family is represented by *Acantocnemoides* Zherichin (Kolibáč & Perkovsky 2020).

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