



<http://dx.doi.org/10.11646/zootaxa.3686.3.7>

<http://zoobank.org/urn:lsid:zoobank.org:pub:13A78E6B-9FF6-4E74-A8C4-45D143B090F2>

## ***Dieneremia rueckeri*, a new genus and species of minute brown scavenger beetle from Baltic amber, with notes on other fossil Latridiidae (Coleoptera: Cucujoidea)**

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### **Abstract**

*Dieneremia rueckeri* **gen. et sp. nov.** is described and illustrated from Upper Eocene Baltic amber (Yantarny village, the Kaliningrad Region, Russia). A new synonymy is established: *Latridius jacquelineae* Hawkeswood, Makhan and Turner, 2009 = *Latridius jantarius* Borowiec, 1985. New fossil records on *Latridius jantarius* Borowiec, 1985 are presented.

**Key words:** Coleoptera, Latridiidae, *Dieneremia rueckeri*, Baltic amber, Eocene, new taxa, new synonymy, new fossil records

### **Introduction**

Baltic amber (succinite) is mainly found on the southern coasts of the Baltic Sea and originates from the Eocene. Although an early Middle Eocene (Lutetian) age has been estimated for the Baltic amber-bearing sediments by K-Ar dating (Ritzkowski 1997), palynological biostratigraphy supports a younger, Priabonian determination of the Prussian formation (Aleksandrova and Zaporozhets 2008). A detailed discussion of the stratigraphic basis for the age of Baltic amber deposits can be found from Perkovsky et al. (2007). According to the well-grounded opinion of Turkin (1997), Baltic amber is derived from resin produced by *Pinus succinifera* (Conw.) Schub., which together with oak dominated the Eocene humid mixed forests of Northern and Central Europe. The “amber forests” were situated at the boundary separating the paratropic and temperate climates and consisted of different conifers (Pinaceae: 11+ species; Taxodiaceae: 4 species; Cupresaceae: 2 species), broad-leaved trees (Fagaceae: *Quercus* spp., *Castanea*, *Fagus succinea*, *Lauraceae*), palms and others (Larsson 1978).

Only a small number of species of Latridiidae are known from fossils (Borowiec 1985; Bukejs et al. 2011, 2012; Hawkeswood et al. 2009; Heer 1856; Kirejtshuk and Azar 2008; Kirejtshuk and Nel 2009; Kirejtshuk et al. 2009; Reike 2012; Schlechtendal 1894; Wickham 1913, 1914a, 1914b; Zherikhin 1977). A detailed review of this family in the fossil record is presented in the catalogue by Ponomarenko and Kirejtshuk (2012). Most records of fossil Latridiidae come from Cenozoic deposits, mostly from Baltic amber. However, most records contain nothing more than a generic or family identification, with no formal descriptions (Klebs 1910; Spahr 1981; Hieke and Pietrzeniuk 1984; Kubisz 2000, 2001; Alekseev and Turkin 2007). Records of the genera *Cartodere* Thomson, 1859, *Corticaria* Marsham, 1802, *Enicmus* Thomson, 1859, *Latridius* Herbst, 1793, *Melanophthalma* Motschulsky, 1866 and *Revelieria* Perris, 1869 are mentioned by Klebs (1910) and Kubisz (2000, 2001) from Baltic amber. A list of the minute brown scavenger beetles (14 species belonging to 7 genera) described from Baltic amber is provided in Alekseev (2013). The current knowledge of the latridiid fauna of Baltic amber forests must be regarded as insufficient, and descriptions of species from 3–4 genera can be expected in the near future.

In the current paper, *Dieneremia rueckeri* **gen. et sp. nov.** is described from Upper Eocene Baltic amber, the first description of an extinct genus from Baltic amber. A new synonymy is also established, and new data on fossil Latridiidae are presented.

## Material and methods

The material examined are deposited in the following collections:

Museum of the Earth of Polish Academy of Sciences (Warszawa, Poland) [ACME]

Private collection of Vitaly Alekseev (Kaliningrad, Russia) [ACWA]

Private collection of Andrzej Górski (Gdańsk, Poland) [ACAG]

Private collection of Andris Bukejs (Daugavpils, Latvia) [ACAB]

The photos were taken using a modified Wild M20 stereomicroscope and a Canon EOS 60D digital camera. Merging of layers to produce the final habitus images was done with Zerene Stacker, Version 1.04 (Zerene Systems LLC, Richland, WA, USA). The drawings were made based on the photographs using a Zeiss Discovery V8 Stereomicroscope. The drawings were scanned and edited using Adobe Photoshop CS5.

## Systematics

### Latridiidae Erichson, 1842

### Latridiinae Erichson, 1842

#### *Dieneremia* gen. nov.

Type species: *Dieneremia rueckeri* sp. nov.

**Diagnosis.** *Dieneremia* is similar to recent members of the subfamily Latridiinae based on the procoxae separated by the prosternal process. The new genus shares the features of having furrows on the head, strongly convex eyes, and shape of the pronotum and elytra with *Metopthalmus* Motschulsky, 1850. *Dieneremia* also shares the dorsoventrally flattened and elongate habitus with *Dienerella* Reitter, 1911 and *Adistemia* Fall, 1899. *Dieneremia* and *Cartodere* Thomson, 1859 both have the frons with carinae, temples relatively long, and halo behind the mesocoxae with radial grooves. Furthermore, the new genus shares characters of *Stephostethus* Le Conte, 1878 (temples relatively long, regular striae of elytra, halo behind the mesocoxae with radial grooves), *Latridius* Herbst, 1793, *Enicmus* C.G. Thomson, 1859, and *Thes* Semenov Tian-Shansky, 1910 (because of the halo behind the mesocoxae with radial grooves).

*Dieneremia* can be reliably differentiated from the other genera of the subfamily Latridiinae based on the following combination of characters: 1) outer carinae of the frons apically toothed (only *Metopthalmus* and *Cartodere* have comparable carinae); 2) eyes large and strongly convex; 3) pro- and mesocoxae distinctly separated; 4) metaventrite separated from first abdominal ventrite (metaventrite and the first abdominal ventrite fused in *Adistemia*); and 5) body flattened in cross-section (whereas other genera with small carinae on the head [e.g., *Cartodere*, *Stephostethus*] have bodies less flattened and more convex).

Prior to this study, *Archelatrius* Kirejtshuk and Azar, 2009 from Lower Cretaceous Lebanese amber was the only paleoendemic genus of the subfamily Latridiinae known. However, *Archelatrius* is easily distinguished from *Dieneremia* by its lack of carinae or furrows on the head, possession of four longitudinal carinae on the elytra, transverse procoxae, subquadrate pronotum, and antennal structure.

**Etymology.** The name of the new genus is formed from the Latin roots of the latridiid genera *Dienerella* and *Adistemia* (“*dienere*” and “*mia*”); gender feminine.

**Note.** The new genus is monotypic, represented by the type species only. Therefore the generic description considerably overlaps that of the species (“descriptio generica specifica”).

***Dieneremia rueckeri* sp. nov.**

(Figs. 1–5)

**Material examined.** Holotype: Nr. AWI-008, sex unknown; deposited in the private collection of V.I. Alekseev (Kaliningrad, Russia). The type will be deposited in the Paleontological Institute, Russian Academy of Science (Moscow) for permanent preservation. The beetle is included in a small and thin subquadrate amber piece 20 mm x 15 mm (L:W). Prior to examination, the amber piece was subjected to thermal and high-pressure processing in an autoclave.

**Type strata.** Baltic Amber, Upper Eocene, Prussian Formation.

**Type locality.** Baltic Sea coast, Yantarny village [formerly Palmnicken], Kaliningrad Region, Russia.

**Etymology.** The epithet of this new species is devoted to our dear friend and colleague, Wolfgang H. Rucker (Neuwied, Germany), acknowledged specialist on the Latridiidae and Merophysiinae (Endomychidae).

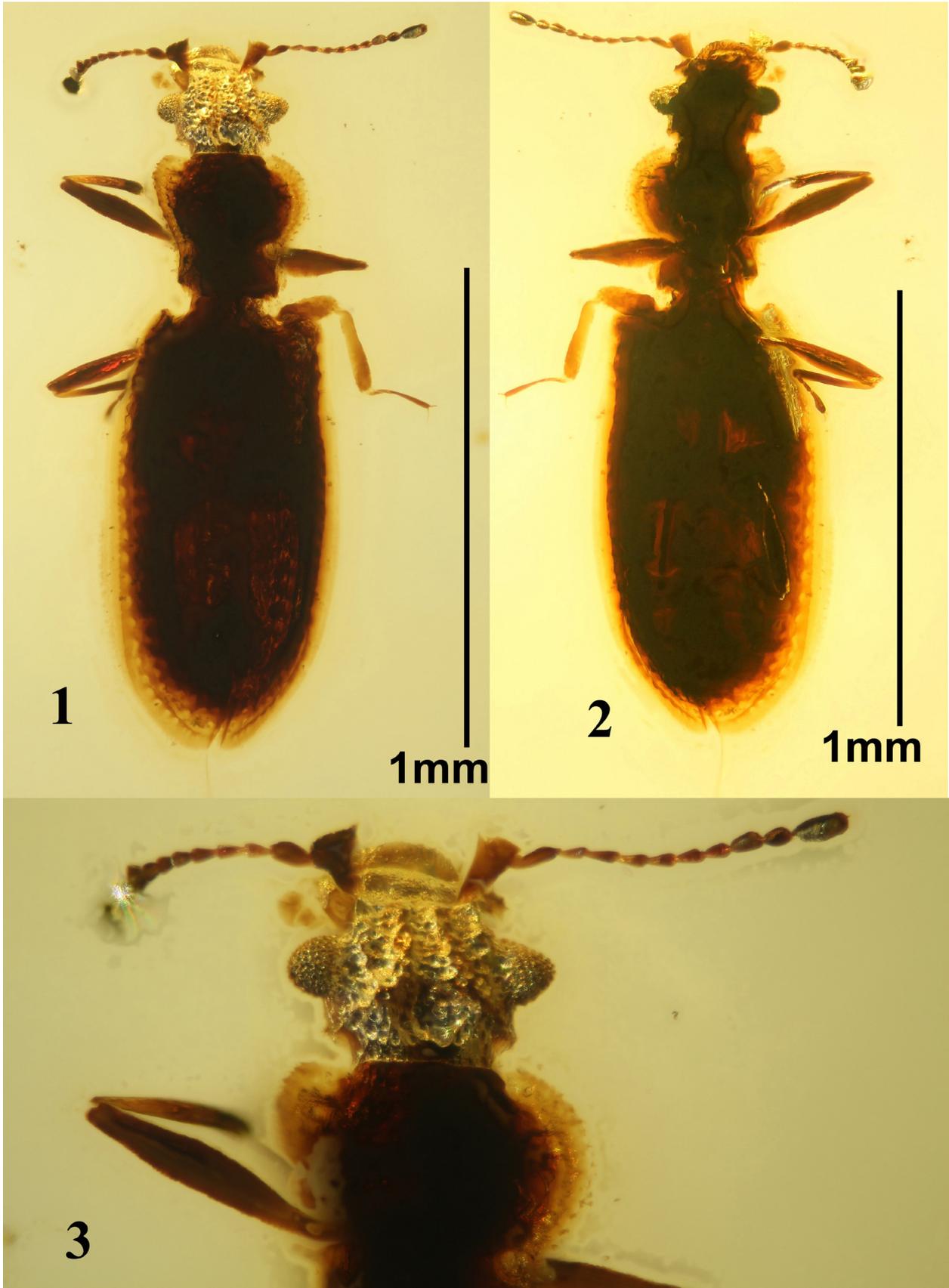
**Description.** Body length: 1.7 mm; max. width: 0.55 mm. Elongate, somewhat flattened; dorsal surface brown, glabrous.

Head dorsally covered with dense and large punctation and coarse rugosity; approximately as long as wide; head together with eyes approximately as wide as the pronotum at its widest part. Frons with four distinct longitudinal carinae, outer carinae apically toothed. Head in basal part with deep, wide impression. Mandibles not visible, dorsally obscured by the labrum. Labrum transverse, anterior margin widely rounded. Clypeus with straight anterior and posterior margins. Mentum relatively large, approximately as wide as the scape length; subtrapezoidal, with emarginated anterior margin. Eyes large, strongly convex, with distinct facets; interocular distance 3.5 times as long as width of eye. Temples parallel, with right angles posteriorly, pointed, very large, approximately half of eye width. Antennae 11-segmented, moderately long, reaching basal 1/3 of pronotum. Scape large, subtriangular, strongly widened distally, inner anterior angle pointed and possessing a sharp spine. Pedicel elongate, more slender, 0.5 times as long as scape but longer than antennomere 3, inserted into scape asymmetrically (insertion located lateroapically). Antennomeres 3–8 elongate, subequal, slightly widened distally. Antennal club 3-segmented, relatively loose; antennomere 11 large, as long as pedicel, oval; antennomere 9 widened distally, approximately half as long as 11; antennomere 10 shorter than 9, approximately as long as wide. Distance between antennal insertions large, approximately as long as scape.

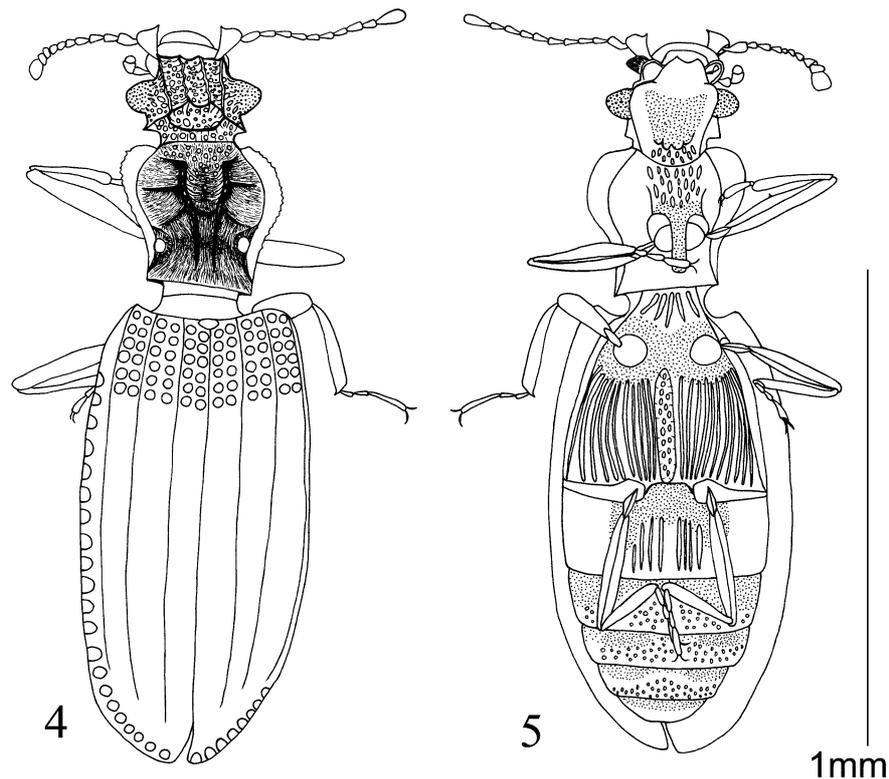
Pronotum cordiform, widest in anterior 1/3, approximately as long as wide, slightly narrowed anteriorly, strongly narrowed posteriorly; lateral margins weakly crenulate, rounded in anterior half, subparallel in basal 1/3; posterior margin straight, 0.59 times as wide as base of elytra; anterior angles prominent and rounded, posterior angles obtuse and pointed. Posterolateral impression near the posterior angles round, distinct, connected by an impression, interrupted medially by two subparallel carinae. Dorsal surface of disk with two longitudinal carinae transected by three pairs of transverse carinae, bounding two deep impressions on each side as well as one large impression in the central anterior third. Punctation indistinct but visible in the anterior pronotum, similar in size and density to that of head. Hypomera broad, flattened.

Scutellum about twice as wide as long. Elytra oblong, subparallel, about 1.9 times as long as wide, with maximal width approximately at midlength; humeri strongly prominent anteriorly with sharp carinae. Each elytron with three longitudinal carinae interspaced by double striae of coarse punctures. Elytral punctures large, dense; distance between striae distinctly smaller than diameter of punctures (exact number of striae not discernible due to opacity of the amber, especially near elytral apex). Lateral margins of elytra broadly flattened.

Ventral side indistinctly visible (Fig. 2), partly covered with secretion (remains of this secretion visible medially on ventral side of head, anterior part of prosternal process, around mesocoxae, ventrad to metacoxae, and at the base of each abdominal ventrite). Basal part of the head and anterior pronotum with dense and large punctation, coarse rugosity. Procoxae nearly round, cone-shaped, separated by relatively wide prosternal process (only slightly narrower than procoxal diameter), distinctly raised relative to prosternal process; meso- and metacoxae transverse, oval. Posterior to mesocoxae with fine, nearly parallel grooves (where secretion appears to originate similar to recent members of *Cartodere*, *Enicmus* or *Latridius*) that reach the metacoxa. Central part of these grooves with a larger, coarsely punctured, longitudinal impression. Similar grooves located anterior to mesocoxae as well as on abdominal ventrite 1. Abdomen with five ventrites; ventrite 1 longest, approximately 1.5 times longer than 2; ventrite 2 longer than 3; ventrites 3 and 4 subequal; ventrite 5 shorter. Metaventrite separated from the first abdominal ventrite by metacoxae.



**FIGURES 1–3.** *Dieneremia rueckeri* **gen. et sp. nov.**, holotype. 1, dorsal habitus; 2, ventral habitus; 3, closeup of head and prothorax, dorsal view.



**FIGURES 4–5.** *Dieneremia rueckeri* gen. et sp. nov., holotype. 4, dorsal habitus; 5, ventral habitus.

Legs moderately long and narrow. Trochanters long, slender, obliquely attached to femur. Femora spindle-shaped, thickest at middle and 1.5–2.5 times as wide as tibiae. Tibiae slender; tibiae and femora subequal in length. Tarsomeres 1 and 2 subequal; tarsomere 3 markedly (2.2 times) longer than the preceding segments combined. Claws simple, small, thin.

## Nomenclature

### *Latridius jantaricus* Borowiec, 1985

= *Latridius jacquelinae* Hawkeswood, Makhan et Turner, 2009: 108, **syn. nov.**

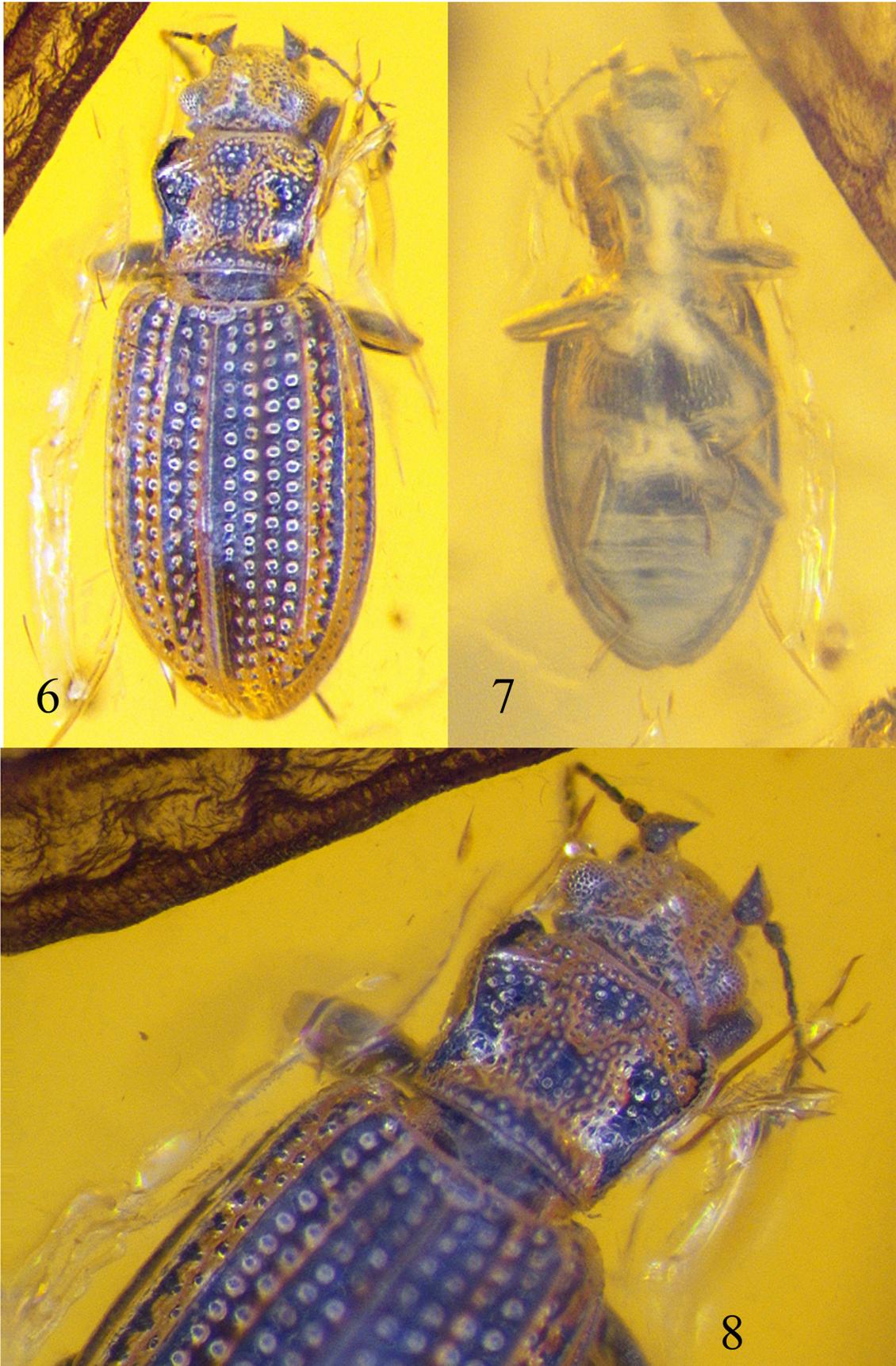
*Latridius jacquelinae* Hawkeswood, Makhan et Turner, 2009 is proposed as junior synonym of *Latridius jantaricus* Borowiec, 1985 based on the original description of *L. jacquelinae* and examination of the holotype of *L. jantaricus* (deposited in ACME).

**Note.** The holotype of *L. jacquelinae* was not available for scientific study. The drawings and picture in the original paper (Hawkeswood et al. 2009) show eight pronotal impressions (three impressions on each side of the pronotum and two impressions medially between the median carinae), which are also present in the holotype of *L. jantaricus*. Unfortunately, this character was not completely illustrated by Borowiec (1985) in his description, representing the pronotum instead as having only two impressions on each side.

## New fossil records

### *Latridius jantaricus* Borowiec, 1985

(Figs. 6–8)



**FIGURES 6–8.** *Latri dius jantaricus* Borowiec, 1985 [collection number 5361, ACAG]. 6, dorsal habitus; 7, ventral habitus; 8, closeup of head and prothorax.

**Material examined.** Three specimens with the collection numbers 5361, 7768, and 7831; Baltic amber, Gdańsk, Poland; deposited in the private collection of Andrzej Górski (Gdańsk, Poland). One specimen with the collection number 023; Baltic amber, Yantarny, the Kaliningrad Region, Russia; deposited in the private collection of Andris Bukejs (Daugavpils, Latvia).

## Acknowledgements

The authors are sincerely grateful to Prof. Barbara Kosmowska-Ceranowicz (PAW Museum of the Earth, Warszawa, Poland) and Andrzej Górski (Gdańsk, Poland) for the loan of the material, to Carsten Gröhn (Glinde, Germany) for the preparation of the amber piece with *Dieneremia rueckeri* **gen. et sp. nov.** for study and for taking photos of this specimen, to Dr. Eugeny E. Perkovsky (Kiev, Ukraine) and Dr. Tatyana A. Trikhleb (Donetsk, Ukraine) for valuable comments on our manuscript, and to Dr. Stephen Venn (Helsinki, Finland) for linguistic correction.

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