

UDC 565.76:549.892.1(474)

## **REVELIERIA GROEHNI — A NEW SPECIES OF MINUTE BROWN SCAVENGER BEETLES (COLEOPTERA, LATRIDIIDAE) FROM BALTIC AMBER**

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***Revelieria groehni* — a New Species of Minute Brown Scavenger Beetles (Coleoptera, Latridiidae) from Baltic Amber.** Sergi T. A., Perkovsky E. E., Reike H.-P. — Based on a fossil specimen from Late Eocene Baltic amber, *Revelieria groehni* Sergi, Perkovsky et Reike, sp. n., a new species is described. It is the first fossil species of the genus *Revelieria* Perris, 1869. The new species clearly differs from extant *R. californica* and *R. genei* in the following characters: eyes more large and convex; antennal insertion located more close to eye; temples very short; metasternum longer; fore tibia evenly curved inwards.

**Key words:** Coleoptera, Latridiidae, *Revelieria*, new species, Late Eocene, Baltic amber.

***Revelieria groehni* — новый вид скрытников (Coleoptera, Latridiidae) из балтийского янтаря.** Серги Т. А., Перковский Е. Э., Райке Х.-П. — Из позднеэоценового балтийского янтаря описан *Revelieria groehni* Sergi, Perkovsky et Reike, sp. n. Это первый ископаемый вид рода *Revelieria* Perris, 1869. Новый вид отличается от современных *R. californica* и *R. genei* следующими признаками: глаза более крупные и выпуклые; усиковые впадины расположены ближе к глазу; виски очень короткие; заднегрудка длиннее; передняя голень равномерно изогнута внутрь.

**Ключевые слова:** Coleoptera, Latridiidae, *Revelieria*, новый вид, поздний эоцен, балтийский янтарь.

### **Introduction**

Latridiidae are often found in leaf litter, decaying vegetation, animal nests or human habitations, or on the surfaces of leaves, bark and wood. Both adults and larvae of most Latridiidae are thought to be mycophagous, feeding especially on spores or conidia of Zygomycota and Ascomycota, including those growing on fruiting bodies of Basidiomycota, but most species show a low level of trophical specialization. At least some species of the genera *Dienerella* Reitter, 1911, *Enicmus* Thomson, 1859, *Latridius* Herbst, 1793 and *Revelieria* appeared to be obligately or facultatively myxomycophagous, feeding on spores or plasmodia of Myxomycota (Andrews, 1976; Newton, Stephenson, 1990; Lawrence, 1991; Dudka et al., 2002).

The genus *Revelieria* Perris, 1869 is represented in extant fauna by two species: *R. californica* Fall, 1899 and *R. genei* (Aubé, 1850) (Rücker, 2009) and differs from other Latridiinae by coarse punctures of elytra arranged in 12 more or less irregular rows. Both species have been found in the regions characterised by Mediterranean climate: *R. californica* in litter of coniferous and deciduous trees in pine-oak subtropical forests of California, and *R. genei* in Mediterranean basin (Southern France, Southern Italy, Greece, Spain, Algeria, Morocco, Tunis, Israel, Lebanon, Turkey) (Andrews, 1976; Ponel, 1993; Johnson, 2007; Rücker, 2010). Larvae are unknown.

The new species from Baltic amber belongs to the family Latridiidae on the base of combination of the following characters: small size; elongate-oval habitus; antennae 11-segmented with a 3 segmented apical club; procoxal cavities closed; tarsi 3–3–3, simple; body surface glabrous, rugosely sculptured (subfamily Latridiinae). From the other 11 fossil species of Latridiinae (*Archelatrius marinae* Kirejtshuk, Azar, 2009; *Cartodere (Aridius) succinobaltica* Bukejs, Rücker, Kirejtshuk, 2012; *Dienerella nielseni* Reike, 2012; *Dieneremia rueckeri* Reike, Alekseev, Bukejs 2013; *Enicmus adrianae* Bukejs, Reike, Rücker, 2012; *E. groehni* Reike, 2012; *E. palaeorugosus* Reike, 2012; *Latridius alexeevi* Bukejs, Kirejtshuk, Rücker, 2011; *L. jantarcus* Borowiec, 1985; *Stephostethus kulickae* Borowiec, 1985; *S. palaeobicoatus* Reike, 2012) (Borowiec, 1985; Bukejs et al., 2011, 2012 a, b; Kirejtshuk et al., 2009; Reike, 2012; Reike et al., 2013) the new species clearly differs in the

shape of pronotum without longitudinal impressions or carinae on the disk, very short temples, strongly convex elytra with uniform dense puncturation, forming about 12 irregular rows (fig. 1, 1–4). The only previous fossil record is "bei *Revelieria*" by Klebs (1910). The present species is the first fossil named.

The Late Eocene species of *Revelieria* clearly differs from extant *R. californica* and *R. genei* in the following characters: eyes more large and convex; wider distance between eyes; antennal insertion located more close to eye; temples very short (fig. 1, 4); metasternum longer (fig. 1, 5); fore tibia evenly curved inwards (fig. 2).

Photographs of holotype were taken at the Paleontological Institute, Russian Academy of Sciences (Moscow) by Alexandr P. Rasnitsyn and Dmitry V. Vasilenko using a Leica M 165C microscope and Leica DFC 425 camera. Holotype will be deposited in the collection of Geological-Palaeontological Institute of the University of Hamburg, Germany (GPIH). The photos of the paratypes were taken by Carsten Gröhn (Glinde, Germany) using a modified Wild M20 stereomicroscope and a Canon EOS 450D 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 paratypes will remain in the collection of Hans-Peter Reike.

## Family LATRIDIIDAE Erichson, 1842

### Subfamily LATRIDIINAE Erichson, 1842

#### Genus *Revelieria* Perris, 1869

#### *Revelieria groehni* Sergi, Perkovsky et Reike, sp. n. (fig. 1, 2)

**Material.** Holotype, GPIH no. 4415, ex coll. Gröhn no. 993; sex unknown; Jantarny, Baltic amber; Late Eocene. The mouthparts, partly pronotum and ventral side of specimen are obscured by a "cracking" and air bubbles.

**Paratypes:** Nr. 08 ex. collection of H.-P. Reike; sex unknown; Jantarny, Baltic amber, Late Eocene. Ventral side partly hidden by a white haze. Nr. 09 ex. collection of H.-P. Reike; sex unknown; Jantarny, Baltic amber, Late Eocene. Ventral side partly hidden by a white haze and two "crackings".

#### Description

**Holotype.** Length 1.5 mm, maximum width about 0.7 mm. Dorsal surface unicolorous brownish, glabrous. Elongate, strongly convex dorsally and moderately convex ventrally (fig. 1, 3). Integument nearly mat.

Head transverse, 0.2 mm long, 0.4 mm wide, strongly convex dorsally; covered with dense and moderately large punctures larger than eye facets in diameter, interspaces between punctures convex and less than a puncture diameter (fig. 1, 4). Neck distinctly narrowing. Eyes large, 0.15 mm longitudinal diameter, strongly convex, with about 100 distinct facets (diameter of eye about 12 facets); distance between eyes 2 times as long as width of eye. Temples very short (0.027 mm). Clypeus transverse, frontoclypeal suture deep. Labrum transverse, slightly convex, embracing the clypeus at sides. Mandibles not exposed. Ultimate maxillary palpomere elongate conical, with 2 distinct setae on the apex, one seta longer than palpomere; penultimate maxillary palpomere elongate, 1.5 times as broad as ultimate palpomere. Labium transverse trapezoidal, 3 times as broad as long, with 1-segmented palpi. Ventral surface of the head covered with dense and moderately large punctures (as on the dorsal surface of the head), without cavities or ridges. Antennal insertion located before anterior edge of eye at distance of about 0.3 longitudinal eye diameter.

Antennae 11-segmented, moderately long, reaching the hind third of pronotum up to the hind angles, 0.4 mm long. Antennomere 1 large, subspherical, 1.5 times as long and 1.5 times as wide as subspherical antennomere 2; antennomeres 3–8 subcylindrical, slightly longer than wide and widened to apex. Antennal club loose, distinctly 3-segmented; antennomeres 9 and 10 subcylindrical, widened to apex; antennomere 11 suboval, about 1.5 times as long as broad.

Pronotum slightly transverse, 0.32 mm long, about 0.42 mm wide, widest in the middle, feebly narrowed anteriorly; anterior and lateral margins about straight, posterior margin feebly convex; anterior angles narrow rounded, posterior angles right; lateral sides explanate (fig. 1, 4). Pronotum covered with large, dense punctures, interspaces between them convex, much smaller than a puncture diameter (as on the head); basal

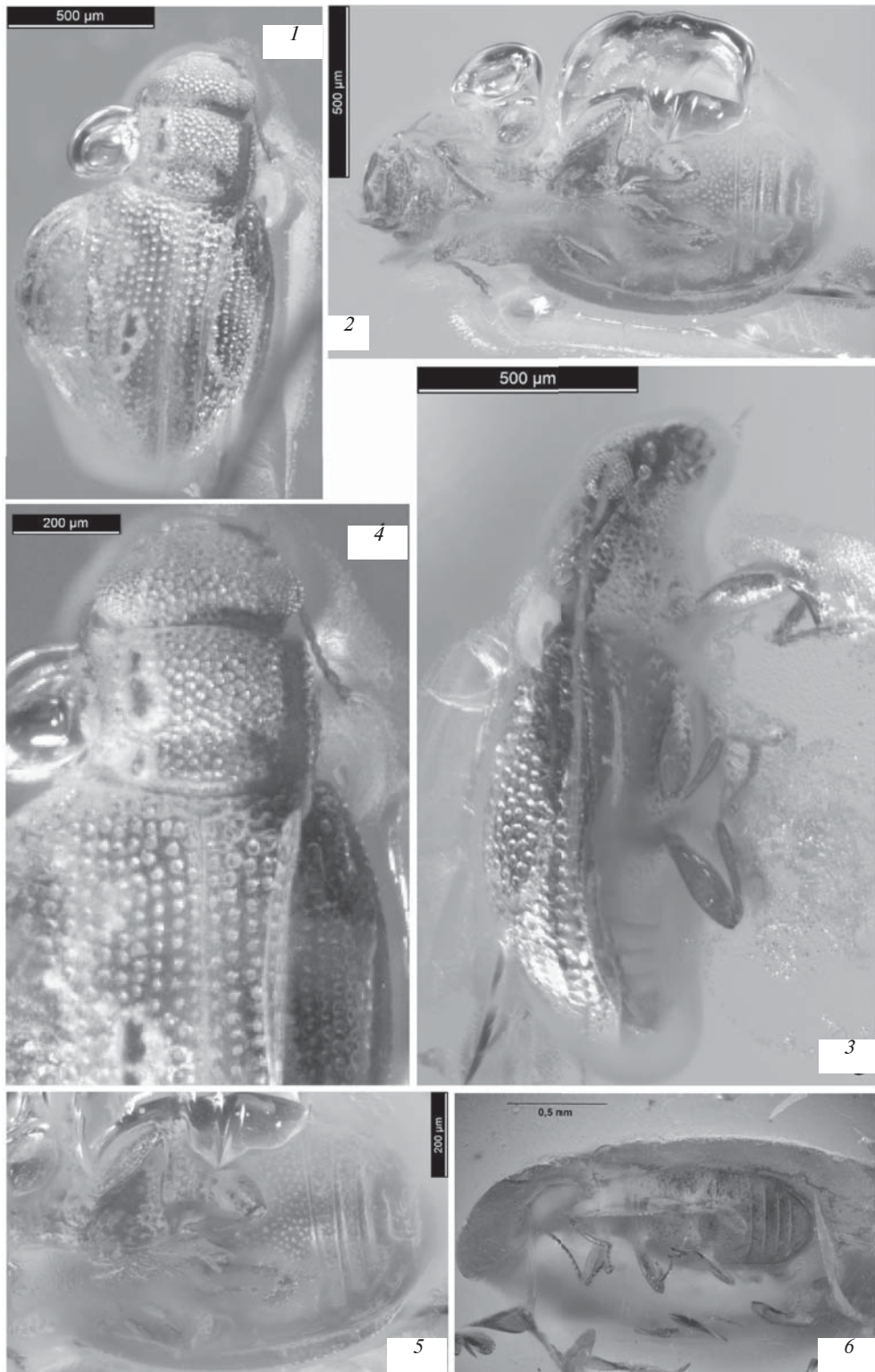


Fig. 1. *Revelieria groehni* sp. n. (1–5 — holotype, 6 — paratype): 1 — body, dorsal; 2 — body, ventral; 3 — body, lateral, from the right; 4 — front part, dorsal; 5 — hind part, ventral; 6 — paratype, body, ventral.

Рис. 1. *Revelieria groehni* sp. n. (1–5 — голотип, 6 — паратип): 1 — вид сверху; 2 — вид снизу; 3 — вид сбоку справа; 4 — передняя часть, вид сверху; 5 — задняя часть, вид снизу; 6 — паратип, вид снизу.

Fig. 2. *Revelieria groehni* sp. n., fore leg.Рис. 2. *Revelieria groehni* sp. n., передняя нога.

wider than the base of the pronotum. Humeral callus visible, but low and not overtop lateral margin of elytra. Punctures are forming about 12 irregular rows; in the middle part of elytra rows 5 to 8 confused; the first punctured row with about 30 punctures. Punctures in elytral rows uniform, dense, large, in the basal third of the elytra punctures about 2 times larger than punctures of the pronotum; interspaces between punctures flattened, about 0.5–1 puncture diameter; punctures become smaller on the posterior half of disk and on the apex of elytra. All interstriae flattened and narrow, in anterior third of the elytra interstriae as wide as interspaces between punctures of the row, in posterior third of elytra interstriae as wide as 2 puncture diameter. Epipleura of elytra 0.08 mm wide and narrowed to apical part; shagreened, without distinct punctures.

Pro-, meso- and metasternum covered with moderately dense coarse irregular punctures, diameter about as punctures on pronotum, interspaces between punctures narrower than up to equal to a puncture diameter. Procoxae separated by prosternal process; process narrow, elevated to level of apices of procoxa, extending to posterior margin of prothorax and completely separating hypomera; procoxal cavities closed posteriorly. Metasternum 2 times as long as mesosternum. Pro- and mesocoxae suboval, metacoxae transversely oval. Distance between mesocoxae distinctly greater than that between procoxae; and between metacoxae greater than that between mesocoxae. Metasternum flattened in middle, without pits and radial lines posterior to mesocoxae, with medial longitudinal depression in hind half.

Abdomen with five visible ventrites; ventrite 1 is the longest, as long as ventrites 2–5 combined, without femoral lines, with dense fine punctures, diameter about 0.5 of

side bordered. Disc evenly convex and steeply sloping to sides. Pronotum with transverse impression at the base, nearly reaching the lateral sides of pronotum. Scutellum small, transverse oval, 0.07 mm wide.

Elytra broadly oval, 1.0 mm long, 0.7 mm wide, about 1.43 times as long as wide combined, widest in the middle; strongly convex at disc and rather steeply sloping to sides, 0.3 mm high (lateral view), lateral sides narrowly explanated. Base of elytra distinctly

Table 1. Distinctive characters of extinct and extant species of the genus *Revelieria*Таблица 1. Отличительные признаки ископаемого и современных видов рода *Revelieria*

Character	<i>R. groehni</i> sp. n.	<i>R. californica</i>	<i>R. genei</i>
Head with labrum length and head with eyes width ratio	0.5	0.94	1
Number of eye facets	100	40	40
Number of facets in eye diameter	12	7	7
Distance between eyes and width of eye ratio	2–3	4	4
Length of temple and longitudinal diameter of eye ratio	0.14	0.5	0.5
Distance between antennal insertion and anterior edge of eye and longitudinal eye diameter ratio	0.3	1	1
Pronotum length and width ratio	0.73–0.80	0.84	0.78
Transverse impression at the base of pronotum	nearly reaching the lateral sides	in the middle third	nearly reaching the lateral sides
Scutellum width and pronotum width ratio	0.16	0.16	0.09
Elytra length and combined width ratio	1.42–1.50	1.6	1.2
Metasternum length and mesosternum length ratio	2	1.5	1

puncture on thorax; ventrite 2 covered with slightly finer punctures; ventrites 3–5 with fine punctures (fig. 1, 5).

Legs moderately long and narrow. All trochanters are about as long as broad. Femora spindle-shaped, thickest at middle and about 3 times as wide as tibiae. Fore tibia slightly thickened and evenly curved inwards, with 5 small irregular teeth on outer margin and with short spur on apex (fig. 2). Middle and hind tibiae slender, straight. All tibiae and femora approximately equal in length. Tarsi with three simple subcylindrical tarsomeres, about 0.6 as long as tibiae; tarsomeres 1 and 2 approximately equal in length; tarsomere 3 about 1.5 times as long as tarsomeres 1 and 2 combined. Claws simple, small and thin.

Paratypes. As holotype, but length 1.78 mm, maximum width about 0.8 mm. distance between eyes 3 times as long as width of eye; antennae 0.5 mm long; pronotum 0.37 mm long, about 0.50 mm wide; elytra 1.2 mm long, 0.8 mm wide, 0.43 mm high (lateral view); fore tibia without teeth on the outer margin and without spur on the apex.

**Etymology.** The species named in honour of Carsten Gröhn, who kindly loaned specimen for study.

Comparison in more details of *R. groehni* sp. n. with extant *Revelieria* species is given on the table 1.

Along with the differences mentioned on the table 1, the holotype differs from *R. genei* in the height of elytra in lateral view and length of elytra ratio 0.30 vs. 0.47 in *R. genei*; number of punctures in the first punctured row 30 vs. 20 in *R. genei*; outer margin of fore tibia of holotype with teeth (without teeth in extant species).

Elytra along the suture not connate in *R. californica*, connate in *R. genei*. In *R. groehni* sp. n. elytral suture is clearly visible, but we cannot affirm whether elytra connate or not. In *R. californica* hind wings reduced to micropterous form of second type with reduced clavus, or wing entirely absent (apterous form) in *R. genei*. In fossil *R. groehni* sp. n. wings are not seen, but we can suppose a presence of wings because of more developed metasternum, than in extant species. Also, extant *Revelieria* species show a sexual dimorphism in structure of fore tarsus: 2-segmented tarsus in male and 3-segmented tarsus in female (Rücker, Sergi, in prep.). As far as the sex of the fossil specimens is unknown, we cannot compare structure of tarsi of these species.

Authors are grateful to Carsten Gröhn (Glinde) for the loan of his specimen as well as for photos of paratypes, A. P. Vlaskin (Schmalhausen Institute of Zoology NAS of Ukraine, Kyiv) for preparing the holotype for investigation, A. P. Rasnitsyn and D. V. Vasilenko (both from Paleontological Institute, Moscow) for kindly taking photos of the holotype, former also for valuable comments, V. Yu. Nazarenko (Schmalhausen Institute of Zoology NAS of Ukraine, Kyiv) for his help in preparing the plates, V. A. Korneyev (Schmalhausen Institute of Zoology NAS of Ukraine, Kyiv) for valuable comments, W. Rücker (Neuwied, Germany) for supplying numerous necessary papers on the Latridiidae and for valuable comments.

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Received 2 September 2013

Accepted 1 October 2013