

The first species of the family Tetratomidae (Coleoptera: Cucujiformia: Tenebrionoidea) from Baltic amber

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The first representative of the family Tetratomidae Billberg, 1820 is described from Eocene Baltic amber. *Tetratoma nikitskyi* sp. nov. is assigned to subgenus *Abstrulia* and differs from all known species of the subgenus by the structure of the antennae and prothorax.

Key words: Eocene, new extinct species, polypore fungus beetles, *Tetratoma nikitskyi*.

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INTRODUCTION

The family of polypore fungus beetles Tetratomidae Billberg, 1820 has a worldwide distribution and includes about 220 extant species from five (Nikitsky, 1998; Bouchard et al., 2011) subfamilies: Tetratominae Billberg, 1820; Piseninae Miyatake, 1960; Penthinae Lacordaire, 1859; Hallomeninae Gistel, 1848; Eustrophinae Gistel, 1848. These beetles have not had a stable family placement until recently and have previously been included in the family Melandryidae in different ways by different authors.

The polypore fungus beetles are also known from Baltic amber, however, records are scarce. The two following taxa (4 specimens) belonging to the Tetratomidae were reported from Baltic amber: "*Eustrophus*" and "by *Hallomenus*" (Klebs, 1910). No species or genera have been described from Baltic amber (Alekseev, 2013). Only one extinct genus of the family has been described

previously: *Pseudohallomenus cretaceus* Nikitsky, 1977 (subfamily Hallomeninae) from the Upper Cretaceous.

The genus *Tetratoma* Fabricius, 1790 includes 24 recent species (Nikitsky, 2004), which are mycetophagous and associated with fungi, especially with the fruiting bodies of wood-rotting fungi. According to Nikitsky (2004), the genus includes five subgenera, *Tetratoma* s.str.; *Abstrulia* Casey, 1900; *Incolia* Casey, 1900; *Falsoxanthalia* Pic, 1934; *Paratetratoma* Nikitsky, 1998, and is distributed in the Nearctic, Palearctic and Oriental regions.

In the present paper, the first reported extinct species of the subfamily Tetratominae (and the first fossil representative of this family from Eocene Baltic amber), assigned to the subgenus *Abstrulia* Casey, 1900 of the genus *Tetratoma*, is described and illustrated.

MATERIALS AND METHODS

The amber piece with the beetle inclusion was obtained from commercial source (Amberif fair) in Poland and registered in the collection of Christel and Hans Werner Hoffeins in March 2009. The type locality and type strata are indicated below as most probable only. The photos were taken with a Nikon Coolpix 4500 Nikon digital camera, attached to a Wild M3Z stereo-microscope. Illustrations were made based on free-hand drawings, made during examination of the original specimen. The drawings were scanned and edited using Adobe Photoshop CS8.

SYSTEMATIC PART

Family Tetratomidae Billberg, 1820
Subfamily Tetratominae Billberg, 1820
Genus *Tetratoma* Fabricius, 1790
Subgenus *Abstrulia* Casey, 1900
Tetratoma (Abstrulia) nikitskyi sp.nov.
(Figs. 1-6)

Material examined: holotype Nr. 421-2 [CCHH], sex unknown. The beetle inclusion is slightly damaged, the pronotum of the specimen being apparently depressed and with a crack in the cuticle. The beetle inclusion is preserved in a polished piece of transparent amber of a yellowish shade. The amber piece is embedded in polyester resin (dimensions 8.5 x 5.5 x 5.0 mm). The syninclusions are represented by one mite specimen (Acari: Acariformes), attached to the right hind femur of the beetle and by the exuvium of a mite on the right hind tarsus. The examined specimen is currently housed in the private collection of Christel and Hans Werner Hoffeins (Hamburg, Germany). The type will be deposited at the Senckenberg Deutsches Entomologisches Institut in Müncheberg, Germany (SDEI), as part of the institute's amber collection for permanent preservation.

Type strata. Baltic Amber. Eocene.

Type locality: Baltic Sea coast.

Diagnosis. The new species can be distinguished from all other *Tetratoma* species by the following combination of characters: uniform red-brown color without pattern, antennomere 7 as long as wide, long and acute maxillar palpomere 4, obtuse angles of pronotum, narrow prosternum, wide prosternal process, accumbent and long elytral pubescence, ventrite I slightly longer than II and absence of impressions on ventrite V. The author considers that the extinct *Tetratoma nikitskyi* sp.nov. is the most closely related species to the recent south-European *T. (Abstrulia) baudueri* Perris, 1864 and clearly differs from this in its pronotal form and antennal proportions.

Description. Body length = 2.75 mm; width (at widest point) = 1.3 mm. Habitus elongate; dorsal and ventral surfaces, head and appendages uniformly red-brown (Figs. 1-3). Pronotum and elytra conspicuously punctured. Body length/maximum body width 2.1. Elytral length/pronotal length 3.4.

Eyes large, prominent, not emarginate. Frontal distance between eyes 2.5 times longer than one eye diameter. Frontoclypeal suture present, straight. Antennal insertions visible dorsally. Antennae relatively short, extending to base of elytra, 11-segmented with loose, conspicuous 4-segmented club (Fig.4). Antennomere length proportions according to the formula: 2.0: 0.9: 1.0: 0.7: 0.9: 0.7: 0.8: 1.2: 1.3: 1.2: 2.0. Antennomeres 7–11 finely pubescent. Antennomeres 8–11 twice as wide as antennomere 6; antennomere 7 as wide as long. Terminal antennomere elongate, near twice as long as wide, narrowing apically. Antennal club 0.81 times as the length of the other antennal segments combined. Maxillary palpomeres (Fig. 5) 2, 3 and 4 only are visible; terminal palpomere the longest, nearly 3 times longer than palpomere 3, slightly oblique, acute; palpomere 3 subcylindrical; palpomere 2 slightly longer than palpomere 2, narrowing at base. Labial palps with small terminal segment, approximately equal in length with the penultimate segment.

Pronotum convex, transverse, 0.59 times as long as wide, 1.62 times wider than head including eyes; disk coarsely, moderately dense punctured,

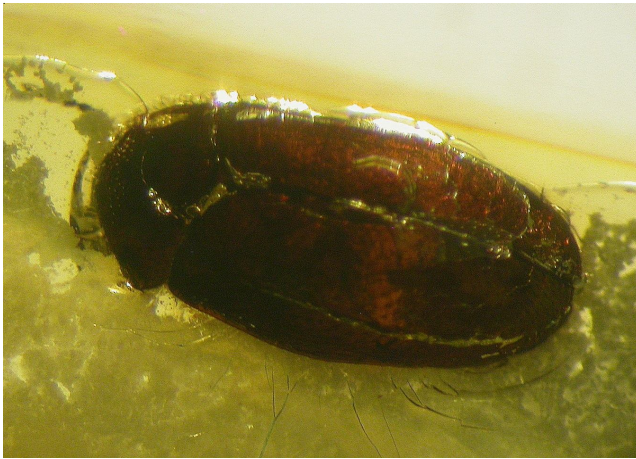


Fig. 1. *Tetratoma (Abstrulia) nikitskyi* sp.nov. Habitus: dorsal view.

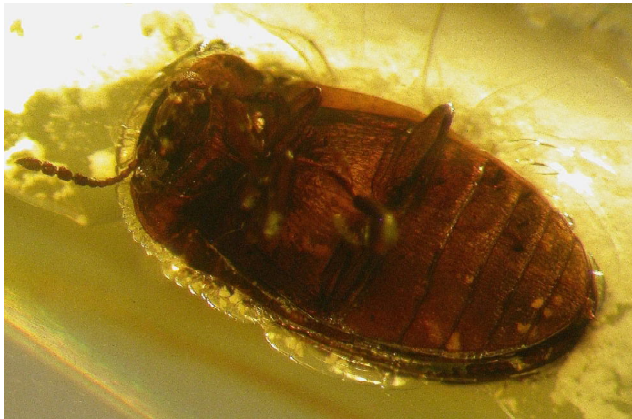


Fig. 2. *Tetratoma (Abstrulia) nikitskyi* sp.nov. Habitus: ventral view.



Fig. 3. *Tetratoma (Abstrulia) nikitskyi* sp.nov. Habitus: lateral view.

as is the elytral base. Basal pits or impressions on the pronotum absent. Lateral margins of pronotum arcuate, flattened, not serrated; maximal pronotal width posterior to the middle; anterior and posterior angles rounded, appearing obtuse when viewed dorsally. Prosternum (Fig. 6) relatively narrow, the anterior part of the procoxae as long as the coxal diameter. Procoxae separated by wide prosternal process; the width of which is 1.8 times narrower than the coxal diameter.

Elytra elongate, moderately convex, 1.6 times as long as wide; disk densely and irregular punctate; punctures small, distinct, round, separated by distance 0.5–1.0 times the puncture diameter (in scutellar area and medially) or by distance 2.0–2.5 times the puncture diameter (laterally and apically). Pubescence on the elytral disc indistinct, on the elytral inclination and laterally—fine, as long as the distance between punctures, accumbent. Sutural striae absent. Scutellum visible, pentagonal, with rounded angles. Mesosternal process not visible on specimen due to position of legs. Mesepimera reaching mesocoxae. Epipleura present, reaching middle of ventrite I. Metacoxae narrow, separated by process of first ventrite.

Legs with tarsal formula 5–5–4. Coxae transverse. Trochantin on first legs visible. Femora flattened. All tibiae simple, slender. Hind tibiae with two short spurs of equal length, 8 times shorter than the first metatarsomere. Tarsi without bilobed segments, finely pubescent ventrally. Metatarsomere I as long as metatarsomere IV and slightly longer than metatarsomeres II and III combined. Tarsal claws simple, equal in length, long and acute.

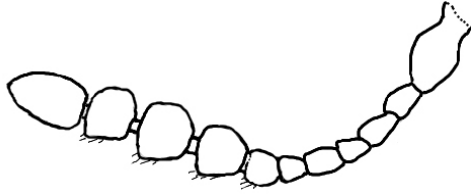


Fig. 4. *Tetratoma (Abstrulia) nikitskyi* sp. nov. Antenna.



Fig. 5. *Tetratoma (Abstrulia) nikitskyi* sp. nov. Maxillar palp.

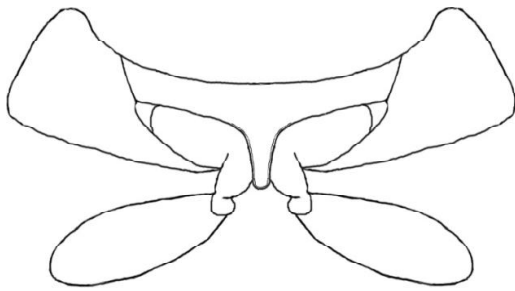


Fig. 6. *Tetratoma (Abstrulia) nikitskyi* sp. nov. Prosternum.

Abdomen with five ventrites. Ventrite I longer than ventrite II; ventrites IV and V equal in length (ventrite lengths proportions: 2.2-1.5-1.3-1.1-1.1). Apex of terminal ventrite widely rounded. Ventrite V without impression. The reproductive system is obscured, making definite sexual determination impossible.

Derivatio nominis: patronymic, the species is named in honour of Dr. Nikolay B. Nikitsky (Moscow, Russia) for his numerous contributions to the study of Tetratomidae and Melandryidae.

DISCUSSION

Tetratoma (Abstrulia) nikitskyi sp. nov is placed in the genus *Tetratoma* Fabricius, 1790 based on the following characters (Nikitsky, 2004): total body size, oblique maxillar palpomere 4, small terminate labial palpomere, full-developed fronto-clypeal suture, antennal insertions visible from above, wide frons, 11-segmented antennae with 4-segmented club, transverse and laterally margined pronotum, procoxae separated by prosternal process, pentagonal scutellum, separation of metacoxae, irregular elytral punctuation, short metatibial spurs, tarsal formula 5-5-4, simple claws. The following features of the recent *Tetratoma* were not observed: basal pronotal impressions and presence of mesonotal process. The latter feature is obscured by the position of the legs.

The assignment of the first fossil species to the subgenus *Abstrulia* Casey, 1900 is preliminary. According to Nikitsky (2004), the representatives of the subgenus have an impression or pit on the terminal ventrite (at least on the male), which were not observed in our specimen. *Tetratoma nikitskyi* sp. nov. could also potentially belong to the subgenus *Incolia* Casey, 1900 (similar pubescence, uniform color, antennal club not long and broad, proportions of ventrites I and II), but the described specimen is clearly smaller in body size and has a shorter antennal club. The important diagnostic feature of subgenera of *Tetratoma* is the structure of the male genitalia (penis, tegmen, parameres). Unfortunately, no genital features were visible in the described specimen. The future study of other fossil specimens of *Tetratoma* from Baltic amber will permit clarification of the proposed subgeneric assignment. It is very possible, that a new subgenus will have to be described for the Baltic amber species, described above.

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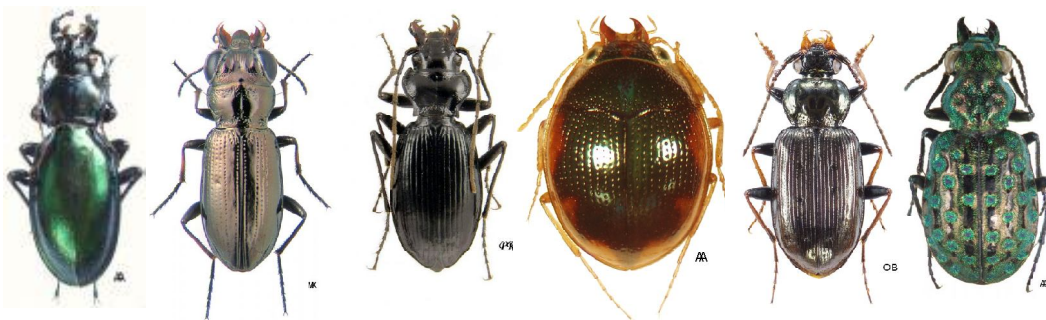
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