



Description of the first extinct member of the tribe Anaglyptini (Coleoptera: Cerambycidae) from European Tertiary

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Abstract

New longhorn beetle taxon, *Acanthoglyptus picollus* **gen. et sp. nov.**, is described and figured from Baltic amber found in the Baltic Sea coast, Yantarny settlement, Kaliningrad Region, Russia. The new amber inclusions presented here prove the occurrence of the tribe Anaglyptini in the ‘Baltic amber forest’, giving this group at least a Palaeogene age. The closest living relative of the extinct beetle appears to be the Chinese genus *Yoshiakioclytus* Niisato, 2007. A brief updated list of the described longhorn beetles from European ambers, including 6 subfamilies, 17 tribes, 25 genera, and 27 species is compiled.

Key words: Beetles, fossil resin, new taxa, palaeontology

Zusammenfassung

Die Bockkäferart *Acanthoglyptus picollus* **gen. et sp. nov.** wird aus dem Baltischen Bernstein der Ostseeküste (Yantarny, Kaliningrader Gebiet, Russland) beschrieben. Der vorliegende Bernsteineinschluss weist auf das Vorkommen des Tribus Anaglyptini im „Baltischen Bernsteinwald“ hin und deutet auf ein zumindest paläogenes Alter für diese Gruppe. Der nächstlebende Verwandte des ausgestorbenen Käfers scheint die Chinese Gattung *Yoshiakioclytus* Niisato, 2007 zu sein. Die aktualisierte Liste der aus dem Europäischen Bernstein beschriebenen Bockkäferarten umfasst nun 6 Unterfamilien, 17 Triben, 25 Gattungen und 27 Arten.

Schlüsselwörter: Käfer, fossiles Harz, Artbeschreibung, Paläontologie

Introduction

The family Cerambycidae is rare as inclusions in Baltic amber and is represented mostly by unique singletons, except for *Trichosieversia europaea* (Vitali, 2004), and the comparatively common *Nothorhina granulicollis* Zang, 1905 (Zang 1905; Hieke & Pietrzeniuk 1984; Vitali 2004, 2005, 2006, 2007, 2014). The representative of one of three morphologically similar cerambycine tribes, Clytini Mulsant, 1839, Tillomorphini Lacordaire, 1868, and Anaglyptini Lacordaire, 1868, was first reported from Baltic succinite amber by Klebs (1910) as “*bei Anaglyptus, herrlich*”. Since Piton’s paper (1940) and the description of fossil species under the name *Clytus (Xylotrechus) pici*, no descriptions or additional reports have been assigned to Clytini or Anaglyptini in Baltic amber. In contrast, the Tillomorphini is actually well studied and represented in succinite by three recently described species assigned the extinct genus *Tillomorphites* Vitali, 2011 (Vitali 2011, 2017).

In the current work, the first fossil assigned to Anaglyptini, *Acanthoglyptus picollus* **gen. et sp. nov.**, is described and figured from Baltic amber. As the presence of any Anaglyptini in the Palaeogene of Europe has not been confirmed during the last century, the new finding in Baltic amber is of especial actuality and interest in respect of understanding of the group phylogeny and biogeography.

Material and methods

The amber piece MAIG 6080 (No JD 8137 ex coll. Jonas Damzen) containing the holotype is deposited in the collection of Museum of Amber Inclusions (Muzeum inkluzji w bursztynie), Department of Invertebrate Zoology and Parasitology, Faculty of Biology, University of Gdańsk, Poland.

Preparation of the amber specimen for examination and photography was performed by Mr. Jonas Damzen (Vilnius, Lithuania). The amber was cut and polished in order to better view all sides of the specimen. Photographs were taken using a Canon 70D camera with a macro lens (Canon MPE-65mm). Extended depth of field at high magnifications was achieved by combining multiple images from a range of focal planes using Helicon Focus software.

The measurements were made using an ocular micrometer in a stereoscopic microscope. Reconstructions were made based on free-hand drawings during examination of the original specimen. All images were edited using Adobe Photoshop® CS8 software.

Systematic Palaeontology

Family Cerambycidae Latreille, 1802

Subfamily Cerambycinae Latreille, 1802

Tribe Anaglyptini Lacordaire, 1868

Genus *Acanthoglyptus* gen. nov.

Type species. *Acanthoglyptus picollus* sp. nov., here designated.

Differential diagnosis. The specimen under consideration is assigned to the tribe Anaglyptini on the basis of the following combination of morphological characters: 1) eyes finely faceted, 2) procoxae rounded, 3) procoxal cavities narrowly open, 4) elytra gibbose at base and without transverse raised ivory-like ridges, 5) antennomeres 3–5 distinctly spinose.

The new genus could be associated to the tribe Tillomorphini, which nevertheless, shows closed procoxal cavities. Exceptionally, they are narrowly open in the, possibly polyphyletic, American genus *Eudercus* LeConte, 1850, which, in turn, shows evident transverse raised ivory-like ridges (peculiar character of Tillomorphini), a cribose elytral disc, divided eyes, antennomere III more than twice as long as IV, etc.

Acanthoglyptus gen. nov. differs from the representatives of extant genera with spined antennomeres (*Anaglyptus* Mulsant, 1839, *Oligoenoplus* Chevrolat, 1863, *Paraclytus* Bates, 1884, and *Cyrtophorus* LeConte, 1850) in the stout elytra and the longer first metatarsomere. For these characters, it resembles the Chinese *Yoshiakioclytus* Niisato, 2007, which nevertheless, has unarmed antennomeres (Huang & Chen 2016).

Considering the species included in Baltic amber, *Tillomorphites* Vitali, 2011 (Tillomorphini Lacordaire, 1868) is the only genus characterised by spined antennae. It differs from *Acanthoglyptus* gen. nov. for the not gibbose elytra, much longer and finer antennal spines on antennomeres (in contrast to three shortly spined antennomeres in the new genus), shorter and more robust legs, and elytral pattern formed by transverse reddish band(s). From *Clytus* (*Xylotrechus*) *pici* Piton, the newly described fossil genus can be distinguished by the smaller body size (9.0 mm compared with 15.0 mm in *C. (Xylotrechus) pici*), the elytra gibbose at base, the antennae longer and apparently spined, and absence of frontal carina.

Description. General habitus small, relatively stout, convex dorsally.

Head oblique, slightly elongated; frons with longitudinal furrow; antennal tubercles rather elevated and widely separated; eyes shallowly emarginated, finely faceted; last maxillary palpomere elongate, truncate at apex, as long as two previous palpomeres combined; antennae 11-segmented, hardly as long as body in female; antennomeres III–V with long spine at inner side decreasing in length to antennomere III; pedicel and antennomeres III–V with a few semierect setae.

Pronotum distinctly narrower than elytral base, elongate, with maximal width in anterior third, sides without

lateral tubercle or spine, narrowed posteriorly; base straight, disc moderately convex, covered with dimorphic pubescence; pronotal surface double punctured.

Elytra comparatively short (about twice as long as wide, and nearly two and a half times longer than pronotum); base straight with a distinct elongate gibbosity bearing a sparser and finer punctation; humeri rounded; sides slightly constricted in middle, apex rounded; disc covered with obliterate punctation on apical half, and pattern consisting of a recumbent light pubescence.

Legs long and slender, covered with recumbent fine pubescence; femora slightly clubbed; tibiae almost straight, with two apical spurs of equal length; procoxae rounded, narrowly separated by prosternal process; procoxal cavities narrowly open posteriorly; mesocoxal cavities open; metatarsi one-half as long as tibiae; metatarsomere I long, hardly twice as long as tarsomeres II and III combined; claws simple.

Etymology. The name is a combination of the old Greek word *ἄκανθα* (*ákantha*, i.e. thorn, spine) and the Greek root *γλυπτός* (*glyptus*, i.e. carved, graved) referring to the tribal type-genus *Anaglyptus*. Gender masculine.

Composition. The new genus is monotypic, represented by the type species only.

Acanthoglyptus picollus sp. nov.

(Figs. 1–5)

Type strata. Baltic amber, *Blaue Erde* deposits, Cenozoic: mid-Eocene to Upper Eocene.

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

Type material. Holotype: MAIG 6080, adult. Sex: female. The specimen is included in narrow and long, orange-yellow amber piece with approximate dimensions of 42×7×5 mm and preserved without supplementary fixation. It lacks the abdomen (only imprint on amber are available), the middle left leg, except for the coxa and the left hind leg. Syninclusions are represented by few stellate fagacean trichomes.

Description. Total body length about 9.0 mm; maximum length of pronotum 2.1 mm; pronotal maximum width 1.6 mm; length of an elytron along suture 5.2 mm; maximal width of elytra 2.5 mm; length of antenna about 8.0 mm.

Frons densely, finely punctate; longitudinal furrow reaching posteriorly the vertex; genae slightly emarginate anteriorly; distance between antennal tubercles wider than distance between inner margins upper eye lobes; posterior area of head, finely transversely wrinkled dorsally and laterally. Scape slightly curved, covered with recumbent sparse setae; pedicel as long as wide, less than one-third as long as scape; antennomere III slightly shorter than scape (excluding apical spine); antennomeres IV–VII with same length, as long as scape; antennomere VIII three-fourth as long as scape; antennomere IX slightly shorter than VIII; antennomeres X–XI with same length, two-thirds as long as antennomere III; antennomere proportions according to the formula: 1.6: 0.5: 1.5: 1.6: 1.6: 1.6: 1.6: 1.2: 1.1: 1.0: 1.0.

Pronotum about one-third longer than wide; disc covered with long, erect, sparse dark setae, and large, shallow punctures separated by about 2–3 times their diameter; sides, base and middle with dense, recumbent light pubescence, and very fine, dense punctation. Scutellum elongate, densely covered with light recumbent pubescence.

Elytra about 2.1 times as long as wide and about 2.5 times as long as pronotum; disc covered with moderately sparse, rounded punctures, irregular and deep on basal half (distance between punctures about 1–3 times diameter of each puncture), obliterate on apical half; each puncture bearing long erect or semirecumbent dark seta; dense light pubescence forming: 1) transverse, angulate macula laterally on basal quarter of each elytron; 2) inverted V-shaped median band; 3) apical spot on sutural angle.

Ventral side not completely conserved; prosternum, meso- and metaventricle finely punctate; metanepisternum narrow and long (about five times as long as wide); metaventral process three times narrower than mesocoxa; metaventricle with long, fine metathoracic discrimen; abdominal ventrites finely punctate, bearing long, erect, sparse setae apically; pygidium broadly rounded at apex; intercoxal process narrowly triangular; ventrites proportions (measured laterally) according to the formula: 3.0: 2.0: 2.0: 2.0: 1.5.

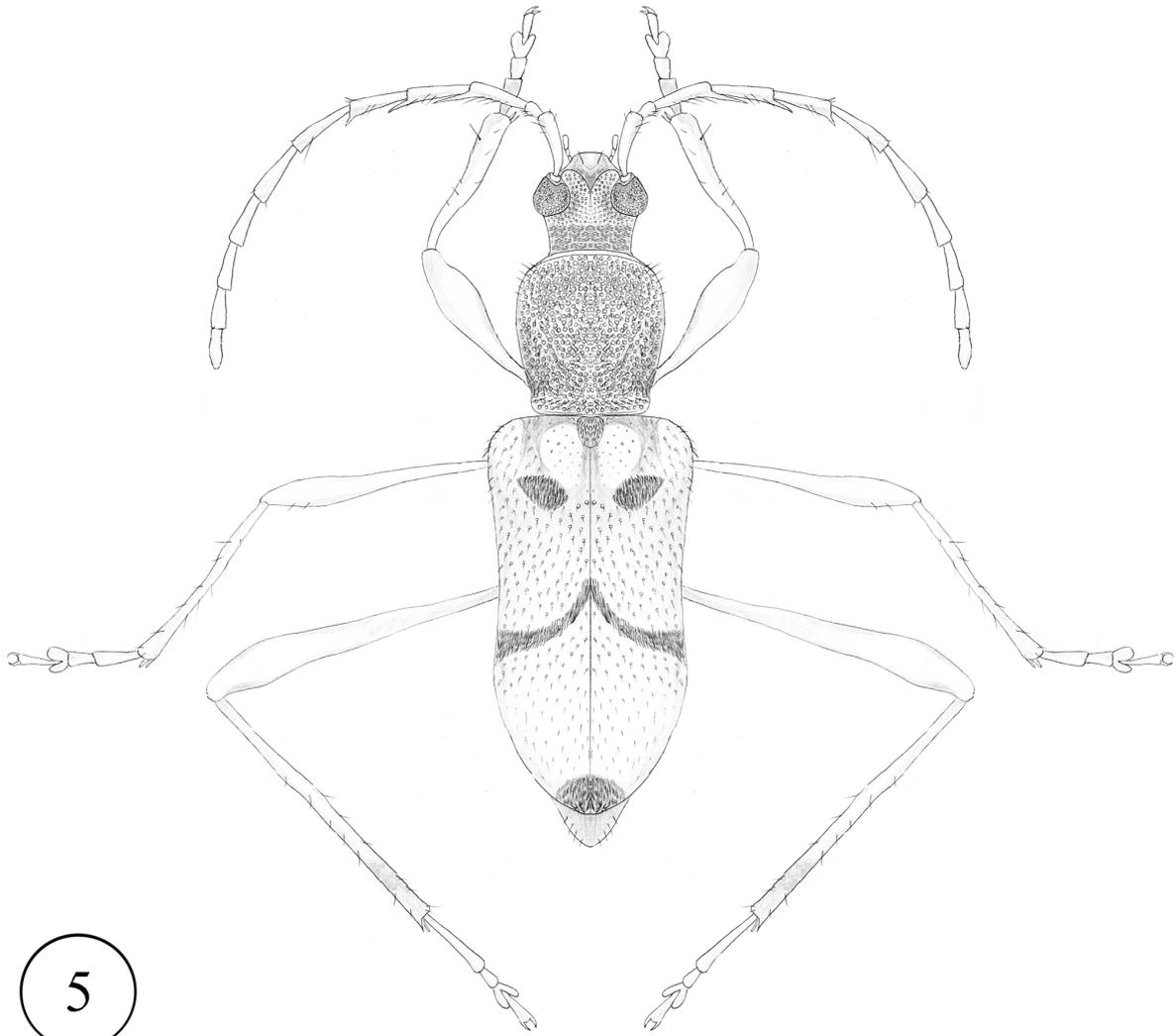
Metatarsomere I about 1.8 times as long as metatarsomeres II and III combined (or 1.1 times as long as tarsomeres II–IV together).



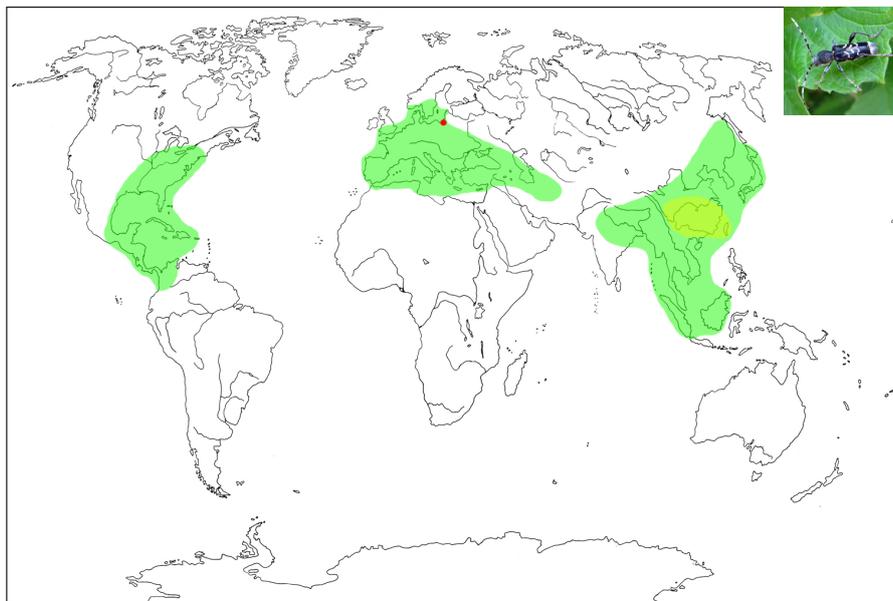
FIGURES 1–2. *Acanthoglyptus picollus* **gen. et sp. nov.**, holotype: 1—habitus, dorsolateral view; 2—forebody, dorsolateral view. Scale bars represent 2.0 mm.



FIGURES 3–4. *Acanthoglyptus picollus* gen. et sp. nov., holotype: 3—habitus, ventrolateral view; 4—body, dorsolateral view. Scale bars represent 2.0 mm.



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FIGURE 5. Reconstruction of *Acanthoglyptus picollus* **gen. et sp. nov.** from Baltic amber. Habitus, dorsal view.

FIGURE 6. Distribution of the tribe Anaglyptini in Recent world (green area), *Yoshiakioclytus* (yellowish green area), and *Acanthoglyptus picollus* **gen. et sp. nov.** (red dot).

Etymology. The name of the new species is a theonym derived from Picollus (Peckols, Pockols, or also sometimes Patolls, Patulas, Patollo), the name of the Old Prussian god of the underworld and the easy death. The species name is a noun in apposition.

Remarks. The body integument coloration and colors of the dorsal pattern of the new fossil species are unknown.

Discussion

1. Short notes to zoogeography of Anaglyptini

Currently, the tribe Anaglyptini is represented by 12 genera and 135 species (Zicha 1999-2019) focused in the Holarctic Realm and marginally, in the Neotropical and Oriental Realms (Fig. 6).

The present-day Anaglyptini can be divided into three informal groups, a rich *Clytus*-like Holarctic group, a Central American group characterised by unusual pronota and antennae, and some small mimic ants genera. The first group has the northernmost distribution limits in Europe at approximately 59°N (Norway—Sweden—Latvia), but it is especially diverse in temperate and subtropical Asia with 107 species distributed in 3 genera (*Anaglyptus*; *Oligoenoplus*; *Paraclytus*); their relatives are widespread in Nearctic with 3 species within 2 genera (*Cyrtophorus*; *Microclytus* LeConte, 1873). The second group counts only 4 species distributed in 3 genera (*Aphysotes* Bates, 1885; *Diphyrana* Bates, 1872; *Pempteurys* Bates, 1885). The third group counts 14 American species in a single genus (*Tilloclytus* Bates, 1885), widespread from Massachusetts to Colombia and in the Antilles, and two Asian genera: the Chinese genus *Yoshiakioclytus* and the Japanese-Indochinese genus *Hirticlytus* Ohbayashi, 1960.

The genus *Acanthoglyptus* **gen. nov.**, shares most of the mentioned characters with *Yoshiakioclytus*. Nonetheless, it shows spined antennomeres, a character only present in that group of more temperate species that currently represent the majority of the members of this tribe. This character should be thus considered as specialised but not synapomorphic, since it characterises species of other evidently not-related tribes (Phoracanthini, some Cerambycini and Hesperophanini).

2. Palaeogene amber assemblage of longhorn beetles

A synopsis of all cerambycid species recorded from Baltic amber has been provided ten years ago (Vitali 2009). Since that publication, many new taxa have been described. A brief updated list of the described European ambers longhorn beetles from Tertiary is compiled and presented below.

Check-list of described Cerambycidae Latreille, 1802 in Baltic and Bitterfeld amber

Lepturinae Latreille, 1802

Lepturini Latreille, 1802

1. *Paracorymbia* Miroshnikov, 1998: *P. antiqua* Vitali, 2005

2. *Pedostrangalia* Sokolov, 1897: *P. pristina* Vitali, 2014

3. *Strangalia* Dejean, 1835: *S. berendtiana* Zang, 1905

4. *Trichosieversia* Vitali, 2009: *T. europaea* (Vitali, 2004)

Rhagiini Kirby, 1837

5. *Encyclopidonia* Vitali, 2009: *E. punctatissima* Vitali, 2009

Spondylidinae Audinet-Serville, 1832

Anisarthrini Mamaev & Danilevsky, 1973

6. *Mesalocerus* Vitali, 2015: *M. tetropoides* Vitali, 2015

Asemini Thomson, 1861

7. *Nothorhina* Redtenbacher, 1845: *N. granulicollis* Zang, 1905

8. *Palaeotetropium* Vitali, 2011: *P. saxonicum* Vitali, 2011

Saphanini Gistel, 1848

9. *Saphanites* Vitali, 2011: *S. mirabilis* Vitali, 2011

Necydalinae Latreille, 1825

Necydalini Latreille, 1825

10. *Necydalis* (*Necydalisca*) Plavilstshikov, 1936: *N. (Necydalisca) zangi* Vitali, 2011

Cerambycinae Latreille, 1802

Achrysonini Lacordaire, 1868

11. *Protachryson* Vitali, 2011: *P. pomeranicum* Vitali, 2011

Anaglyptini Lacordaire, 1868

12. *Acanthoglyptus* **gen. nov.**: *A. picollus* **sp. nov.**

Clytini Mulsant, 1839

13. *Clytus* Laicharting, 1784: *C. pici* Piton, 1940

Obriini Mulsant, 1839

14. *Obrium* Dejean, 1821: *O. damgaardi* Vitali, 2015

15. *Stenhomalus* White, 1855: *S. hoffeinsorum* Vitali, 2014

Opsimini LeConte, 1873

16. *Dicentrus* LeConte, 1880: *D. mehli* Vitali & Daamgard, 2016

17. *Europsimus* Vitali, 2011: *E. germanicus* Vitali, 2011

18. *Japonopsimus* Matsushita, 1935: *J. balticus* Vitali, 2014

Sestyrini Lacordaire, 1868

19. *Procleomenes* Gressitt & Rondon, 1970: *P. gouverneuri* Vitali, 2018

Tillomorphini Lacordaire, 1868

20. *Tillomorphites* Vitali, 2011: *T. robustus* Vitali, 2011; *T. otiliae* Vitali, 2017; *T. spinipes* Vitali, 2017

Lamiinae Latreille, 1825

Dorcaschematini Thomson, 1860

21. *Dorcaschema* Chevrolat, 1844: *D. succineum* Zang, 1905

Parmenini Mulsant, 1839

22. *Parmenops* Schaufuss, 1891: *P. longicornis* Schaufuss, 1891

Pogonocherini Mulsant, 1839

23. *Pogonocherus* Dejean, 1821: *P. jaekeli* Zang, 1905

Incertae sedis:

24. *Dorcadionoides* Motschulsky, 1856: *D. subaeneus* Motschulsky, 1856

Dorcasominae Lacordaire, 1868

Apatophyseini Lacordaire, 1869

25. *Eurapatophysis* Vitali, 2016: *E. groehni* Vitali, 2016

The biodiversity described at the moment consists of 27 extinct species, distributed in 25 genera of at least 17 tribes. Two taxa are known from Bitterfeld amber (*Palaeotetropium saxonicum* and *Europsimus germanicus*), while 25 fossils are described from Baltic amber. There is no longhorn beetles described from Oise amber or Rovno amber Lagerstätten. Two fossils are of doubtful generic placement (*Dorcaschema succineum* and *Clytus (Xylotrechus) pici*) and one species is considered to be *incertae sedis* within Lamiinae (*Dorcadionoides subaeneus*). Almost two-thirds of the taxa were described in the last decade; the extension of the provided above list in the nearest future is expected. An unusual low ratio of the subfamily Lamiinae in the Palaeogene amber assemblage of Cerambycidae (compared to the current fauna) is intriguing, but could not be considered as a reliable phenomenon due to insufficient knowledge state on Palaeogene European cerambycids.

Acknowledgements

The authors are sincerely grateful to Dr. Elżbieta Sontag (Museum of Amber Inclusions, University of Gdańsk, Poland) for the loan of interesting material for study, and to Mr. Jonas Damzen (Vilnius, Lithuania) for permission

to use his excellent photographs, for informing us about the specimen, and assistance during our amber research. We are very grateful to Dr. Alexander M. Weigand (Nationalmuseum für Naturgeschichte, Luxembourg) for his corrections of the German abstract, and to anonymous reviewers for their valuable comments and corrections to an earlier version of this manuscript. The study of V.I.A. was done with the support of the state assignment of IO RAS (Theme No.0149–2019–0013). This paper is supported financially by the National Museum of Natural History of Luxembourg.

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