Baltic J. Coleopterol. 14(1) 2014
ISSN 1407 - 8619

A NEW SPECIES OF *XYLOLAEMUS* (COLEOPTERA: ZOPHERIDAE: COLYDIINAE) FROM BALTIC AMBER

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Alekseev V.I., Lord N.P. 2014. A new species of *Xylolaemus* (Coleoptera: Zopheridae: Colydiinae) from Baltic amber. *Baltic J. Coleopterol., 14(1): 97. – 102.*

A new fossil beetle, *Xylolaemus sakhnovi* sp. nov., from Baltic amber (Eocene) of the Kaliningrad region of Russia is described and compared with the related extant species *X. fasciculosus* (Gyll.), *X. africanus* Grouv., *X. indicus* Grouv., *X. aeonii* (Oromí et García) and *X. abnormis* Ślipiński. The newly described species differs morphologically from all studied extant species in the structure of the antennal club, proportions of the antennomeres and smaller body size.

Key words: Coleoptera, Zopheridae, Colydiinae, *Xylolaemus sakhnovi*, new species, Baltic amber, Tertiary, Eocene.

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INTRODUCTION

The synchitine genus *Xylolaemus* Redtenbacher, 1857 (Zopheridae: Colydiinae) includes six described species distributed in the Old World only: *Xylolaemus fasciculosus* (Gyllenhal, 1827) from Europe [Austria, France, Italy, Romania, Sweden, Russian South, Serbia] and Northern Africa [Marocco, Tunisia], *Xylolaemus indicus* Grouvelle, 1903 from the Northern India [Dardjiling], *Xylolaemus griveaudi* Dajoz, 1980 from Madagascar, *Xylolaemus africanus* Grouvelle, 1908 from the Eastern Africa [Burundi, Rwanda, Tanzania], *Xylolaemus abnormis* Slipinski, 1984 from Saudi Arabia and *Xylolaemus aeonii* (Oromí & García, 1986) from Tenerife (Canary Islands).

Recently, an investigation of inclusions in Baltic amber from the Kaliningrad region of Russia resulted in the discovery of specimens of *Xylolaemus.* This genus was first reported from Baltic amber by Klebs (1910) and later cited by Larsson (1978) and Spahr (1981). One of these three specimens (3 from 14 specimens of Colydiidae, =Zopheridae) mentioned by Klebs (1910) was very close to the recent European species *X. fasciculosus* (Gyllenhal, 1827) and was noted as "*X.* conf. *fasciculosus*".The discussion about possibility of extant species occurring in Baltic amber is not the focus of this paper, and the new species described herein is easily discernible from all extant species of the genus.

In the current paper, the first extinct species of the genus *Xylolaemus* is described from Baltic

amber, which is usually attributed to the Upper Eocene.

MATERIAL AND METHODS

The amber piece with the beetle inclusion was obtained from commercial source in Kaliningrad in 2012. The piece was polished by hand and facetted on three sides allowing improved views of the included specimen. Photos were taken with a Zeiss AxioCam ICc3 digital camera attached to a Zeiss Stemi 2000-c stereomicroscope. Illustrations were made based on free–hand drawing during examination of the original specimen. The drawings were scanned and edited using Adobe Photoshop CS8.

For comparison with the extant members of the genus, we relied exclusively on literature sources (Redtenbacher, 1874; Grouvelle, 1903; Grouvelle, 1908; Slipinski, 1984; Oromí & García, 1986). It is possible additional morphological differences could be found (notably characters of the venter) through detailed study of museum specimens of the genus.

SYSTEMATICS

Family Zopheridae Solier, 1834
Subfamily Colydiinae Erichson, 1842
Tribe Synchitini Erichson, 1845
Genus *Xylolaemus* L. Redtenbacher, 1857
***Xylolaemus sakhnovi* sp. nov.**
(Figs 1-5)

Material examined: Holotype: Nr. AWI-041, sex unknown; deposited in the private collection of the first author (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 polished piece of transparent amber with a yellow shade. The amber was not subjected to any fixation. Measurements of the amber piece in the form of a trigonal prism are 26mm x 11mm x 6mm. In addition to the *Xylolaemus* specimen, this amber piece also contains a number of syninclusions. There are 28 stellate hairs from an oak and a piece of wood fiber 1.1 mm in length, as well as part of an aphid (Hemiptera: Aphidoidea). The *Xylolaemus* inclusion is damaged on the left side of the pronotum, appendages of the left half, left elytral margin. The large portions of the left half of the beetle are blackened, because of possible thermal processing of the amber piece in an autoclave.

Type strata: Baltic Amber. Eocene.
Type locality: Baltic Sea coast, Yantarny settlement [formerly Palmnicken], the Kaliningrad region, Russia.

Differential diagnosis: *X. sakhnovi* sp.nov. clearly differs from extant members of *Xylolaemus* in possessing a weak, loose antennal club with segment X not dilated and subequal in size to antennomeres I–IX (in contrast to an abrupt, 2-segmented club in extant species and distinctly transverse antennomere X; see Figs. 5-8). Additionally, this species can be distinguished by the smaller body size (3.2 mm compared with 4.2–4.5mm in *X. fasciculosus*, 4.8 mm in *X. abnormis*, 3.5-4.0 mm in *X. africanus*, 4.0 mm in *X. indicus*, and 4.8–6.3 mm in *X. aeonii*) and the absence of setose patches on the elytra. The angulate anterior pronotal angles are most similar to the extant *X. fasciculosus* and *X. africanus* (in contrast with *X. abnormis*, *X. indicus* and *X. aeonii*), but the distinctly transverse pronotum is most similar to *X. abnormis* and *X. fasciculosus* (in contrast with *X. indicus* and *X. aeonii*, which have the pronotum longer than broad and in comparison with *X. africanus*, which has the pronotum "assez transversal" i.e. almost transversal).

Description:
Body: length approx. 3.2 mm, maximum width (humeral area) = 1.1 mm. Elongate, flat, body and appendages uniformly dark grey (Fig.1-2).

Head (Fig.3): slightly longer than wide; length 0.5 mm; width 0.4 mm, widest between antennae. Anterior clypeal margin straight; frons convex with deep impressions near raised lateral margins; vertex convex; sculpture of head and

Figs. 1-2. *Xylolaemus sakhnovi*, sp.nov. Habitus. : 1) Dorsal view; 2) Ventral view

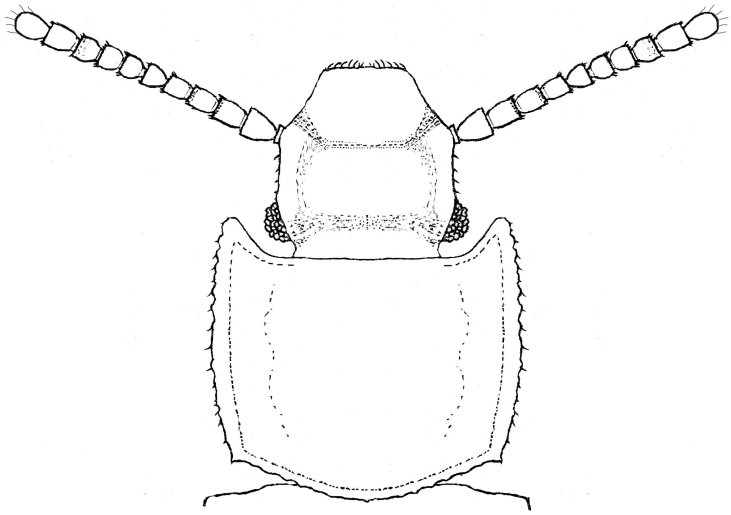


Fig. 3. *Xylolaemus sakhnovi*, sp.nov. Head, pronotum and antennae

pronotum consisting of flat, round, unisetose granules; granule 2–3x size of eye facet, separation approximately 0.3–0.4x diameter. Eyes large (diameter approx.. 0.1 mm), prominent, hemispherical, with coarse facets. Interfacetal setae are not apparent (by x56 magnification). Maxillary palpi 4-segmented.

Antennae 11-segmented (Fig. 5), approx. 1 mm in length, moderately long, reaching basal S! of pronotum. Antennomeres subequal in length; antennomere I not visible in dorsal aspect, concealed by expansion of the frons; antennomere II wider than rest; antennomeres I–V subcylindrical; antennomeres VI–IX subquadrate; antennal club 2-segmented, weak, relatively loose; antennal segment XI large, oval, as long as antennal segment X, bearing long setae, setal length about 1/3 as long as antennomere); antennal segment X not wider than XI.

Pronotum: slightly transverse (ratio of length to width is 7:9), widest at middle; anterior margin slightly arcuate, bordered by a groove which is interrupted medially; anterior angles triangular, acute, prominent, reaching anterior 1/3 of eye; lateral margins of pronotum explanate, nearly parallel-sided, finely denticulate, denticles bearing short setae; posterior angles obtuse; basal margin arcuate medially, entirely and narrow bordered. Sculpture of pronotal disc similar to head sculpture, but granules are slightly smaller, sparser and more flat. Intervals between granules approx. 0.7–1.0 x granule diameter.

Prosternum setose, with granules similar to pronotum. Granules of meso- and metasternum flatter than those of prosternum. Procoxal cavities externally open, meso- and metacoxal cavities closed. All coxae are separated from each other by distance approx. 0.25 of coxal diameter. Prosternal process elongate (2:1), parallel-sided, fastigiate, rounded by apex. The ratio of lengths mesoventrite to metaventrite to abdomen is 5:16:41.
Scutellum pure visible on the specimen, possibly it is small and round.

Elytra elongate (elytral length / elytral width = 2.0–2.06), nearly parallel-sided, slightly wider than pronotum, jointly rounded apically. Elytron with 10 rows of strial punctures, intervals between strial punctures separated by 1–1.5 x puncture diameter; elytral intervals flat, with long accumbent thick setae; strial punctures small, distinct, round, separated longitudinally by distance 0.7–0.8 x puncture diameter; humeral angles rounded. The scutellary striole is not apparent on the specimen, possible present. Epipleura present, well developed, reaching apex of elytra, widest at humeral angle.

Abdomen (Fig.4): with five visible, similarly articulated ventrites; relative lengths of ventrites 20-19-14-10-10. Setation of ventrites not apparent (possibly absent); ventrite V rounded apically, with two long, erect setae near apical margin, length of seta approx. 0.07 mm. Intercoxal process of abdominal ventrite I acute.

Legs: Tarsal formula 4-4-4. Length of apical metatarsomere equal to combined length of tarsomeres I–III; length of apical pro- and mesotarsomeres slightly shorter than combined length of tarsomeres I-III; tarsal claws are simple, large, equal in size, length approx. 1/3 of apical tarsomere.

Hind wings are not apparent.

Etymology: Patronymic, the species-group name epithet is devoted to the Kaliningrad entomologist and animal painter Nikolay I. Sakhnov (1957-2001).

REMARKS

At present, *Xylolaemus sakhnovi* sp.nov. is the first described extinct species of the genus and first described zopherid species from Baltic amber. With the exception of the structure of the antennae, *X. sahknovi* appears most morphologically similar to the extant European *X. fasciculosus* and to the Eastern African *X.*

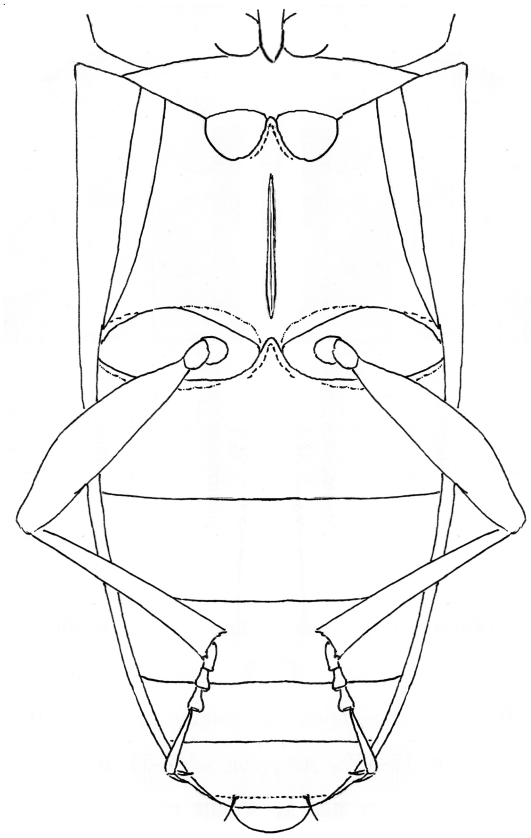


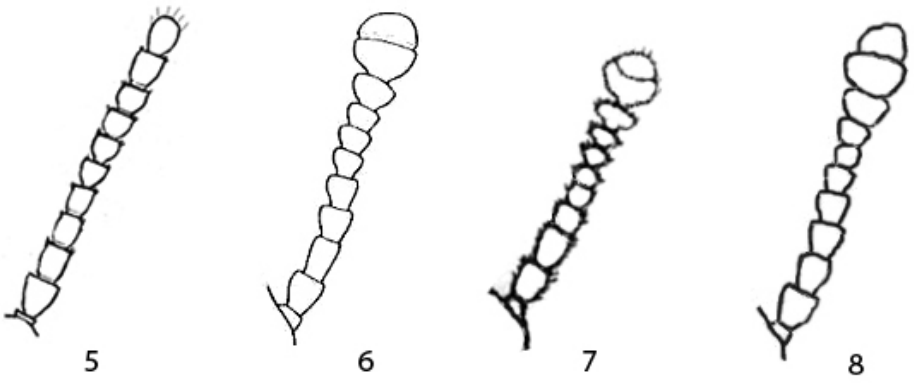
Fig. 4. *Xylolaemus sakhnovi*, sp.nov. Thorax and abdomen with five abdominal ventrites and the exposed tergite VII

africanus. Other recent species (*X. indicus*, *X. abnormis* and *X. aeonii*) exhibit a greater number of morphological differences.

The distribution of the genus *Xylolaemus* is interesting and unusual for Baltic amber fauna. All recent points of generic area are rather isolated and lay in the circle around the ancient Tetis Sea (Central Europa, Canarian islands, Madagascar, India, Eastern Africa and Saudi Arabia). So, it could be possible to speak about the historical "coastal peri-tetis" relict distributional area and origin of the genus *Xylolaemus*. The most part of the described to the moment fossil beetle from Baltic amber have the Palaearctic, Holarctic, Far East, Indo-Malayan and other affinities. The relationship of the Baltic amber fauna with the South African and Madagascan zoogeographical region is one of the least.

ACKNOWLEDGEMENTS

The authors are very grateful to Dr. A. Ślipiński (CSIRO, Canberra, Australia) for assistance during the study and useful comments to the manuscript, to Dr. P.I. Alekseev (Saint-Petersburg, Russia) for photos of the specimen, to Dr. Pedro Oromķ (Tenerife, Spain) for the help with the literature sources and to Ulrike Eith (Freiburg, Germany) for the help with translation of French.



Figs. 5-8. Antennae (scape concealed) of *Xylolaemus* spp.: 5) *X. sakhnovi* sp.nov.; 6) *X. abnormis*; 7) *X. aeonii*; 8) *X. fasciculosus*

The study of first author has been supported by the Russian Foundation for Basic Research (grant № 14-04-00262 A).

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Received: 25.02.2014.
Accepted: 15.04.2014.