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Two new tropical bugs (Insecta: Heteroptera: Thaumastocoridae – Xylastodorinae and Hypsipterygidae) from Baltic amber

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With 7 Figures

Summary

Two new Heteroptera species, *Xylastodoris gerdae* n. sp. and *Hypsipteryx hoffeinsorum* n. sp., are described from Baltic amber. It is the first record of tropical palm bugs (Thaumastocoridae: Xylastodorinae) for the Palaearctic and for Baltic amber, and the first fossil record and first Palaearctic record for the bug family Hypsipterygidae that are now only known from the Palaeotropis.

Zusammenfassung

Zwei neue Heteropterenspezies, *Xylastodoris gerdae* n. sp. and *Hypsipteryx hoffeinsorum* n. sp., werden aus dem Baltischen Bernstein beschrieben. Es handelt sich um den ersten Nachweis der tropischen Palmenwanzen (Thaumastocoridae: Xylastodorinae) für die Paläarktis und den Baltischen Bernstein, und den ersten Fossilnachweis und ersten Nachweis für die Paläarktis der Wanzenfamilie Hypsipterygidae, die heute nur aus der Paläotropis bekannt ist.

1. Introduction

Thaumastocoridae is a small monophyletic family of bugs with relictual Gondwanan distribution that are characterized by a flat body, strongly anteriorly produced mandibular plates, and asymmetrical male genitalia as putative synapomorphies (Schuh & Slater 1995). Bergroth (1909) and Reuter (1912) regarded the family as an isolated „primitive“ group within Heteroptera, and Cobben (1978) regarded the family as of problematic position, but most commonly they are now placed in Cimicomorpha (Slater & Drake 1956, Drake & Slater 1957, Stys 1962, Kumar 1964, Schaefer 1969, Kerzhner 1981, Schuh & Stys 1991, Schuh & Slater 1995). Thaumastocoridae could be the sistergroup of Tingidae (Kerzhner 1981) or Miridae + Tingidae (Schuh & Stys 1991). The family is divided into two subfamilies (Drake & Slater 1957): Thaumastocorinae Kirkaldy, 1908 with four extant

genera with totally nine species that are mainly endemic to Australia (except for one genus and species in India); and Xylastodorinae BARBER, 1920 (palm bugs) with the two extant genera *Discocoris* KORMILEV, 1955 with five species from South America, and *Xylastodoris* BARBER, 1920 with a single extant species from Cuba and Florida (probably introduced by man), as well as the fossil genus *Paleodoris* POINAR & SANTIAGO-BLAY, 1997 with a single species from Dominican amber. Both subfamilies seem to be monophyletic, since Thaumastocorinae is characterized by strongly protuberant eyes as putative autapomorphy, while Xylastodorinae is characterized by conspicuously projecting antenniferous tubercles and the loss of both parameres as putative autapomorphies. VIANA & CARPINTERO (1981) regarded Xylastodorinae as a distinct family, which was rejected by SLATER & BRAILOVSKY (1983), since it obscures rather than clarifies the phylogenetic position of this group.

POINAR & SANTIAGO-BLAY (1997) described *Paleodoris lattini* from Dominican amber (20–40 million years bp) as first fossil record of Thaumastocoridae. They also mentioned the citation of a putative representative of this family from Mexican amber in POINAR (1992), which they could not relocate. However, in the referring publication there is no such citation, but only a citation of a specimen from Dominican amber (lapsus?). We here describe the first fossil species of Thaumastocoridae – Xylastodorinae from Baltic amber.

Hypsipterygidae also is a small monophyletic family of poorly known bugs with only a single extant genus with three species from Thailand, Angola, and Uganda (DRAKE 1961, STYS 1970). They were originally classified as subfamily of Dipsocoridae, but are now generally regarded as a distinct family within Dipsocoromorpha (SCHUH & SLATER 1995). *Hypsipteryx* species are characterized by a distinct ornamentation of the forewings (autapomorphy), a straight labium (autapomorphy), and thin legs. They are superficially similar but unrelated to lace bugs (Tingidae). No fossil Hypsipterygidae have previously been described. Here we describe a new species of the extant genus *Hypsipteryx* from Baltic amber.

Methods

The drawings were made with camera lucida, and the photos have been made with a 35 mm SLR camera on a binocular microscope.

2. Systematic Palaeontology

Class Insecta LINNAEUS, 1758 (= Hexapoda LATREILLE, 1825)
Pterygota BRAUER, 1885
Order Heteroptera LATREILLE, 1810
Infraorder Cimicomorpha LESTON et al., 1954
Superfamily Miroidea HAHN, 1831
Family Thaumastocoridae KIRKALDY, 1908
(= Thaumastotheriinae KIRKALDY, 1908)
Subfamily Xylastodorinae BARBER, 1920 (= Discocorinae KORMILEV, 1955)

Genus *Xylastodoris* BARBER, 1920

Xylastodoris gerdae n. sp.
Figs 1–5

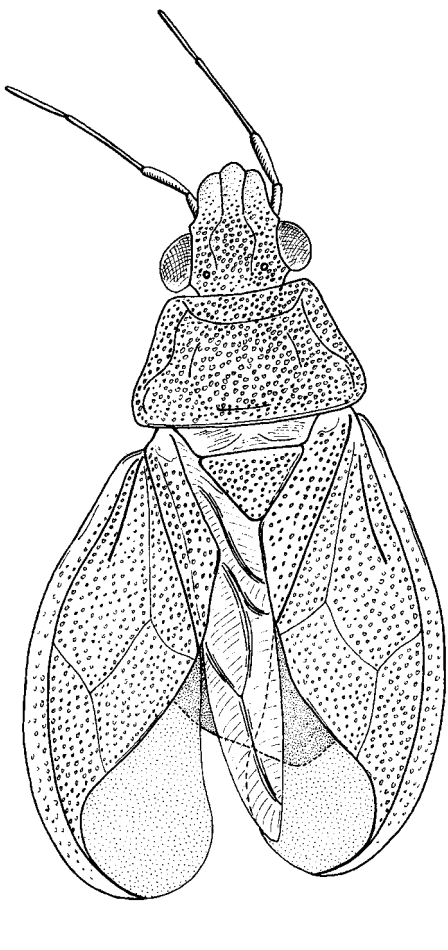

Fig. 1. *Xylastodoris gerdae* n. sp., holotype SMNS BB-2368. Scale 1 mm [drawing BECHLY].

Fig. 2. *Xylastodoris gerdae* n. sp., holotype SMNS BB-2368. Without scale [photo BECHLY].

Holotype (Figs 1–3): Specimen no. BB-2368 in the amber collection of the Staatl. Museum f. Naturkunde Stuttgart, Germany; purchased from the private collection of the second author.

Paratype (Figs 4–5): Specimen no. 1268 coll. HOFFEINS (will be donated and deposited at Entomological Institute, Eberswalde, Germany).

Type locality: Baltic. The holotype was purchased as Baltic amber by the second author in March 1999 from a Polish trader, and was now purchased by SMNS. The bright yellow colour, the presence of stellate hairs of oak blossoms, and the strong development of „white cloudy matter" around parts of the inclusion also confirm the Baltic origin.

Age: Eocene (40–50 my bp), Baltic amber (Succinite).

Derivation of name: Named in honour of Mrs GERDA WITTMANN (Wendelstein), dear wife of the second author.

Diagnosis. – This new species is very similar to the extant type species *X. luteolus* (royal palm bug), but can be distinguished by the following diagnostic features: size somewhat larger (3.0 mm compared to 2.3 mm in *X. luteolus*); punctuation

Fig. 3. *Xylastodoris gerdae* n. sp., holotype SMNS BB-2368. Without scale [photo BECHLY].

strongly developed (body surface is only weakly punctuate in *X. luteolus*); antenniferous tubercles less conspicuous (?); borderline between corium and membrane strongly curved (only smoothly curved in *X. luteolus*).

Description (holotype). – A completely preserved small bug of uncertain sex (most likely a female). Unfortunately the ventral side of the body and all legs are clouded by „white matter" (in German „Verflohmung" or „Verflumung"), so that no details are visible. Body elongate and flattened; total length 3.15 mm, max. width 1.45 mm; dorsal surfaces (head, pronotum, scutellum, and corium of hemi-elytrae) densely ornated with well-defined punctures; head length 0.57 mm, width between compound eyes 0.38 mm; head prognathous with large mandibular plates that are not surpassing the clypeus; clypeus parallel-sided; antennae four-segmented (length of segment I = 0.13 mm, segment II = 0.24 mm, segment III = 0.41 mm, segment IV = 0.28 mm); the two basal antennal segments are distinctly thicker than the two distal ones; second segment of antenna distinctly surpassing mandibular plates; antenniferous tubercle hardly visible; two ocelli widely separated (distance between ocelli 0.23 mm; distance ocellus to compound eye 0.06 mm) and aligned with posterior margin of compound eyes; compound eyes rather large and sessile (not protuberant); rostrum not visible in the holotype, but in the paratype it reaches up to the po-

Fig. 4. *Xylastodoris gerdae* n. sp., paratype, no. 1268 coll. HOFFEINS, dorsal view. Without scale [photo BECHLY].

sterior third of the metathoracic sternite; posterior margin of head not withdrawn into pronotum; pronotum wider than long and distally broadened (length 0.57 mm, width 0.64–1.03 mm); lateral margins of pronotum nearly straight, only slightly concave; scutellum large, forming an equilateral triangle; hemi-elytra extending 0.48 mm beyond tip of abdomen (total forewing length 2.07 mm); clavus distally broadened (basal width 0.16 mm, distal width 0.22 mm); lateral margin of corium expanded (width 0.09 mm), explanate and reflexed, and extending to tip of membrane; border between corium and membrane strongly curved (distal half of membrane nearly circular); venation of corium with typical pattern of Sc, R, r-m, M&Cu. and CuP&AA1 (as figured by SCHAEFER 1969, fig. 2); membrane transparent and without veins (length of membrane from clavus to apex 1.12 mm); hindwing (the left hindwing is partly visible) with typical venation of R, M&Cu, R&M, CuA, and CuP (as figured by SCHAEFER 1969, fig. 1); legs relatively short, but no details are visible; length of thorax + abdomen 2.10 mm; sternites and genitalia not visible, but a faint outline of the produced tip of the abdomen suggests that it could be a female specimen.

Fig. 5. *Xylastodoris gerdae* n. sp., paratype, no. 1268 coll. HOFFEINS, ventral view. Without scale [photo BECHLY].

The paratype is more or less identical to the holotype, but also shows the ventral side.

Discussion. – According to the family and subfamily keys in SCHUH & SLATER (1995) this specimen can be clearly identified as a Thaumastocoridae – Xylastodorinae, and thus represents the oldest fossil record and the first record of Thaumastocoridae for the Palaearctic. Xylastodorinae only feed on palms (BARBER 1920, KORMILEV 1955, BARANOWSKI 1958, SCHUH 1975, SLATER & SCHUH 1990, SCHUH & SLATER 1995), which agrees with the record of various Palmeae in Baltic amber (SPAHR 1993: 50–51). According to the generic key of Xylastodorinae in POINAR &

SANTIAGO-BLAY (1997) this specimen without doubt belongs to the extant genus *Xylastodoris*, since it shares all six diagnostic characters, and is even strikingly similar to the extant type species *X. luteolus*. POINAR & SANTIAGO-BLAY (1997) suggested that *Xylastodoris luteolus* from Cuba (secondarily introduced in Florida) might be a relic taxon, and that the record of the closely related *Paleodoris lattini* from Dominican amber shows that the group had a wider distribution with a Gondwanian pattern in the past. The present record from Baltic amber shows that the distribution was even much more wide than suggested by these authors, and that the Gondwanian pattern of distribution is just an artifact of extinction due to climatic changes in the Tertiary.

Infraorder Dipsocoromorpha STYS & KERZHNER, 1975

Family Hypsipterygidae DRAKE, 1961

Genus *Hypsipteryx* DRAKE, 1961

Hypsipteryx hoffeinsorum n. sp.

Figs 6–7

Holotype: Specimen no. 990 coll. HOFFEINS (will be donated and deposited at Entomological Institute, Eberswalde, Germany). The amber piece is embedded in a polished block of synthetic resin. The presence of stellate hairs shows that it is no recent African copal, but genuine Baltic amber.

Type locality: Baltic.

Age: Eocene (40–50 my bp), Baltic amber (Succinite).

Derivation of name: Named in honour of Mrs CHRISTEL HOFFEINS and Mr HANS WERNER HOFFEINS (Hamburg) who has declared in will the donation of the holotype to the Entomol. Institute in Eberswalde.

Diagnosis. – This new species is very similar to the extant type species *H. ectpaglus*, but can be easily distinguished from all three extant species by the different venation of the forewings and the different shape and sculpturing of the pronotum, as well as the distinctly thicker legs and larger eyes. The new amber species furthermore differs from both African species by the non-abbreviated forewings and the larger body size, which both rather agree with the type species.

Description. – A completely preserved tiny bug of indeterminable sex. Unfortunately parts of the head, most of the ventral side of the body and all legs are obscured by clouds of „white matter". Body elongate (total length 1.9 mm, max. width 1.1 mm); dorsal surfaces of wings and scutellum densely ornated with small punctures, giving the animal a general appearance similar to a lace bug (Tingidae); head length 0.34 mm, width between the compound eyes 0.16 mm; segmentation of antennae not clearly visible, but especially the distal parts of the antennae bear long hairs (total length of antenna 1.0 mm; length of the last segment 0.20 mm); the base of the antenna is somewhat thickened; no ocelli; compound eyes rather large (0.20 mm); rostrum largely clouded; pronotum rectangular, somewhat narrowed anteriorly (length 0.20–0.22 mm, width 0.44–0.54 mm); median part of pronotum with three inconspicuous longitudinal ridges; scutellum large (length 0.53 mm, width at base 0.35 mm); forewings 1.5 mm long, without distinction between hemi-elytra and membrane; pattern of forewing venation more or less identical to extant Hypsi-

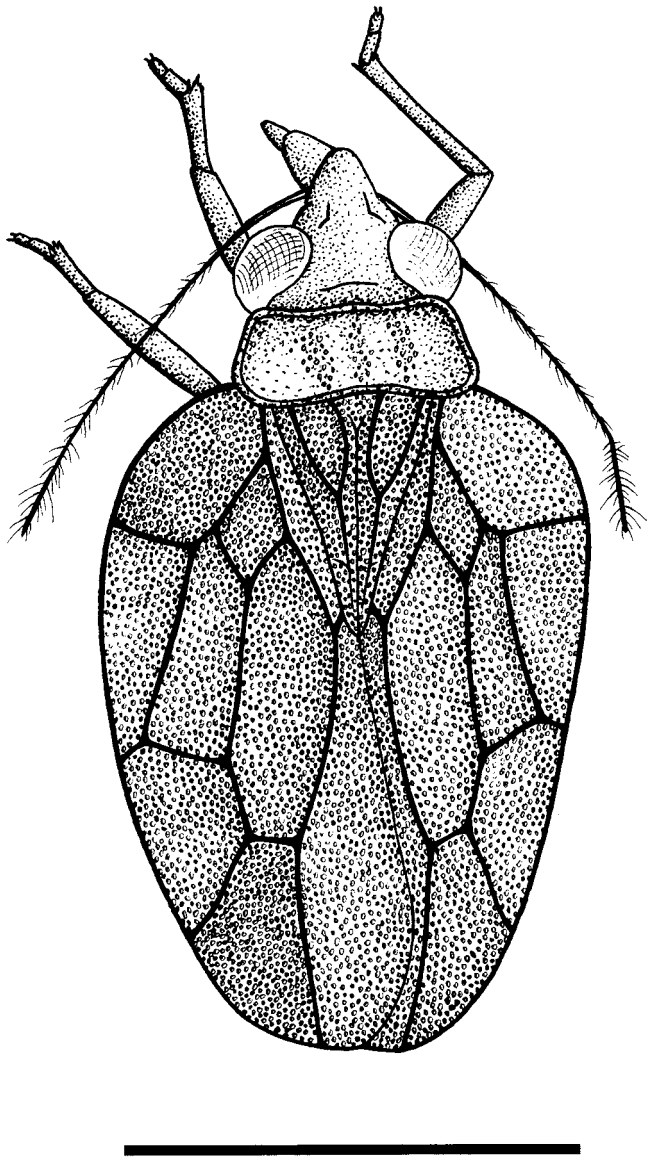

Fig. 6. *Hypsipteryx hoffeinsorum* n. sp., holotype, no. 990 coll. HOFFEINS. Scale 1 mm [drawing BECHLY].

pterygidae; hindwings not visible; legs relatively short and strong with short two-segmented tarsi with small tarsal claws; sternites and genitalia not visible.

Discussion. – This new species from Baltic amber demonstrates that Hypsipterygidae were more widely distributed in the Tertiary and that the current palaeotropical disjunct distribution of this group is caused by extinction events that are most probably related to the significant climatic changes within the Tertiary. It is also a further indication for the presence of tropical forests in the Baltic region of the Lower Tertiary.

Fig. 7. *Hypsipteryx hoffeinsorum* n. sp., holotype, no. 990 coll. HOFFEINS. Without scale [photo BECHLY].

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