

Protoscena baltica gen. et sp. n. from the Eocene Baltic amber (Hemiptera, Homoptera)

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(With 4 figures)

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Abstract

Protoscena baltica gen. et sp. n. has been reported for the first time from the Eocene Baltic amber. The morphological description is supplemented with metric data and figures. *Protoscena baltica* gen. et sp. represents the first fossil species of the Paurocephalinae, Rhinocolidae.

Keywords: Baltic amber, Palaeogene, Insecta, Psylloidea.

Zusammenfassung

Protoscena baltica gen. et sp. n. wird aus dem Eozän des Baltischen Bernsteins neu beschrieben. Die morphologische Beschreibung wird durch die Angabe metrischer Daten und durch Abbildungen ergänzt. *Protoscena baltica* gen. et sp. n. stellt den bisher ersten fossilen Vertreter der Paurocephalinae, Rhinocolidae, dar.

Schlüsselwörter: Baltischer Bernstein, Paläogen, Insecta, Psylloidea, Blattflöhe.

Introduction

The oldest known fossil jumping plant lice, representatives of the only recent superfamily Psylloidea, are species of Aphalarinae (Aphalaridae) found in the Baltic amber (ENDERLEIN 1915; BECKER-MIGDISOVA 1985; KLIMASZEWSKI 1993a). Species described from Eocene and Oligocene sediments – apart from the Dominican amber (KLIMASZEWSKI 1995; in litt.) material from the turn of the Oligocene and Miocene – also belong to the family Aphalaridae, within which a subfamily Palaeoaphalarinae has been erected to house plesiomorphic forms (without processes on the anal cone). So far, Palaeoaphalarinae have been known only from the Bembridge Marls of the Isle of Wight (KLIMASZEWSKI & POPOV 1993).

All Aphalaridae have vein R+M on hind wings; this is a primitive character because it occurs in all groups from the developmental line of Psylloidea (KLIMASZEWSKI 1993b, KLIMASZEWSKI & POPOV 1993). Only within Psylloidea are there forms in which vein M+Cu₁ is created as a result of moving the vein M division (KLIMASZEWSKI 1993b).

Rhinocolidae are close to Aphalaridae in a number of morphological characters. This is especially true in the case of Paurocephalinae, although in this group the basal vein on the hind

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wings forks into R and M+Cu₁, while in Aphalaridae the plesiomorphic division into R+M and Cu₁ is retained. The described species belongs to Rhinocolidae. It is the oldest known representative of the apomorphic developmental line and of a psyllid family other than Aphalaridae.

Family Rhinocolidae

Subfamily Paurocephalinae

Protoscena gen. n.

Type species: *Protoscena baltica* sp. n.

Derivatio nominis: coined from gr.: protos, "the first", and the name of the recent genus *Camaratoscena* HAUPT, 1935, close to the described form.

Diagnosis: antennae slightly longer than head width, inserted high (antennal insertion visible in dorsal view, seen at right angles to the vertex surface). The anterior margin of pronotum evenly arcuate, the posterior margin straight (fig. 1). Pronotum narrower than head width. Forewings with wedged pterostigma (figs. 2, 4). Basal vein on hind wings, like on forewings, divides into R and M+Cu₁.

Discussion: The described genus is the only representative of the subfamily Paurocephalinae in the fossil record. Among recent genera, *Camaratoscena* HAUPT and *Haplaphalara* UICHANCO, 1921. are close to *Protoscena* gen. n., although they differ from the latter in the type of pterostigma (leathery or ribbon-like, while in the described form it is wedged and membranous) and in their width (the described genus is considerably wider). Moreover *Protoscena* gen. n. differs from *Haplaphalara* UICH. in the lack of a forewing pattern, and from *Camaratoscena* HAUPT in the absence of meracathi.

Protoscena baltica sp. n.

(Figs. 1–4)

Holotype: Without abdomen (damaged during preliminary treatment of amber), Kalinin-gradskaja Obl., in the collection of Naturhistorisches Museum in Vienna, 1996z0188/0001.

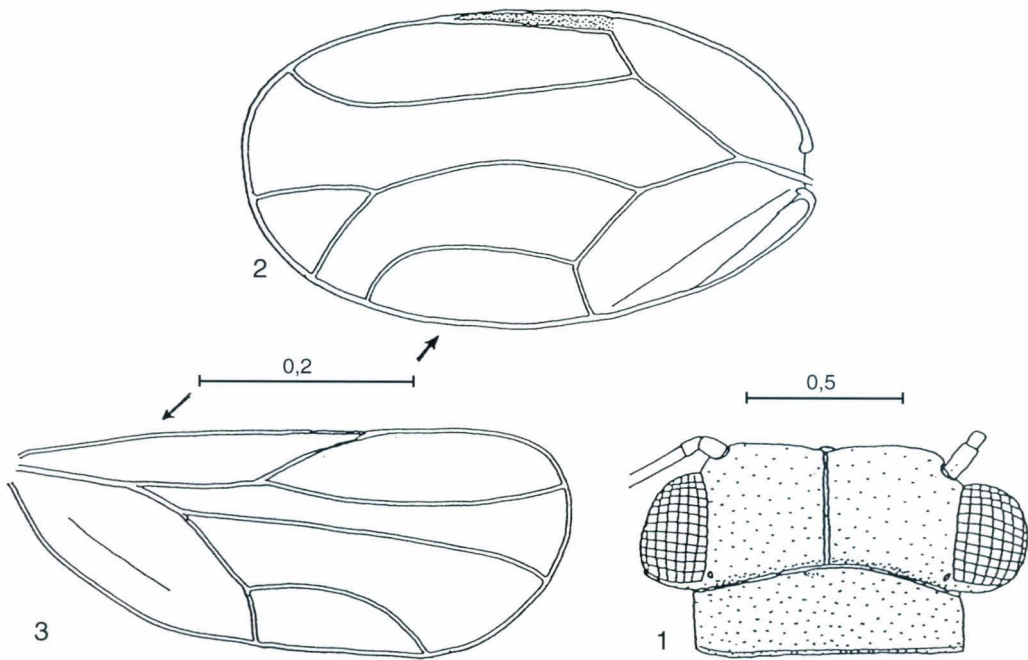
Derivatio nominis: From the Baltic Sea, along whose shore the described specimen was collected.

Diagnosis: See under genus.

Description: General body colour yellowish, forewing membrane yellow-tinted. Antennae yellowish, all segments roughly similar in colour, not darkened subapically.

Head width: 0.53 mm; anterior margin of vertex almost straight, vertex width: 0.34 mm, length: 0.17 mm. Antennae length: 0.60 mm, slightly longer than head width. Antennal segment III over twice as long as the next one. Forewing length: 1.35 mm, width: 0.56 mm.

Forewing membrane, like in the recent species *Tetrafollicula omissa* (WAGNER, 1944), rugose, with an irregular net of surface spinules on both fore- and hind wings. Cell Cu₁ on forewings with coefficient 2.5, about 1.6 times as long as cell m₁ (fig. 2). Vein R+M slightly longer than vein Cu₁. Vein M on hind wings not forked, thus hind wings without cell m₁.



Figs. 1–3. *Protoscena baltica* gen. et sp. n. – 1 head in dorsal aspect, 2 left forewing, 3 right hind wing.



Fig. 4. Total body *Protoscena baltica* gen. et sp. n. in ventral aspect. NHMWien 1996z0188/0001.

(figs. 3, 4). III legs without meracanthi, which occur in recent species of *Camaratoscena* HAUPT and are present, though very weak, in species of *Paurocephala* CRAWFORD, 1913.

Protoscena baltica sp. n. is the only known representative of Paurocephalinae in the fossil record. It differs from recent species of this subfamily in generic features. It should be noted that in forewing structure it resembles species of the genus *Gyropsylla* BRETHERS, 1921, which is a primitive group within Aphalaridae, although its clypeus is most apomorphic (it protrudes strongly beyond the genae level and resembles anteriorly a strong, cylindrical process).

Notes on the evolution of Psylloidea

The fact that until recently only Aphalarinae – a group with clearly apomorphic anal cone structure – were known from the Eocene and Oligocene was, in my opinion, an obvious indication that some more plesiomorphic forms must already have occurred at that time. This was confirmed when species with more primitive anal cone structure were described from the turn of the Eocene and Oligocene and were placed within a newly erected subfamily Palaeoaphalarinae KLIMASZ. (KLIMASZEWSKI & POPOV 1993). However, it was not clear whether another developmental line of Psylloidea, with characteristic apomorphic hind wing venation (basal vein subdividing into R and M+Cu₁), had already existed in the Eocene. *Protoscena baltica* sp. n. helps establish that in the Lower Eocene (crucial for the formation of the Baltic amber) both developmental lines were already present. The fact that representatives of the other line are significantly less common in the fossil record does not necessarily prove that they were of minor importance in the Eocene. They might have occurred in a different environment, one with a poor fossilization potential. Still, up to the Lower Miocene only representatives of Aphalaridae have been identified in the fossil record; the placement of some species within other families (BECKER-MIGDISOVA 1985) seems highly arguable (KLIMASZEWSKI 1993a).

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