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One more microphysid from the Eocene Baltic amber (Heteroptera: Cimicomorpha, Microphysidae)

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Abstract. New fossil representative of the cimicomorphan bug family Microphysidae from Baltic amber (Late Eocene) is described and figured: *Loricula* (s. str.) *polonica* n. sp. A key for all fossil microphysids described hitherto is presented.

Key words: paleontology, taxonomy, new species, Heteroptera, Cimicomorpha, Late Eocene.

INTRODUCTION

This article is continuation of a series of papers on fossil microphysid bugs from various insectiferous fossil resins, in particular from Baltic (Prussian Formation), Ukrainian (Rovno), and Saxonian (Bitterfeldian) amber. These bugs are mainly found in different European museums and private collections of Austria, Denmark, Germany, Poland, Russia, and Baltic countries. Microphysidae are a small family – about 30 recent species and four recognized genera, where *Loricula* (s. str.) and *Myrmedobia* are treated as one genus *Loricula* (Popov 2004) of very tiny bugs (not more than 3 mm) the majority of which are distributed in Palearctic and a few in Nearctic regions. Microphysids are usually found in the litter on tree bark, on branches and trunks of old trees often covered by mosses or lichens and also in ant-hills. They are quite active predators, sucking small arthropods like mites, springtails, aphids, psocids, psyllids, and some other arthropods. During examination of numerous heteropteran inclusions we have unexpectedly discovered that microphysids are not so rare and they are probably one of the numerous groups of Heteroptera in Baltic and Saxonian amber like Cylapinae or Isometopinae of the family Miridae. One of the reasons for such a poor

knowledge of the fossil Microphysidae in the past is their striking resemblance with members of the family Anthocoridae (especially with Oriini of the smallest size), and their very small size of 1.2 to 2 mm. Main characters allowing their recognition (except the small size) are as follows: 4-segmented rostrum, 2-segmented tarsi, one cell with one or two veins branching from the cell of the hemelytral membrane, almost transparent hemelytra, and hind wing with the typical venation for microphisids (Fig.2). Hind wing of Microphysidae is characterized by free marginal Sc, interruption of basal stem of R, presence of the remnants of hamus (= basal stem of M), the developed M as diagonal vein between Cu and R, the structure of cubital furrow, presence of anal lobe and 2An etc. (see ŠTYS 1962).

The first record of a fossil species of Microphysidae, later described as *Loricula ceranowiczae* POPOV from Baltic amber (POPOV 2004), was reported by KULICKA et al. (1996). Four species of the genus *Loricula*, sensu POPOV (*L. perkovskyi* PUTSH. & POP. *L. ceranowiczae* POP., *L. damzeni* POP. and *L. pericarti* POP.) have been so far described from Baltic and Ukrainian amber (PUTSHKOV & POPOV 2003; POPOV 2004). Revising other microphysid inclusions (POPOV 2006) from rich private collection of well-known Austrian heteropterologist Ernst HEISS (Innsbruck, Austria), we have also discovered five new species whose main characters are given in a key below. In this collection the first submacropterous female of *Loricula* (*Eocenophysa*) *damzeni* POP. was also found. Its subbrachypterous form had been described earlier (POPOV 2004). There are also some undescribed new species of Microphysidae from the Saxonian amber. The results of their investigation will be published later. Generally, so far we can register 10 described species, including *Loricula polonica* n.sp.

SYSTEMATIC PART

Order Hemiptera
Suborder Heteroptera
Infraorder Cimicomorpha
Superfamily Miroidea
Family Microphysidae DOHRN 1859
Subfamily Microphysinae DOHRN 1859
(Type genus *Loricula* CURTIS 1833)

Genus *Loricula* CURTIS 1833
Subgenus *Loricula* CURTIS 1833
Subgenus *Loricula* POPOV 2004: 99 (stat. nov.)
(Type species: *Loricula pselaphiformis* CURTIS 1833)

***Loricula* (*Loricula*) *polonica* POPOV et HERCZEK n. sp.**

(Figs. 1-3)

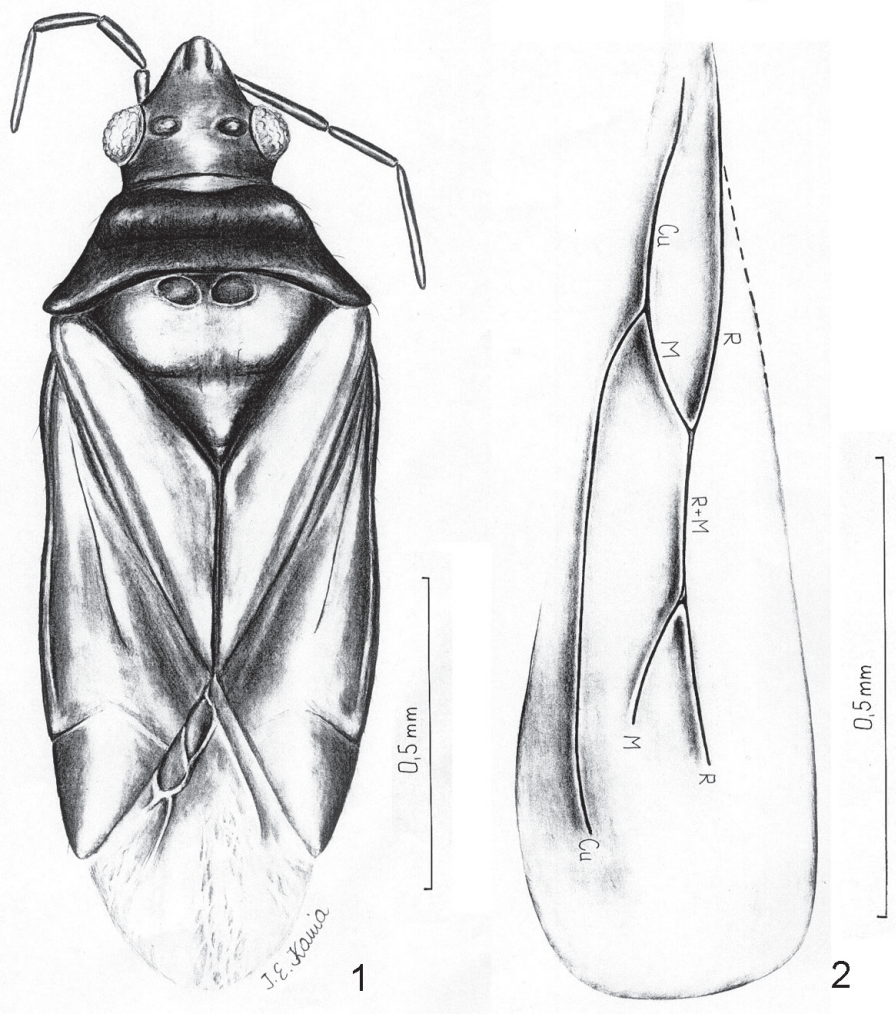
MATERIAL EXAMINED

Holotype, macropterous male (inv. No 3115 JF 168), housed in the Muzeum Inkluzji w Bursztynie (= Museum of Amber Inclusions), Uniwersytet Gdański, Poland. Light-

yellowish small piece of amber (8 x 7.3 mm) of irregular, quadrangular shape. The specimen is dorsally and ventrally very clearly visible, antennae and legs complete, the latter bent ventrally.

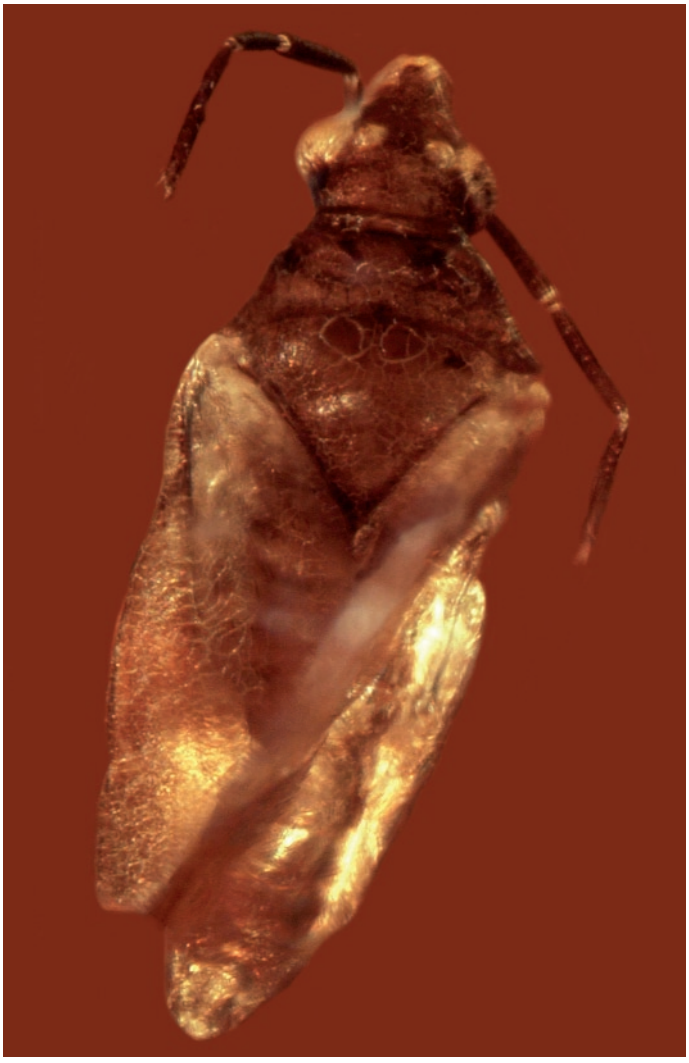
Description

Body length from head to apices of hemelytra 1.5 mm. Generally oblong, 2.6 x as long as wide. General colouration uniform yellow-brownish; head and pronotum brownish, hemelytra pale-yellowish, almost transparent, membrane colourless. Anterior part of pronotum and mesoscutum glabrous, dorsal surface of head and other parts of body matt, not punctate; posterior part of pronotum and hemelytra covered with hardly visible, tiny, appressed, pale hairs.



1, 2. *Loricula polonica* nov.sp.; holotype, male, Nr. 3115: 1 – dorsal view, 2 – hind wing

Head short, about 1.3 x as wide as long, setae not visible; preocular part slightly shorter, about 0.9x (ca. 1.1 times) as long as the ocular part; head slightly longer than pronotum (1.2 times); vertex wide, about 2.8x as wide as the diameter of eyes; rostrum thin, reaching middle of mesosternum; rostral segment II reaching base of head and longer than other segments and about 1.5x as long as IV; proportion of rostral segments I–IV: 5-14-10-6; antennae slender and without pilosity, joints II and III longest and 1.1 times (0.91x) as long as the diatone, II and IV are of equal length; proportion of antennal segments I–IV: 7-20-15-20. Pronotum distinctly transverse, 2.2 times as wide as long, its posterior margin distinctly emarginated, about twice as wide as anterior one; lateral



3. *Loricula polonica* nov.sp.; holotype, male, NR. 3115; dorsal view

margins converging anteriorly; collar narrow and deep transversal impression (groove) distinct, anterior part of pronotum with one transversal shallow callosity. Mesoscutum glabrous and 1.2 times longer than the scutellum which is matt; two polished sports along the middle of mesoscutum base. Lateral margins of hemelytra almost straight and parallel; external margin of exocorium distinctly thickened along its length up to the cuneus; cuneal fracture very distinct; apex of cuneus gently angulate; proportions of length of corium and cuneus: 6.0-1.5; length of cuneus 0.4 x as long as the corium; membrane with two thickened veins branching from two cells (Fig. 1). Tibiae and femora of all legs without pilosity; metatibiae straight; their tarsi quite short, about 0.25 x as long as the tibiae.

Measurements (in mm): Body length (including hemelytra) 1.5, width 0.57; head: length 0.275, width (diatone) 0.4; preocular part 0.125, ocular + postocular parts 0.15; width of eye 0.07; width of vertex 0.2; antennal segments I–IV: 0.09: 0.3: 0.21 ; 0.3; rostral segments I–IV: 0.07: 0.2: 0.142: 0.08; pronotum: length 0.225 (max.) and 0.175 (min.), width 0.25 (ant.) and 0.5 (post.); length of open part of mesoscutum 0.15, of scutellum 0.125; length of corium and cuneus: 0.9 and 0.225; length of posterior legs: femora 0.36, tibiae 0.5, tarsi 0.13 (0.03: 0.1).

Etymology

Named after Poland.

Comparison

This new species is very close to *L. finitima* Pop. – it shares the same width of vertex (ca. 3 times wider than eye diameter), bare antennae, and the proportion of pronotum which is strongly converging anteriorly (2.2 times as wide as long and posterior margin twice as broad as the anterior one). However, new species differs from *L. finitima* as its head is matt and longer (ca. 1.3 times as wide as long), slightly longer than pronotum, almost equal in length of the preocular and the ocular parts while in *L. finitima* the preocular part is over twice as short as ocular one, and the 2nd rostral segment is distinctly longer than the 3rd one (1.4 x) compared to 1.2 x in *L. finitima*. In addition, the posterior margin of pronotum, which is distinctly emarginated, as well as difference in the proportions of antennal segments clearly distinguish this new species from *L.finitima*. We have also discovered quite a strange structure on the specimen of *L. polonica* n. sp.: two small glabrous spots on the mesonotum which have never been noted before and therefore it is quite difficult to estimate their functional and taxonomical value now.

KEY TO *LORICULA* SPECIES IN BALTIC AND UKRAINIAN AMBER

1(2) Head short, at most 1.5 x as long as the pronotum; rostrum very thick and short, not reaching even anterior coxae, distinctly shorter than head and pronotum taken together (subgenus *Myrmedobia*) ….....… *L.* (*M.*) *pericarti* Popov 2004

2(1) Head distinctly longer; if it is shorter than pronotum, then it is at least 1.3x as long as pronotum; rostrum considerably thinner and always reaching at least anterior coxae …..... 3.

3(4) Head strongly elongate, especially preocular part which is at least 1.3 x as long as ocular and postocular part; females with well developed ocelli; rostrum reaches middle of mesosternum; subbrachypterous and submacropterous forms (subgenus *Eocenophysa*) ……..... *L.* (*E.*) *damzeni* Popov 2004

4(11) Head moderately long, usually slightly shorter than pronotum; rostrum reaches at least middle of mesosternum; rostral segment II reaches base of head (subgenus *Loricula*) ……..... 5.

5(6) Head about 1.3x as short as pronotum, the latter strongly converging anteriorly, posterior margin about 2.5 x as wide as anterior one and considerably emarginated (the ratio lmx.to lmin. is 1.5 x); lateral margins convex; legs pilose; whole dorsal surface covered by quite dense, short, appressed hairs. Length 2–2.5 mm ……..... *L.* (s.str.) *ablusa* Popov, 2006

6(5) Head only slightly shorter, of equal length or at most 1.2 x as long as pronotum, the latter less constricted anteriorly and with concave lateral margins; legs without pilosity; smaller species, length not more than 1.7 mm …..... 7.

7(8) Pronotum slightly converging anteriorly, posterior margin about 1.5 x as wide as anterior one and more emarginated (the ratio lmx.to lmin. is about 1.5 x); external margin of hemelytral exocorium not expanded distally. Length 1.6 mm ……..... *L.(*s.str*.) ceranowiczae* Popov, 2004

8(7) Pronotum distinctly converging anteriorly, posterior margin about 2.1–2.2 x as wide as anterior one; antennae bare; external margin of hemelytral exocorium reaches cuneal fracture …..... 9.

9(10) Head smooth, shorter (1.5 x as wide as long); rostral segment II slightly passing base of head; posterior margin of pronotum straight, transverse callosity weakly elevated and bilobated in the form of two obscure low swellings. Length 1.7 mm ……..... *L.* (s.str.) *finitima* Popov, 2006

10(9) Head matt, longer (1.3 x as wide as long); rostral segment II reaches only base of head; posterior margin of pronotum distinctly emarginated, transversal callosity distinctly elevated and not divided; mesonotum with two glabrous spots. Length 1,5 mm ……..... *L.*(s.str.) *polonica* n. sp.

11(4) Head 1.2–1.4 x as long as the pronotum; rostrum rather thin, reaching only posterior margin of anterior coxae; rostral segment II almost reaching base of head (subgenus *Myrmericula*) ……..... 12.

12(13) Dorsal surface of body without pilosity, lateral margins of hemelytra distinctly dilated posteriorly; surface of pronotum almost glabrous, transverse pronotal impression not developed, anterior part of pronotum with a transverse narrow, smooth spot; antennal segments II–IV almost of equal length; external margin of hemelytral exocorium thickened along its length, reaching to the cuneal fracture; cuneus very distinct. Length about 2 mm …..... *L.* (*M.*) *heissi* Popov, 2006

13(12) Dorsal surface of body, except of head, covered with pale, very short, adpressed hairs, lateral margins parallel; pronotum with a transverse impression and a

callosity; antennal segment II usually longer than III and of equal length as IV; external margin of exocorium weakly developed and not expanding posteriorly ………………………………………………………………………………… 14.

14(15) Pronotum transverse, about 2.5 x as wide as long, lateral margin feebly explanate, callosity and transverse impression well developed, pronotum strongly converging anteriorly; posterior margin almost 2.5 x as wide as anterior one; cuneus distinctly shorter than corium and about 1/3 as long as the latter; legs without pilosity. Length 1.75 mm (Rovno, Ukrainian Amber) ………………… ……………………………………… *L.* (*M.*) *perkovskyi* PUTSHKOV & POPOV 2003

15(16) Pronotum less transverse, about twice as wide as long, lateral margin not visible, pronotum moderately converging anteriorly, posterior margin not more than twice as wide as anterior one; females macropterous with well developed ocelli; pronotal callosity and transverse impression rather obscure; cuneus longer than 1/3 the length of the corium; legs pilose ……………………………………… 16.

16(17) Preocular part of head of equal length as ocular and postocular part; lateral margins of pronotum distinctly converging anteriorly, posterior margin almost twice as wide as anterior one; metatibiae with long erect hairs which are longer than the diameter of the tibiae. Length 1.8 mm ….. *L.* (*M.*) *ocellata* POPOV, 2006

17(16) Preocular part of head longer than ocular and postocular part; lateral margins of pronotum only slightly converging anteriorly, posterior margin narrower and about 1.5x as wide as anterior one; metatibiae with short hairs which are shorter than the diameter of tibiae. Length 1.9 mm ..... *L.* (*M.*) *samlandi* POPOV, 2006

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