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Isomyiomma hirta gen. et sp. n., a new peculiar plant bug (Hemiptera: Heteroptera: Miridae: Isometopinae) from late Eocene Baltic amber

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Abstract. *Isomyiomma hirta* gen. et sp. n. is described from late Eocene, Baltic amber. This peculiar genus is mainly characterized by an unusually developed scutellum and a very short claval commissure like *Metoisops akingbohungbei* HERCZEK & POPOV, 2014, but with a different head structure. So far, six of the extinct genera Isometopinae have been described from Baltic amber; the key to these genera is provided.

Key words: Hemiptera, Heteroptera, Isometopinae, extinct new genus and species, Eocene Baltic amber, key.

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I. INTRODUCTION

This article is a continuation of a series of our joint papers on fossil plant bugs (Miridae) subfamily Isometopinae from Late Eocene Baltic amber fauna. So far, six extinct genera from Isometopinae have been described from Baltic amber in a joint effort by these authors: *Electromyiomma* POPOV & HERCZEK, 1992, *Metoisops* POPOV & HERCZEK, 1992, *Clavinyiomma* POPOV & HERCZEK, 1992, *Archemyiomma* HERCZEK, 1993, *Electroisops* HERCZEK & POPOV, 1997, *Hofeinsoria* HERCZEK & POPOV, 2012. Among the genera, the genus *Metoisops* is comprised of species that differ significantly in metric characteristics. Perhaps, the genus *Metoisops* should be regarded as a collective, and be revised as new species become known. This disparity is particularly evident in the case of *M. akingbohungbei* HERCZEK et POPOV, 2014 and *M. groehni* HERCZEK & POPOV, 2014.

Based on many undescribed isometopine bugs from Baltic, Ukrainian (Rovno), Bitterfeld, and French

amber, this group of plant bugs clearly demonstrates diversification already during the early Cenozoic period, and especially in the Eocene. One of the reasons Isometopinae were so dominant among extinct Miridae is probably due to the warmer climate at that time as well as the ecological connections Isometopinae had with different types of coniferous vegetation. This lifestyle definitely favored their resin fossilization.

II. MATERIAL AND METHODS

The study was based on material from Y. A. POPOV deposited in the collection of the Laboratory of Evolutionary Entomology and Museum of Amber Inclusions, University of Gdańsk (MAIG). The study material (one specimen) is an inclusion of an adult from Baltic amber dated at the Eocene. A detailed analysis of the specimen was performed using the standard methods used in palaeoentomology studies.

For the microscopic examination, we used a Nikon SMZ1500, Leica M205C stereoscopic microscope and a Nikon Microphot-FX equipped with a camera lucida with changeable, direct and transmitted light. The measurements were taken with NIS Elements. The photographs were taken using a Nikon Microphot-FX with a Nikon Eclipse E 600 digital camera and Lucia® software and edited with Adobe® Photoshop Elements 6.0.

III. SYSTEMATIC PALEONTOLOGY

Order: **Hemiptera** LINNAEUS, 1758

Suborder: **Heteroptera** LATREILLE, 1810

Family: **Miridae** HAHN, 1831

Subfamily: **Isometopinae** FIEBER, 1860

Isomyiomma gen. n.

urn:lsid:zoobank.org:act:24423F8C-4EF7-4099-AF25-607A834BFFD0

Type species: *Isomyiomma hirta* sp. n.

E t y m o l o g y. The name is formed from two generic names: *Isometopus*, the type genus of the subfamily and another isometopin name, *Myiomma*. Gender feminine.

D i a g n o s i s. Body length ca. 3 mm, elongate oval; dorsal surface of body smooth, distinctly punctured (except head), hemelytral membrane feebly wrinkled; pronotum, scutellum, and hemelytra (ex-

cept membrane) furnished with pale, dense, adpressed hairs, head bare. Head is distinctly transverse, twice as wide as long; vertex half as wide as eye; eyes globular; ocelli small and placed quite near the posterior margin of the head; rostrum long, apex reaching behind hind coxae. Pronotum trapezoidal, 1.73x wider than medial length, posterior margin hardly convex, median incision placed between calli at anterior part of pronotum; collar very narrow. Mesoscutum is extremely narrowly exposed, its length is about ¼ the length of scutellum. Scutellum has quite deep punctation. Hemelytra smooth and clearly punctured, cuneus clearly elongated and narrower. Claval commissure quite short, slightly longer than scutellum (1.27x). Hemelytral membrane with two cells: one cell very large and long, the other cell extremely small.

C o m m e n t s. This new genus mainly differs from all known extinct isometopine genera described from Baltic amber (see POPOV et al. 2011) by its combination of features (Table 1). Only one described species, *Metoisops akingbohungbei*, has developed a scutellum 3.2x longer than a very short mesoscutum and a short claval commissure (1.11x). The scutellum of *Isomyiomma* is 4.11x longer than the mesoscutum and 1.27x as long as the claval commissure. On the other hand, the new genus differs from *Metoisops* by a less transversal head which is not flattened in front, and by globular eyes. The distinctly long claval commissure of the genera *Electromyiomma*, *Metoisops*, *Clavimyiomma*, *Hoffeinsoria*, and *Electroisops* also clearly differ from that of *Isomyiomma*. The convex

Table 1

Proportions of selected body parts of holotypes of extinct genera of the Isometopinae

Holotypes	<i>Metoisops kerzhneri</i>	<i>Electromyiomma weitschati</i>	<i>Clavimyiomma henryi</i>	<i>Electroisops ritzkowskii</i>	<i>Archemyiomma carvalhoi</i>	<i>Hoffeinsoria robusta</i>	<i>Isomyiomma hirta</i> sp. n
Body length / width	3.10	3.73	2.14	2.93	2.37	2.26	2.79
Head width / length	2.95	2.27	2.29	2.04	2.14	3.67	2.00
Dorsal width of eye / width of vertex	2.00	1.44	1.70	0.65	2.00	0.68	2.00
Rostral segments II:I	1.50	1.07	-	1.02	1.19	0.92	1.17
Pronotum width / length	2.10	2.00	1.65	1.97	1.35	1.87	1.73
Pronotum posterior width / anterior width	1.98	2.20	1.31	2.60	1.83	1.70	1.73
Scutellum length / mesoscutum length	3.50	1.28	3.00	1.17	3.30	2.04	4.60
Claval commissure length / scutellum length	1.75	1.53	2.61	2.13	1.50	1.79	1.27
Hind femur length / width	7.50	3.17	4.07	4.67	3.71	4.03	5.76
Hind tibia length / tarsus length	3.75	3.55	3.97	4.73	4.77	3.13	4.25
Hind tarsus II:I	1.53	1.75	?	3segmented	2.71	1.43	2.00

hind margin of the pronotum in the new genus is similar to the genera *Electroisops* and *Clavimyiomma*, however the configuration and size of the pronotum are different, and the position of the ocelli close to the hind margin of the head is characteristic only for *Iso-myiomma*. The vertex of the new genus is not as broad as that in *Electromyiomma* and *Archemyiomma*: the dorsal width of eye is 1.5x wider than vertex (*E. weitschati*) or 1.77x wider than vertex (*Archemyiomma*).

Iso-myiomma hirta sp.n.

urn:lsid:zoobank.org:act:D4D84DC6-7198-44AC-9F29-12E
DA9F8AA49

(Figs 1-3)

D i a g n o s i s. As for the genus.

E t y m o l o g y. *Hirta* (Latin, feminine) = hairy.

M a t e r i a l e x a m i n e d. Holotype male, Nr MAIG 6279; deposited in the Museum of Amber Inclusions, Laboratory of Evolutionary Entomology and Museum of Amber Inclusions, Faculty of Biology, University of Gdańsk, Poland; The holotype is a well preserved and complete bug included in a clear light, yellowish and moderately-sized piece of amber (43 x 25 mm) of irregular shape. This amber piece contains the following syninclusions: Sciaridae (Diptera), leg (Diptera), Aranei (fragment), and Collembola. This piece of amber is a donation from our late friend, Y.A. POPOV.

A g e a n d o c c u r r e n c e. Eocene, Baltic amber.

D e s c r i p t i o n. Male, elongate oval, 2.8x as long as wide. General coloration brownish, pronotum dark brown, rostrum and legs brownish; 2nd rostral segment 1.31x as long as the third. Scutellum shiny, dark brownish. Hemelytra densely pubescent with reclining pale adpressed hairs arising from aciculate punctures; cuneus punctate, distinctly elongate, 4.7x as long as wide; hind femur almost reaching apex of abdomen, slender, ca. 5.76x longer than wide, 1st tarsal segment half the length of the 2nd one.

Measurements (in mm). Length of body from apex of hemelytra is 2.9, width 1.04; length of head 0.31, width 0.62; dorsal width of eye 0.28; max. width of vertex 0.14; antennal segments: not distinct; rostral segments: 1.34 (0.36:0.42:0.32:0.34); length of pronotum 0.52 (lm.) and 0.42 (ls.), width 0.53 (ant.) and 0.90 (post.); length of mesoscutum 0.08; length of scutellum 0.37; claval commissure 0.47; length of hind femur 0.98, width 0.17; length of tibia 1.19; length of tarsus 0.28 (I:II = 0.09:0.18). (Abbreviations: lm. – length of pronotum in mid line, ls. – length of lateral margin of pronotum, ant. – length of anterior margin of pronotum, post. – length of posterior margin of pronotum).

Key to extinct Isometopinae genera

1. Ocelli very small, reduced, situated near the posterior margin of the head; rostrum long, reaching beyond the middle of the abdomen; mesoscutum is widely exposed, almost the same length as small scutellum; tarsi 3 segmented*Electroisops*
- ocelli not reduced; rostrum short; mesoscutum narrower; tarsi 2 segmented2
2. Frontal part of the is head triangular; tylus elongate; rostrum reaching second abdominal segment; eyes very large, strongly prominent; ocelli large; pronotum distinctly transverse; calli strongly flattened, almost indistinct*Hoffeinsoria*
- frontal part of the head not developed laterally and dorsoventrally; eyes significantly extend beyond anterior angles of pronotum; ocelli large or medium sized, occupying the front or middle part of vertex; rostrum reaching at most first abdominal segment; posterior margin of pronotum convex to strongly concave; calli weakly prominent or well elevated3
3. Pronotum trapezoidal or rectangular; posterior margin of pronotum straight or slightly concave; calli weakly developed or indistinct4
- posterior margin of pronotum strongly concave; calli elevated, occupying over 1/2 of the front of pronotum6
4. Scutellum almost equilateral, reaching 1/2 - 1/3 of claval length; mesoscutum extremely narrow, ca. 1/4 of scutellum length5
- pronotum trapezoidal, transverse, posterior margin straight; scutellum almost reaching middle of clavus; combined length of 3rd and 4th antennal segments almost equal to 2nd segment; collar very narrow*Metoisops*
5. Scutellum reaching 1/2 of claval length; claval commissure short, 1.3x of scutellum length; rostrum reaching first abdominal segment.....
-*Iso-myiomma* gen. n.
- scutellum reaching only 1/3 of claval length; claval commissure long, 2.6x longer than length of scutellum; pronotum almost rectangular, posterior margin slightly convex; collar absent; combined length of 3rd and 4th antennal segments distinctly longer than 2nd segment.....
-*Clavimyiomma*
6. Posterior margin of pronotum strongly concave; calli well developed, elevated; mesoscutum broadly exposed, ca. 0.7x of scutellum length; combined length of 3rd and 4th antennal segments distinctly shorter than 2nd segment; rostrum reaching hind coxae*Electromyiomma*

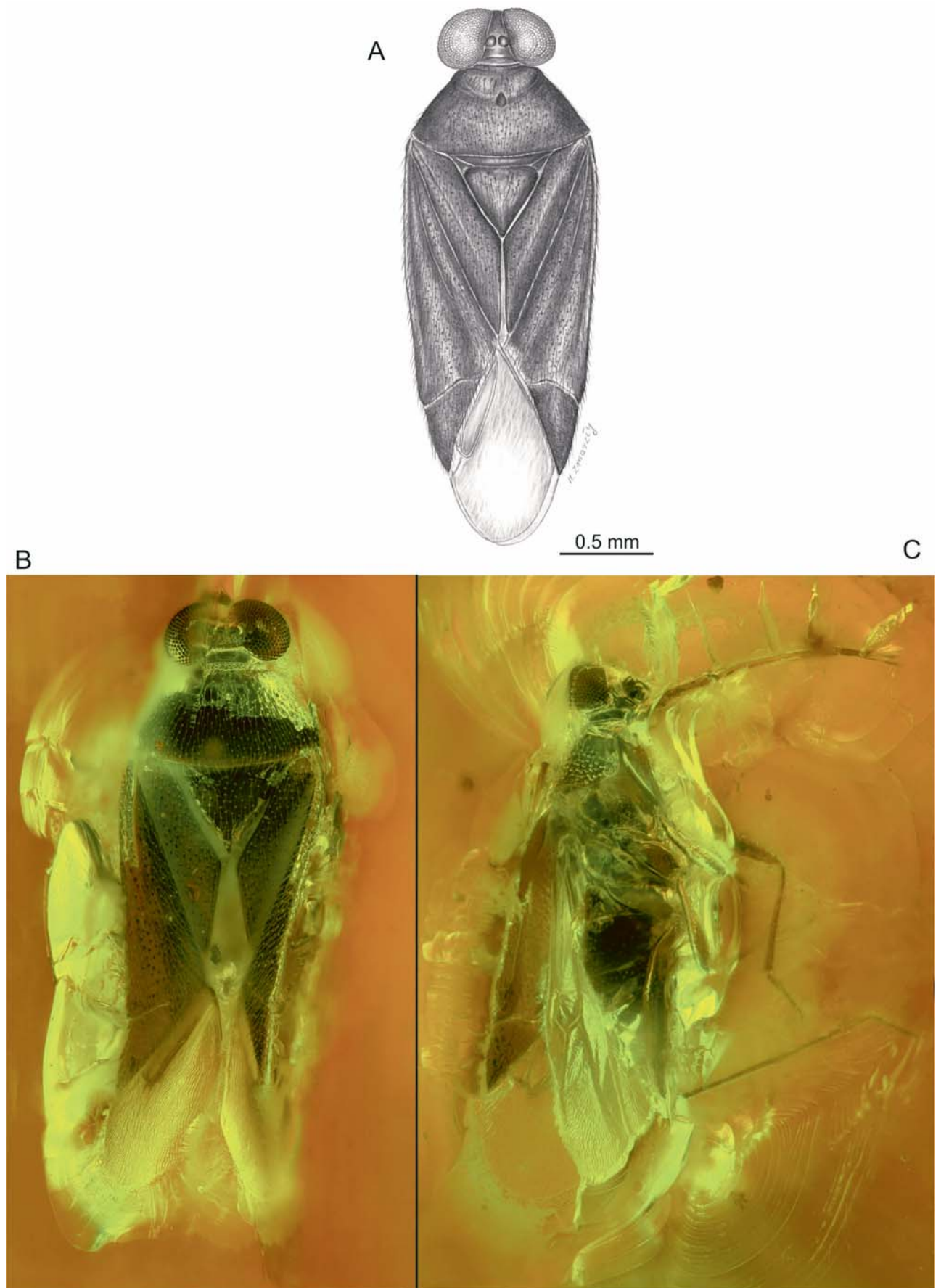


Fig. 1. *Isomyiomma hirta* sp. n., holotype male, No. MAIG 6279, A. drawing of habitus, dorsal view; B, C, photographs of habitus, dorsal and lateral views, respectively. (Photo: A. TASZAKOWSKI).

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REFERENCES

- FIEBER F. X. 1860. Die europäischen Hemiptera. Halbflügler (Rhynchota Heteroptera) I: 1-112. Wien: Carl Gerold's Sohn.
- HAHN C. W. 1831. Die wanzenartigen Insecten: getreu nach der Natur abgebildet und beschrieben I. vi + 236 pp. Nürnberg: C.H. Zeh'schen Buchhandlung.
- HERCZEK A. 1993. Systematic position of Isometopinae (Miridae, Heteroptera) and their intrarelationships. *Wydawnictwo Uniwersytetu Śląskiego*, Katowice, **1357**, 88 pp.
- HERCZEK A., POPOV Yu. A. 1997. New peculiar representative of the Isometopinae from the Baltic amber (Heteroptera: Miridae). *Mitteilungen aus dem Geologisch-Paläontologischen Institut der Universität Hamburg*, **80**: 189-195.
- HERCZEK A., POPOV Yu. A. 2012. A new peculiar isometopine genus (Hemiptera: Heteroptera: Miridae) from the Eocene Baltic amber. *Zootaxa*, **3196**: 64-68. <https://doi.org/10.11646/zootaxa.3196.1.4>
- HERCZEK A., POPOV Yu. A. 2014. Revision of the genus *Metoisops* (Hemiptera: Heteroptera, Miridae, Isometopinae) from late Eocene European amber. *Zootaxa*, **3887**: 401-421. <https://doi.org/10.11646/zootaxa.3887.4.1>
- LATREILLE P. A. 1810. Considérations générales sur l'ordre naturel des animaux composant les classes des Crustacés, des Arachnides, et des Insectes. Avec un tableau méthodique de leurs genres, disposés en familles. Paris: F. Schoell, 444 pp.
- LINNAEUS C. 1758. Systema naturae per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis. Tomus I. Editio decima, reformata. Holmiae: Laurentii Salvii. [4] + 824 pp.
- POPOV Yu. A., HERCZEK A. 1992. The first Isometopinae from Baltic Amber (Insecta: Heteroptera, Miridae). *Mitteilungen aus dem Geologisch-Paläontologischen Institut der Universität Hamburg*, **73**: 241-258.
- POPOV Yu. A., KOSMOWSKA-CERANOWICZ B., HERCZEK A., KUPRYJANOWICZ J. 2011. Review of true bugs (Insecta: Hemiptera, Heteroptera) from the amber collection of the Museum of the Earth of PAS in Warsaw with some remarks on heteropteran insects from Eocene European amber. *Polish Journal of Entomology*, **80**: 699-728.