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

Aleksander HERCZEK, Yuri A. POPOV and Jowita DROHOJOWSKA


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, *Clavimyiomma* POPOV & HERCZEK, 1992, *Archemyiomma* HERCZEK, 1993, *Electroisops* HERCZEK & POPOV, 1997, *Hofffeinsoria* 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-AF25-607834BFFD0

Type species: *Isomyiomma hirta* sp. n.

**Etymology.** The name is formed from two generic names: *Isometopus*, the type genus of the subfamily and another isometopin name, *Myiomma*. Gender feminine.

**Diagnosis.** Body length ca. 3 mm, elongate oval; dorsal surface of body smooth, distinctly punctured (except head), hemelytral membrane feebly wrinkled; pronotum, scutellum, and hemelytra (except membrane) furnished with pale, dense, addressed 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 median length, posterior margin hardly convex, median incision placed between calli at anterior part of pronotum; collar very narrow. Mesocutum is extremely narrowly exposed, its length is about \(\frac{1}{4}\) the length of scutellum. Scutellum has quite deep punctuation. 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.

**Comments.** 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, *Metoisopsakingbohungbei*, has developed a scutellum 3.2x longer than a very short mesocutum and a short claval commissure (1.11x). The scutellum of *Isomyiomma* is 4.11x longer than the mesocutum 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*, *Hoffeisoria*, and *Electroisops* also clearly differ from that of *Isomyiomma*. The convex

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

**Isomyiomma hirta** sp.n.

urn:lsid:zoobank.org:act:D4D84DC6-7198-44AC-9F29-12ED9F8AA49

(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 Gdaňsk, 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 (Im.) and 0.42 (Is.), 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).

**K e y t o e x t i n c t I s o m e t o p i n a e g e n e r a**

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 segmented .......................... 2

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**

---

3. Pronotum trapezoidal or rectangular; posterior margin of pronotum straight or slightly concave; calli weakly developed or indistinct .................. 4

---

**Electromyiomma**

4. Scutellum almost equilateral, reaching 1/2 - 1/3 of claval length; mesoscutum extremely narrow, ca. 1/4 of scutellum length ................................. 5

---

**Metiosops**

5. Scutellum reaching 1/2 of claval length; claval commissure short, 1.3x of scutellum length; rostrum reaching first abdominal 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 ...............................
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).
Acknowledgements. We are grateful to Artur TASZAKOWSKI, PhD (Institute of Biology, Biotechnology and Environmental Protection, University of Silesia, Katowice) for the photos and Marzena ZMARZY, M.Sc. (Institute of Biology, Biotechnology and Environmental Protection, University of Silesia, Katowice) for the excellent drawing.

REFERENCES


MITTEILUNGEN AUS DEM GEOLOGISCH-PALÄONTOLOGISCHEN INSTITUT DER UNIVERSITÄT HAMBURG, 80: 189-195.


