

# Revision of the flat bug family Aradidae from Baltic Amber IX. *Aradus macrosomus* sp. n. (Hemiptera: Heteroptera)

Ernst Heiss<sup>1</sup>

<sup>1</sup> *Tiroler Landesmuseum, Josef Schraffl Strasse 2a, A 6020 Innsbruck, Austria*

† <http://zoobank.org/A4B5783D-568C-4928-86CB-3315714AC586>

<http://zoobank.org/F349411B-C7AA-4802-96A2-6E2836D20B1A>

Corresponding author: *Ernst Heiss* (aradus@aon.at)

## Abstract

Received 28 January 2014

Accepted 24 April 2014

Published 30 May 2014

Academic editor:

*Sonja Wedmann*

The present paper is a continuation of previous contributions describing fossil *Aradus* species from Baltic Amber inclusions (Heiss 1998, 2002, 2013). *Aradus macrosomus* sp. n. is a well-preserved large new species which is described and illustrated herein. It differs by a combination of characters from the known Eocene and extant *Aradus* taxa, documenting again the unexpected richness of species diversity preserved in Baltic Amber.

## Key Words

Hemiptera

Heteroptera

Aradidae

*Aradus*

new species

Baltic Amber

## Introduction

Baltic Amber, a fossilized tree resin found on or near the shores of the eastern Baltic Sea, represents the largest deposit of amber in the world. It is exceptionally rich in well-preserved inclusions of botanical and zoological objects, particularly arthropods. The origin, genesis, properties, age and the flora and fauna of Baltic Amber are largely discussed by Grimaldi (1996) and Weitschat and Wichard (1998).

Among the insect fauna, Heteroptera have attracted considerable attention and taxa from at least 3 aquatic and about 14 terrestrial bug families have been described since the first description by Germar and Berendt (1856; Weitschat and Wichard 2002, Grimaldi and Engel 2005).

Records of the flat bug family Aradidae are reported from the subfamilies Aneurinae (4 spp.: Heiss 1997, 2001, 2012), Calisiinae (6 spp.: Usinger 1941, Heiss

2000, 2002a), Mezirinae (1 sp.: Usinger 1941) and Aradinae (only genus *Aradus*).

To date 14 species of the genus *Aradus* have been described from Baltic amber inclusions, sharing all essential characters (e.g., habitus, structure of body, hemelytra and antennae) of this widely distributed extant genus (*A. assimilis*; *A. superstes*; *A. consimilis* Germar & Berendt, 1856; *A. frater* Popov, 1978; *A. frateroides* and *A. popovi* Heiss, 1998; *A. goellnerae* and *A. lativentris* Heiss, 2002b; *A. weitschati*, *A. kotashevichi*, *A. velteni*, *A. voigti*, *A. damzeni* and *A. balticus* Heiss, 2002c).

Another species, *A. grabenhorsti* Heiss, 2013 was described based on a specimen from Bitterfelder Amber (Saxonia, Germany), which presumably is of the same Eocene age as Baltic Amber. Specimens from Baltic Amber agree in all essential characters which could be assigned to this taxon and were thus included as paratypes in the type series.

## Material and methods

The Amber inclusion used in this study is preserved in the collection of the author at the Tiroler Landesmuseum, Innsbruck, Austria.

Photos were taken through an Olympus SZX 10 binocular microscope with Olympus E 3 digital camera and processed with Helicon Focus 4.3 software, using Adobe Photoshop and Lightroom 2.3.

Measurements were taken with a micrometer eyepiece, 20 units = 1 mm, and are given in millimetres, unless otherwise stated.

## Taxonomy

### Subfamily Aradinae Brullé, 1836

### Genus *Aradus* Fabricius, 1803

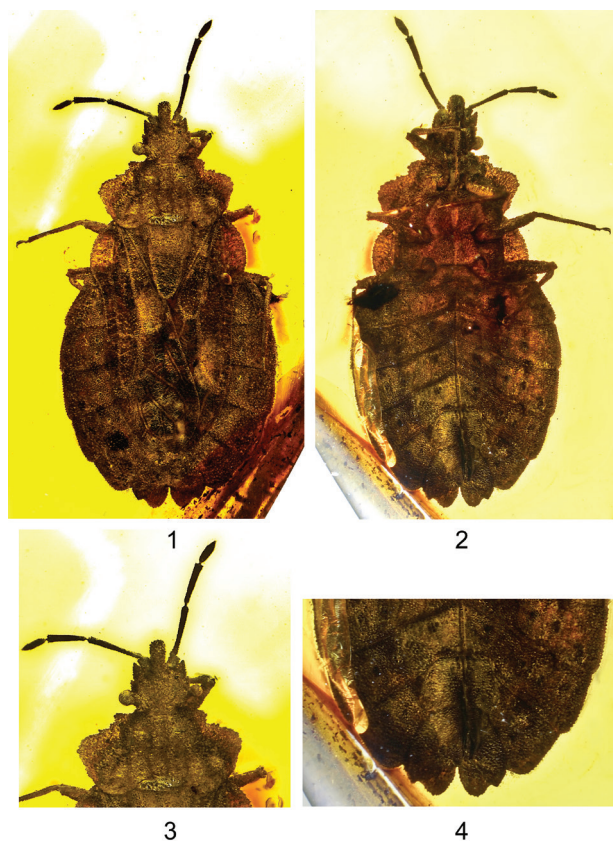
#### *Aradus macrosomus* sp. n.

<http://zoobank.org/6BC829E1-5481-4645-8CF5-C3396BEEC474>

[http://species-id.net/wiki/Aradus\\_macrosomus](http://species-id.net/wiki/Aradus_macrosomus)

Figs 1-4

**Material examined.** Holotype female in a honey-coloured transparent piece of Baltic Amber, which will be embedded in a block of epoxid resin (He-BB-Ar-40).



**Figures 1–4.** *Aradus macrosomus* sp. n., 1 – dorsal view; 2 – ventral view; 3 – head and pronotum, dorsal view; 4 – terminal segments, ventral view.

The specimen is dorsally and ventrally clearly visible, without a frequently occurring white incrustation (German: Verlumung). Antennae and legs are complete, the latter are bent ventrally.

**Diagnosis.** Species of larger size (9.2 mm) with long antennae, which are beset with tubercles bearing stiff bristles. Lateral margins of pronotum angulate and serrate, constricted anterolaterally. Abdomen widely rounded, connecting vein M-Cu of corium situated posterior to A-Cu.

**Description.** Macropterous female. Body with fine granulation. Colour light brown with darker patches on head, pronotum and hemelytra.

**Head.** Wider across eyes than long (32 / 29). Clypeus subparallel, twice as long as antennal segment I, apex rounded. Antenniferous tubercles subparallel, acute, shorter than antennal segment I. Lateral margins begranulate, a distinct preocular tubercle present. Antennae slender, 1.72 × as long as width of head; antennal segment I short but widest, here secondarily depressed; II longest, thinner at middle than at its ends; III shorter than II tapering toward base; IV shortest with pilose apex. Relative length of antennal segments I / II / III / IV = 6 / 23 / 17 / 11. Eyes reniform, large, protruding laterally. Postocular lobes rounded, their margins beset with some larger tubercles. Vertex with U-shaped depression. Rostrum arising from an open atrium, four-segmented, reaching anterior 1/3 of prosternum.

**Pronotum.** 2.56 × as wide as long (64 / 25). Lateral margins irregularly serrate, angularly expanded at middle then strongly converging and constricted anteriorly. Anterolateral angles rectangular, anterior margin straight. Surface only slightly convex, with 4 longitudinal carinae, the median ones of full length, the lateral ones shorter, reaching to shallow transverse impressions. Humeral angles slightly carinate. Posterior margin concave at middle, rounded laterally.

**Scutellum.** Triangular, 1.60 × as long as wide at base (40 / 25). Lateral margins straight and carinate, apex narrowly rounded. Disk elevated at basal 1/3, surface granulate.

**Hemelytra.** Basal lateral expansion of corium rounded; posterior angle of corium reaching posterior margin of dorsal external laterotergite (deltg) V. Veins distinct, M-Cu situated posterior to A-Cu. Membrane with 4 distinct veins, reaching to anterior margin of tergite VII, surface wrinkled.

**Abdomen.** Widely rounded; lateral margins of deltg II-VI slightly convex posteroexterior angles not produced; deltg VII broadly rounded posteriorly, paratergites VIII cleft at middle, apex rounded with a blunt lateral tooth. Ventral side with a longitudinal groove, reaching from sternite VIII to prosternum. Spiracles II-VII ventral and far from lateral margin, VIII lateral and visible from above.

**Legs.** Femora fusiform, trochanters fused along visible sutures. Tibiae cylindrical, slender, protibial comb present. Tarsi two segmented with slender curved claws lacking pulvilli.

**Measurements.** Length 9.2 mm; length of antennae 2.25 mm; width of abdomen 5.05 mm; width of corium 3.75 mm; width of tergite VIII 1.7 mm.

**Etymology.** The epithet refers to its unusual large size, from “macros” <Greek> large and “soma” <Greek> body.

## Discussion

The new species can be distinguished at once from all other species of *Aradus* described so far of Baltic amber by a combination of characters not occurring otherwise, e.g., its large size, wide rounded body, structure of head with reniform laterally protruding eyes, long and thin antennae, and shape of the pronotum and scutellum. It shows only a superficial similarity to *A. lativentris* Heiss (2002b) and *A. velteni* Heiss (2002c), which, however, are of smaller size and the structure and shape of head, antennae and pronotum are different. There does not seem to be a close relationship with the extant species of *Aradus*.

## Acknowledgments

I am grateful to Marius Veta (Palanga, Lithuania) who provided the Amber inclusion, Stefan Heim (Tiroler Landesmuseum) for the photos and Dominique Zimmermann, the newly appointed editor-in-chief for the *Deutsche Entomologische Zeitschrift*, who invited me to contribute to this issue and the reviewers for their critical reading and suggestions.

## References

- Brullé A (1836) Histoire naturelle des insectes, traitant de leur organisation et de leurs mœurs en général, et comprenant leur classification et la description des espèces. Pillot, Paris.
- Germar EF, Berendt GC (1856) Die im Bernstein befindlichen Hemipteren und Orthopteren der Vorwelt. In: Berendt CG (Ed) Die im Bernstein befindlichen organischen Reste der Vorwelt 2, Berlin: 1–40.
- Grimaldi DA (1996) Amber: Window of the past. American Museum of Natural History, Harry N. Abrams, Inc and American Museum of Natural History, New York, 216 pp.
- Grimaldi DA, Engel MS (2005) Evolution of the Insects. Cambridge University Press, 755 pp.
- Heiss E (1997) Erstnachweis einer Aneurinae aus dem Baltischen Bernstein: *Aneurus ancestralis* n. sp. (Heteroptera, Aradidae). *Carolinaea* 55: 111–113.
- Heiss E (1998) Revision der Familie Aradidae des Baltischen Bernsteins I: Bisher beschriebene Taxa der Gattung *Aradus* und zwei neue Arten (Insecta, Heteroptera). *Mitteilungen des Geologisch-Paläontologischen Instituts der Universität Hamburg* 81: 251–268.
- Heiss E (2000) Revision der Familie Aradidae des Baltischen Bernsteins II. Drei neue *Calisius*-Arten (Insecta, Heteroptera). *Carolinaea* 58: 195–201.
- Heiss E (2001) Revision der Familie Aradidae des Baltischen Bernsteins III. Zwei neue *Aneurus*-Arten (Insecta, Heteroptera). *Entomologisches Nachrichtenblatt* 8: 12–18.
- Heiss E (2002a) Revision der Familie Aradidae des Baltischen Bernsteins V. Eine neue Gattung und zwei neue Arten der Unterfamilie Calisiinae (Heteroptera, Aradidae). *Linzer biologische Beiträge* 34/2: 1127–1136.
- Heiss E (2002c) Revision der Familie Aradidae des Baltischen Bernsteins VI: Neue Arten der Gattung *Aradus* Fabricius 1803 (Heteroptera, Aradidae). *Linzer biologische Beiträge* 34(2): 1137–1150.
- Heiss E (2002b) Revision of the family Aradidae in Baltic Amber IV: Two new *Aradus* from the collection of the Institut für Paläontologie, Museum für Naturkunde, Berlin (Heteroptera, Aradidae). *Mitteilungen des Naturkundemuseums Berlin, Deutsche Entomologische Zeitschrift* 49: 221–225. doi: 10.1002/mmnd.20020490207
- Heiss E (2012) Revision der Aradidae des Baltischen Bernsteins VII. Eine neue *Aneurus*-Art (Hemiptera: Heteroptera). *Entomologische Zeitschrift* 122(3), Stuttgart, 109–110.
- Heiss E (2013) Erstnachweis von Rindenwanzen (Aradidae) in Bitterfelder Bernstein (Insecta, Heteroptera). *Linzer biologische Beiträge* 45 (1): 741–753.
- Popov YA (1978) New species of Aradidae (Hemiptera) from the Baltic Amber. *Prace Muzeum Ziemi* 29: 137–140.
- Usinger RL (1941) Two New Species of Aradidae from Baltic Amber (Hemiptera). *Psyche* 48: 96–100. doi: 10.1155/1941/72496
- Weitschat W, Wichard W (1998) Atlas der Tiere und Pflanzen im Baltischen Bernstein. Verlag F. Pfeil, München, 256 pp.
- Weitschat W, Wichard W (2002) Atlas of Plants and Animals in Baltic Amber. Verlag F. Pfeil, Munich, 256 pp.

