

## ***Microcalisius madagascariensis* gen.n. et sp.n., the first record of Calisiinae (Heteroptera: Aradidae) from Madagascar**

Ernst HEISS & Andreas ECKELT

### **Abstract**

A total of 93 species from 35 genera of Aradidae have been reported from Madagascar to date, which belong to the subfamilies Aneurinae, Aradinae, Carventinae, and Mezirinae. *Microcalisius madagascariensis* gen.n. et sp.n. is the first representative of the subfamily Calisiinae from Madagascar which is described and illustrated below.

**Key words.** Hemiptera, Heteroptera, Aradidae, Calisiinae, new genus, new species, Madagascar.

### **Zusammenfassung**

Insgesamt 93 Arten aus 35 Gattungen der Familie Aradidae sind bisher von Madagaskar gemeldet worden; sie gehören in die Unterfamilien Aneurinae, Aradinae, Carventinae und Mezirinae. Nun vorliegende Belege stellen die ersten Vertreter der Unterfamilie Calisiinae für diese Insel dar. Sie werden als *Microcalisius madagascariensis* gen.n. et sp.n. beschrieben und abgebildet.

### **Introduction**

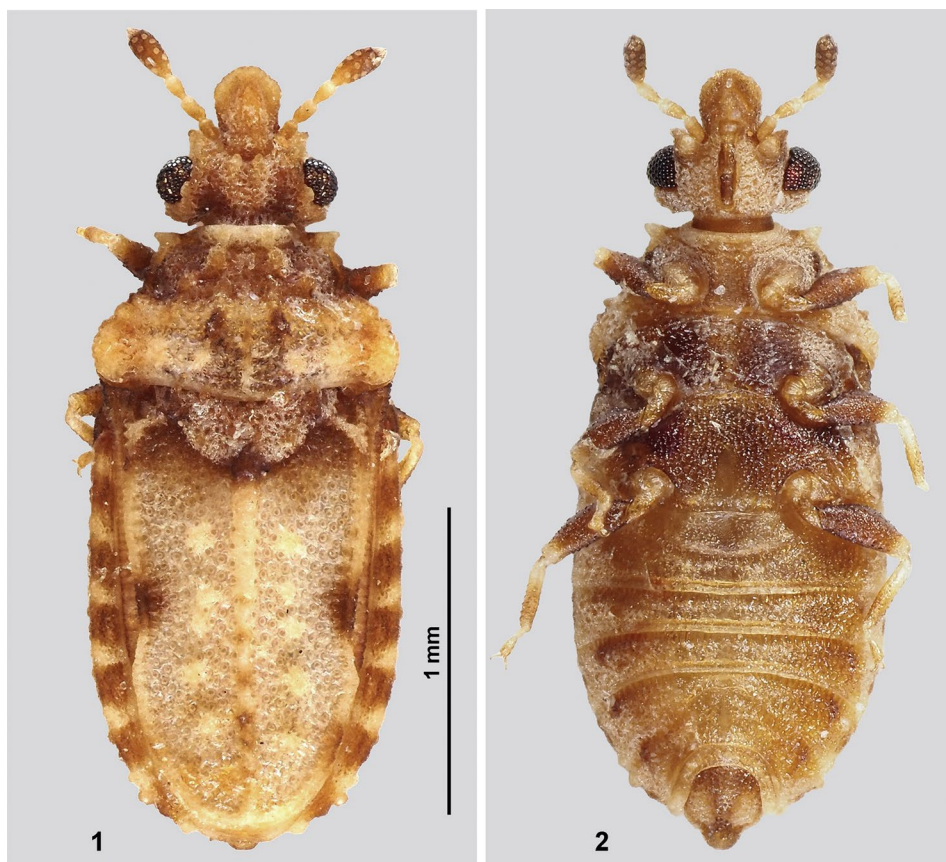
The fauna of flatbugs (Aradidae) from Madagascar is rich and diverse, comprising 93 species assigned to 35 genera to date, most of them endemic to this island. They belong to the subfamilies Aneurinae, Aradinae, Carventinae, and Mezirinae (HEISS 2012 (catalogue); later additions by HEISS & MARCHAL 2012, HEISS & BAÑAR 2013, BAÑAR et al. 2016, BAÑAR & HEISS 2018a, 2018b, HEISS et al. 2019).

Some very small Aradidae represent the first representatives of the flat bug subfamily Calisiinae from Madagascar and adjacent islands (Comoros, Mauritius, Reunion, Rodrigues). As they cannot be placed into any known genus of the nearby African fauna, a new genus is proposed to accommodate the new species. It is described and illustrated herein.

### **Material and methods**

The material upon which this study is based is presently deposited in the collection of the first author at the Tiroler Landesmuseum, Innsbruck, Austria (CEHI) which later will be transferred to the Bavarian State Collection of Zoology in Munich, Germany.

Measurements were taken with a micrometre eyepiece and are given in millimetres.



Figs 1–2. *Microcalisius madagascariensis* sp.n. (1) Habitus of holotype (♂), dorsal. (2) Habitus of paratype (♂), ventral. © A. Eckelt.

When citing the text on the labels of a pin attached to the specimens, / separates the lines and // different labels. Photos were taken with an Olympus OM-5 camera and Helicon Focus 8 along with Adobe Photoshop CS6 software, was utilized for image stacking and composition.

Abbreviations used: deltg = dorsal external laterotergite (connexivum), ptg = paratergite.

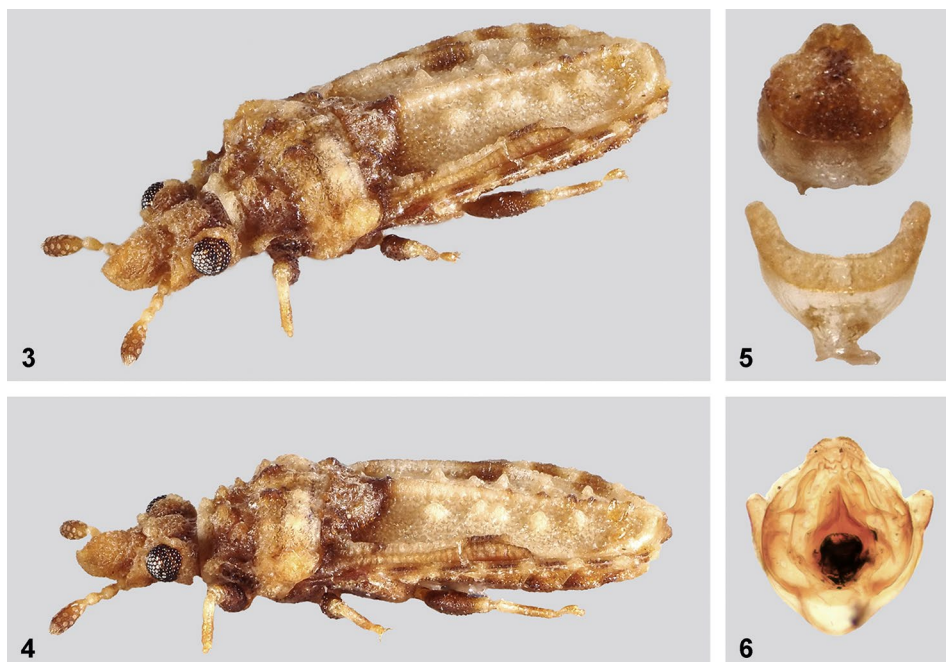
## Taxonomy

### Subfamily Calisiinae USINGER & MATSUDA, 1959

#### Genus *Microcalisius* gen.n.

Type species. *Microcalisius madagascariensis* sp.n.

Description. Macropterous, of small size, body length 2.25–2.85 mm. Body subparallel, colouration stramineous with darker brownish markings.



Figs 3–6. *Microcalisius madagascariensis* sp.n. (3) Habitus, semilateral. (4) Habitus, lateral. (5) Pygophore and segment VIII, ventral. (6) Cleared pygophore, dorsal, showing internal structures. © A. Eckelt.

Head slightly wider than long. Clypeus wide, subparallel; apex conical, its border flattened. Eyes globose, of darker colouration; postocular lobes not exceeding outer margin of eyes. Rostrum arising well behind apex of clypeus; rostral groove deep, as long as head. Antenna about 0.75 times as long as width of head; segments I–III short and of same length; segment IV longer and fusiform, with distinct plaques.

Pronotum posteriorly wider than long; lateral margins granulate and rounded at humeri, then converging to acute anterolateral angles; disk with a median short carina on posterior elevation, flanked by two carinae with darker tubercles reaching anterior margin and two short, granulate carinae joining them on anterior lobe; posterior margin convex.

Scutellum nearly completely covering and obscuring abdomen, with basal semi-circular elevation; disk with four larger basal tubercles overlapping the pronotum, granulate elsewhere; two median shallow longitudinal carinae continuing as a strong median ridge beset with dark triangular elevations; surface of scutellum lateral of median ridge with shallow punctures and 5–6 irregular longitudinally arranged whitish tubercles; lateral margins carinate, their concavity for the partly visible corium marked by a dark brown assemblage of tubercles.

Legs unarmed. Femora incrassate. Tibiae cylindrical. Tarsi two-segmented, bearing distinct pulvilli.

Abdomen. Lateral margins of deltg II–VII nearly straight, without a double row of tubercles usually present in Calisiinae; spiracles II–VI ventral, VII lateral and visible from above. Venter flat at middle of pro-, meso- and metasternum.



Figs 7–8. *Microcalisius madagascariensis* sp.n., head and pronotum in dorsal (7) and ventral (8) aspect. © A. Eckelt.

**Comparative notes.** *Microcalisius* gen.n. resembles *Paracalisiopsis* KORMILEV, 1963 (type species: *P. aethiopicus* KORMILEV, 1963 from Lunda, Zambia), sharing a similar enlarged and flattened clypeus. However, it is distinguished by three distinct flat tubercles on lateral margins of delgt II–VII and a different shape and structure of the pronotum. The new genus is also habitually similar to the neotropical genus *Calisiopsis* CHAMPION, 1898, differing by tuberculate lateral margins of delgt II–VII, a truncate clypeus, and much shorter antennae. Also, biogeographical considerations do not support a close relationship.

**Distribution.** Madagascar (Fig. 9).

**Etymology.** The generic name refers to the small size and the Calisiinae subfamily to which it is assigned.

***Microcalisius madagascariensis* sp.n. (Figs 1–9)**

**Material examined.** Holotype (male): MADAGASCAR / E of Ambositra / 15 VIII 76 lg. Miller// (CEHI). A holotype label is attached to this specimen. Paratypes: 1 ♀ collected with holotype; 1 ♂, 1 ♀, Madagascar / Maromizah rainforest / Périnet 8 X 2000 / Heiss & Perner //; 3 ♂♂, 1 ♀, Madagascar / Périnet / Res. Nat. / 21 X 1995 //; 4 ♂♂, Madagascar / W of Mananara / 23 VII 76 lg. Miller // (CEHI). The paratypes are labelled accordingly.

**Description.** Based on the generic description only few further details are added.

Head distinctly wider than long (0.575 / 0.475). Colour stramineous; a transverse band at



the base of head and antennal segment IV brownish; triangularly shaped, flattened apex of clypeus slightly directed upwards (Figs 3, 4); antennae 0.74 times as long as width of head (0.425 / 0.575); segments I–III short and cylindrical; IV longer, incrassate and beset with longitudinal rows of whitish plaques.

Pronotum 1.72 times as wide as long (0.95 / 0.55). Narrower anterior lobe brownish except collar, anterolateral apices, and two large median tubercles stramineous; wider posterior lobe mainly stramineous, the two medial tubercles and the surface posterior to them brownish.

Scutellum. Basal part around and lateral of the semi-circular elevation brownish; disk with brownish patches adjacent to lateral concavity for corium.

Abdomen. Deltg II–VII bicoloured, brownish, with a triangular yellowish part on posterior margin. Ventral side with brownish median part of pro-, meso- and metasternum, and femora.

Genital structures (Figs 5, 6). Male pygophore nearly globular posteriorly enlarged, parameres blade-like and recognizable in cleared capsule (Fig. 6).

Female. Basic structures and colouration as of male, body wider and of larger size.

Measurements. Holotype (♂): Body length 2.40; width of abdomen across tergite IV 1.70; length of antenna 0.425. Paratypes: Body length of males 2.25–2.50, of females 2.70–2.85.

**Etymology.** Named after Madagascar where it was discovered.

**Distribution.** So far recorded from four localities in Madagascar (Fig. 9) where it might have been overlooked due to its small size. The species is assumed to be endemic.



Fig. 9. Map of Madagascar with records of *Microcalisius madagascariensis* sp.n. Original map by Freeworldmaps (<https://www.freeworldmaps.net/africa/madagascar/map.html>).

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