



Dimifaia secunda, a New Species of Mezirinae from Papua New Guinea (Hemiptera: Aradidae)

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Abstract

The fauna of Aradidae or flat bugs of New Guinea Island is still insufficiently explored and studied. Of the largest subfamily of tropical Aradidae, 26 genera are recorded to date from New Guinea Island. Recent examination of macropterous Mezirinae from Papua proved that there is another species belonging to the monotypic genus *Dimifaia* Kormilev, 1971. This species is described and figured herein as *Dimifaia secunda* new species.

Key words: Heteroptera, Flat Bugs, new species, Oriental Region

Introduction

The island of New Guinea has an area of 786.000 km², the second largest island after Greenland. A central mountain range reaching 4882 m at the highest point (Puncak Jaya) forms the backbone of the island, with its slopes predominately covered by rainforest descending to lowland forests on alluvial river plains. It is politically divided and belongs today to two states. The western part comprises the Indonesian provinces Barat Papua and Papua while the eastern part represents the independent state of Papua New Guinea, where our material originates.

The rich and diverse habitats are inhabited by numerous insect families, among them are 26 genera of the subfamily Mezirinae of the flat bug family Aradidae recorded and described from New Guinea Island (Monteith 1982, Usinger and Matsuda 1959, Kormilev 1971, Kormilev and Froeschner 1987, Heiss and Eckelt 2025).

The study and descriptions of Kormilev (1971) in his publication “Mezirinae of the Oriental and South Pacific” still represent the best comprehensive paper assembling the knowledge of the Mezirinae fauna of these regions. Only one additional taxon (*Neochlonocoris sepicus* Heiss and Eckelt, 2025) has been described from Papua New Guinea since. Kormilev erected a new monotypic genus *Dimifaia* for the new species *D. lobulata*, based on a female holotype from Mt. Giluwe in NW highlands and a male allotype from Wau area in SE region.

Now a male and a female specimen were available for study, collected from Mt. Kaindi in SE Wau area, which resemble the habitus of *D. lobulata*. However, it was not clear if they were conspecific to the latter. To prove this, we compared them with the photos of the types of *lobulata*, which were kindly made available by Mrs. Emily Curcio, collection manager at the Benice B. Bishop Museum, Honolulu, where Kormilev's types are deposited. These photos are presented here for the first time.

As a result of our examination, we determined/decided that the specimens from Mt. Kaindi represent a second species of *Dimifaia*, which is described and figured herein.

Material and Methods

The material used in this study is deposited in the aradid 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 micrometer eyepiece and are given in millimetres.

When citing the text on the labels of a pin attached to the specimens / separates the lines and // different labels. Photos were captured with an Olympus OM-5 camera and Helicon Focus 8 along with Adobe Photoshop 25 software were utilized for image composition.

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

Taxonomy

Subfamily Mezirinae Oshanin, 1908

Genus *Dimifaia* Kormilev, 1971



FIGURES 1–2. 1, *Dimifaia lobulata*, female holotype, dorsal habitus. 2, *Dimifaia secunda* n. sp., female holotype, dorsal habitus. Scale 2 mm.

***Dimifaia secunda* Heiss and Eckelt, new species**

<http://zoobank.org/urn:lsid:zoobank.org:act:0F362306-6C12-4376-B364-0A86F792CC4B>

(Figs. 2, 4, 6, 9)

Diagnosis. The female holotype of *D. secunda* shares the habitus of the female holotype of *D. lobulata* differing at once by the following set of characters: shorter and more rounded not angulate deltg VII; ptg VIII lobate, apex rounded, not lanceolate and acute apex; lateral expansions of deltg II–VI less angulate and more rounded; anterolateral angles of paranota less angulate. Less conspicuous character differences of the male paratypes were compared but not described, as it is uncertain that the male of *D. lobulata* is conspecific with the female holotype, see in discussion section.

Description. Macropterous, of median size (7.3–8.8 mm); abdomen with teeth-like lateral expansions of deltg II–VII, longest of deltg VII; pronotum with laterally expanded paranota: colouration yellowish, with darker brownish antennal segment IV, postocular parts of head of female, basal half of femora, tergal plate and tergite VII at middle, partly ptg VIII of female and male pygophore.



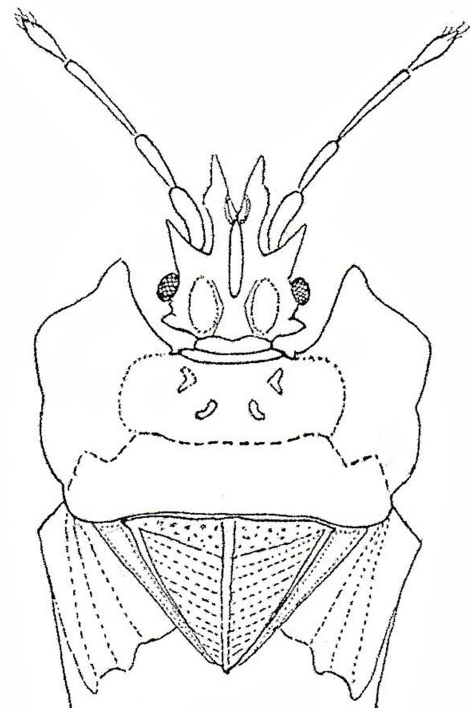
FIGURES 3–4. 3, *Dimifaia lobulata*, female holotype, head, pronotum and scutellum dorsal. 4, *Dimifaia secunda* n. sp., female holotype, head, pronotum and scutellum dorsal. Scale 2 mm.



FIGURES 5–6. 5, *Dimifaia lobulata*, female holotype, terminal segments dorsal. 6, *Dimifaia secunda* n. sp., female holotype, terminal segments dorsal. Scale 2 mm.

Head. Longer than wide; genae long, produced anteriorly, apices pointed, leaving a cleft between them; clypeus medially raised; antenniferous lobes triangular with acute apices, directed anterolaterally; antennal segments II and IV shorter than I and III, IV longest; postocular lobes with a lateral tooth, then converging to constricted neck,

Thorax. Pronotum. About three times as wide as long; paranota expanded laterally and anterolaterally reflexed, anterolateral angles bluntly rounded, lateral margins sinuate; disk with two flat round callosities on anterior half, finely granulate elsewhere. **Scutellum.** Triangular, wider than long, anterior and lateral margins carinate, disk longitudinally raised at middle, surface granular. **Hemelytra.** Membrane transparent without distinct veins, reaching tergite VII; corium with three distinct veins: anal, cubitus and media + radius, the two latter ones are thickened at their end by a blackish patch of tubercles. **Legs.** Femora incrassate, tibiae cylindrical, claws with long thin arolia.



FIGURES 7–8. 7, *Dimifaia lobulata*, male “allotype,” dorsal habitus. 8, *D. lobulata*, female holotype, fig. 126 of original description and labels of type specimens.



FIGURE 9. Localities of *Dimifaia* records in Papua New Guinea.

Abdomen. Flat, deltg II–VI wide with lateral expansions, their rounded posterolateral lobe increasing from deltg II–VI; deltg of tergite VII larger and produced posteriorly, apices rounded; ptg.VIII lobate, spiracles VIII dorsolateral.

Venter. Rostrum arising from a slit-like atrium as long as head; venter flat and smooth; spiracles II–VI ventral, far from lateral margin, spiracle VII sublateral hardly visible from above.

Male (Paratype). Similar to female but of smaller size and more slender; lateral expansions of deltg II–VI less produced, apex of deltg VII angulate; ptg VIII lanceolate reaching $\frac{3}{4}$ of deltg VII, spiracles VIII dorsolateral.; cordate pygophore with a reverse U-shaped depression posteriorly.

Measurements. Holotype ♀: Length including posterior expansions of deltg VII 8.8; head width/length 1.65/1.35; antennae I/II/III/IV 0.6/0.5/0.7/0.5; pronotum width/length 3.25/1.10; width of abdomen across tergite IV 4.35, VII 2.25.

Paratype ♂: length 7.30; head width/length 1.35/1.15; antennae I/II/III/IV 0.5/0.4/0.6/0.5; pronotum width/length 2.50/0.85; width of abdomen across tergite IV 3.20, VII 2.00.

Etymology. Indicates that it is the second species of genus *Dimifaia*.

Distribution. To date genus *Dimifaia* is known only from eastern part of New Guinea Island.

Type material (Holotype ♀): NEW GUINEA NE / Mt. Kaindi, 2350m / 3.I.1969 //;

Paratype ♂: NEW GUINEA NE / Mt. Kaindi, 2350m / 3.V.1967. [no collector known].

Discussion

The female of the new species *D. secunda* was chosen as holotype to compare the essential differences to the female holotype of *D. lobulate* (Figs. 1, 3, 5, 8).

Both type specimens of *D. secunda* n. sp. are from the same locality, and although their collection data are different, their habitus and body structures concur and it can be assumed, that they belong to the same species. In

contrast, the female holotype of *D. lobulata* is from Mt. Giluwe in Central highlands, and the male “allotype” is from an area south of Wau, at about 370 km airline distance. Comparing the males from both species we found some smaller differences between them: being the male of *D. lobulata* larger (7.96), and also showing different outline of deltg VII lobes, ptg VIII and paranota (Fig. 7). Although the collection site of the male of *D. lobulata* is rather close to that of *D. secunda*, it does not belong to the latter.

Considering the biogeographical distance among *D. lobulata* records, we are not sure that the male “allotype” is conspecific with the female holotype and, therefore, might belong to a third taxon. This cannot be decided from the photo and needs confirmation when further specimens are available for a detailed study.

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Literature Cited

- Heiss, E. and A. Eckelt. 2025. *Neochlonocoris sepicus* n. gen., n. sp., a striking new apterous Mezirinae (Hemiptera: Aradidae) from Papua New Guinea. *Journal of the International Heteropterist's Society* 2(2): 121–125. <https://doi.org/10.11646/jihs.2.2.4>
- Kormilev, N. A. 1971. Mezirinae of the Oriental Region and South Pacific (Hemiptera – Heteroptera). *Pacific Insects Monograph* 26: 1–165.
- Kormilev, N. A. and R. L. Froeschner. 1987. Flat Bugs of the World: A Synonymic List (Heteroptera: Aradidae). *Entomography* 5:1–246.
- Monteith, G. B. 1982. Biogeography of the New Guinea Aradidae (Heteroptera), pp. 645–657. *In* Gressitt, J. L., ed. *Biogeography and Ecology of New Guinea*. The Hague; Boston: W. Junk; Hingham, Mass.: Distributors for the U.S. and Canada, Kluwer Boston. 983 pp. https://doi.org/10.1007/978-94-009-8632-9_31
- Usinger, R. L. and R. Matsuda. 1959. *Classification of the Aradidae*. British Museum, London. 410 pp.