

## THREE NEW SPECIES OF THE NEW GUINEA GENUS *BIROANA* (HETEROPTERA: ARADIDAE)

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*Abstract.* Morphological and biological notes are given on the aradid genus *Biroana* and 3 new species are described and illustrated: *Biroana clypeata*, *B. kormilevi* and *B. baloghi*. The unknown nymph of *B. eurycephala* is also described. The 6 species of the genus are keyed.

A small amount of material collected by several collectors in New Guinea and Australia is deposited in the Hungarian Natural History Museum, including 3 new species of the genus *Biroana* Kormilev, 1956 which are described below.

Kormilev (1956) described the genus on the basis of the species *B. eurycephala*. Usinger & Matsuda (1959) essentially redescribed the genus on the basis of another species, *B. inflata*. There is no reference made by any of the authors to the fused pro- and mesonotum. A part of the type-series of *B. eurycephala* is at hand, and a male paratype of *B. inflata* from the British Museum. In both species, the continuity of the median ridge on the thorax is clearly visible. The discs of the pro- and mesonotum are also fused on both sides. The figure of *B. armigera* Kormilev (1970: 715, Fig. 9), the 3rd species described in the genus, shows a continuous median ridge. There are 3 additional species at hand with completely or almost completely fused discs and with a median thoracic ridge. Thus, the fused thoracic tergites are characteristic of this curious genus. The same fusion is also observed on the thoracic sternites of the species examined. Another fact worthy of mention is the continuous lateral margin of the thorax and abdomen formed by anterior prolongation of the fused 2nd and 3rd connexival plate; as noted by Usinger & Matsuda (1959), this feature is shared also by the related genus *Acaraptera* Us. & Mats., from New Zealand and other Pacific islands.

There is no habitat information in the literature on *Biroana* species. Dr J. Balogh kindly informed me that specimens of the 3 new species were collected in mossy forest from soil moss and forest litter, using the Berlese funnel.

### KEY TO THE SPECIES OF *Biroana*

- |        |   |                         |
|--------|---|-------------------------|
| 1.     | Genae not reaching apex of clypeus .....  | <b>clypeata, n. sp.</b> |
|        | Genae reaching or surpassing apex of clypeus .....  | 2                       |
| 2 (1). | Postocular lobes broadly rounded. Pronotum more than 3.5× as wide as long. First antennal segment shorter than pronotum ..... | 3                       |
|        | Postocular lobes pointed. Pronotum less than 3.5× as wide as long. First antennal segment longer than pronotum .....          | 4                       |

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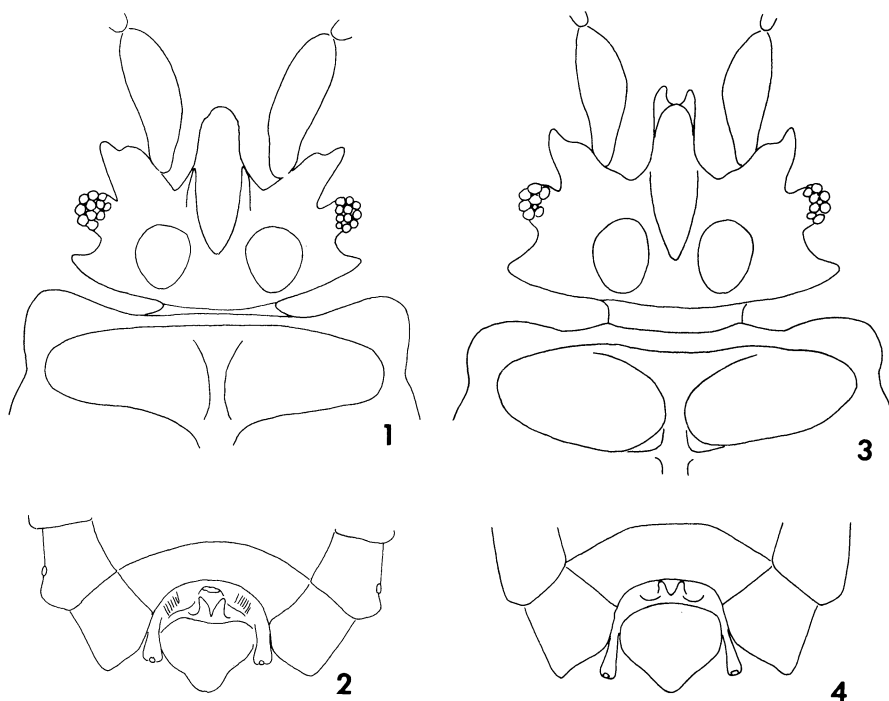


FIG. 1-4. 1-2, *Biroana clypeata*: 1, head and pronotum; 2, tip of abdomen. 3-4, *B. baloghi*: 3, head and pronotum; 4, tip of abdomen.

- 3 (2). Middle part of body strongly elevated. Posterolateral angles of segment VII of ♂ about rectangular, those of ♀ obtuse-angled ..... **inflata** Us. & Mats.  
 Middle part of body less elevated. Posterolateral angles of segment VII pointed on both sexes ..... **eurycephala** Korm.
- 4 (2). Pronotum less than 3× as wide as long ..... **armigera** Korm.  
 Pronotum more than 3× as wide as long ..... 5
- 5 (4). Postocular lobes only slightly surpassing eyes. Hind margin of postocular lobes obtuse-angled (FIG. 5) ..... **kormilevi**, n. sp.  
 Postocular lobes distinctly surpassing eyes. Hind margin of postocular lobes almost straight, slightly convex (FIG. 3) ..... **baloghi**, n. sp.

### ***Biroana clypeata* Vásárhelyi, new species**      FIG. 1, 2

♂, apterous, oval, body covered with thin yellowish incrustation.

*Head* (FIG. 1) 1.5× as wide as long. Genae narrow, not reaching apex of clypeus. Anterior process of head reaching about  $\frac{2}{5}$  of 1st antennal joint. Antenniferous tubercles strong, wide, shortly pointed. Eyes semiglobose, pedunculate. Postocular tubercles not reaching outer border of eye on left side, surpassing it on right side. Vertex with V-shaped impression and with rounded dark wrinkled areas on either side. Relative length of antennal segments I-IV, 38:15:26:30. Rostrum reaching hind border of shallow labial groove, labial atrium widely open. *Pronotum* more than 3× as wide as long. Median ridge not elevated but marked by strong punctations. Fore border convex, anterolateral angles reaching far beyond narrow thin collar, hind border V-shaped. Mesonotum with median ridge widening posteriorly, not elevated but well marked by rough punctation on both sides. Median ridge elevated on metanotum and 1st visible

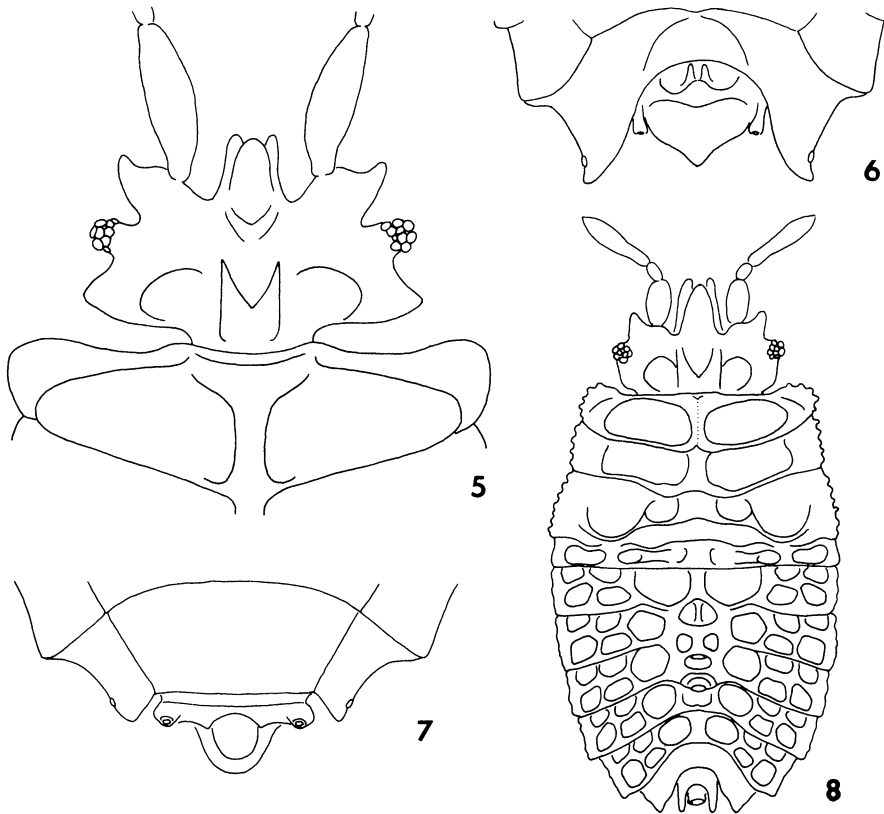


FIG. 5–8. 5–7, *Biroana kormilevi*: 5, head and pronotum; 6, tip of abdomen, ♂; 7, tip of abdomen, ♀. 8, *Biroana eurycephala*, nymph.

abdominal tergite. Borders between meso- and metanotum and 1st visible abdominal tergite marked only by punctations. Lateral margins marked off from tergites by deep furrows. Tergal plate with inner glabrous areas impressed. Lateral margin of connexival plates III–VII bordered by furrows. Posterolateral angles of connexival plates II–VI increasingly protruding, VII forming acute lobes slightly surpassing apex of hypopygium (FIG. 2). Spiracles II–VII lateral, clearly visible from above, VIII apical.

*Measurements* (in mm): total length, 3.25; length of head, 0.56; width of head across eyes, 0.84; length of pronotum, 0.35; width of pronotum, 1.16; length of fused 3 thoracic and 2 abdominal tergites, 1.22; remainder of abdomen, 1.48.

Holotype ♂: PNG: NEW GUINEA (NE): Mt Wilhelm, 3900 m, 13–24.IX.1968, NG-M-B 145, Dr J. Balogh. Deposited in the Hungarian Natural History Museum, Budapest.

***Biroana kormilevi* Vásárhelyi, new species**      FIG. 5–7

Apterous, ♂ less, ♀ more broadly oval, body covered with thin yellowish brown incrustation, with mostly curled bristles on several parts of the body.

*Head* (FIG. 5) much wider than long. Genae surpassing apex of clypeus, reaching  $\frac{1}{3}$  of antennal segment

I. Antenniferous tubercles strong, apex acute. Eyes semiglobose, pedunculate. Postocular borders excavated behind eyes, forming postocular lobes laterally surpassing eyes. Hind border of head slightly convex, vertex with an M-shaped impression. Antennae much longer than width of head, 1st segment covered with curled bristles. Relative length of antennal segments I–IV: ♂, 42:16, segments III and IV missing: ♀, 40:15:26:31. Rostrum not reaching hind border of wide and shallow labial groove, labial atrium widely open. *Pronotum* short and very wide. Fore border slightly concave, collar narrow. Anterolateral angles rounded laterally, protruding, hind border rising. Median ridge posteriorly widening. Mesonotum with median ridge widening and rising posteriorly. Anterior border of metanotum hollowed, disc with smooth plates and punctation, median ridge broad and high. Border between metanotum and 1st visible abdominal tergite marked by transverse punctation. Lateral margin separated by furrows with groove between them. Anterior border of tergal plate slightly concave, disc medially strongly rising, with expressed glabrous areas. Hind margin sinuate, on ♀ less strongly. Posterolateral angles of connexival plates II–IV not protruding, V slightly, VI strongly protruding, VII forming acute pointed lobes well surpassing apex of hypopygium on ♂ (FIG. 6), reaching about ½ of segment IX on ♀ (FIG. 7). Spiracles II–VII lateral, visible from above, VIII apical on ♂, preapical laterodorsal on ♀.

*Measurements* (in mm): total length: ♂, 3.4; ♀, 3.9; length of head: ♂, 0.58; ♀, 0.62; width of head across eyes: ♂, 0.97; ♀, 0.97; length of pronotum: ♂, 0.44; ♀, 0.41; width of pronotum: ♂, 1.34; ♀, 1.4; length of fused 3 thoracic and 2 abdominal tergites: ♂, 1.32; ♀, 1.32; remainder of abdomen: ♂, 1.48; ♀, 1.94; maximum width of abdomen across segment III (♂): 1.97; across segment IV (♀): 2.32.

Holotype ♂: PNG: NEW GUINEA (NE): Wau, Mt Kumbak, 27–28.IX.1968, NG-W-B. 162, Dr J. Balogh. Allotype ♀: same data except NG-W-B. 163. Both types deposited in the Hungarian Natural History Museum, Budapest.

It is a great pleasure to dedicate this peculiar species to Dr N. A. Kormilev whose works have much facilitated studies on aradid bugs.

### ***Biroana baloghi* Vásárhelyi, new species**      FIG. 3, 4

♂, apterous, oval, body covered with thin dirty brown incrustation, with curled bristles on several parts of the body.

*Head* (FIG. 3) much wider than long. Genae acute, surpassing apex of clypeus. Anterior process of head reaching about ½ of 1st antennal segment. Antenniferous tubercles developed, pointed, slightly diverging anteriorly. Eyes semiglobose, pedunculate. Postocular tubercles well developed, surpassing eyes laterally. Hind border convex, vertex with an M-shaped impression. Antennae longer than width of head, relative length of antennal segments I–IV, 39:15:24:27. Rostrum almost reaching hind border of shallow labial groove, labial atrium widely open. *Pronotum* almost 3× as wide as long, with emerging median ridge. Fore border straight, with rounded anterolateral angles produced beyond narrow collar. Hind border not elevated above mesonotum. Median ridge of mesonotum strongly widening posteriorly, widened median ridge rising on metanotum and 1st visible abdominal tergite. Border between metanotum and 1st visible abdominal tergite marked by hollow punctation. Lateral margin separated by furrows with a groove between them. Slightly visible furrow bordering lateral margin on connexival plates IV–VII. Anterior border of tergal plate slightly concave, disc medially rising. Inner glabrous areas not or only slightly impressed but marked by punctations, midlateral glabrous areas impressed. Hind margin of tergal plate concave. Posterolateral angles of connexival plates II–IV not protruding, V slightly, VI prominent, VII pointed, acute lobes surpassing apex of hypopygium (FIG. 4). Spiracles II–VII lateral, VIII apical.

*Measurements* (in mm): total length, 3.15; length of head, 0.56; width of head across eyes, 0.93; length of pronotum, 0.41; width of pronotum, 1.26; length of fused 3 thoracic and 2 abdominal tergites, 1.28; remainder of abdomen, 1.3; width of abdomen across segment III, 1.85.

Holotype ♂: PNG: NEW GUINEA (NE): Mt Wilhelm, 3900 m, 13–24.IX.1968, NG-M-B. 151, Dr J. Balogh. Deposited in the Hungarian Natural History Museum, Budapest.

**Biroana eurycephala** Kormilev

Kormilev (1956) mentioned 1 nymph of the species among the type-series without any remarks on the larval characters. Since the knowledge of these may be of importance from an evolutionary point of view, a short description of the specimen, probably a 4th instar, is given here.

General shape and appearance similar to those of imago (FIG. 8). Head almost 2× as wide as long. Antennae 3-jointed, 3rd joint being relatively as long as 3rd and 4th together of imago. Characteristic postocular lobes similar to those of imago.

Pro- meso- and metanotum not fused but with median ridge not continuous between pro- and mesonotum and with signs of border between meso- and metanotum and metanotum and 1st abdominal tergite, respectively. Median ridge elevated above tergal disc only on metanotum and first 2 abdominal tergites. First and 2nd abdominal tergites not fused with metanotum. Lateral margin reaching from pronotum to 2nd abdominal tergite, not continuous with same of 3rd abdominal tergite. No tergal disc but abdominal tergites III–VI medially fused and elevated. Glabrous areas expressed. Pro- meso- and metasternum fused but borders marked by deep furrows medially. Hind border of abdominal sternites III–VI slightly thickened, suggesting carinae visible, e.g., on *Neuroctenus*.

*Measurements* (mm): total length, 2.4; length of head, 0.42; width of head across eyes, 0.82; length of pronotum, 0.26; width of pronotum, 1.1; length of thorax and first 2 abdominal tergites together, 0.83; remainder of abdomen, 1.1; width of abdomen across segment III, 1.26.

*Specimen examined.* “New Guinea Biro 1899/Sattelberg Huon Golf/*Biroana eurycephala* Det. Kormilev N. Kormilev 56 nymph.”

*Acknowledgments.* I would like to express here my sincere gratitude to Dr J. Balogh for collecting this interesting material and providing me available data; to Dr W. R. Dolling of British Museum (Nat. Hist.) for his kind help and loan of the ♂ paratype of *B. inflata*; and to Dr J. L. Gressitt for his helpful criticism on the manuscript.

## LITERATURE CITED

- Kormilev, N. A.** 1956. Notes on Aradidae from the Eastern Hemisphere, XI (Hemiptera) — on some apterous Mezirinae from New Guinea. *Philipp. J. Sci.* **85**: 389–403.  
1970. Aradidae in the Bishop Museum, Honolulu V. Supplement (Hemiptera-Heteroptera). *Pac. Insects* **12**: 701–22.
- Usinger, R. L. & R. Matsuda.** 1959. *Classification of the Aradidae*. London. vii + 410 p.