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Leptogenopapus mirabilis, a new genus and species of Lomechusini (Coleoptera: Staphylinidae, Aleocharinae) from Papua New Guinea associated with ants of the genus *Leptogenys* Roger

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Abstract

Leptogenopapus mirabilis, **gen. n.**, **sp. n.** is described based on the single male collected from foraging colony of *Leptogenys breviceps* Viehmeyer in Papua New Guinea. The genus is a member of the tribe Lomechusini (Coleoptera: Staphylinidae, Aleocharinae) and is most closely related to *Leptogenoxenus* Kistner. The list of all Staphylinidae associated with the ant genus *Leptogenys* Roger is given.

Key words: Staphylinidae, Aleocharinae, Lomechusini, *Leptogenopapus*, new genus, new species, Papua New Guinea, myrmecophile, *Leptogenys*

Introduction

Association of some staphylinid beetles with ants of the genus *Leptogenys* Roger were first summarised by Kistner (1975), who also described two monotypic genera, *Leptogenoxenus* Kistner, 1975 and *Leptogenophilus* Kistner, 1975. According to Kistner (1975), three genera of staphylinids (*Wroughtonilla* Wasmann, 1899, *Leptogenoxenus* and *Leptogenophilus*), had been recorded as associated with nomadic *Leptogenys*, all from the Oriental region. Two species recorded by Wasmann (1899) as guests of *Leptogenys* in South Africa, *Derema fauveli* (Wasmann, 1899) and *Zyras lobopeltinus* (Wasmann, 1899), were regarded as very doubtful by Kistner (1975), and are excluded from the checklist in this paper. Since 1975, three additional genera (*Neowroughtonilla* Kistner, 1989, *Maschwitzia* Kistner, 1989 and *Togpelenys* Kistner, 1989) and five species have been described (Kistner 1989, 2003; Dvořák 1996; Maruyama 2004). All are catalogued in our checklist.

The purpose of this paper is to describe a new genus and species collected by the second author in Papua New Guinea in association with ants of the genus *Leptogenys* and provide a summary of our knowledge of association of staphylinids with these ants.

Leptogenopapus Hlaváč & Janda, gen. n.

(Figs. 1–15)

Type species. *Leptogenopapus mirabilis* Hlaváč & Janda, **sp. n.** Gender masculine.

Diagnosis. *Leptogenopapus* is a member of the tribe Lomechusini where it can be readily distinguished by long, sharply pointed, triangular metaventral process (Fig. 5) and by presence of two very long, thin and sharp claws which are about as long as terminal tarsomere or slightly shorter. In general appearance

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Leptogenopapus resembles *Leptogenoxenus* from which it also differs by the characters mentioned above: *Leptogenoxenus* has the apex of metaventral process truncate and the claws of all tarsi short.

Description. Body (Figs.1, 2) myrmecoid, elongate and slender, laterally with long and erect golden setae.

Head triangular, roundly narrowed posteriorly, with slightly rounded anterior margin, about as long as wide, widest in the level of eyes, with distinct neck; eyes large, protuberant, rounded in lateral view; temples distinctly longer than eyes. Antennae (Fig. 9) long, stout, all antennomeres densely covered with micro- and macrosetae, all antennomeres elongate, scape strongly widened apicaly, more than twice as long as pedicel and about three times as long as wide; antennomere III also strongly widened apicaly; antennomeres IV–IX of about the same size, X slightly longer than previous; apical antennomere slightly pointed at apex, about three times as long as antennomere X. Labrum narrowed posteriorly, transverse, about twice as wide as long, posterior margin straight, anterior margin with shallow small lateral and deep median excavations. Mandibles (Fig. 12) almost symmetrical, lacking teeth, pointed at apex, with four macrosetae near external margin. Maxilla (Fig. 11) with relatively slender galea, slightly fastigiate apicaly, apex with long setae; lacinia wider and only a little bit shorter than galea, apex with dense setae. Maxillary palpi with palpomere I quadrate, very short, palpomere II slightly shorter than III, both with few long setae, apical palpomere much narrower, lacking setae. Gula thin and long (Fig. 3), gular sutures subparallel, closest to one another in the middle, slightly diverging apically and basally, submentum large, fused with gula, mentum distinct, trapeziform.

Pronotum (Fig. 2) elongate, distinctly longer than head, strongly constricted in basal third, surface smooth. Meso- and metaventrite as in Fig. 5, smooth, shining and with few erect, golden setae; mesoventrite narrow, mesoventral process short and widely rounded; metaventral process very long, triangular and sharply pointed, isthmus short. Elytra with smooth surface, at suture shorter than pronotum, slightly wider than long, scutellum clearly visible.

Abdomen parallel-sided and cylindrical, tergites III–VII of about the same length, paratergites small but well developed on segments III–VII.

Legs (Figs. 6–8) very long and slender, with tarsal (Fig. 10) formula 4-5-5, from coxae to tibiae covered with long, sparse golden setae, setae on apex of tibiae denser; all coxae very large, trochanters smaller, all tarsi with last tarsomere longest; two claws very long, thin and sharp, about as long as terminal tarsomere or slightly shorter.

Sexual dimorphism: female unknown.

Distribution. Papua New Guinea.

Etymology. The name of the genus is a combination of the host ant name *Leptogenys* and the name of the country of its discovery, Papua New Guinea.

***Leptogenopapus mirabilis* Hlaváč & Janda, sp. n.**
(Figs. 1–15)

Type material. Holotype: PAPUA NEW GUINEA: m#, "PAPUA NEW GUINEA, Sandaun Prov. Yapsiei mission, Imnai village, upper Sepik river, 141,0584 E – 4,3770 S, 250 m a.s.l. M. Janda lgt., 22.3.2004 / Foraging column of army ants *Leptogenys breviceps* Viehmeyer, M. Janda det., 2006 / red label HOLOTYPE *Leptogenopapus mirabilis* sp. n., P. Hlaváč det., 2007" (deposited in National Museum of Natural History, Washington, D.C., USA). Note: one specimen of the host ant is pinned together with the holotype.

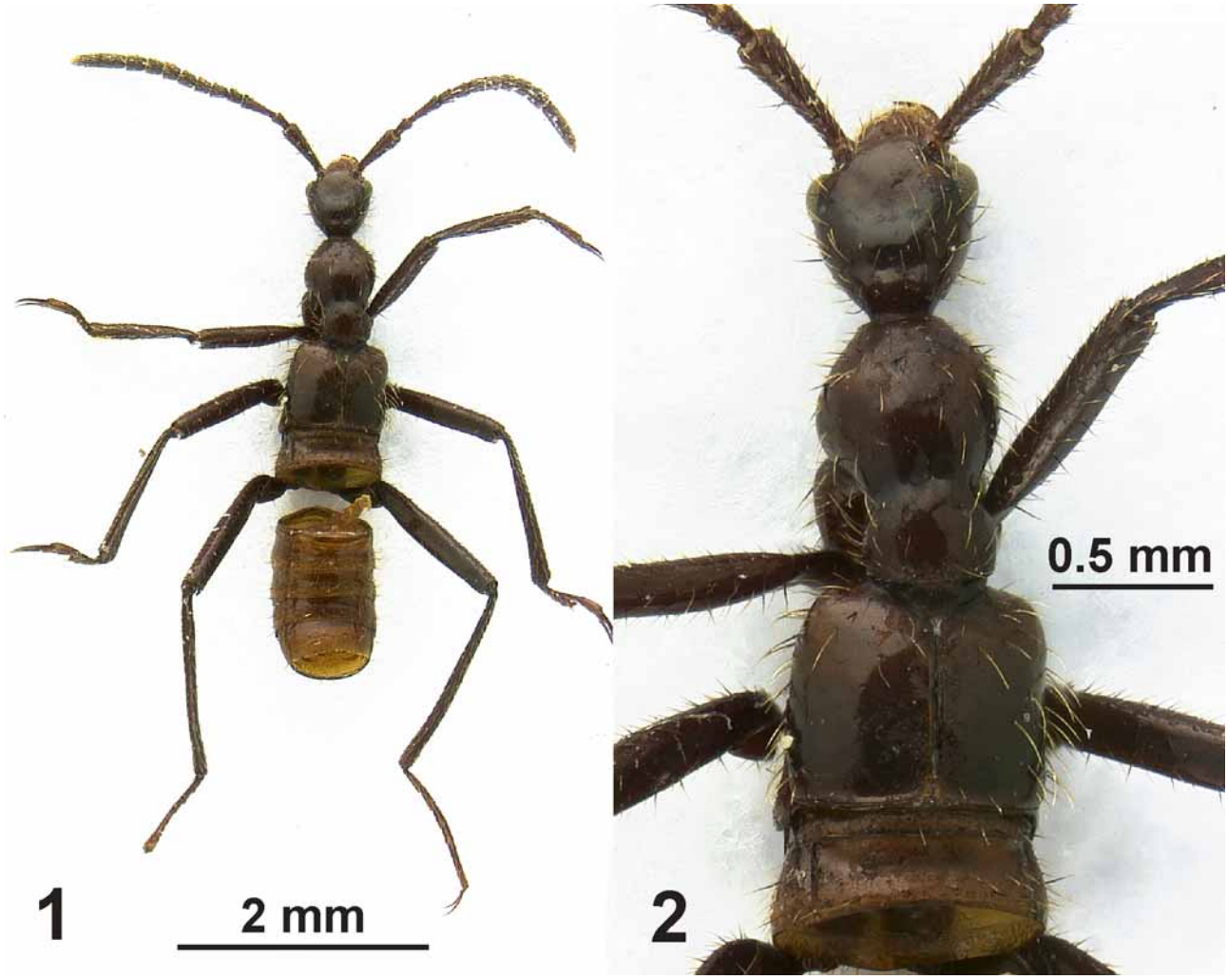
Description. Body length about 3.8 mm, maximum width of elytra 1.25 mm; colour light brown, whole body shining (Fig.1).

Head as long as wide, at the level of eyes almost three times as wide as neck, temples twice as long as length of eye. Antennae with scape widened apicaly, about 3 times as long as wide at apex and 2.5 times as long as pedicel and 1.3 times as long as antennomere III; segments IV–IX of about the same size, antennomere X about 1.25 times as long as IX, terminal antennomere 3.8 times as long as wide and 2.8 times

as long as X; relative lengths of antennomeres from base to apex: 40: 16: 30: 11: 13: 13: 13: 13: 13: 16: 46.

Pronotum elongate, about 1.6 times as long as head (measured without neck), strongly constricted before the middle from base beeing formed by two almost globular shapes, apical one 1.3 times as wide as basal one. Elytra (at suture) 1.35 times shorter than pronotum but clearly wider, humeri well defined.

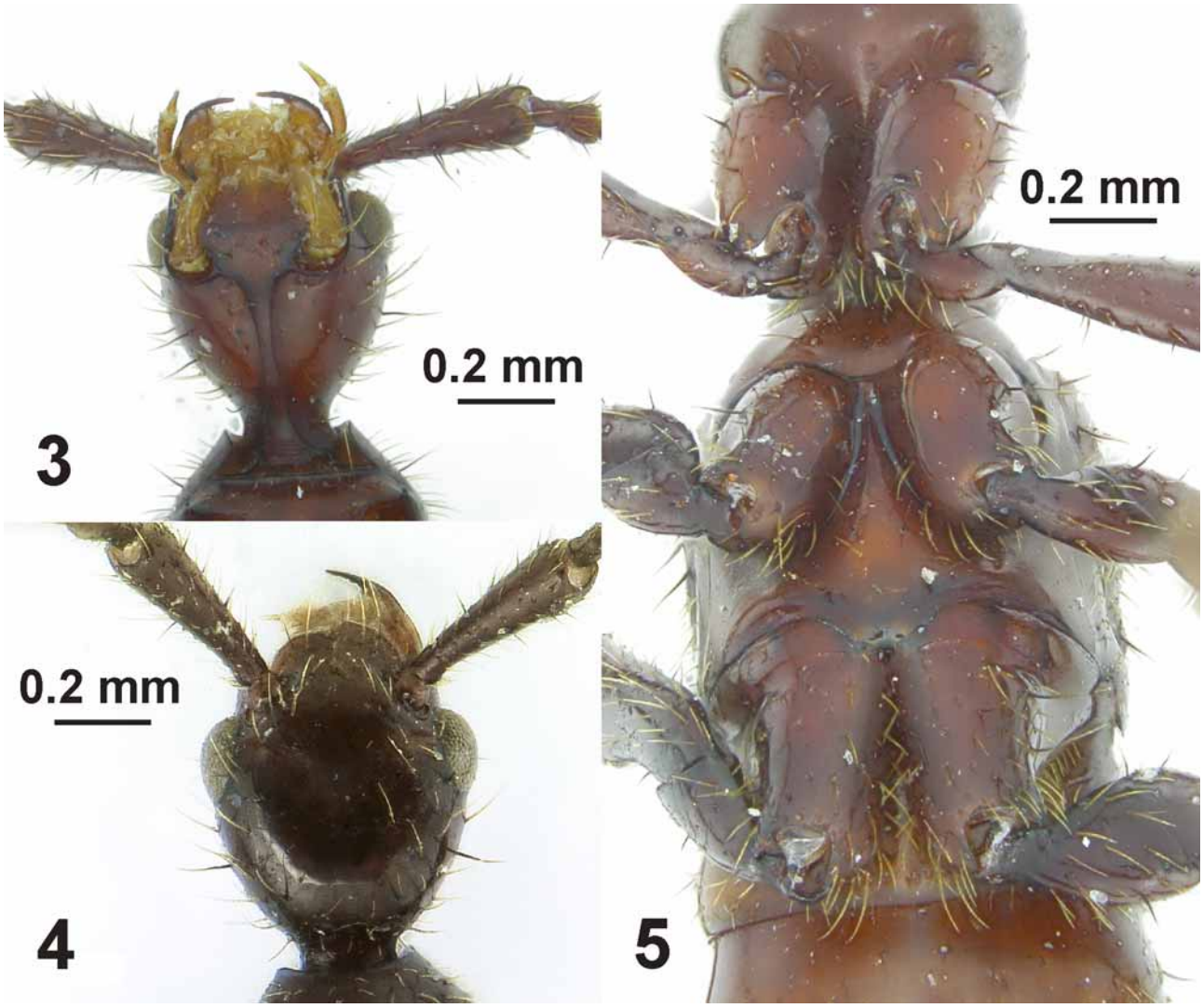
Aedeagus as in Figs. 14–15.



FIGURES 1–2. *Leptogenopapus mirabilis* **sp. n.** (holotype). 1, habitus; 2, fore body, dorsal.

Etymology. Specific name refers to the elegant body shape of the beetle.

Collecting conditions. The new species, together with two additional species of staphylinids, was collected from a raiding column of ants *Leptogenys breviceps* Viehmeyer, 1914 consisting of small (5–10) groups of workers. The workers were crossing a narrow trail in the secondary rain forest near Imnai village in Sandaun Province. Additional staphylinids collected in this colony were one specimen of *Myrmedonota* Cameron, 1920 and three specimens of a species belonging to an undescribed genus of Paederinae which bears some resemblances to the neotropical genus *Monista* Sharp, 1876 and the genus *Scopaeus* Erichson, 1839 (de Rougemont, personal communication). The ants were observed for a period of approximately 20 minutes and several ant specimens were continuously collected with associated staphylinids from small foraging groups running across a clay pathway surrounded by vegetation. The beetles were typically running at the end of a group of *Leptogenys* workers, however at least two individuals have been observed to run between two workers just in the centre of a foraging squad.



FIGURES 3–5. Details of *Leptogenopapus mirabilis* **sp. n.** (holotype). 3, head ventral; 4, head dorsal; 5, thorax, ventral.

Host ant *Leptogenys breviceps* Viehmeyer, 1914
(Figs. 16, 17)

Leptogenys is a large genus of Ponerinae ants containing about 259 described species (Bolton *et al*. 2006) distributed in tropics of all zoogeographic regions. All *Leptogenys* species are predators feeding on other arthropods but many species developed different strategies for hunting (Steghaus-Kovac & Maschwitz 1993). There are only about ten species reported to hunt collectively, exhibiting the legionary behavior. All are known from the tropical Asia and Australia (Queensland) (Hölldobler & Wilson 1990). The holotype of *Leptogenys breviceps* comes from eastern Papua New Guinea (Wareo, Morobe province). This species is considered to be a member of *L. processionalis* „group“, containing species with mostly Indo-Malayan distribution (Wilson 1958b). Ants related to *L. processionalis* (Jerdon, 1851) are believed to conduct group raides when searching for prey (Wilson 1958a). The second author also witnessed group raiding behavior in *L. breviceps* during foraging, although predation was not directly observed. The investigated colony of *L. breviceps* was nesting in soil in the vicinity of a small pathway through grass undergrowth. The nest had multiple entrance holes and groups of ants were running among them. The surrounding vegetation was as a mixture of abandoned and active gardens, covered by patches of secondary re-growth forest, 5–15 years old. Wilson (1958b) reported *L. breviceps* from a secondary forest, as well as from a primary forest.

FIGURES 6–10. Legs and antenna of *Leptogenopapus mirabilis* **sp. n.** (holotype). 6, right fore leg, dorsal; 7, right mid leg, dorsal; 8, right hind leg, dorsal; 9, left antenna, dorsal; 10, hind tarsus, dorsal.

Checklist of Staphylinidae associated with *Leptogenys*

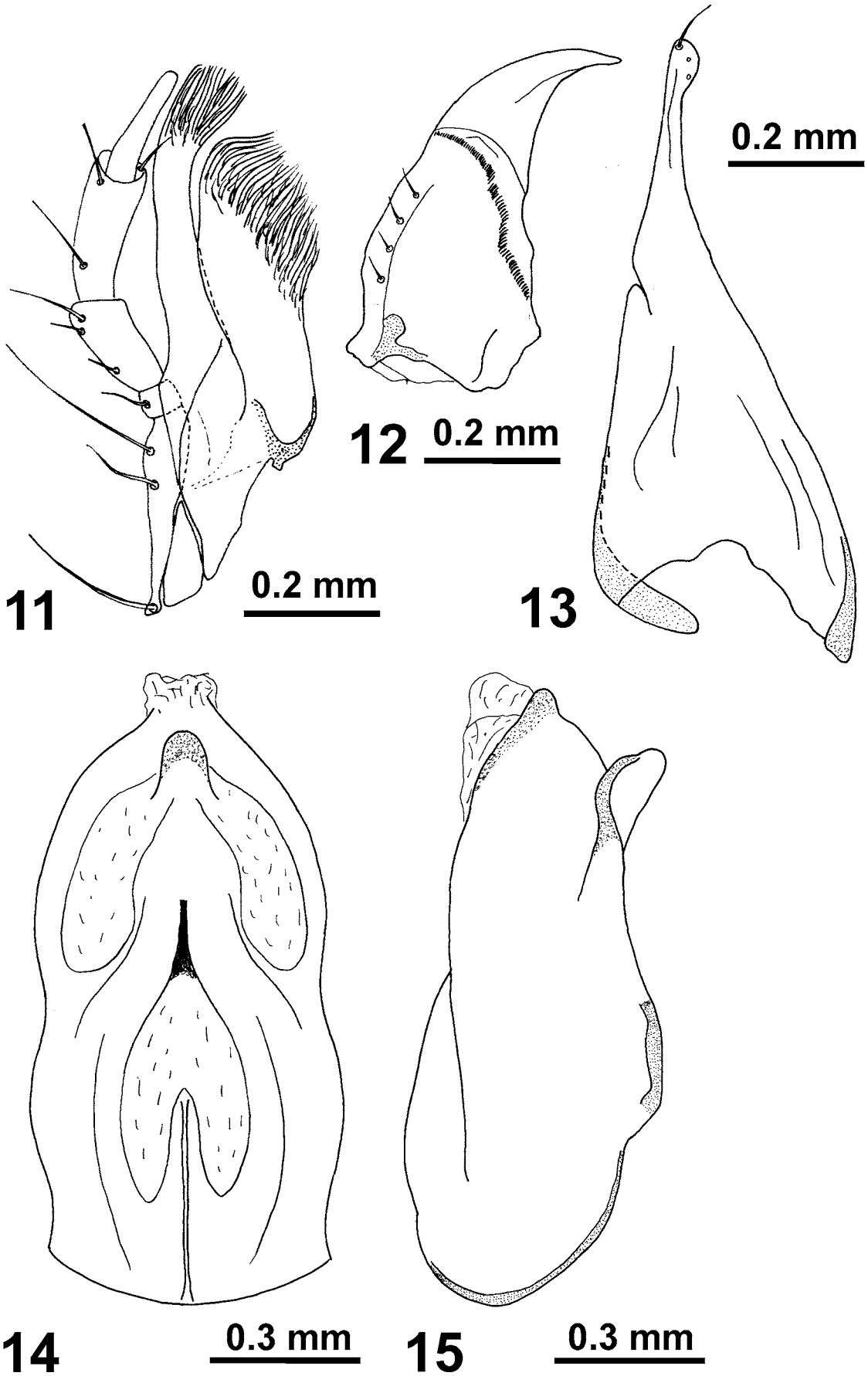
Leptogenys sp.
Wroughtonilla watanabei Maruyama, 2004 (Lomechusini). Laos.
Zyras trapeziceps Dvořák, 1996 (Lomechusini). Northern Vietnam.

Leptogenys breviceps Viehmeyer, 1914
Leptogenopapus mirabilis **sp. n.** (Lomechusini). Papua New Guinea.
Myrmedonota sp. (Lomechusini). Papua New Guinea.
Unknown genus (Paederinae). Papua New Guinea.

Leptogenys diminuta (F. Smith, 1857)
Neowroughtonilla steghausae Kistner, 1989 (Lomechusini). Malaysia (Selangor, Ulu Gombak).
Wroughtonilla lobopeltae Wasmann, 1899 (Lomechusini). India, Sri Lanka, Malay peninsula.
= *Astilbus migratorius* Fauvel, 1903

Leptogenys sp. near *diminuta*
Leptogenophilus judithae Kistner, 1975 (Hoplandriini, new placement (Maruyama, personal communication)). Philippines (Luzon).
Leptogenoxenus wilsoni Kistner, 1975 (Lomechusini). Philippines (Luzon).

Leptogenys processionalis distinguenda (Emery, 1887)
Maschwitzia ulrichi Kistner, 1989 (Lomechusini). Malaysia (Selangor, Ulu Gombak).
= *Trachydonia leptogenophila* Kistner, 2003



FIGURES 11–15. Details of *Leptogenopapus mirabilis* **sp. n.** (holotype). 11, right maxilla, ventral; 12, right mandible, ventral; 13, left paramera, dorsal; 14, median lobe of aedegus, dorsal; 15, median lobe of aedegus, lateral.

FIGURES 16–17. *Leptogenys breviceps* Viehmeyer. 16, head, dorsal; 17, habitus, lateral.

Leptogenys sp. near *mutabilis* (F. Smith, 1861)
Maschwitzia ulrichi Kistner, 1989 (Lomechusini). Malaysia (Selangor, Ulu Gombak).
= *Trachydonia leptogenophila* Kistner, 2003
Togpelenys gigantea Kistner, 1989 (Lomechusini). Malaysia (Selangor, Ulu Gombak).

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