

A new genus *Velutinomiris* for the Oriental-Wallacean mirine plant bugs (Insecta: Heteroptera: Miridae: Mirinae), with descriptions of five new species

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Abstract. *Velutinomiris*, a new genus of the mirine plant bug (Mirinae: Mirini) ranging from the Oriental Region to Wallacea, is proposed to accommodate five new species, namely, *V. aungsani*, new species (Shan, Myanmar), *V. makassar*, new species (South Sulawesi, Indonesia), *V. palawanus*, new species (Palawan, Philippines), *V. phorcopterus*, new species (Luzon, Philippines), and *V. taiwanicus*, new species (Taiwan, including the Lanyu Islands). These new taxa are considered representatives of the *Adelphocoris-Adelphocorisella-Phytocoris* group, and their taxonomic positions are discussed. A key is provided to distinguish all congeners of our new genus.

Key words. Mirini, new taxa, fauna, Oriental Region, Wallacea, SEM documentation

INTRODUCTION

Since the late 19th century, a great number of Asia-Oriental mirine plant bugs (Mirinae: Mirini) were described as members of *Adelphocoris* Reuter, 1896, *Creontiades* Distant, 1883, *Megacoelum* Fieber, 1858, or *Phytocoris* Fallén, 1814, based mainly on external similarities (e.g., Distant, 1904, 1909, 1911; Poppius, 1914, 1915a, 1915b). Most of these taxa have been referred to the *Adelphocoris-Creontiades-Megacoelum* complex (Chérot & Malipatil, 2016) or the *Adelphocoris-Adelphocorisella-Creontiades-Phytocoris* group (Yasunaga & Schwartz, 2015; Pagola-Carte et al., 2022). The included members share a similarly elongated body with long antennae and legs, but further reevaluation is required because these characters are shared by the majority of taxa in Mirini, with an impunctate or only slightly punctate dorsal surface. Despite recent attempts to reclassify these taxa, many genera and species in the subtropical and tropical Asia remain undescribed (e.g., Yasunaga et al., 2021; Yasunaga, 2024).

The present paper documents five undescribed species found in Indonesia, Myanmar, the Philippines, and Taiwan, which

cannot be accommodated by any known genera. A new genus *Velutinomiris*, assumed to be closely related to *Adelphocoris*, is herein established for these five new species. A key is provided to facilitate identification of each species, and the systematic position of the new genus is also discussed.

MATERIAL AND METHODS

Type specimens are deposited in National Museum of Natural Science, Taichung, Taiwan (NMNS); National Science Museum, Tsukuba, Japan (NSMT); National Museum of the Philippines (NMP); Seoul National University, Korea (SNU); T. Yasunaga collection, Nagasaki, Japan (TYCN); and Zoological Reference Collection, Lee Kong Chian Natural History Museum, National University of Singapore (ZRC). Matrix code labels are attached to the holotype specimens, which are searchable on the ‘Heteroptera Species Page’ (<http://research.amnh.org/pbi/heteropterasespeciespage/>).

All measurements are given in millimetres. Terminology of the genitalia follows Yasunaga & Schwartz (2007), Chérot & Malipatil (2016), and Yasunaga (2023, 2024). Scanning electron micrographs were taken with Hitachi Tabletop Microscope (Miniscope®), TM3030 or TM4000 plus II; Nikon Eclipse-Ci upright microscope with a phase-contrast unit was used to observe and photograph the genitalic structures.

TAXONOMY

Velutinomiris, new genus

Type species. *Velutinomiris taiwanicus*, new species; here designated.

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Table 1. Character states of three superficially similar mirine genera.

	<i>Adelphocoris</i>	<i>Adelphocorisella</i>	<i>Creontiades</i>
Basic colouration	Variable; hemelytron bicolorous (with spotted or striped pattern or with pale cuneus, Fig. 3C, E) or uniformly fuscous or reddish	Pale stramineous brown; hemelytron speckled with dark or reddish maculae or spots (Fig. 3A)	Pale stramineous brown; hemelytron often with reddish stripe or spots (Fig. 3F)
Dorsal vestiture pattern	Similar to new genus	Similar to new genus	With simple setae only
Colour pattern of antenna	Uniformly pale; if segment I darkened, then segment II also darkened or bicolorous (Fig. 2C, E)	Uniformly pale (Fig. 3A)	Uniformly pale (Fig. 3F)
Ostiolar peritreme	Relatively large	Similar to new genus	Relatively large
Stridulatory device	Absent	Absent	Present
Vesica	Widely sclerotised, with comb-shaped and hook-shaped spiculi (Figs. 7D, 12P)	Widely membranous, with a single, stick-like spicule (cf. Miyamoto & Yasunaga, 1993; Yasunaga et al. 2016)	Almost membranous (cf. Yasunaga, 1997a)
Sclerotised rings	Enlarged, mesally contiguous to each other (Fig. 3B)	Narrow, mesally contiguous to each other (Fig. 3A)	Elongate ovoid, mesally contiguous to each other (Yasunaga, 1997a)

Diagnosis. The present new genus is generally very similar to *Adelphocoris* Reuter, 1896 and *Adelphocorisella* Miyamoto & Yasunaga, 1993 (and certain members of *Creontiades* Distant, 1883) but can be distinguished by the following combination of characters (see Table 1): Basic colouration pale brown to brown, almost unicolourous; dorsum velvety, with sparsely distributed, simple, semierect setae and densely distributed, sericeous, reclining setae; antenna with dark brown to reddish brown antennomere I and uniformly pale antennomeres II–IV; metathoracic scent efferent system with narrow peritreme; stridulatory structures (forewing edge/metafemur) absent; pygophore with conical (Figs. 8I, J) or triangular (Fig. 10O) process beside base of left paramere; vesica with a single flagellate (Fig. 4B) or hooked (Figs. 4E, F) spicule; sclerotised rings small, separated from each other and situated near lateral margins (Fig. 6A, C, E, G). Corresponding characters for *Adelphocoris*, *Adelphocorisella*, and *Creontiades* are shown in Table 1.

Description. Body medium-sized (4.5–5.5 mm in total length), oval, more or less elongate, nearly parallel-sided, not sexually dimorphic in general shape; basic colouration almost uniformly castaneous or pale brown; dorsal surface matte, weakly shining, with sparsely distributed, simple, stiff, semierect setae (each arising from rounded socket as in Figs. 9D, 10B) and densely distributed, sericeous, reclining setae. **Head:** Oblique in lateral view, short, almost glabrous; eyes contiguous to anterior margin of pronotal collar; vertex with a shallow, indistinct basal transverse carina, lacking longitudinal sulcus mesally; frons and clypeus weakly projected. **Antenna:** Longer than body, almost linear, not incrassate; antennomere I always dark or reddish brown, shorter than antennomere IV; antennomeres II–IV

pale brown, almost uniform in thickness; antennomere III slightly shorter than II. **Labium:** Relatively long, reaching or slightly surpassing apex of metacoxa, slightly longer than antennomere II. **Thorax:** Pronotum weakly shining, impunctate; calli reduced, weakly flattened; collar shagreened, about as thick as base of antennomere II, densely setose; scutellum weakly inflated; propleuron not margined nor carinate; metathoracic scent efferent system subtriangular, with narrow, somewhat keeled peritreme (Figs. 8E, 9K, 10C). **Hemelytron:** Almost unicolourous, more or less declivous at cuneal fracture, with both sparsely distributed, simple, stiff, semierect setae and densely distributed, sericeous, reclining setae; cuneus about $1.5 \times$ as long as basal width. **Legs:** Long, generally slender; tibial spines pale brown, relatively short; apical part of metatibia densely covered with spinules (Figs. 8F, 9E, 10G); meta-tarsomere I shorter than II or III; meta-tarsomere II as long as III; parempodia relatively widened. **Abdomen:** Usually castaneous, with apex reaching distal $\frac{2}{3}$ – $\frac{3}{4}$ of forewing membrane (at level of apex of large areolar cell). **Male genitalia:** Pygophore with conical (Figs. 8I, J) or triangular (Fig. 10O) process beside base of left paramere. Parameres similar in general shape to those of *Adelphocoris* and *Adelphocorisella* species: left paramere J- or L-shaped, almost uniform in thickness, with sparsely distributed, short sensory setae (Figs. 5B, E, 8K, 12F, J); right paramere almost straight, tapered apically (Figs. 5C, F, 8M, 12G, K). Vesica with narrow membranous area, with a developed spicule that is flagellate (Figs. 4A, B, 8O) or apically hooked (Figs. 4E, F, 12H); phallosome short, subtriangular. **Female genitalia:** Genital chamber more or less inflated dorso-medially, with sclerotised rings small, mesally separated from each other and situated near lateral margins (Fig. 6A, C, E, G); posterior wall with relatively

narrow dorsal structure and wide interramal lobes that are densely covered with scaly microstructures (Figs. 11A–C, F–H, K–L, 12A–C).

Etymology. From Latin, ‘velutinus’ [=velvety, covered with short hairs] combined with mirine genus *Miris* Fabricius, 1794, referring to the densely setose, velvety dorsum possessed by each congener of the present new genus; gender masculine.

Biology. No information is currently available. Most of the specimens examined were collected by UV lighting method in preserved forest zones; members of the present new genus are assumed to inhabit canopy areas.

Discussion. Based on the similarities in external appearance and genitalic structures, this new genus undoubtedly belongs to the *Adelphocoris-Adelphocorisella* group. There are more superficially similar taxa known from the distribution areas of *Velutinomiris*, new genus, e.g., *Megacoelum* Fieber, 1858, *Muttiocapsus* Yasunaga, 2024, *Nythomiris* Yasunaga, 2024, *Orientalomiris* Yasunaga, 1997b, *Poppiocapsidea* Yasunaga, 1998, and *Sakaeratiella* Yasunaga, 2024. However, most of these genera possess distinct stridulatory structures (except for *Nythomiris* and *Poppiocapsidea*, which have different colour pattern, surface structures and genitalia, cf. Yasunaga, 2024).

Although the widely sclerotised male vesica of *Velutinomiris*, new genus, is similar to that of *Adelphocoris*, the female genital chamber (and sclerotised rings) of the former significantly differs from the latter or *Adelphocorisella*. The generic characters in the male and female genitalia provisionally suggest their relationship as: (*Adelphocorisella* + (*Adelphocoris* + *Velutinomiris*)). On the other hand, *Adelphocorisella tamdaoensis* Chérot & Kim, 2025, recently described from a single male holotype from Vietnam (cf. Kim et al., 2025), is also similar in general colour pattern and shape of the vesica to *Velutinomiris aungsani*, new species. Since the female of *A. tamdaoensis* is yet to be found, we currently refrain from arguing its generic placement. Within the three allied genera, *Adelphocorisella* is posited to be the basic lineage as having the simple form of the male vesica and female genital chamber. Nonetheless, further comprehensive analyses, including members of the vast, nearly worldwide genus *Phytocoris* Fallén, 1814, are required (cf. Stonedahl, 1988; Yasunaga & Schwartz, 2015; Pagola-Carte et al., 2022).

Incidentally, Malipatil & Chérot (2002) described *Adelphocorisella australis* from Queensland, Australia. On the basis of their detailed original description and illustrations, this species evidently possesses the diagnostic characters of *Velutinomiris* (e.g., pigmented antennomere I, apical flagellate spicule on vesica, and ovoid, clearly-rimmed sclerotised rings that are mesally separated from each other). Since we have not examined any specimen of *A. australis*, a definitive treatment of this Australian taxon is beyond the scope of the present study and further study is encouraged.

Key to species of *Velutinomiris*, new genus

1. Antennomere I pale reddish brown, densely speckled with sanguineous spots; antennomere III obviously longer than maximum width across hemelytra; NE Myanmar *V. aungsani*, new species
- Antennomere I almost uniformly reddish brown or castaneous, without speckled spots; antennomere III shorter than maximum width across hemelytra 2
2. Basic colouration castaneous brown; labium obviously shorter than metafemur, slightly exceeding apex of metacoxa; median lateral margin of corium with pale macula (Fig. 2C, G) 3
- Basic colouration pale or whitish-brown; labium about as long as metafemur, reaching but not exceeding apex of metacoxa; corium uniformly pale (Figs. 1D, 2A) 4
3. Male vertex wider, 0.33–0.39 times as wide as head width, including eyes; mesal length of pronotum about as long as head width, including eyes; Philippines (Palawan) *V. palawanicus*, new species
- Male vertex narrower, 0.29–0.32 times as wide as head width, including eyes; mesal length of pronotum shorter than head width, including eyes; Taiwan *V. taiwanicus*, new species
4. Dorsum whitish; width of head, including eyes, greater than mesal pronotal length; antennomere III about as long as pronotal width; Philippines (Luzon) *V. phorcopteris*, new species
- Dorsum pale brown; width of head, including eyes, about as long as mesal pronotal length; antennomere III much longer than pronotal width; Indonesia (S. Sulawesi) *V. makassar*, new species

Velutinomiris aungsani, new species

(Figs. 1A–C, 4A–D, 8A–P)

Type material. **Holotype:** Male, **MYANMAR:** South Shan, Ywangan, Panlaung & Pyadalin Wildlife Sanctuary, Basecamp [21°05'53"N, 96°21'26"E], on light trap, coll. M. Oh, 15 October 2016 (SNU_161012-MS-022) (AMNH_PBI 00378819). **Paratype:** **MYANMAR:** 1 male, same data as for holotype (SNU_161012-MS-021).

Diagnosis. Currently known by two male specimens. Recognised by the characters mentioned in above generic diagnosis and key, in addition to its elongate body form (Fig. 1A) and unique form of the male vesica (Figs. 4A, B, 8N, O).

Description. Male. Body almost uniformly castaneous brown, relatively elongate, parallel-sided; dorsum weakly shiny (Fig. 1A). Head with uniformly distributed, upright setae; vertex 0.31 times as wide as head including eyes. Antenna pale brown; antennomere I reddish brown, densely speckled with sanguineous spots, with paler base; antennomere IV missing in available specimens. Labium brown, slightly exceeding apex of metacoxa; segment IV darker. Pronotum weakly shiny, with posterior margin narrowly yellowish brown; scutellum with a pale, faint stripe mesally; thoracic pleura pale brown, partly speckled with brown spots; metathoracic scent efferent system creamy yellowish brown, relatively wide and rounded (Fig. 8E). Hemelytron uniformly chestnut brown; vestiture pattern of corium as in Fig. 8C; cuneus tinged with red, with darkened extreme apex; membrane pale smoky brown, with pale veins. All coxae pale brown, except for basal half of metacoxa speckled with darker maculae; femora castaneous brown; tibiae and tarsi pale brown, except for

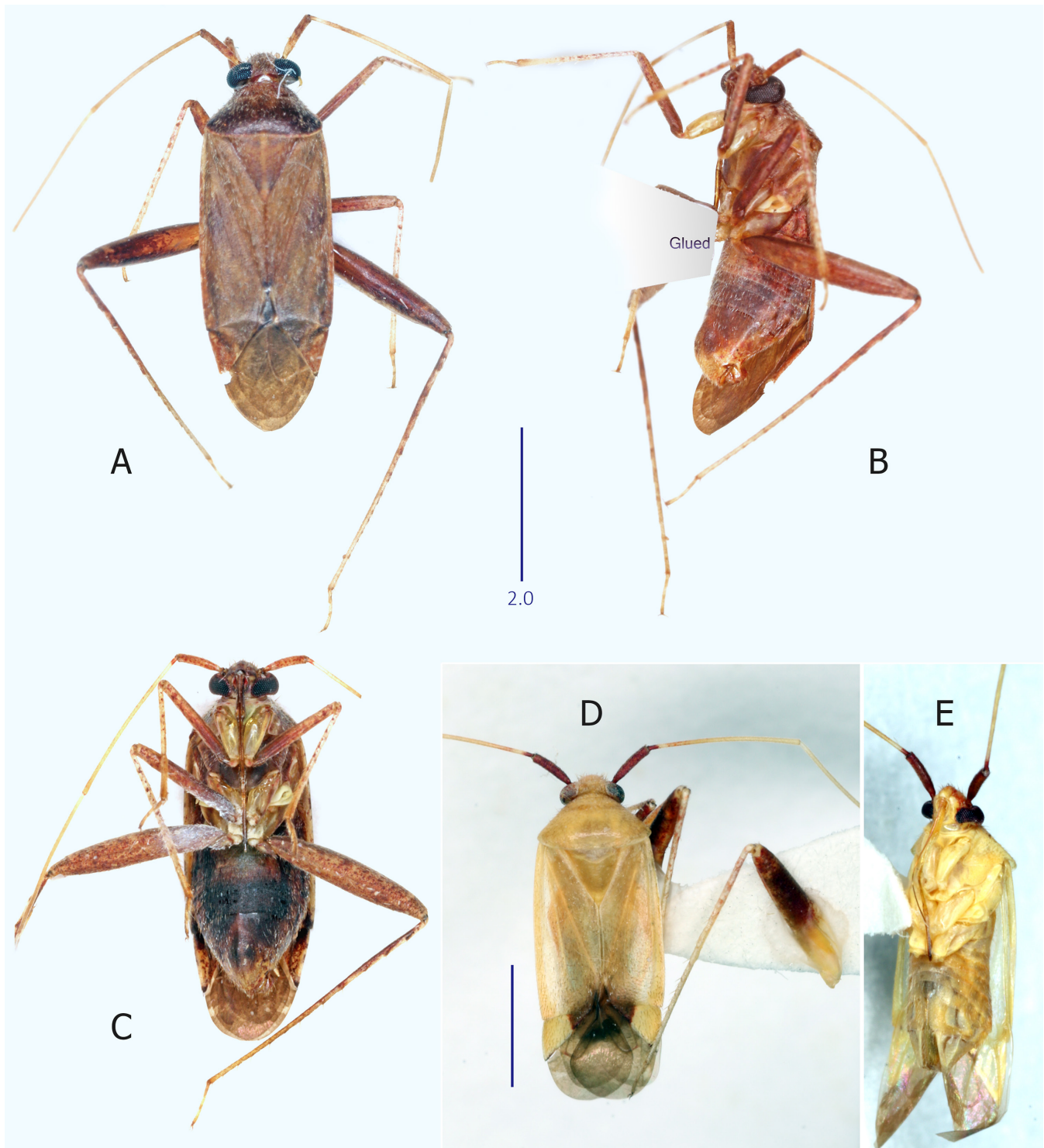


Fig. 1. Habitus images of the new species of *Velutinomiris*, new genus. A, *V. aungsani*, holotype male; B, ditto, in left lateral view; C, ditto, paratype male in ventral view; D, E, *V. phorcopterus*, holotype female.

basal half of metatibia brown; pretarsal structure as in Fig. 8H. Abdomen dark brown; apical part of genital segment (pygophore) pale brown. **Male genitalia** (Figs. 4A–D, 8I–P): Pygophore with a conical (Fig. 8I, J) process beside base of left paramere and the other smaller process near base of right paramere. Left paramere J-shaped, weakly constricted subapically (Fig. 8K, L); right paramere narrowed at middle (Fig. 8M). Vesica with a narrow, flagellate spicule apically (Figs. 4A, B, 8N, O); phallosome short, subtriangular (Figs. 4C, D, 8P). **Female**. Unknown.

Measurements. See Table 2.

Etymology. Named in honour of Bogyoke Aung San (1915–1947), a heroic Burmese politician and democrat known as the ‘Father of the Nation’ of modern Myanmar; a noun in genitive case.

Distribution. Myanmar (Shan State).

Table 2. Measurements for five new species of *Vertinomiris* new genus. Abbreviations — F: female, FM: femur, HT: holotype, L: length, LBM: labium, M: male, PRN: pronotum, PT: paratype, TB: tibia, VTX: vertex (interocular space), W: width.

		Body	Head	VTX	Pronotum		Max	Antennomere L				LBM	Metaleg L	
		L	W	W	L	W	W	I	II	III	IV	L	FM	TB
<i>aungsani</i>	HT-M	5.49	1.10	0.34	1.02	1.73	1.96	0.75	2.30	2.09	—	2.48	2.78	4.19
	PT-M	5.34	1.06	0.33	0.92	1.71	1.96	0.75	2.38	2.07	—	2.48	2.75	4.05
<i>makassar</i>	HT-F	5.40	1.00	0.38	1.00	1.79	2.15	0.77	2.59	2.21	1.11	2.63	2.63	4.19
	PT-F	5.46	0.98	0.40	1.02	1.80	2.28	0.77	2.50	2.15	1.08	2.61	2.61	4.03
<i>palawanicus</i>	HT-M	4.56	0.91	0.36	1.00	1.75	2.07	0.75	2.25	1.75	0.92	2.32	2.57	3.65
	PT-M	4.89	1.04	0.35	0.98	1.90	1.98	0.75	2.19	1.96	0.98	2.25	—	—
	PT-F	5.04	1.04	0.44	1.02	1.84	2.23	0.75	2.34	1.92	0.98	2.28	2.53	3.69
	PT-F	4.80	1.02	0.40	1.00	1.73	2.23	0.77	2.27	1.92	0.94	2.30	2.59	3.71
<i>phorcopterus</i>	HT-F	5.25	1.00	0.42	0.96	1.69	2.02	0.75	2.42	1.73	0.86	2.57	2.59	3.99
	PT-F	4.86	1.01	0.40	0.96	1.77	2.00	0.75	2.38	1.73	0.94	2.63	2.63	3.80
	PT-F	5.10	0.98	0.42	0.94	1.73	1.92	0.75	2.40	1.77	0.92	—	—	—
<i>taiwanicus</i>	HT-M	4.89	1.09	0.33	1.00	1.77	2.11	0.77	2.17	1.92	0.96	2.30	2.63	3.65
	PT-M	4.80	1.08	0.35	0.96	1.71	1.94	0.69	2.09	1.71	0.90	2.27	2.38	3.40
	PT-M	5.40	1.13	0.33	0.98	1.75	2.07	0.71	2.15	—	—	2.28	2.38	3.53
	PT-F	4.86	0.98	0.40	0.94	1.65	1.96	0.73	2.09	1.86	1.00	2.17	2.34	3.44
	PT-F	5.34	1.06	0.42	1.00	1.86	2.19	0.77	2.25	1.84	0.96	2.30	2.48	3.63

***Velutinomiris makassar*, new species**

(Figs. 2A, B, 6A, B, 9A–G, 11A–E)

Type material. Holotype: female, **INDONESIA:** South Sulawesi, Maros, Bantimurung, 30 km NE of Makassar (Ujung Pandang), 5°00'56"S, 119°40'56"E, at FL light of lodge, coll. T. Yasunaga, 27 August 1989 (ZRC) (AMNH_PBI 00378820). **Paratypes:** **INDONESIA:** 2 females, South Sulawesi, Lompobattan, 30 miles E of Makassar (Ujung Pandang), 5°19'S, 119°56'E, coll. M. Takai, Ehime University Expedition, 22–25 December 1999 (TYCN).

Diagnosis. Currently known only from female specimens. Recognised by the characters mentioned in above generic diagnosis and key, in addition to its wide, ovoid body (Fig. 2A), long antennomere III that is longer than mesal length of pronotum and relatively thick-rimmed sclerotised rings (Figs. 6A, 11D).

Description. Female. Body almost uniformly pale brown, relatively oval; dorsum weakly shining (Fig. 2A). Head castaneous brown, with rather densely distributed, semierect setae; vertex 0.38–0.41 times as wide as head including eyes. Antenna pale brown; antennomere I uniformly castaneous brown; extreme base of antennomere II brown; antennomere III much longer than basal width of pronotum; antennomere IV longer than mesal length of pronotum. Labium shiny reddish brown, reaching but not exceeding apex of metacoxa; apical part of segment IV darker. Pronotum castaneous brown, weakly shining, with posterior margin faintly yellowish brown; mesoscutum and scutellum castaneous brown; thoracic pleura castaneous brown, partly speckled with reddish spots; metathoracic scent efferent system pale

brown, with relatively wide peritreme (Fig. 9C). Hemelytron uniformly pale brown, slightly suffused with red along cuneal fracture; apex of cuneus narrowly darkened; membrane including veins pale smoky brown. All coxae castaneous brown, except pale basal half of procoxa; legs pale brown; metafemur castaneous brown; pretarsal structure as in Fig. 9G; parempodia developed. Abdomen pale brown. **Female genitalia** (Figs. 6A–B, 11A–E): Genital chamber with developed dorsal sac and subtriangular sclerotised rings (Fig. 6A, 11D). Interramal sclerite wide (Fig. 11A), densely covered with reticulated scaly microstructures except for distal margin (Fig. 11B–C). **Male.** Unknown.

Measurements. See Table 2.

Etymology. Named for Makassar, the capital of the province of South Sulawesi, type locality of this new species; a noun in apposition.

Distribution. Indonesia (South Sulawesi).

***Velutinomiris palawanicus*, new species**

(Figs. 2C–E, 4E, 5A–C, 6C–D, 9H–L, 11F–J, 12J–L)

Type material. Holotype: male, **PHILIPPINES:** North Palawan, Langan [near Puerto Princesa, 9°48'N, 118°45'E], 10 m alt., coll. M. Tomokuni, 26 August 1985 (NSMT) (AMNH_PBI 00378821). **Paratypes:** **PHILIPPINES:** 1 male, 2 females, same data as for holotype (NSMT).

Diagnosis. Recognised by the characters mentioned in above generic diagnosis and key, in addition to its rather ovoid body form (Fig. 2C), dark castaneous basic colouration,

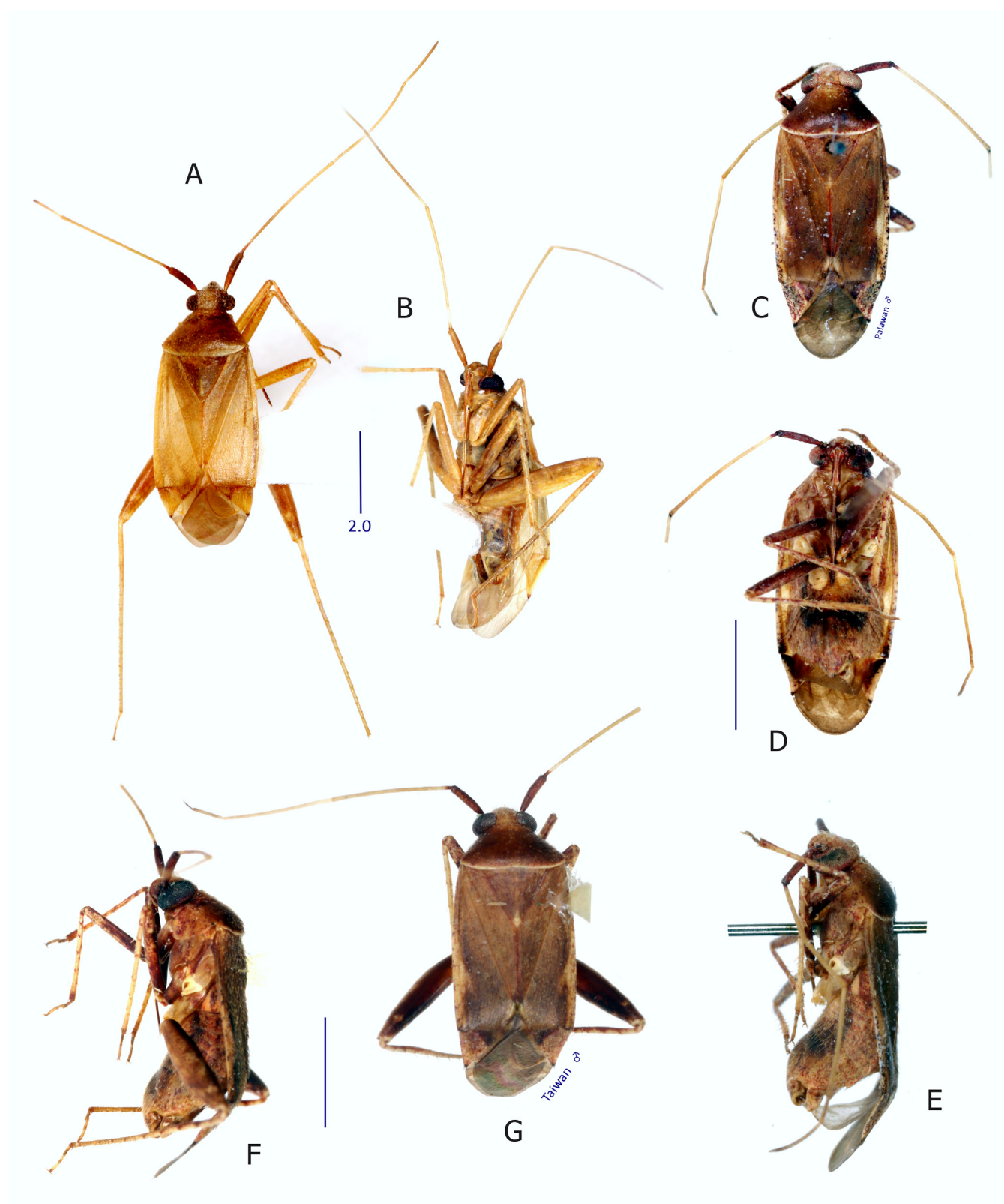


Fig. 2. Habitus images of the new species of *Velutinomiris*, new genus. A, *V. makassar*, holotype female; B, ditto, paratype female in left lateral view; C, *V. palawanicus*, holotype male; D, ditto, in ventral view; E, ditto, in left lateral view; F, G, *V. taiwanicus*, holotype male.

antennomere II as long as or longer than labium, median pale macula along lateral margin of corium, and structures of the male and female genitalia.

Description. Male. Body almost uniformly castaneous brown, relatively ovoid; dorsum weakly shining (Fig. 2C).

Head with densely distributed, semierect or upright setae; vertex 0.33–0.39 times as wide as head including eyes. Antenna pale brown; antennomere I and extreme base of antennomere II dark brown. Labium shiny chestnut brown, slightly exceeding apex of metacoxa. Pronotum weakly shiny, with posterior margin creamy yellow; apical 1/4 of

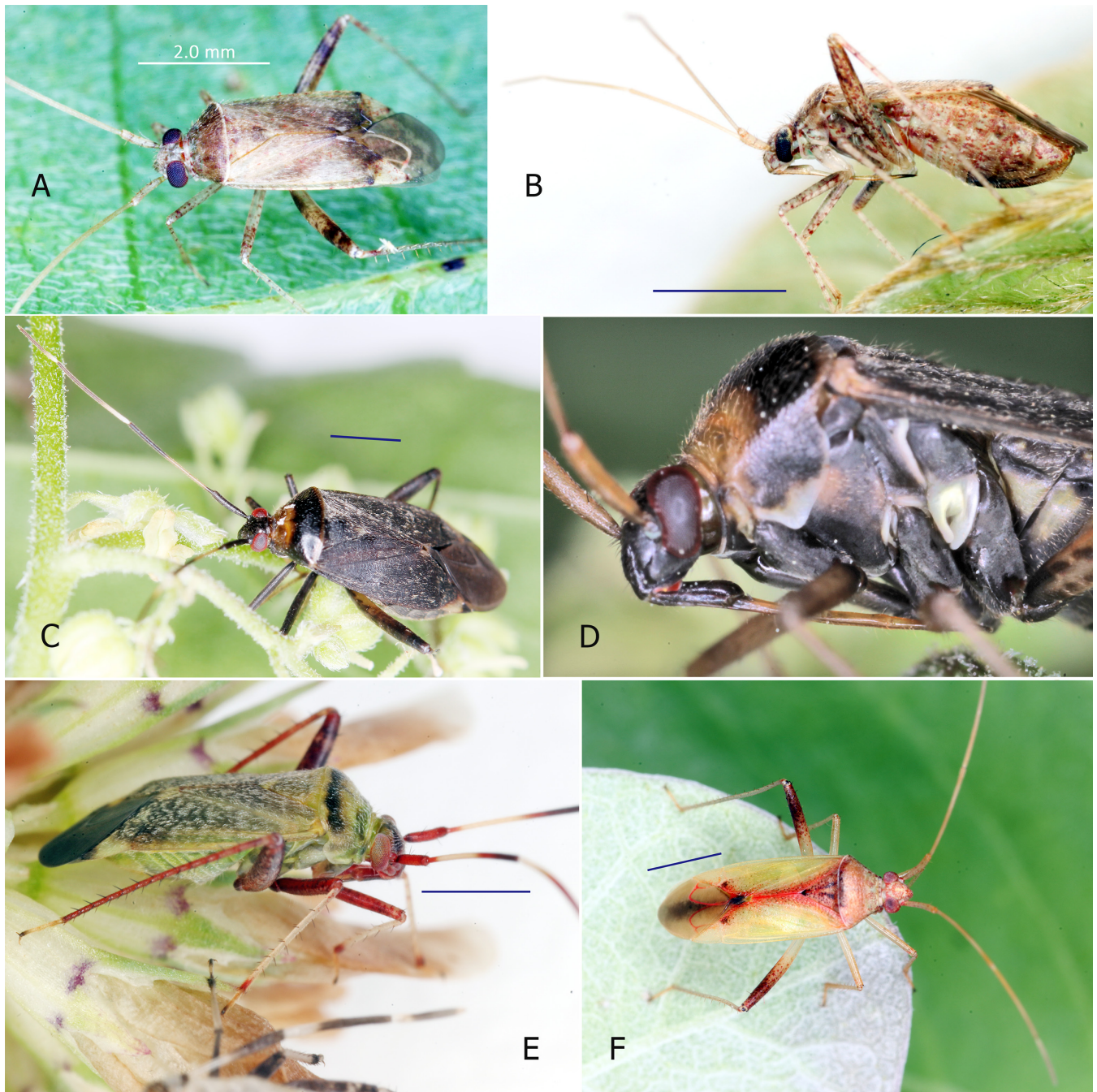


Fig. 3. Habitus images of externally similar mirine plant bugs. A, *Adelphocorisella lespedezae*, male; B, ditto, female; C, D, *Adelphocoris triannulatus*, female; E, *A. demissus*, female; F, *Creontiades bipunctatus*, female. All photographed in Nagasaki City, Japan.

scutellum with a pale, short stripe mesally; thoracic pleura pale brown, partly speckled with reddish-brown spots; metathoracic scent efferent system creamy yellow, with narrow peritreme (Fig. 9K). Hemelytron chestnut brown; corium with a pale, ovoid, small macula at medio-lateral margin; apical half of exocorium and cuneus pale brown, densely speckled with small, reddish brown or fuscous spots; apex of cuneus darkened; membrane smoky brown, with paler veins. All coxae pale brown, speckled with reddish or dark brown spots; each femur reddish castaneous brown; each tibia partly with small reddish spots and short stripes; all tarsi pale reddish brown; pretarsal structure as in Fig. 9L. Abdomen pale brown, with darkened ventral median part; lateral side of sterna and apical part of genital segment

(pygophore) speckled with reddish-brown spots as in Fig. 2D–E. **Male genitalia** (Figs. 4E, 5A–C, 12J–L): Pygophore weakly produced at base of left paramere (Fig. 5A). Left paramere L-shaped, with apical half of sensory lobe almost uniform in thickness (Fig. 5B, 12J); right paramere relatively slender (Figs. 5C, 12K). Vesica with a developed, hooked spicule (Figs. 4E, 12L); subapical process on spicule small. **Female**. Basic colouration and structures as in male. Body ovoid. Vertex 0.40–43 times as wide as head including eyes. **Female genitalia** (Figs. 6C–D, 11F–J): Sclerotised rings relatively elongate (Fig. 6C); interrampal lobe wide, laterally rounded (Figs. 6D, 11G), with uniformly distributed, comb-like microstructures (Fig. 11H).

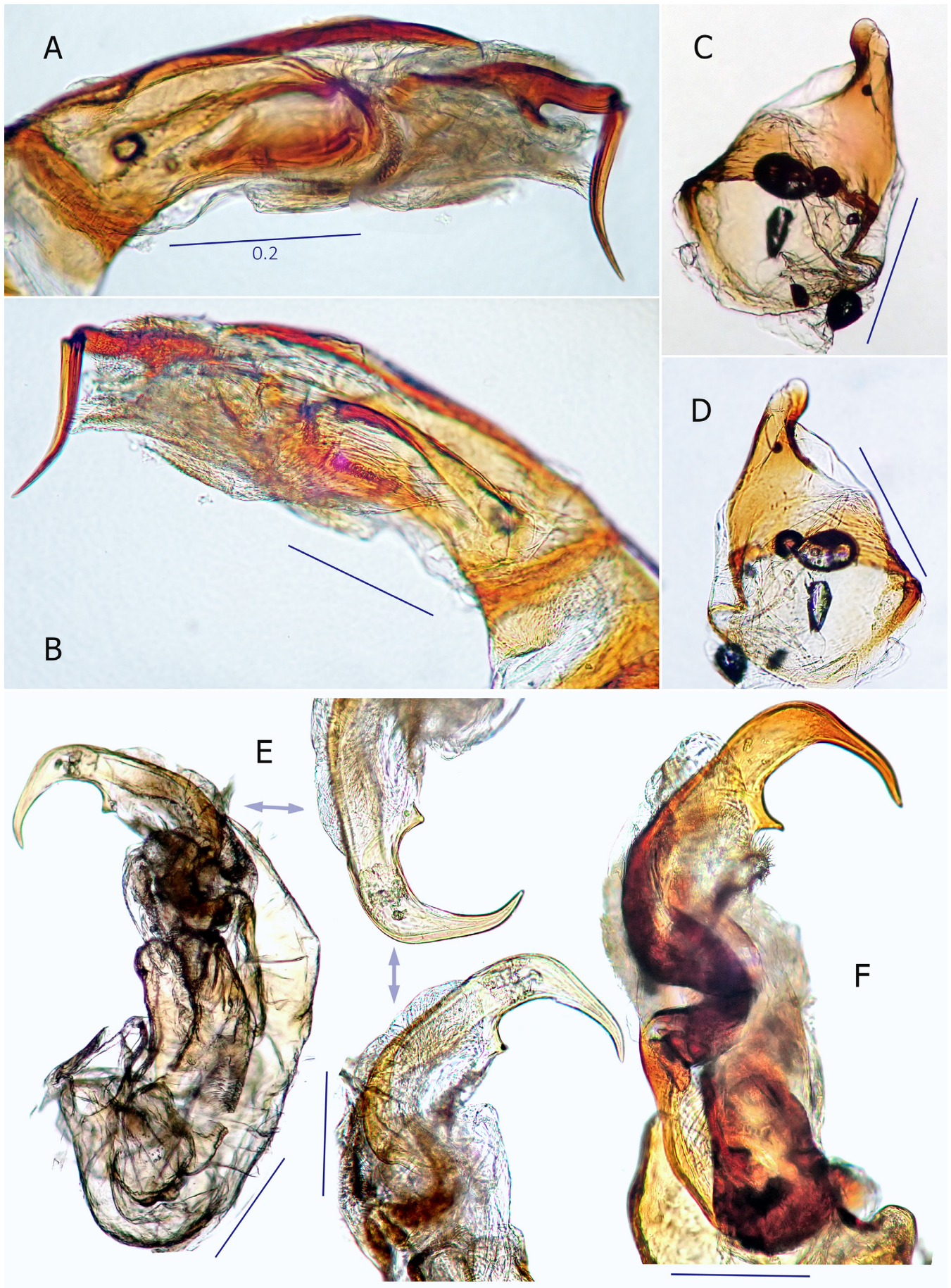


Fig. 4. Male genitalia of the new species of *Velutinomiris*, new genus. A, B, *V. aungsani*, vesica; C, D, ditto, phallotheca; E, *V. palawanicus*, vesica; F, *V. taiwanicus*, vesica. Scale bars 0.2 mm.

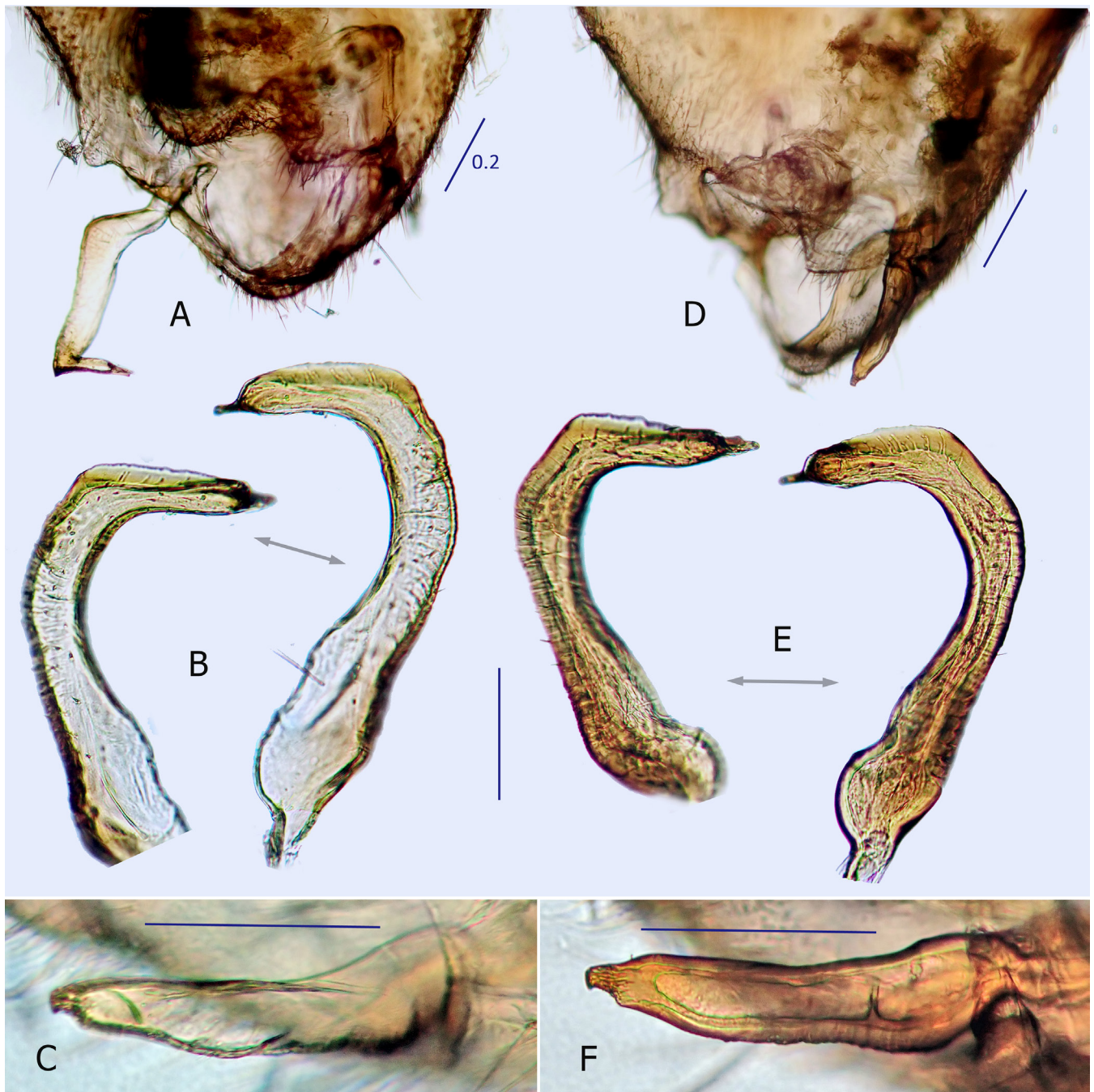


Fig. 5. Male genitalia of *Velutinomiris palawanicus*, (A–C) and *V. taiwanicus* (D–F). A, D, genital segment (pygophore); B, E, left paramere; C, F, right paramere. Scale bars 0.2 mm.

Measurements. See Table 2.

Etymology. Named for Palawan Island of the Philippines, type locality of this new species; an adjective.

Distribution. Indonesia (South Sulawesi).

Velutinomiris phorcopterus, new species
(Figs. 1D, E, 6E, F, 9M–O, 11K–P)

Type material. **Holotype:** female, **PHILIPPINES:** Luzon, Aurora Municipality, Maria Aurora, Barong Punglo, Base Camp, Coconut farm, 15°43'46"N, 121°24'14"E, 219 m alt., Hand Collecting, Siler Brachymeles Expedition 1,

28 February 2016 (NMP). Paratypes: **PHILIPPINES:** 1 female, Luzon, same data as for holotype, except for date 26 February 2016 (NMP); 1 female, Luzon, Albi Prov., City of Tabaco, Munc. Berungi Mariroc, Mt. Mayon, 13°18'19"N, 123°41'18"E, beating *Melastoma* sp., Siler Brachymeles Expedition 1, 13 February 2016 (NMP).

Diagnosis. Currently known only from female specimens. Recognised readily by the uniformly pale creamy general colouration and characters mentioned in above key.

Description. Female. Body almost uniformly pale yellowish brown, relatively elongate, subparallel-sided; dorsum weakly shiny (Fig. 1D). Head with sparsely distributed, upright

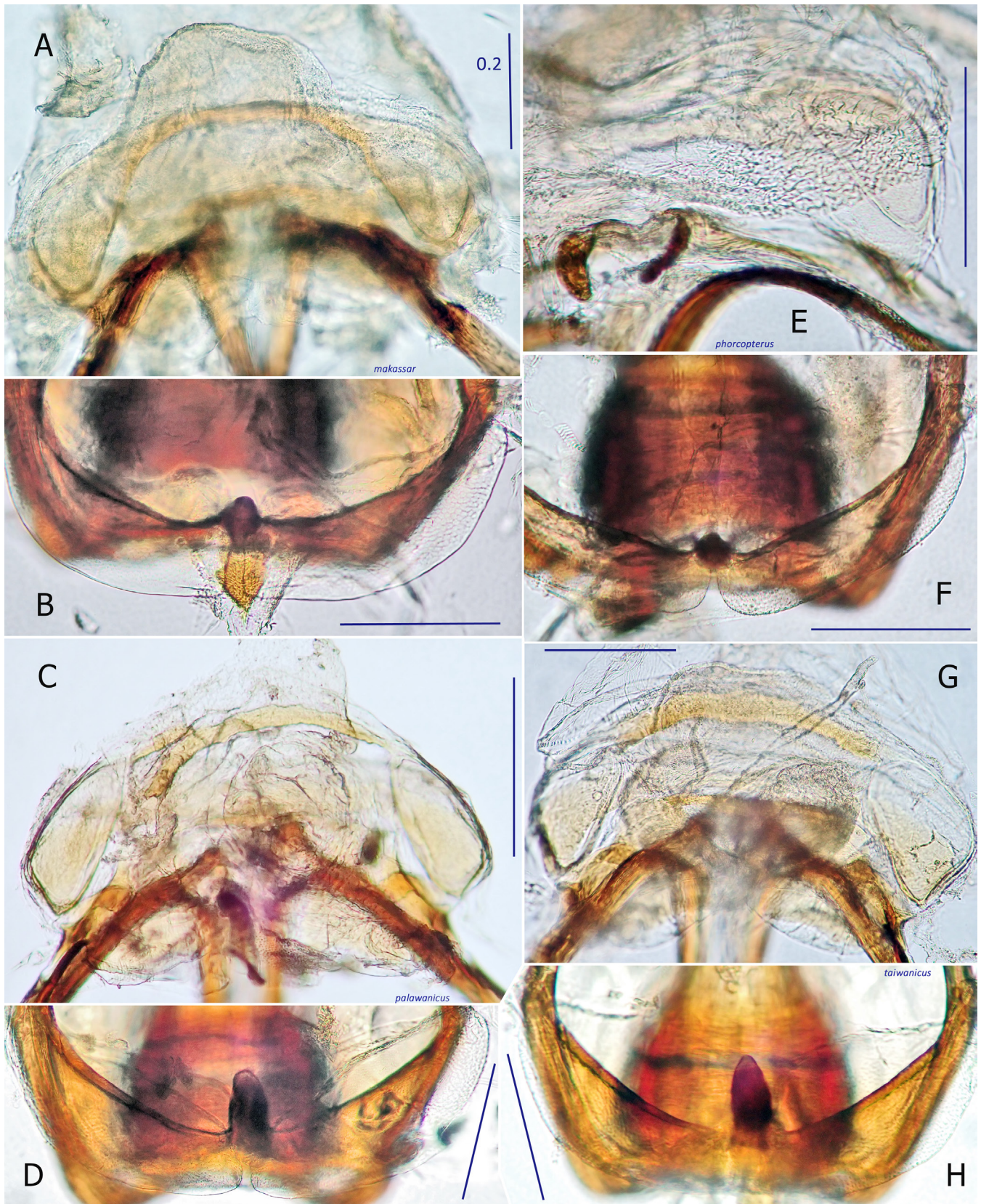


Fig. 6. Female genital chamber (A, C, E, G) and posterior wall (B, D, F, H) of *Velutinomiris makassar* (A, B), *V. palawanicus* (C, D), *V. phorcopterus* (E, F) and *V. taiwanicus* (G, H). Scale bars 0.2 mm.

setae; vertex 0.40–0.43 times as wide as head including eyes. Antenna pale creamy brown; antennomere I and base of antennomere II reddish brown. Labium shiny pale brown, slightly exceeding apex of metacoxa; apical ¼ of segment IV darkened. Pronotum weakly shiny, uniformly pale; thoracic

pleura uniformly pale creamy brown; metathoracic scent efferent system as in Fig. 90. Hemelytron uniformly pale yellowish brown, with sparsely distributed, dark stiff setae; membrane pale smoky brown, with pale veins. All coxae pale creamy brown; femora reddish brown, except for pale bases;

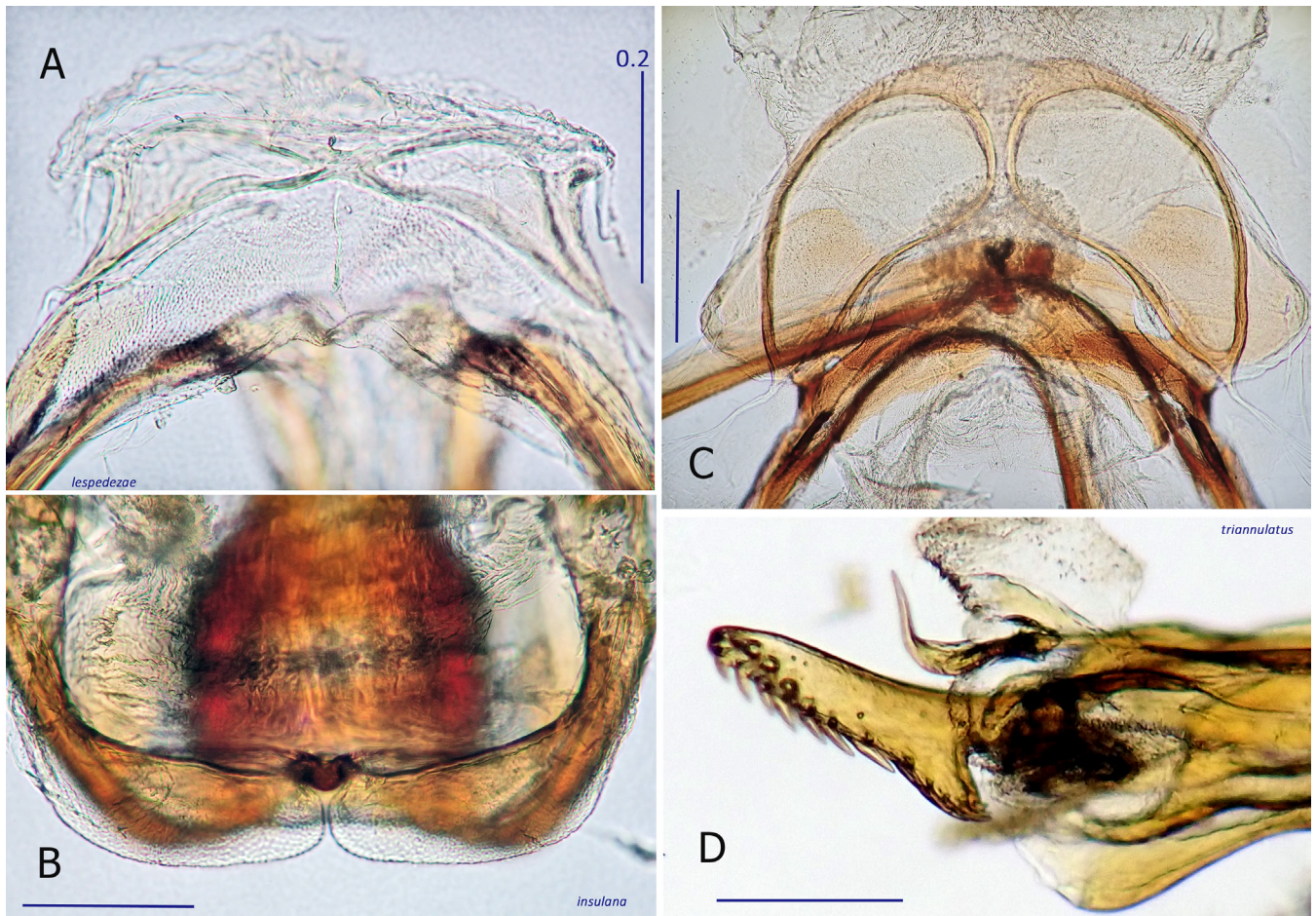


Fig. 7. A, Female genital chamber of *Adelphocorisella lespedezae*; B, posterior wall of *A. insulana*; C, genital chamber of *Adelphocoris triannulatus*; D, apical sclerites on vesica of *A. triannulatus*.

tibiae and tarsi pale brown; structure of pro- and metatarsi as in Fig. 11O–P. Abdomen pale brown. **Female genitalia** (Figs. 6E, F, 11K–O): Sclerotised ring small, subtriangular (Figs. 6E, 11M); interrampal lobe relatively narrow (Fig. 6F), uniformly covered with scaly microstructures (Fig. 11K–L). **Male**. Unknown.

Measurements. See Table 2.

Etymology. From Greek, ‘phorkos’ (grey, white) combined with ‘peron’ (wing), referring to the basic colouration of the forewings possessed by this new species; an adjective.

Distribution. Philippines (Luzon).

***Velutinomiris taiwanicus*, new species**
(Figs. 2F, G, 4F, 5D–F, 6G, H, 10A–O, 12A–I)

Type material. Holotype: male, **TAIWAN:** Pingtung, Sheding, 21°57'31.1"N 120°49'22.7"E, UV lighting, coll. Y. Lan & X. Zhen, 23 June 2011 (NMNS) (AMNH_PBI 00378822). **Paratypes:** **TAIWAN:** 1 male, same data as for holotype; 1 female, same locality as holotype, hand collecting, coll. C. Qiu & Y. Lan, 13 August 2010 (NMNS); 1 male, Pingtung, Siangjao Bay, 21°55'42.7"N, 120°49'40.2"E, UV lighting, coll. Y. Lan & J. Chou, 20 December 2010 (NMNS); 1 female, Manzhou Township, Lanren River,

22°03'00.6"N, 120°51'18.5"E, hand collecting, coll. Y. Lan & C. Qiu, 19 December 2010 (NMNS); 1 female, Taitung, Lanyu Island, N. Fukuhara, 22°03'N 121°33'E, 17 April 1971 (TYCN); 2 females, same locality as preceding, 3–6 April (no further data, TYCN); 1 male, Taitung, Taimali Chinlun, UV lighting, coll. W. T. Yang & K. W. Huang, 7–8 December 2009 (NMNS).

Diagnosis. This new species is most closely related and externally very similar to *V. palawanicus*, new species, from which *V. taiwanicus*, new species, can be distinguished by the characters in the above key and the following differences: Antennomere II shorter than labium; thoracic pleura generally paler; small spots on cuneus sparser; pygophore with triangular process beside base of left paramere (Fig. 10O); sensory lobe of left paramere with relatively widened apical part (Fig. 5E); right paramere generally thicker (Fig. 5F, 6G); subapical process on vesica sharply produced (Fig. 4F); vesical membrane apically with clustered hair-like structures (Fig. 12I); sclerotised ring smaller, subtriangular (Fig. 6G); and interrampal lobe laterally narrowed, with rather sparsely distributed microstructures (Figs. 6H, 12A–C).

Description. Male. Body almost uniformly castaneous brown, relatively ovoid; dorsum weakly shining (Fig. 2G). Head with uniformly distributed, semierect or upright setae; vertex 0.29–32 times as wide as head including eyes.

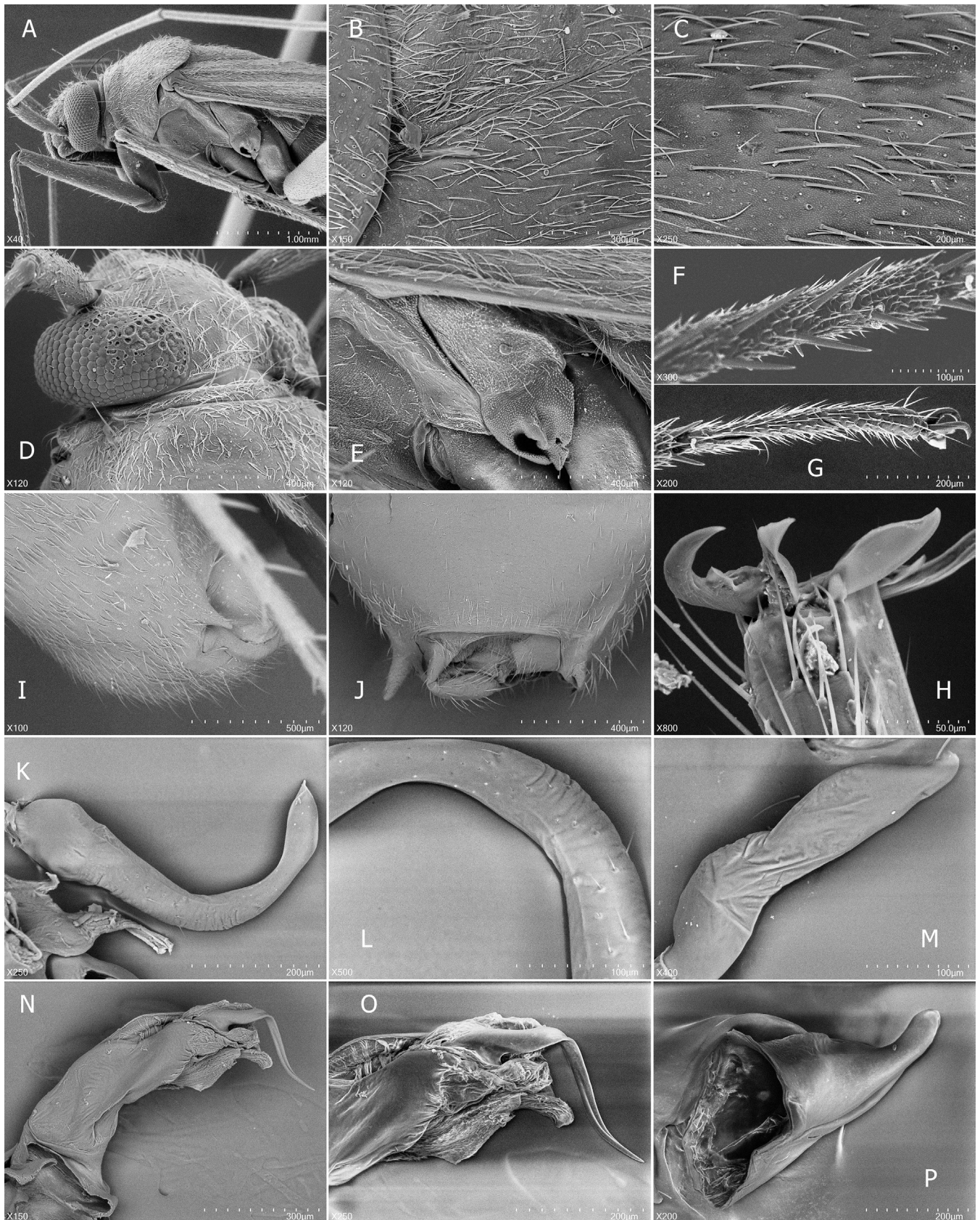


Fig. 8. Scanning electron micrographs for *Velutinomiris aungsani*, male. A, Anterior body; B, posterior pronotum, scutellum and anterior corium; C, vestiture on corium; D, head and pronotum; E, left thoracic pleura; F, apex of metatibia; G, metatarsus; H, pretarsal structure of metaleg; I, genital segment (pygophore), left lateral view; J, ditto, dorsal view; K, L, left paramere; M, right paramere; N, O, vesica; P, phallosome.

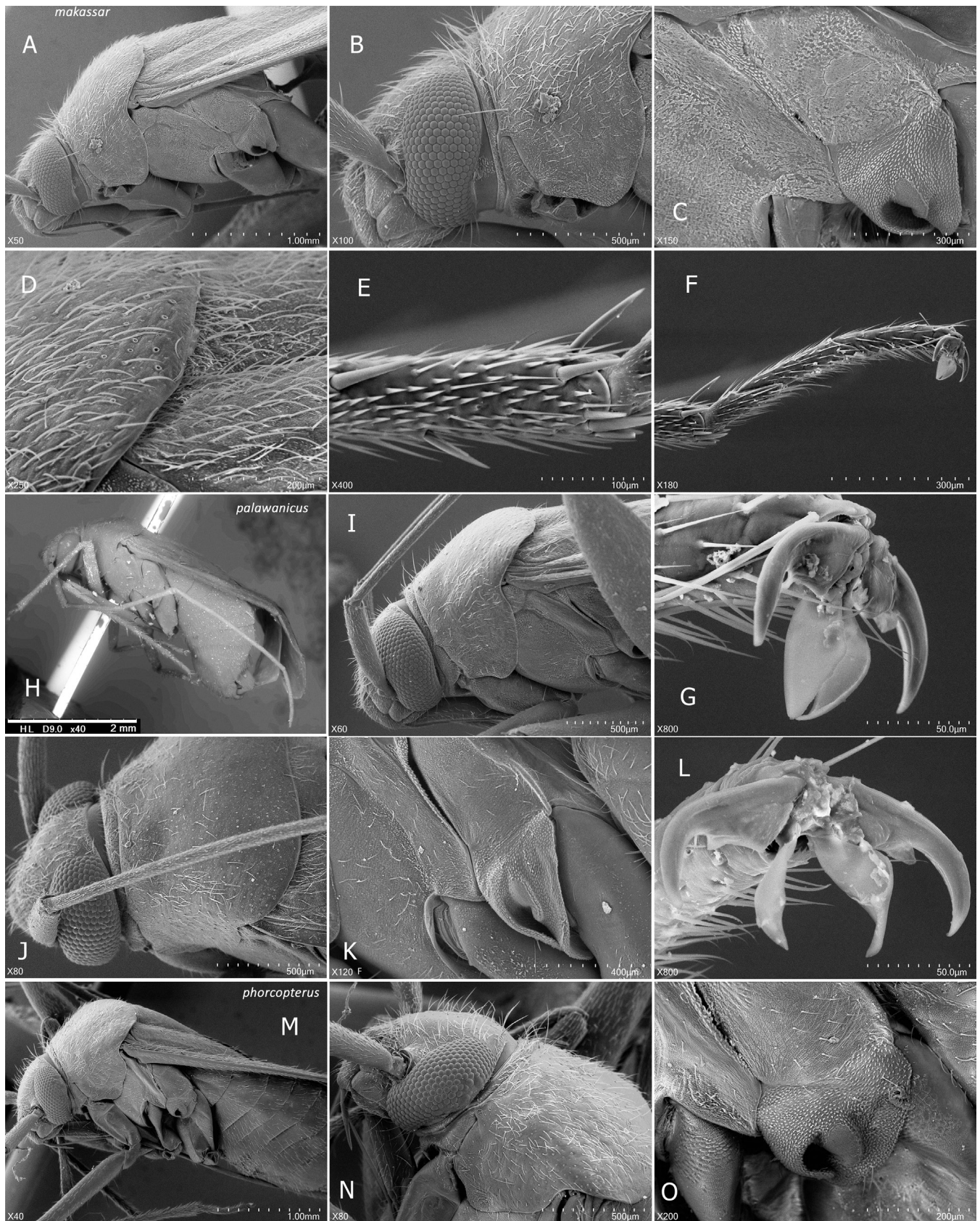


Fig. 9. Scanning electron micrographs for *Velutinomiris makassar*, holotype female (A–G), *V. palawanicus* (H–L), male (except for K–L = female); *V. phorcopterus*, female (M–O). A, I, M, Anterior body; B, J, N, head and pronotum; C, K, O, left thoracic pleura; D, vestiture on posterior pronotum, scutellum and anterior corium; E, apex of metatibia; F, metatarsus; G, L, pretarsal structure of metaleg.

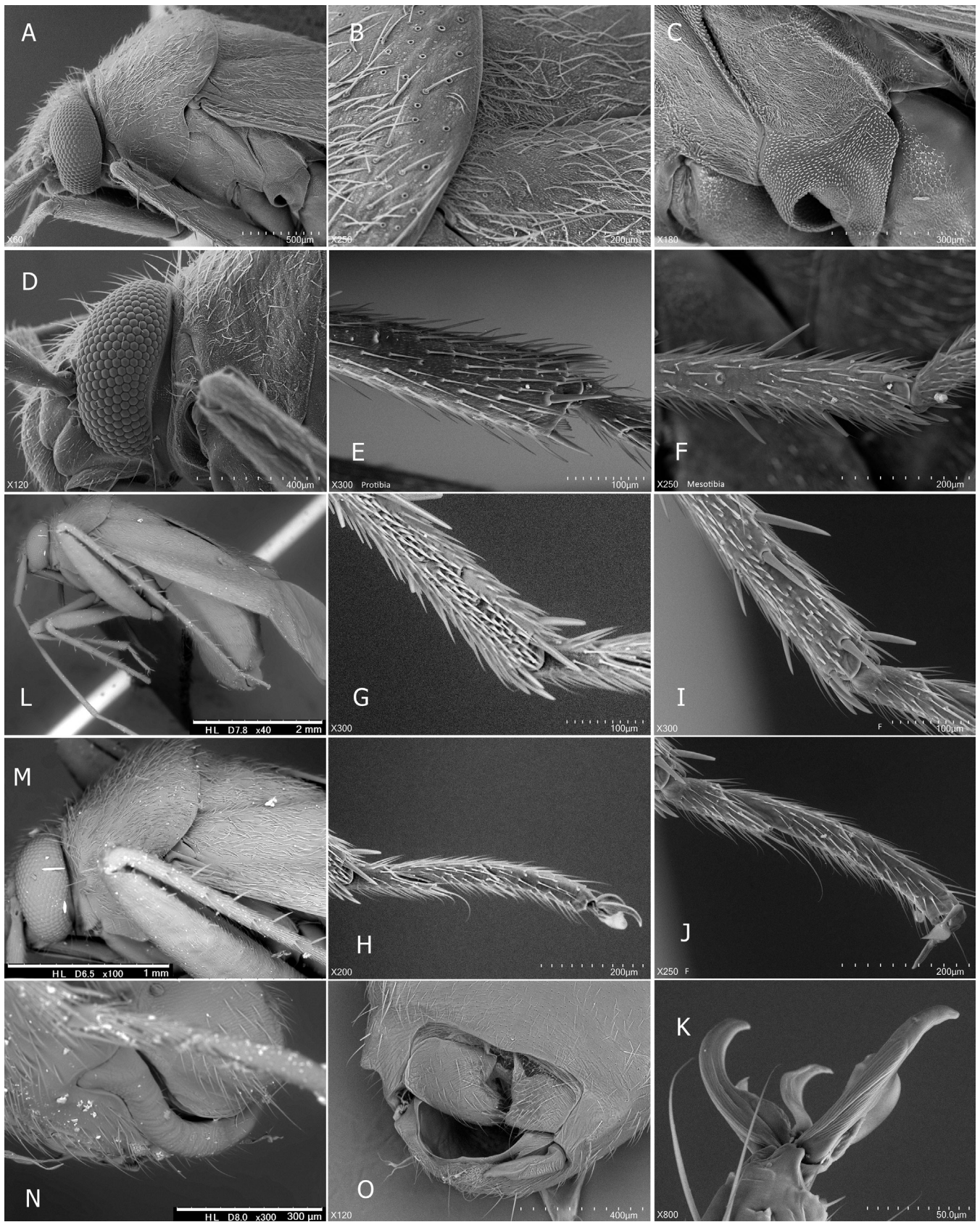


Fig. 10. Scanning electron micrographs for *Velutinomiris taiwanicus*, male from Pingtung (except for L–N from Lanyu Island and I–J = female). A, M, Anterior body; B, vestiture on posterior pronotum, scutellum and anterior corium; C, left thoracic pleura; D, head and pronotum; E, apex of protibia; apex of mesotibia; G, I, apex of metatibia; H, J, metatarsus; K, pretarsal structure of metaleg; L, left lateral habitus; N, male genital segment (pygophore), left lateral view; O, same, dorsal view.

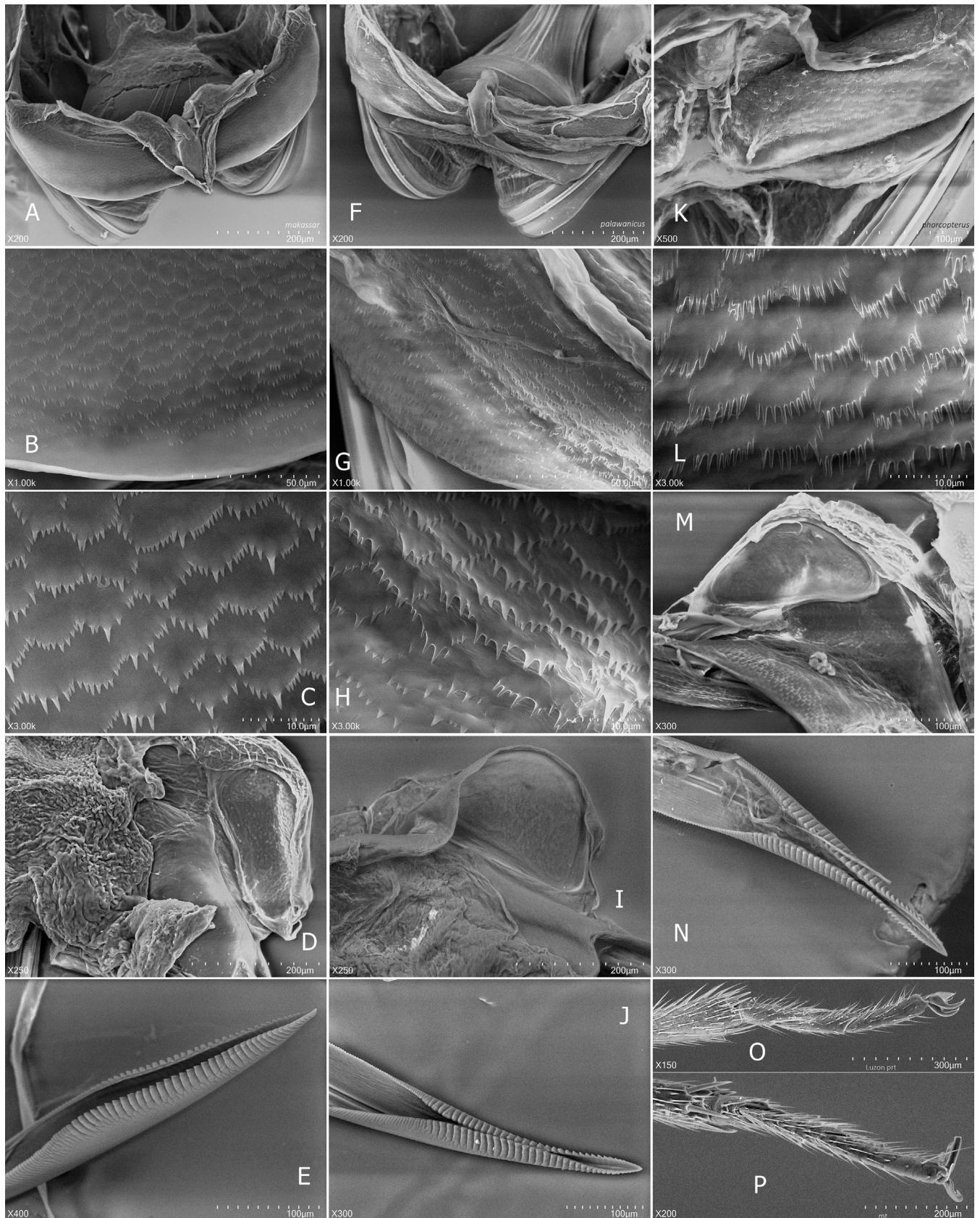


Fig. 11. Scanning electron micrographs for female genitalia (and tarsi: O–P) of *Velutinomiris makassar* (A–E), *V. palawanicus* (F–J) and *V. phorcopterus* (K–P). A, F, K, Posterior wall; B, C, G, H, L, interramal lobe; D, I, M, sclerotised ring; E, J, N, apical part of ovipositor (gonapophysis I); O, protarsus; P, metatarsus.

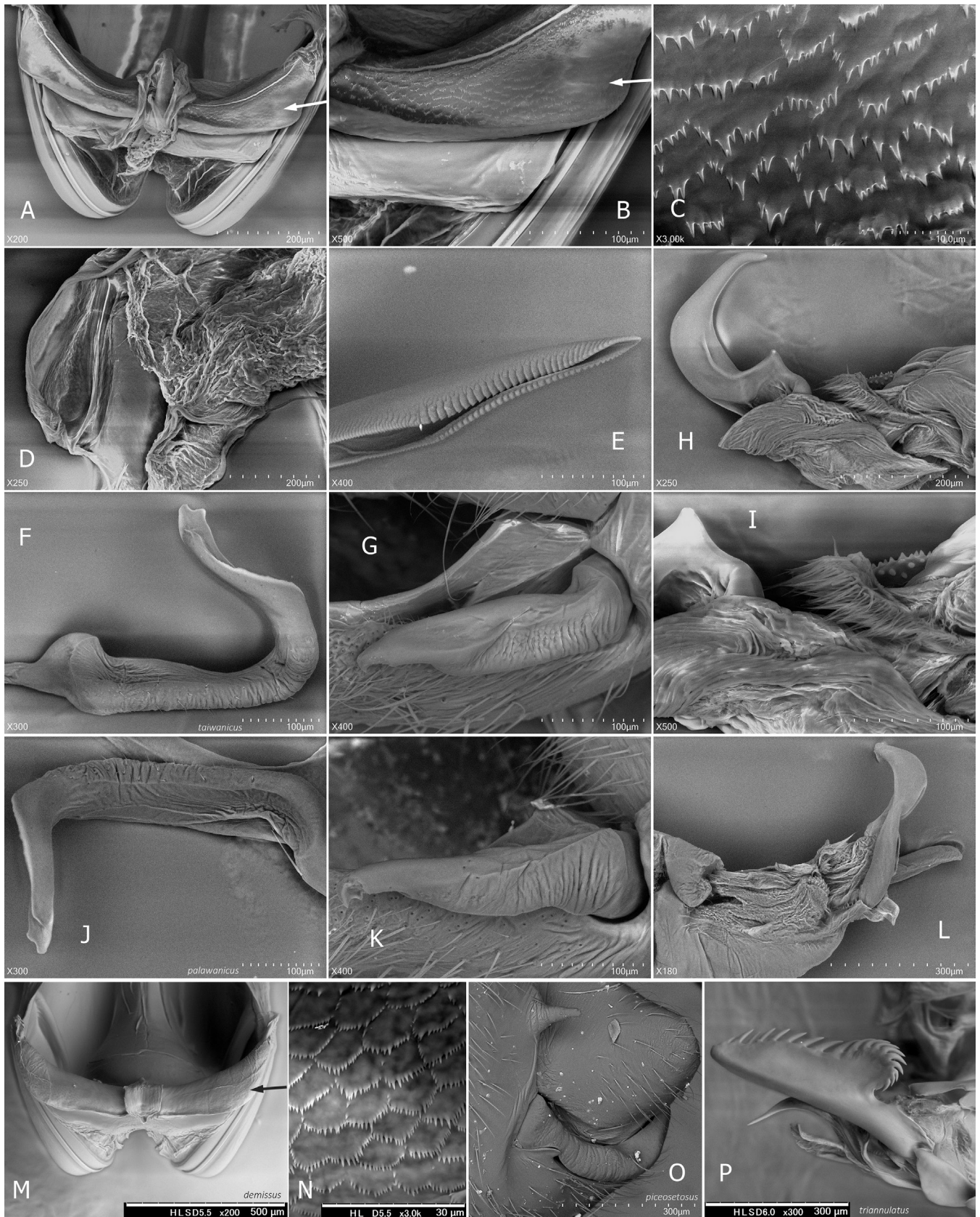


Fig. 12. Scanning electron micrographs for genitalic structures of *Velutinomiris taiwanicus* (A–I), *V. palawanicus* (J–L), *Adelphocoris demissus* (M, N), *A. piceosetosus* (O) and *A. triannulatus* (P). A, B, M, Posterior wall; C, N, interramal lobe; D, sclerotised ring; E, apical part of ovipositor (gonapophysis I); F, J, left paramere; G, K, right paramere; H, I, L, P, vesica; O, male genital segment (pygophore), left lateral view.

Antenna pale brown; antennomere I and extreme base of antennomere II dark brown; antennomere II shorter than labium. Labium shiny chestnut brown, slightly exceeding apex of metacoxa. Pronotum weakly shiny, with posterior margin creamy yellow; apex of scutellum with a pale, rhombic macula; thoracic pleura pale brown, partly speckled with reddish-brown spots; episternum greyish brown; metathoracic scent efferent system creamy yellow, with evaporative area expanded posteriorly (Fig. 10C). Hemelytron chestnut brown; corium with a pale, short, oblique macula at medio-lateral margin; apical half of exocorium and cuneus pale brown, rather sparsely speckled with small, reddish-brown spots and lacking dark spots; apex of cuneus dark brown; membrane smoky brown, with pale brown veins. Coxae pale brown, except for posterior part of procoxa and apical half of mesocoxa irregularly darkened; basal part of metacoxa with reddish suffusions; each femur densely speckled with reddish-castaneous maculae or spots; each tibia pale brown, partly with small reddish spots at bases of spines; all tarsi pale brown; pretarsal structure as in Fig. 10K. Abdomen pale brown, with darkened ventral median part; lateral side of sterna and apical part of genital segment (pygophore) speckled with reddish or dark brown spots as in Fig. 2F. **Male genitalia** (Figs. 4F, 5D–F, 10N, O, 12F–I): Pygophore with triangular process beside base of left paramere (Fig. 10O). Left paramere J-shaped, with apical part of sensory lobe thickened (Fig. 5E); right paramere relatively stout (Figs. 5F, 12G). Vesica with a developed, hooked spicule (Figs. 4F, 12H); subapical process on spicule sharply pointed; apical part of vesical membrane with a bundle of hair-like structures (Fig. 12I). **Female**. Basic colouration and structures as in male. Vertex 0.40–41 times as wide as head including eyes. **Female genitalia** (Figs. 6G–H, 12A–E): Sclerotised rings subtriangular (Fig. 6G); interramal lobe laterally narrowed, with rather sparsely distributed, comb-like microstructures (Fig. 6H, 12A–C).

Measurements. See Table 2.

Etymology. Named for Taiwan, type locality of this new species; an adjective.

Distribution. Taiwan (Pingtung, Lanyu Island).

ACKNOWLEDGEMENTS

We are grateful to Dr. K. Menard (University of Connecticut, Storrs, CT, USA), Dr. J. F. Tsai (NMNS), and Dr. M. Tomokuni (NSMT) for the loan of specimens. The first author also thanks Mr. A. Hama, Mr. Y.-Q. Zhang, Ms. A. Nihei, and the late Mr. D. Terada (CSR Division, Hitachi High-Tech, Tokyo) for generously allowing the use of a scanning electron microscope. Thanks are extended to Dr. T. J. Henry (Systematic Entomology Laboratory, ARS, USDA, c/o National Museum of Natural History, Smithsonian Institution, Washington, DC, USA), Dr. F. Chérot (Département de l'Etude du Milieu Naturel et Agricole, Service Public de Wallonie, Belgium), and Dr. A. D. Tran (subject editor of RBZ) for reviewing or editing the manuscript. This work

was partly supported by a grant from the National Institute of Biological Resources (NIBR), funded by the Ministry of Climate, Energy and Environment Ministry of Environment (MCEOE) of the Republic of Korea (NIBR202606202).

LITERATURE CITED

- Chérot F & Malipatil MB (2016) A review of *Adelphocoris-Creontiades-Megacoelum* complex (Hemiptera: Heteroptera: Miridae: Mirini), with descriptions of two new genera and four new species. *Zootaxa*, 4126 (2): 151–206.
- Distant WL (1883) *Insecta. Rhynchota. Hemiptera-Heteroptera. Biologia Centrali-Americana*, Volume 1. R. H. Porter, London, pp. 225–264.
- Distant WL (1904) *The fauna of British India, including Ceylon and Burma. Rhynchota. Volume 2, Part 2.* Taylor & Francis, London, pp. 243–503.
- Distant WL (1909) Descriptions of Oriental Capsidae. *Annals and Magazine of Natural History*, (8)4: 440–454.
- Distant WL (1911) *The fauna of British India, including Ceylon and Burma. Rhynchota. Volume 5. Heteroptera: Appendix.* Taylor & Francis, London, xii+362 pp.
- Fabricius JC (1794) *Entomologia Systematica emendata et aucta secundum classes, ordines, genera, species adjectis synonymis, locis observationibus, descriptionibus.* Volume 4. Impensis Christian Gottlob Proft, Hafniae, vi + 472 pp.
- Fallén CF (1814) *Specimen novam Hemiptera disponendi methodum exhibens.* Litteris Berlingianis, Lundae, 26 pp.
- Fieber FX (1858) Kriterien zur generischen Theilung der Phytocoriden (Capsini auct.). *Wiener Entomologische Monatschrift*, 2: 289–327, 329–347, 388, 1 pl.
- Kim J, Chérot F, Phan QT & Jung S (2025) Two new species of the tribe Mirini (Hemiptera: Heteroptera: Miridae: Mirinae) from Vietnam, with additional data to Vietnamese Mirinae catalogue. *Zootaxa*, 5604(4), 555–564.
- Malipatil MB & Chérot F (2002) *Adelphocorisella* Miyamoto and Yasunaga newly recorded from Australia, with the description of a new species (Heteroptera: Miridae: Mirinae). *Australian Journal of Entomology*, 41: 99–103.
- Miyamoto S & Yasunaga T (1993) A new genus of the mirid bug, *Adelphocorisella* (Heteroptera, Miridae), with two new species from Japan. *Proceedings of the Japanese Society of Systematic Zoology*, 49: 47–52.
- Pagola-Carte S, Yasunaga T & Duwal RK (2022) A new species of the plant bug genus *Phytocoris* from Nepal, representing the first record of the subgenus *Exophytocoris* for the Oriental Region (Hemiptera: Heteroptera: Miridae: Mirinae). *Heteropterus Revista de Entomología*, 22: 145–157.
- Poppius B (1914) Zur Kenntnis der Miriden, Anthocoriden und Nabiden Javas und Sumatras. *Tijdschrift voor Entomologie (suppl.)*, 56: 100–187.
- Poppius B (1915a) H. Sauter's Formosa-Ausbeute: Nabidae, Anthocoridae, Teratophylidae, Miridae, Isometopidae und Ceratocombidae (Hemiptera). *Archiv für Naturgeschichte*, 80A(8): 1–80 (1914).
- Poppius B (1915b) Zur Kenntnis der Indo-Australischen Capsarien. I. *Annales Historico-Naturales Musei Nationalis Hungarici*, 13: 1–89.
- Reuter OM (1896) *Dispositio generum palaearticorum divisionis Capsaria familiae Capsidae.* Öfversigt af Finska Vetenskaps-Societätens Förhandlingar, 38: 158–171.
- Stonedahl GM (1988) Revision of the mirine genus *Phytocoris* Fallén (Heteroptera: Miridae) for western North America. *Bulletin of the American Museum of Natural History*, 188: 1–257.

- Yasunaga T (1997a) Revision of the mirine genus *Creontiades* Distant and allies from Japan (Heteroptera, Miridae). Part I: True members of *Creontiades*. Japanese Journal of Entomology, 65: 541–555.
- Yasunaga T (1997b) Revision of the mirine genus *Creontiades* Distant and allies from Japan (Heteroptera, Miridae). Part II: Species of *Orientomiris*, n. gen. Japanese Journal of Entomology, 65: 728–744.
- Yasunaga T (1998) Revision of the mirine genus *Creontiades* Distant and allies from Japan (Heteroptera: Miridae). Part III. *Neomegacoelum* gen. n. and exotic new taxa, new synonymy and new combinations. Entomological Science, 1: 63–70.
- Yasunaga T (2023) Descriptions of twenty-three new mirine species from Japan, with a key to genera of the tribe Mirini, updating the Japanese fauna (Hemiptera: Miridae: Mirinae). Tijdschrift voor Entomologie, 166: 1–116.
- Yasunaga T (2024) Reassessment of characters of the ‘*Orientomiris*-group’, with descriptions of three new genera and eight new species of the tribe Mirini from the Oriental Region (Hemiptera: Heteroptera: Miridae). Acta Entomologica Musei Nationalis Pragae, 64: 397–426.
- Yasunaga T, Chérot F & Schwartz MD (2021) New genera and species of the Oriental mirine plant bugs from Southeast Asia, with six new combinations (Insecta: Heteroptera: Miridae: Mirinae: Mirini). Raffles Bulletin of Zoology, 69: 137–155.
- Yasunaga T & Schwartz MD (2007) Revision of the mirine plant bug genus *Philostephanus* Distant and allies Heteroptera: Miridae: Mirinae: Mirini). Tijdschrift voor Entomologie, 150: 100–180.
- Yasunaga T & Schwartz MD (2015) Review of the mirine plant bug genus *Phytocoris* Fallén in Japan (Hemiptera: Heteroptera: Miridae: Mirinae), with descriptions of eight new species. Tijdschrift voor Entomologie, 158: 1–27.
- Yasunaga T, Shishido T & Yamada K (2016) Two new species of the mirine plant bug genus *Adelphocorisella* (Insecta: Heteroptera: Miridae: Mirinae: Mirini) from central Thailand. Raffles Bulletin of Zoology, 64: 250–256.