

Two new species of the mirine plant bug genus *Adelphocorisella* (Insecta: Heteroptera: Miridae: Mirinae: Mirini) from central Thailand

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Abstract. The mirine plant bug genus *Adelphocorisella* Miyamoto & Yasunaga, 1993 is reported from Central Thailand and the Oriental Region for the first time. Two new species, *A. adelphocoroides* and *A. sarika*, are described, with habitus images of live individuals. Generic characters are reviewed, and the phylogenetic relationship of *Adelphocorisella* to superficially similar genera is discussed.

Key words. Heteroptera, Miridae, *Adelphocorisella*, new species, Thailand, Oriental

INTRODUCTION

The mirine plant bug genus *Adelphocorisella* was proposed by Miyamoto & Yasunaga (1993) to accommodate two Japanese species, *A. insulana* and *A. lespedezae*, which are reminiscent of some members of *Adelphocoris* Reuter. Subsequently, Malipatil & Chérot (2002) described *Adelphocorisella australis* from Queensland, Australia, and Cho et al. (2008) recorded *A. lespedezae* from the Korean Peninsula. Currently, the known distribution (eastern Palearctic and Australian regions) of *Adelphocorisella* appears to be disjunct, but Malipatil & Chérot (2002) have alluded to occurrences of several additional species in the Oriental Region.

Our continuing field investigations in central Thailand recently produced two undescribed species. One, herein named as *A. sarika*, has the typical shape of *Adelphocorisella*, whereas the other, *A. adelphocoroides*, is very similar in general facies to certain species of *Adelphocoris*. After careful evaluation on their characters including the male genitalia, we conclude that both taxa above should be accommodated in *Adelphocorisella*.

In this paper, we describe the two new species and review the diagnostic characters of *Adelphocorisella*. The inferred phylogenetic relationship of *Adelphocorisella* to superficially related mirine genera is also discussed.

MATERIAL AND METHODS

Type specimens are deposited in Insect Collection, Entomology & Zoology Group, Plant Protection Research & Development Office, Bangkok, Thailand (DOA) or T. Yasunaga collection, Nagasaki, Japan (TYCN). Matrix code labels are attached to all type specimens, which uniquely identify each specimen and are referred to as ‘unique specimen identifiers’ (USIs). The USI codes [AMNH_PBI 0123] comprise a dataset code (AMNH_PBI) and a unique specimen number (0123). These data were digitised on the Arthropod Easy Capture (formerly the Planetary Biodiversity Inventory) database maintained by the AMNH: ‘Heteroptera Species Pages’ (<http://research.amnh.org/pbi/heteropteraspeciespage/>).

All measurements are in millimeters. Terminology of the male genitalia follows Yasunaga & Schwartz (2007; 2015). Some terms indicating the endosomal sclerites used by Malipatil & Chérot (2002) are also employed. Digital images of live individuals were taken with a Canon EOS Kiss camera body, plus a Canon-Olympus mount adapter, and an Olympus Macrophoto System (Auto Extension Tube with 38 mm or 50 mm macro lens and T10 Ringflash).

TAXONOMY

Genus *Adelphocorisella* Miyamoto & Yasunaga

Adelphocorisella Miyamoto & Yasunaga, 1993: 47 (n. gen.), type species by original designation: *A. lespedezae* Miyamoto & Yasunaga, 1993: 48; Schuh, 1995: 695 (cat.); Kerzhner & Josifov, 1999: 59 (cat.); Yasunaga et al., 2001: 211 (diag.).

Diagnosis. Distinguished from other mirine genera, in particular *Adelphocoris* Reuter, *Creontiades* Distant, *Orientomiris* Yasunaga, and *Phytocoris* Fallén, by following combination of characters: Moderate size (4–6 mm in total length); mostly brown-mottled color pattern (Fig. 2); elongate body shape (Fig. 1); slightly to moderately oblique head; two

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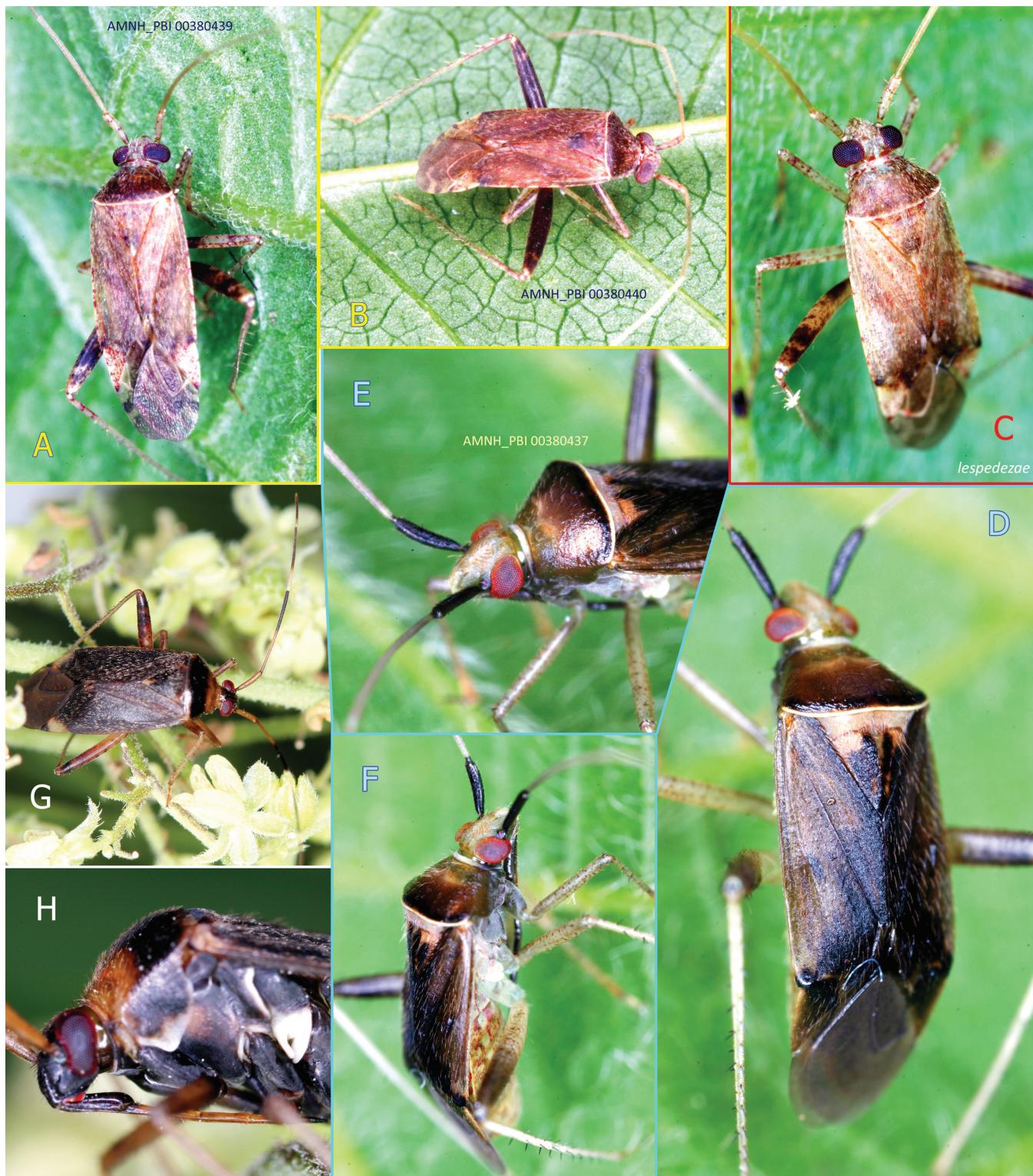


Fig. 1. Habitus images of live individuals. A, *Adelphocorisella sarika*, male from Nakhon Nayok; B, ditto, from Nakhon Ratchasima; C, *A. lespedezae*, male from Nagasaki, Japan; D–F, *A. adelphocoroides*, holotype male; G, *Adelphocoris triannulatus* (Stål), male from Nagasaki; H, ditto, female from Nagasaki.

types of vestiture (simple brown semierect setae and reclining silvery setae) usually present on dorsum; antennal segment I shorter than width of head across eyes; antennal segments II–IV uniformly yellowish, linear with almost equal diameter; rostrum long, usually exceeding apex of metacoxa; male pygophore lacking paired, conical processes near paramere insertions; wide membranous endosoma always with a distinct spiculum as well as a set of gonoporal sclerites (Figs. 3 &

4, sclerite ‘a’) and secondarily extending sclerite ‘b’, and with a more or less (usually basally) sclerotized lateral lobe.

Distribution. Australia (Queensland), Japan (Honshu, Kyushu, Ryukyu Islands), Korea, Thailand; several unidentified species currently represented only by adult females are known in Indonesia and the Philippines.

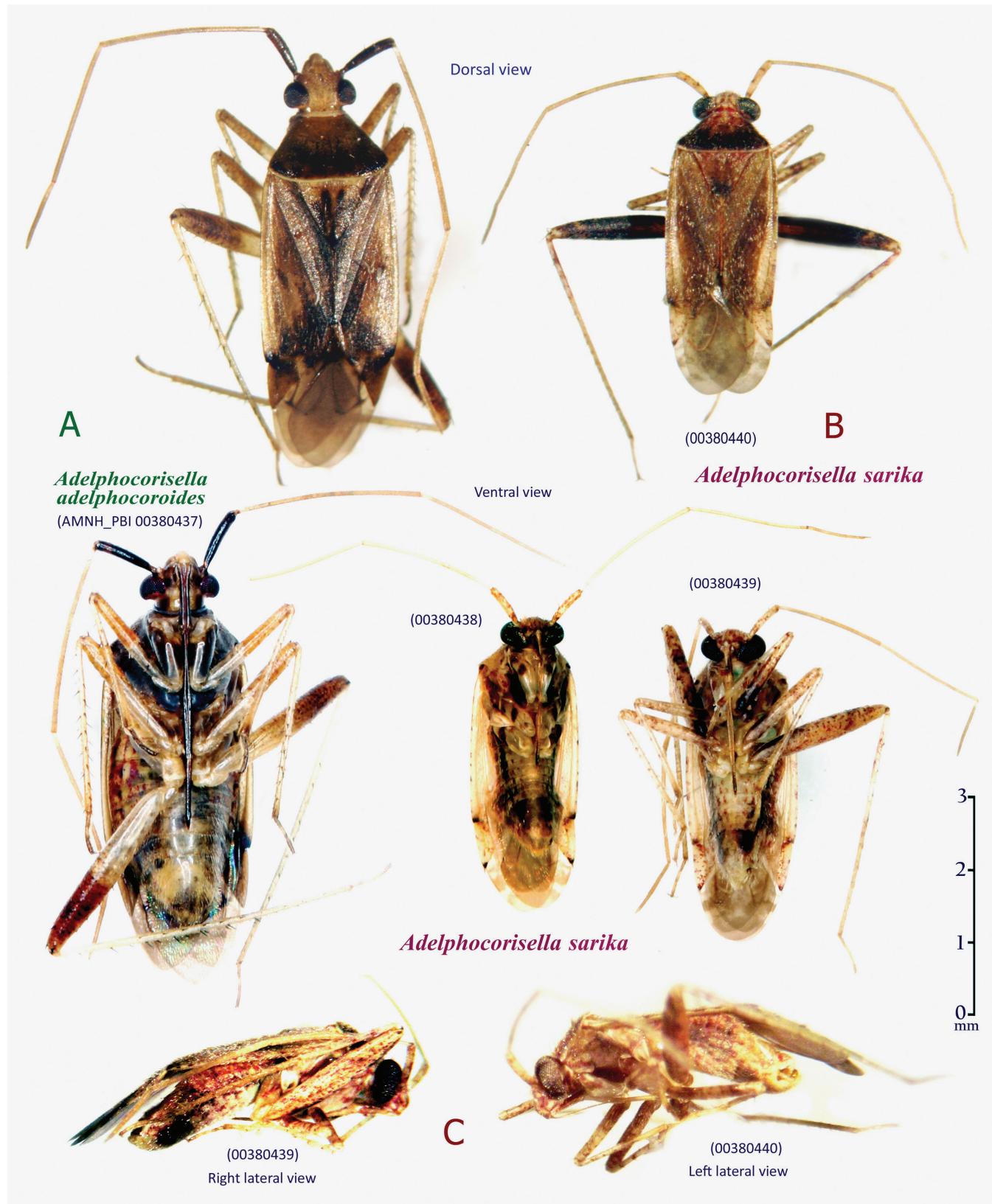


Fig. 2. Habitus images of dried specimens of *Adelphocorisella* spp. A, *A. adelphocoroides*, holotype male; B, *A. sarika*; C, dittos, lateral view.

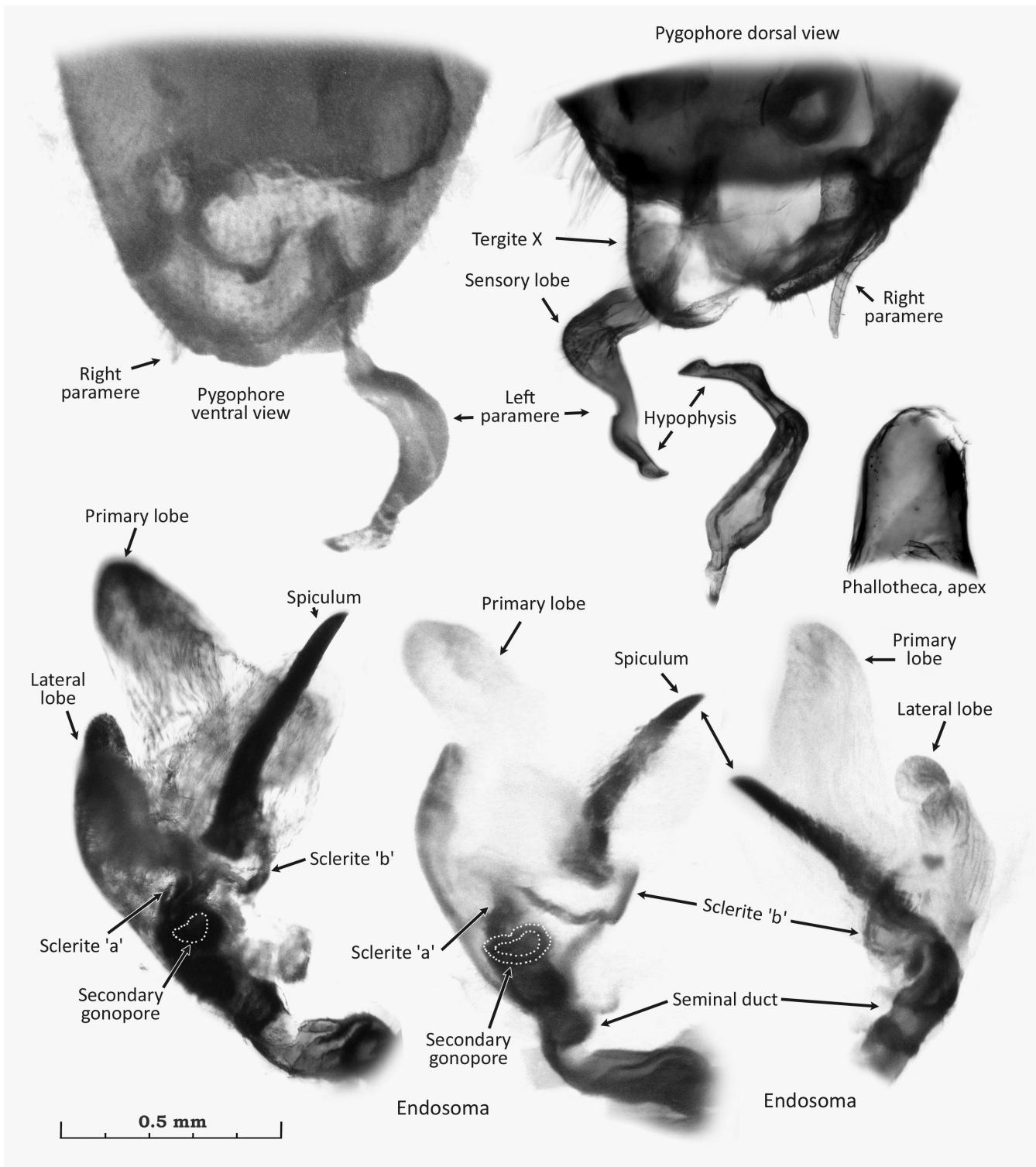


Fig. 3. Male genitalia of *Adelphocorisella adelphocoroides*, holotype.

Biology. Two Japanese species, *A. lespedezae* Miyamoto & Yasunaga and *A. insulana* Miyamoto & Yasunaga, are known to inhabit on *Lespedeza* spp. and/or *Pueraria* spp. (Fabaceae), on which the immature forms were found (Yasunaga et al., 2001). No biological information is available for tropical species.

Discussion. *Adelphocorisella* can be distinguished from other related genera by the above characters. As mentioned by Yasunaga & Schwartz (2015), the present genus, and

Adelphocoris Reuter, *Creontiades* Distant and *Phytocoris* Fallén are likely to have derived from the same lineage, based on the similar body shape and the assumed homology of the endosomal sclerites. The endosoma (almost wholly membranous and lacking any noticeable sclerites) in *Creontiades* seems to represent the most primitive character status within these genera (Yasunaga, 1997). In *Adelphocorisella*, a spiculum and sclerite 'b' [= 'sclerite B' sensu Malipatil & Chérot (2002)] are hypothesized to replace the comb-shaped sclerite in *Adelphocoris* and

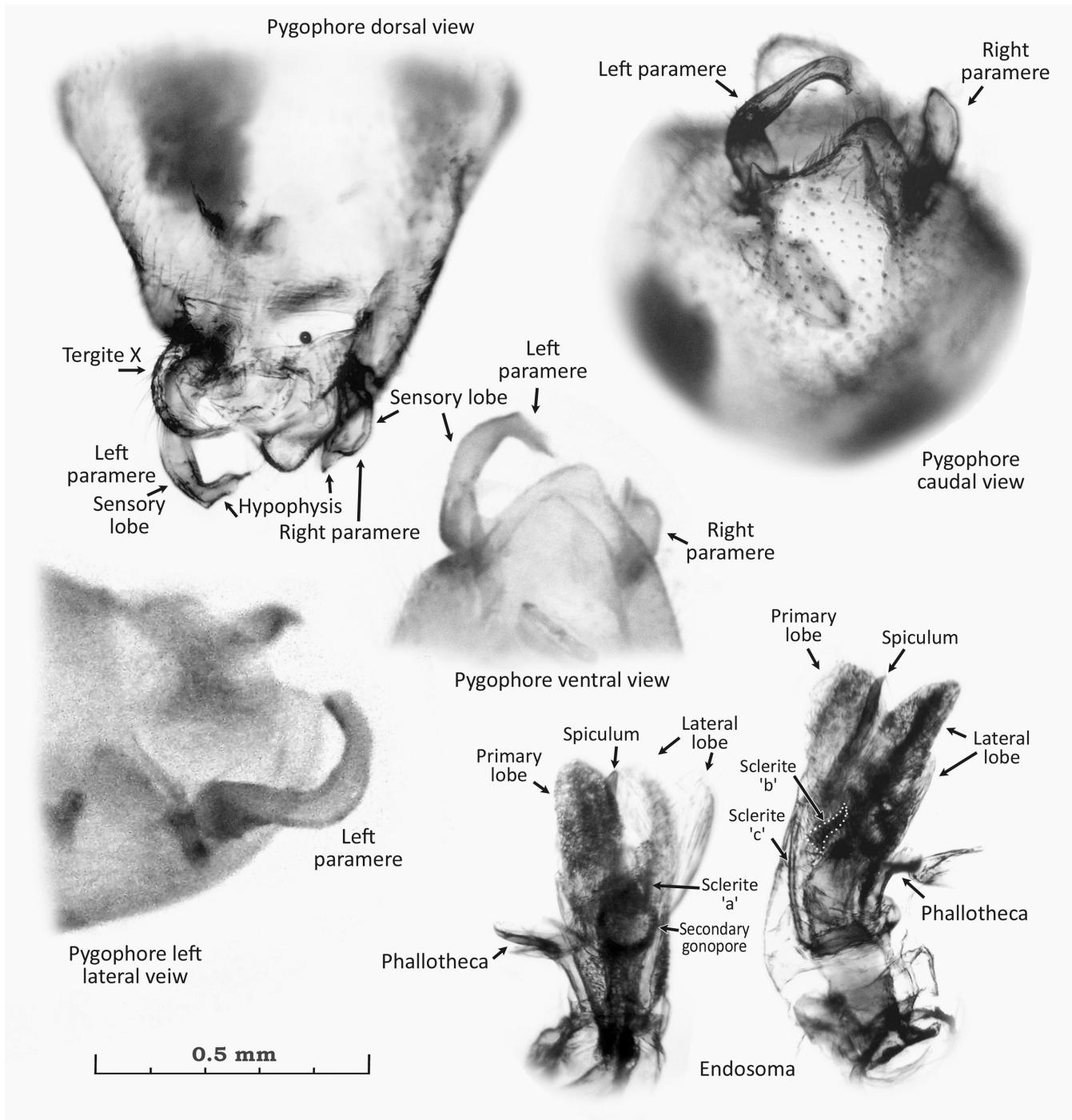


Fig 4. Male genitalia of *Adelphocorisella sarika*, holotype.

Phytocoris (Yasunaga, 1990; Yasunaga & Schwartz, 2015), and the hook-shaped sclerite in *Adelphocoris* (Yasunaga, 1990) respectively. The gonoporal sclerite [Fig. 3 & 4, sclerite 'a' = 'sclerite A' sensu Malipatil & Chérot (2002)] is situated on the secondary gonopore between two major membranous lobes and shared by all of these genera and many other mirines. To demonstrate more reliable phylogenetic relationships between such related genera, the acquisition of DNA sequence data would be necessary.

The present discovery of the two new species from Indochina expands the known distribution of *Adelphocorisella*, now ranging from the eastern Palearctic and Oriental to Australian

regions across Wallacea. However, quite a few species previously described under *Adelphocoris* or *Phytocoris* from the Oriental tropics (cf., Poppius, 1915) most likely belong to *Adelphocorisella* (Malipatil & Chérot, 2002, Yasunaga & Schwartz, 2015), because most members of the two former genera are considered to be temperate zone inhabitants.

Of the two new species described below, *Adelphocorisella sarika* (Fig. 1A, B) exhibits a typical facies of the genus and is unequivocally related to *A. insulana* and *A. lespedezae* (Fig. 1C). On the other hand, we at first thought our new taxon, *A. adelphocoroides*, was a member of *Adelphocoris*, because of greater similarity in external appearance (Fig. 1D–F vs. G

& H for *Adelphocoris triannulatus*). But our investigation of the male genitalia doubtlessly suggest that this new species belongs to *Adelphocorisella* (Fig. 3). In *Adelphocoris*, the endosoma is cubically and broadly sclerotized and, without exception, bears comb- and hook-shaped spiculi; externally (Fig. 1G & H), the body is larger and lacks mottled color pattern, the head is vertical, and the labium does not exceed much beyond the metacoxa (Yasunaga, 1990).

***Adelphocorisella adelphocoroides*, new species**

(Figs. 1D–F, 2A, 3)

Type material. Holotype: male, THAILAND: Nakhon Ratchasima, Wang Nam Khieo, Sakaerat Environmental Research Station (SERS), N14°30'27" E101°55'39", 410 m alt., UV light trap, coll. T. Yasunaga, TB. Shishido, 25 December 2012 (AMNH_PBI 00380437) (DOA).

Diagnosis. Distinguished readily from known congeners by its coffee brown dorsum with very sparsely distributed, reclining, sericeous setae; moderately oblique head; shiny fuscous antennal segment I; long labium reaching abdominal sternum VII; somewhat shiny pronotum; and shape of parameres and endosoma.

Description. *Holotype Male:* Body elongate oval; dorsal surface generally coffee brown, weakly shining, with uniformly distributed, pale brown, semierect simple setae and very sparsely distributed, reclining sericeous setae (Fig. 1D). Head whitish brown (Fig. 1E), but chestnut brown ventrally (Fig. 2A), oblique, a little porrect; vertex rather wide, about 1.5 times as wide as an eye in dorsal view, with a faint, narrow, longitudinal, mesal sulcus; frons shallowly and obliquely striolate. Antenna longer than body; segment I shiny fuscous, somewhat clavate; segments II–IV completely yellow, linear (Fig. 2A). Labium shiny dark brown, long, thick, reaching posterior margin of abdominal sternum VII (Fig. 2A). Pronotum somewhat shining, widely pale brown, narrowly darkened posteriorly, with yellowish white collar and posterior margin (Fig. 1D, F); pleura widely darkened and pruinosed, with creamy yellow ostiolar peritreme; mesoscutum yellowish brown, matte; scutellum dark brown, matte, with irregular, yellow basal striae; shallowly and roughly rugose (Fig. 1D). Hemelytron matte; corium and anterior part of clavus mottled with brown; apical half of cuneus yellowish brown; membrane smoky brown. Coxa generally dark brown, silvery pruinosed, except for metacoxa grayish brown (Figs 1F, 2A); leg pale brown; all femora and tibiae with small, brown or reddish brown spots; apical half of metafemur darkened; tibial spines fuscous. Abdomen pale brown; ventral median part irregularly darkened; ventral lateral part mottled with reddish spots (Fig. 2A). *Male genitalia* (Fig. 3): Left paramere with rather developed hypophysis; right paramere slender, tapered apicad. Apex of phallotheca simple, rounded. Endosoma composed of wide membranous area, with well developed spiculum and sclerite 'b', and relatively broad sclerite 'a'. *Female:* Unknown.

Measurements. Male: Total body length 6.0; width of head across eyes 1.10; width of vertex 0.44; lengths of antennal segments I–IV 0.86, 2.84, 2.23, 1.10; length of labium 3.71; basal width of pronotum 1.84; maximum width across hemelytron 2.16; and length of metafemur, tibia and tarsus 2.70, 4.26, 0.64.

Etymology. From the mirine generic name, *Adelphocoris* Reuter, with which the new species can be confused.

Biology. Unknown; only a single male was collected using UV light trap.

***Adelphocorisella sarika*, new species**

(Figs. 1A, B, 2B, C, 4)

Material examined. Holotype: male, THAILAND: Nakhon Nayok, Sarika, N14°18'39" E101°18'00", at light, coll. T. Yasunaga, K. Yamada, 16 June 2009 (AMNH_PBI 00380438) (DOA). Paratypes: THAILAND: 1 male, Nakhon Nayok, Sarika, N14°18'39" E101°18'00", at light, coll. T. Yasunaga, 19 December 2010 (00380439) (TYCN); 1 male, Nakhon Ratchasima, Wang Nam Khieo, Sakaerat Environmental Research Station (SERS), N14°30'27" E101°55'39", 410 m alt., UV light trap, coll. T. Yasunaga, K. Yamada, 12–14 June 2009 (00380440) (TYCN).

Diagnosis. Recognised by its smallest size among congeners; generally short antenna; chestnut brown, weakly mottled pronotum and hemelytron (Fig. 1A, B); long metatibia; sharply curved hypophysis of left paramere; triangular, apically pointed hypophysis of right paramere; and broad endosomal spiculum (Fig. 4). A combination of these characters enables this new species to be distinguished from any other species of *Adelphocorisella*.

Description. Body elongate oval, nearly parallel-sided; dorsal surface chestnut brown, widely matte, with uniformly distributed, brown, simple setae and densely distributed, reclining silvery setae (Fig. 1A, B). Head reddish brown, mottled with yellow. Antenna yellowish brown; segment I with reddish brown spots. Labium shiny pale brown, reaching abdominal sternum VI; basal 2/3 of segment I and apical half of IV chocolate brown. Pronotum chestnut brown, weakly shining, slightly mottled anteriorly, with yellow posterior margin; collar reddish brown, matte, speckled with yellow spots; pleura reddish brown, mottled with yellow; ostiolar peritreme creamy yellow; scutellum chestnut brown, somewhat darkened posteriorly, sometimes with pale apex. Hemelytron matte, without significant mottled pattern; lateral margin of embolium narrowly yellow, speckled with red spots; cuneus yellow, with dark base and apex, speckled with red spots; membrane smoky brown, with irregular pale marks posterior to apex of cuneus; membrane vein usually tinged with red. Coxa and leg yellowish brown; procoxa widely reddish brown; meso- and metacoxae each with a reddish brown spot subbasally; all femora speckled with small, reddish brown spots; pro- and mesofemora sanguineous brown basally; metafemur widely chestnut brown dorsally (Fig. 1A, B), with a sanguineous stripe at basal 1/4 along

anterior margin (Fig. 2B, C); tibial spines pale or reddish brown. Abdomen matte, yellowish brown, ventrally with a pair of reddish brown stripes (continuing from metacoxae to paired, lateral large marks on pygophore) and with scattered, red, small spots (Fig. 2B). *Male genitalia* (Fig. 4): Left paramere rather long, with sharply curved hypophysis; right paramere short and broad, with triangular, pointed hypophysis. Apex of phallotheca narrowly keeled. Endosoma with clear sclerite ‘c’ (sclerite C sensu Malipatil & Chérot, 2002), and comparatively developed, weakly curved and apically tapered spiculum. *Female*: Unknown.

Measurements. Male: Total body length 3.9–4.3; width of head across eyes 0.88–0.94; width of vertex 0.24–0.27; lengths of antennal segments I–IV 0.61–0.64, 1.88–1.94, 1.61–1.72, 0.88–0.98; length of labium 1.96–2.06; basal width of pronotum 1.25–1.28; maximum width across hemelytron 1.49–1.55; and length of metafemur, tibia and tarsus 2.13–2.21, 3.18–3.26, 0.51–0.59.

Biology. Unknown; all available specimens were collected at light. Collection records suggest this mirid has two or more generations per year.

Etymology. Named for the type locality, Sarika in Nakhon Nayok Province.

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