RAFFLES BULLETIN OF ZOOLOGY **64**: 176–186
Date of publication: 29 July 2016
http://zoobank.org/urn:lsid:zoobank.org:pub:759928F1-E89E-412D-B49D-07236E25E648

Taxonomic review of the fungal-inhabiting plant bug genera *Bothriomiris* and *Dashymenia* (Hemiptera: Heteroptera: Miridae: Cylapinae: Bothriomirini), with descriptions of two new species of *Dashymenia* from Thailand

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Abstract. The two closely related and frequently confused genera of the fungal-inhabiting plant bug subfamily Cylapinae, *Bothriomiris* Kirkaldy, 1902 and *Dashymenia* Poppius, 1910 are redefined and reviewed. Two new species of *Dashymenia*, *D. artchawakomi*, new species and *D. gorczycai*, new species, are described from Thailand. *Bothriomiris capillosus* Yasunaga, 2000 and *B. yakushima* Yasunaga & Miyamoto, 2012 are transferred to the genus *Dashymenia* Poppius, and a revised key to the two genera is provided. Color habitus images of the adults are given for *Dashymenia artchawakomi*, *D. capillosa*, and *D. gorczycai*. The male genitalic structures of the following species are illustrated: *Bothriomiris ernsti* Yasunaga & Miyamoto, *B. lugubris* Poppius, *Dashymenia artchawakomi*, *D. capillosa*, and *D. gorczycai*. Photographic images of live individuals (adults and fourth and final instar immatures) are also provided for *D. artchawakomi*.

Key words. Heteroptera, Miridae, Cylapinae, Bothriomirini, *Bothriomiris, Dashymenia*, new species, new combination, Oriental Region, Japan, Thailand

INTRODUCTION

The plant bug subfamily Cylapinae currently comprises more than 100 species in approximately 30 genera in the Oriental Region (Schuh, 2002–2013; Gorczyca, 2006, 2008; Gorczyca & Chérot, 2008; Sadowska-Woda, 2008; Murphy & Polhemus, 2012; Wolski, 2008, 2010; Wolski & Gorczyca, 2007, 2011, 2012). The majority of the Oriental cylapines are known from Indonesia and Malaysia (about 80 species), and only 12 species have so far been recorded from Thailand (Schuh, 2002–2013; Gorczyca, 2006; Wolski & Gorczyca, 2012).

This paper, providing descriptions of two new species of the bothriomirine genus *Dashymenia* Poppius from Thailand, represents part of recent attempts to document the diversity of the cylapine tribe Bothriomirini (Yasunaga, 2000; Gorczyca & Wolski, 2006; Wolski & Gorczyca, 2006, 2012; Yasunaga & Miyamoto, 2006; Wolski, 2012). We also place two species, which were originally described under *Bothriomiris* Kirkaldy (*B. capillosus* Yasunaga, 2000 and *B. yakushima* Yasunaga & Miyamoto, 2012), in the genus *Dashymenia* and provide revised keys and diagnoses to the genera and known species of *Bothriomiris* and *Dashymenia.* Photographic images of live adults, and fourth and fifth instar immatures are presented for *D. artchawakomi*.

MATERIALS AND METHODS

Observations were made using an Olympus SZX12 stereomicroscope and an Olympus BX50 optical microscope. Color photographs of the adult dry preserved specimens, taken with an ALTRA 20 digital camera, are not to scale.

Measurements were taken using an eyepiece (ocular) micrometer and defined in the paper of Wolski & Gorczyca (2012); all measurements are given in millimeters. Dissections of male genitalia were performed using the technique described by Kerzhner & Konstantinov (1999). The terminology of the male genitalic structures follows Konstantinov (2003) and Cassis (2008). Terms for the endosomal sclerites in the Bothriomirini presented in Figs. 7, 10–11, 14, 17 are indicated in detail in the separate paper (Wolski & Gorczyca, 2012).

Digital images of live individuals were taken by TY, with a Canon EOS Kiss Digital camera body, plus a Canon-Olympus mount adapter, and an Olympus Macro photo System (Auto Extension Tube with 38 mm or 50 mm macro lens and T10 Ring flash).

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ISSN 2345-7600 (electronic) | ISSN 0217-2445 (print)

Figs. 1–6. Dorsal habitus photographs: 1, 2, *Dashymenia artchawakomi* (1. holotype, 2, paratype, male); 3, 4, *D. capillosa* (3. Female, Thai: Nk. Ratchasima: Sakaerat Environ. R.S., upper tower, coll. T. Yasunaga, 29 October 2008, 4. Female, Ryukyus: Ishigaki: Mt. Nosokodake, coll. T. Nakata, 14 August 2002); 5, 6, *D. gorczycai* (holotype).

This study is based on the material deposited in the following institutions: DOA: Insect Collection, Entomology & Zoology Group, Plant Protection Research and Development Office, Department of Agriculture, Bangkok; TYCN: T. Yasunaga Collection, Nagasaki, Japan; USNM: US National Museum of Natural History, Smithsonian Institution, Washington, D.C.; ZMUC: Zoological Museum, University Copenhagen, Denmark.

TAXONOMY

Key to *Bothriomiris* and *Dashymenia*

1. Antennal segment I constricted at basal one fourth (Wolski & Gorczyca, 2012: figs. 3–4, 28); metepisternum covered with more or less densely distributed punctures (Wolski & Gorczyca, 2012: fig. 26); ostiolar peritreme obtuse, matte, covered with minute, fine setae (Wolski & Gorczyca, 2012: 27); endosoma simple, with a sclerotized part of ductus seminis (DSS) thin, nearly parallel-sided along entire length or tapering; endosomal sclerites absent or very weakly developed (Figs. 7, 10; Yasunaga 2000: fig. 85; Wolski & Gorczyca, 2012: fig. 36)..... .....*Bothriomiris* Kirkaldy
2. Antennal segment I cylindrical, weakly narrowed basally (Wolski & Gorczyca, 2012: figs. 55, 64, 74); metepisternum impunctate (Figs. 2, 4, 6; Wolski & Gorczyca, 2012: figs. 50–51, 69–70); ostiolar peritreme characteristically rounded, devoid of microtrichae and shiny (Figs. 2, 6; Wolski & Gorczyca, 2012; Figs. 71); endosoma with a DSS stout, strongly broadened basally and with a fully set of sclerites (Figs. 11, 14, 17: Yasunaga & Miyamoto 2006: fig. 3J; Wolski & Gorczyca, 2012: figs. 39, 57–58, 60–61, 80, 84) ....*Dashymenia* Poppius

Bothriomiris Kirkaldy, 1902
(Figs. 7–10)

Bothriomiris Kirkaldy, 1902: 270, type species by monotypy: *Bothriomiris marmoratus* Kirkaldy, 1902 (junior synonym of *Capsus dissimulans* Walker, 1873 synonymized by Distant 1904b); Distant, 1904a: 469 (redescription), 1904b: 112 (list); Kirkaldy, 1906: 145 (list); Reuter, 1910: 154 (list and taxonomy), 1912: 43 (taxonomy); Bergroth, 1910: 235 (diagnosis), 1920: 70 (list); Carvalho, 1955: 18 (key to genera), 1957: 26 (catalog); Carvalho & Lorenzato, 1978: 121 (diagnosis); Schuh, 1995: 20 (catalog); Kerzhner & Josifov, 1999: 10 (catalog); Gorczyca, 2000: 47 (list), 2006: 9 (catalog); Yasunaga, 2000: 185, 203 (diagnosis, key to Japanese species); Yasunaga & Miyamoto, 2006: 721–722 (diagnosis, key to Japanese species); Wolski & Gorczyca, 2012: 3, 6, 7–8 (checklist, key to Oriental genera, diagnosis).

Bothriomiridius Poppius, 1915: 44 (synonymized by Carvalho, 1952: 49), type species by original designation: *Bothriomiridius lugubris* Poppius, 1915; Bergroth, 1920: 70 (list); Carvalho, 1957: 26 (catalog); Schuh, 1995: 20 (catalog); Kerzhner & Josifov, 1999: 10 (catalog).

Diagnosis. Recognised by the following combination of characters: body subovate to elongate oval (Yasunaga & Miyamoto, 2006: figs. 1C, D; Wolski & Gorczyca, 2012: figs. 1–4), relatively large (usually over 5.5 mm); dorsum usually moderately shining, covered with dense, semierect or erect setae; head rugose (Wolski & Gorczyca, 2012: figs. 42–43); antennal segment I constricted at basal one fourth (Wolski & Gorczyca, 2012: figs. 3–4, 28); segment II thin, covered with moderately dense setae (Wolski & Gorczyca, 2012: fig. 29); metepisternum covered with densely distributed punctures (Wolski & Gorczyca, 2012: fig. 26); scutellum almost flattened or weakly arched (Wolski & Gorczyca, 2012: 2–4; Yasunaga & Miyamoto, 2006: 1C, D); ostiolar peritreme obtuse, matte, covered with minute, fine setae (Wolski & Gorczyca, 2012: 27); endosoma simple; DSS thin, nearly parallel-sided along entire length or tapering; endosomal sclerites absent or very weakly developed (Figs. 7, 10; Yasunaga, 2000: fig. 85; Wolski & Gorczyca, 2012: fig. 36).

Key to species of *Bothriomiris*

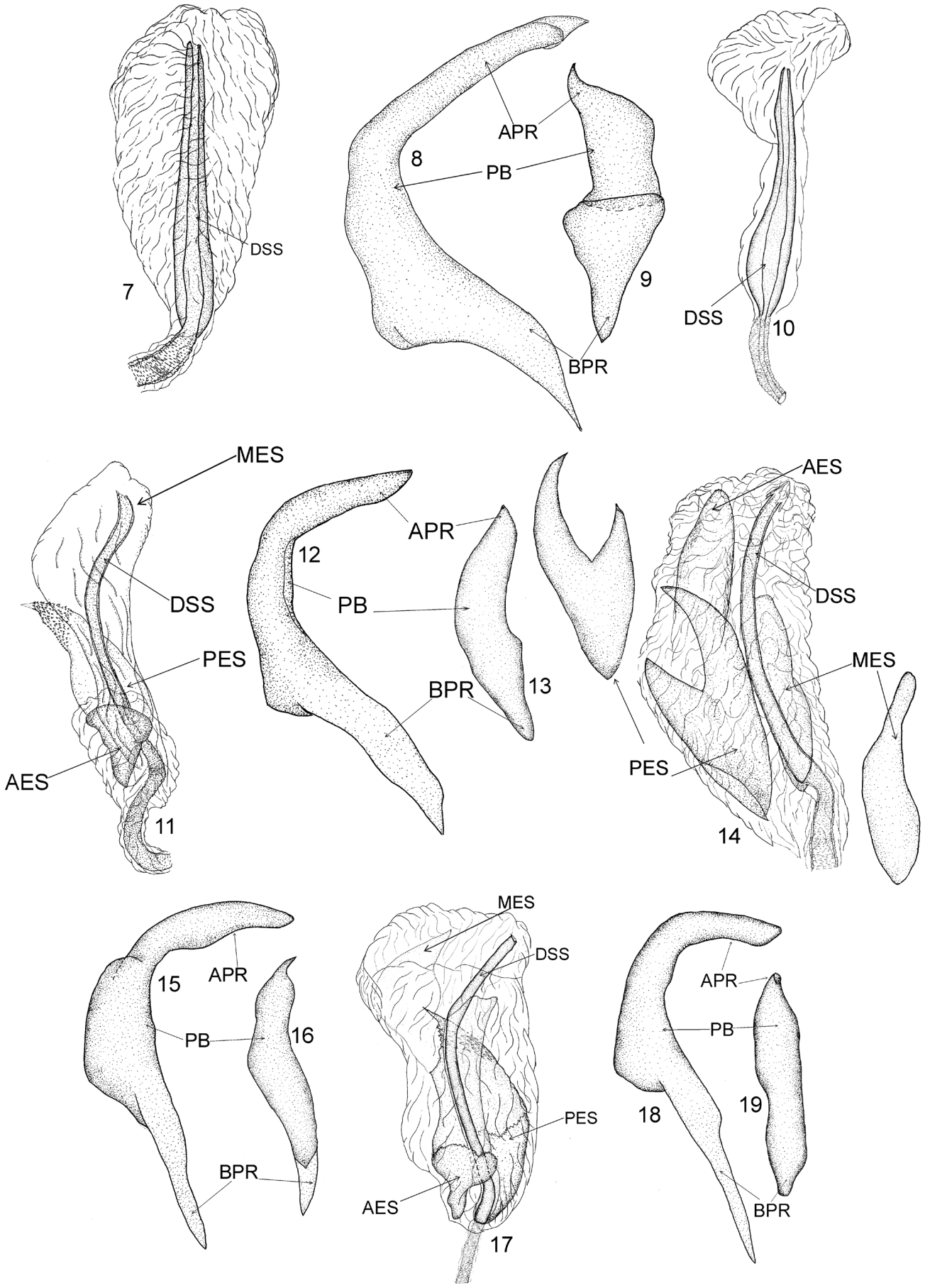
1. Pronotum with a triangular, ochraceous patch from anterior margin reaching medial portion..... *B. ornatus* Bergroth
– Pronotum entirely dark brown to black, rarely reddish (Yasunaga & Miyamoto, 2006: figs. 1C, D; Wolski & Gorczyca, 2012: figs. 3–4), sometimes with an anterior lobe yellow and with a yellow swelling from anterior lobe to posterior margin (Wolski & Gorczyca, 2012: figs. 1, 2), but never with a triangular, ochraceous patch anteriorly 2

2. Dorsal surface entirely reddish .....*B. testaceus* Distant
– Dorsal surface usually dark brown or blackish brown, sometimes with yellow, reddish or ochraceous areas, never entirely reddish (Yasunaga & Miyamoto, 2006: figs. 1C, D; Wolski & Gorczyca, 2012: figs. 1–4) 3

3. Vertex with two distinct, broad tubercles, each situated laterally and contiguous with an inner margin of eye and occipital carina; antennal segment I longer than width of vertex (Wolski & Gorczyca, 2012: fig. 4); left paramere with sensory lobe strongly convex, without sharply pointed process (Gorczyca, 2005; Fig. 3)..... *B. sulawesicus* Gorczyca
– Tubercles on vertex weakly developed; antennal segment I nearly as long or shorter than width of vertex (Figs. 1–3); left paramere with sensory lobe not convex (Wolski & Gorczyca, 2012: fig. 37), or if convex, furnished with sharply pointed process (Gorczyca, 2005: fig. 6).....4

4. Dorsum varying from pale brown with reddish and yellowish areas to dark brown or blackish with yellowish stripes and/or patches (Wolski & Gorczyca, 2012: figs. 1, 2); pronotal calli impunctate; posterior lobe of pronotum with a distinct, pale, median, longitudinal stripe (Figs. 1, 2); endosoma with relatively weakly developed AES and MES (Wolski & Gorczyca, 2012: fig. 36) ..... *B. dissimulans* (Walker)
– Dorsal surface almost entirely blackish dark brown except for a dull yellowish to nearly orange apex of scutellum (Yasunaga & Miyamoto, 2006: figs. 1C–D; Wolski & Gorczyca, 2012: fig. 3); pronotal calli punctate; posterior lobe of pronotum entirely blackish (Yasunaga & Miyamoto, 2006: figs. 1C, D; Wolski & Gorczyca, 2012: fig. 3); endosoma without sclerites (Figs. 7, 10; Yasunaga, 2000: fig. 85) 5

5. Apex of scutellum and corium with an indistinct, dull yellowish patch (Wolski & Gorczyca, 2012: fig. 3); left paramere with sensory lobe strongly convex, furnished with a distinct spine (Gorczyca, 2005: fig. 6) ..... *B. lugubris* Poppius



Figs. 7–19. Male genitalia. 7–9, *Bothriomiris ernsti*; 10, *B. lugubris*; 11–13, *Dashymenia artchawakomi*; 14–16, *D. capillosa*; 17–19, *D. gorczycai*. 7, 10, 11, 14, 17, Endosoma (dorsal view); 8, 12, 15, 18, Left paramere (right lateral view); 9, 13, 16, 19, Right paramere (dorsal view). AES = anterior endosomal sclerite; APR = apical process; BPR = basal process; DSS = sclerotized portion of ductus seminis inside endosoma; MES = medial endosoma sclerite; PES = posterior endosomal sclerite; PB = paramere body.

– Apex of scutellum and corium with distinct, large, yellowish to nearly orange patches (Yasunaga & Miyamoto, 2006: figs. 1C–D); left paramere with sensory lobe either with weakly developed process or just slightly convex (Fig. 8; Yasunaga, 2000: fig. 83) 6

6. Endosoma with DSS thin and strongly sinuate along entire length (Yasunaga, 2000: fig. 85); sensory lobe of left paramere with weakly developed, obtuse process (Yasunaga, 2000: fig. 83) ..... *B. gotohi* Yasunaga
– Endosoma with DSS relatively broad, straight (Fig. 7); sensory lobe of left paramere only slightly convex, without process (Fig. 8) ..... *B. ernsti* Yasunaga & Miyamoto

Bothriomiris ernsti Yasunaga & Miyamoto, 2012
(Figs. 7–9)

Bothriomiris ernsti: Yasunaga & Miyamoto, 2006: 722–727, Figs. 1C, 2B, G, 3D–F, 4C–D) (new species, invalid name due to missing citation of type depository).
Bothriomiris ernsti Yasunaga & Miyamoto, 2012 in Yasunaga et al., 2012: 111 (reinstated as valid species); Schuh, 2002–2013 (online catalog); Wolski & Gorczyca, 2012: 7 (distribution map).

Diagnosis. Recognised by the following set of characters: body oval (Yasunaga & Miyamoto, 2006: fig. 1C); apex of scutellum and apex of corium with a large, distinct, orange patch (Yasunaga & Miyamoto, 2006: fig. 1C); male genitalia as described below and depicted in Figs. 7–9.

Most similar to *B. gotohi* in sharing the oval body and distinct pale patch on apex of scutellum and corium (Yasunaga & Miyamoto, 2006: figs. 1C, D). *B. ernsti* can, however, be easily distinguished by the shape of the male genitalia (Figs. 7–9; Yasunaga, 2000: fig. 85).

Male genitalia. *Aedeagus* (Fig. 7). Endosoma membranous, with DSS broad, straight, tapering toward apex and without other sclerites. *Left paramere* (Fig. 8). Apical process straight, pointed, with a characteristic extension at extreme apex forming a pocket-like structure; paramere body relatively broad medially; sensory lobe only slightly convex, without any process. *Right paramere* (Fig. 9). Apical process sinuate and pointed; paramere body with a straight left lateral margin and sinuate right lateral margin; basal process nearly triangular.

Bothriomiris gotohi Yasunaga, 2000

Bothriomiris gotohi Yasunaga, 2000: 185, 205, Figs. 17, 78, 79, 83–86 (new species); Schuh, 2002–2013 (online catalog); Gorczyca, 2006: 10 (catalog); Yasunaga & Miyamoto, 2006: 722–726, Figs. 1D, 2C, H, 3G (checklist, key to Japanese species, dorsal and lateral color images, male genitalia); Wolski & Gorczyca, 2012: 7 (map).

Diagnosis. Recognised by the following combination of characters: body oval (Yasunaga & Miyamoto, 2006: fig. 1D); apex of scutellum and apex of corium with a distinct yellow patch apically (Yasunaga & Miyamoto, 2006: fig. 1D); male and female genitalia as described and illustrated by Yasunaga (2000: figs. 83–86).

Most similar to *B. ernsti* (see diagnosis of the preceding species).

Bothriomiris lugubris Poppius, 1915
(Fig. 10)

Bothriomiridius lugubris Poppius, 1915: 46 (new species); Bergroth, 1920: 70 (list); Gaedike, 1971: 148 (list); Carvalho, 1957: 26 (catalog), 1980: 650 (diag., type specimen, lectotype designation); Carvalho & Lorenzato, 1978: 122, Figs. 1–4 (misidentification); Schuh, 1995: 20 (catalog); Kerzhner & Josifov, 1999: 10 (catalog); Gorczyca, 2005: 541, Figs. 5–6 (male genitalia); 2006: 10 (catalog); Wolski & Gorczyca, 2012: 3, 6, 9, 14–15, 19 (checklist, key to the Oriental species, diagnosis, redescription).

Male genitalia. *Aedeagus* (Fig. 10). Simple; DSS strongly elongate, right lateral margin slightly sinuate, left lateral margin strongly curved at basal half, remainder of left margin weakly sinuate. Parameres as described and depicted by Gorczyca (2005: figs. 5, 6).

Dashymenia Poppius, 1910
(Figs. 1–6, 11, 12)

Dashymenia Poppius, 1910: 170 (gen. nov.), type species: *Dashymenia convexicollis* Poppius, 1910 (original designation); Carvalho, 1955: 17 (key to genera), 1957: 27 (catalog); Schuh, 1995: 24 (catalog); Gorczyca, 2000: 47 (list), 2006: 11 (catalog).
Dasymenia: Bergroth, 1920: 69 (unnecessary emendation).

Diagnosis. Body elongate oval to suboval (Yasunaga & Miyamoto, 2006: figs. 1A, B, 2D), usually larger than 4.5 mm; dorsum shining, covered with long, dense vestiture (Wolski & Gorczyca, 2012: 5–12, 50, 51, 55, 64, 66, 67); head moderately rugose (Wolski & Gorczyca, 2012: figs. 44, 45); antennal segment I cylindrical along entire length, weakly narrowed basally (Wolski & Gorczyca, 2012: figs. 55, 64, 74); segment II stout (Wolski & Gorczyca, 2014: figs. 5–12), covered with dense vestiture (Wolski & Gorczyca, 2012: figs. 74–75); apex of labium reaching beyond apex of procoxae (Figs. 2, 4, 6; Wolski & Gorczyca, 2014: fig. 51); pronotal calli flattened, weakly defined, sometimes not differing externally from surrounding areas (Figs. 1, 3; Wolski & Gorczyca, 2012: figs. 5–12); scutellum almost flattened or weakly arched, without medial swelling (Figs. 1, 3, 5; Wolski & Gorczyca, 2012: figs. 5–12); metepisternum impunctate (Figs. 2, 4, 6; Wolski & Gorczyca, 2012: figs. 50, 51, 69, 70); ostiolar peritreme characteristically rounded, devoid of microtrichae and shiny (Figs. 2, 6; Wolski & Gorczyca, 2012: fig. 71); endosoma with DSS stout, strongly broadened basally and with fully set of sclerites (Figs. 11, 14, 17: Yasunaga & Miyamoto, 2006: fig. 3J; Wolski & Gorczyca, 2012: figs. 39, 57, 58, 60, 61, 80, 84).

Key to species of *Dashymenia*

1. Body smaller than 3.5 mm; antennal segment I short, shorter than half width of vertex, narrowed basally, strongly broadened toward apex, nearly triangular in outline; sensory lobe of left paramere with a characteristically curved process (Gorczyca & Wolski, 2006: fig 3) ..... *D. kerzhneri* Gorczyca & Wolski

Figs. 20–25. *Dashymenia artchawakomi*. 20–22 & 23 (left). Male adult; 23 (right) & 24, Final (5th) instar nymph; 25, Fourth instar nymph.

– Body larger than 3.5 mm; antennal segment I longer than half width of vertex, usually cylindrical or slightly narrowed basally (Figs. 2, 3, 5; Wolski & Gorczyca, 2012: fig. 74); sensory lobe of left paramere usually flattened or weakly convex.....2

2. Scutellum entirely dark brown to black (Figs. 1, 3, 5: Wolski & Gorczyca, 2012: fig. 7).....3
– Scutellum with a more or less developed, yellowish or orange tinge apically (Wolski & Gorczyca, 2012: figs. 5, 6, 10–12) 8

3. Labium extending to procoxae (Fig. 4); endosomal AES situated at apex of endosoma, PES characteristically bifurcated apically (Fig. 14).....*D. capillosa* (Yasunaga) n. comb**.**
– Labium extending to mesocoxae (Figs. 2, 6); endosoma with AES and PES of different shape (Figs. 11, 17; Yasunaga & Miyamoto, 2006: 3J).....4

4. Antennal segment II fuscous or yellow with a brown annulation basally (Poppius, 1914; Yasunaga & Miyamoto, 2006: fig. 2D); endosoma as depicted by Yasunaga & Miyamoto (2006: fig. 3J) (unknown in *D. macgillavryi*) 5
– Antennal segment II with numerous, sometimes indistinct brown spots (Wolski & Gorczyca, 2012: fig. 7); endosomal segment PES crescent–like, curved and pointed apically (Figs. 11, 17; Wolski & Gorczyca, 2012: fig. 39).....6

5. Antennal segment II yellow with a brown annulation basally; antennal segment IV yellow with brownish black annulations basally and apically.....*D. macgillavryi* Poppius
– Antennal segments II and IV fuscous ..... *D. yakushima* (Yasunaga & Miyamoto) n. comb.

6. Antennal segment II contrastingly yellow with distinct brown spots (Wolski & Gorczyca, 2012: fig. 7); endosoma with DSS short, not reaching middle of endosoma; AES nearly parallel–sided (Wolski & Gorczyca, 2012: fig. 39)..... *D. conspersa* Wolski & Gorczyca
– Antennal segment II brown to dark brown with indistinct brown spots (Fig. 5); endosoma with DSS reaching apex of endosoma; AES narrowed on basal one third and strongly broadened, somewhat rounded apical two thirds (Figs. 11, 17).....7

7. Endosoma with MES indistinct, occupying apical half of endosoma; left lateral margin of PES with a sharp process subapically ....*D. gorczycai* Wolski & Yasunaga, new species
– Endosoma with MES strongly enlarged, occupying entire surface of endosoma; PES with a left lateral margin sinuate, without process subapically (Fig. 11) ....*D. artchawakomi* Wolski & Yasunaga, new species

8. Pronotum orange with a broad, black patch along midline of posterior lobe and with a broad, orange transverse stripe on corium apically; scutellum entirely orange ....*D. croesus* (Distant)
– Pronotum dark brown to blackish, only with a yellowish or orange tinge laterally, if pronotum entirely blackish, then dorsum blackish with a contrasting orange patch on scutellum and hemelytron apically; hemelytron entirely dark brown or with a relatively narrow, orange patch on corium apically..9

9. Head entirely dark brown ..... *D. remus* (Distant)
– Head varying from yellow, sometimes with brownish tinges to red or brown (Wolski & Gorczyca, 2012: figs. 5, 6, 9–12) 10

10. Antennal segment I uniformly reddish or dark red (Wolski & Gorczyca, 2012: figs. 10, 11); DSS long, straight, and sharply pointed (*D. tenmalai*) (Wolski & Gorczyca, 2012: fig. 80) 11
– Antennal segment I yellowish, with reddish rings: one situated beyond base and the other at apex (Wolski & Gorczyca, 2012: figs. 5–6, 12), if reddish rings absent, then yellow stripes at sides of pronotum well developed (Wolski & Gorczyca, 2012: fig. 9); DSS more or less curved, not sharply pointed (Figs. 57, 60, 84) 12

11. Scutellum orange, with a distinct dark brown patch medially, originating from base (Wolski & Gorczyca, 2012: figs. 10, 11).....*D. tenmalai* Wolski & Gorczyca
– Scutellum black brown basally, yellowish red apically..... .....*D. convexicollis* Poppius

12. Antennal segment I entirely yellow without reddish annulations; yellow stripes at sides of pronotum well developed, occupying nearly one third of surface (Wolski & Gorczyca, 2012: fig. 9).....*D. kotejai* Wolski & Gorczyca
– Antennal segment I yellowish, with reddish rings: one situated beyond base and the other at apex (Wolski & Gorczyca, 2012: figs. 5, 6, 12); yellow stripes at sides of pronotum narrower, hardly visible in dorsal view (Wolski & Gorczyca, 2012: figs. 5, 6, 12) 13

13. Lateral yellow stripe on pronotum narrow, not visible in dorsal view (Wolski & Gorczyca, 2012: fig. 12); MES and PES almost straight and relatively small (Wolski & Gorczyca, 2012: fig. 84).....*D. webbi* Wolski & Gorczyca
– Lateral yellow stripe on pronotum broader, distinctly visible in dorsal view (Wolski & Gorczyca, 2012: figs. 5, 6); MES strongly curved, sharply pointed apically; PES composed of two sclerites: one large and hook-shaped and the other strongly narrowed toward apex (Wolski & Gorczyca, 2012: figs. 57, 60).....14

14. PES with smaller sclerite obtuse and large hook-shaped sclerite without swelling posteriorly (Wolski & Gorczyca, 2012: figs. 60, 61).....*D. colubrina* Wolski & Gorczyca
– PES with smaller sclerite sharply pointed, hook-shaped sclerite with a swelling posteriorly (Wolski & Gorczyca, 2012: figs. 57, 58).....*D. cognata* Wolski & Gorczyca

Dashymenia artchawakomi Wolski & Yasunaga, new species

(Figs. 1, 2, 11–13, 20–25)

Diagnosis. Recognised by the following set of characters: antennal segment II brown, with an indistinct brown spots; segment IV yellow, with a relatively broad annulations situated basally and apically; endosoma as presented below and depicted on Fig. 11.

Most similar to *D. conspersa* and *D. gorczycai* in sharing antennal segment II with a brown spots along entire length and endosoma with similar shape of the MES.

Description. *Male*. **COLORATION** (Figs. 1, 2, 20–23). Mostly black. ***Head***. Vertex, frons, gula, basal half of mandibular plate, and posterior half of buccula dark yellow, apical half of mandibular plate, clypeus and anterior half dark brown; antennal segment dark yellow, with a yellow

annulation basally, blackish annulation beneath base and dark brown annulation apically; segment II with basal two thirds dark brown with indistinct, blackish spots, apical one third blackish; segments III and IV blackish, segment IV with a broad, yellow annulation medially; labium mostly blackish, except for weakly paler, dark brown segment I. ***Thorax***. Pronotum, scutellum, mesoscutum, thoracic pleura, hemelytron, and abdomen black; apex of corium with a dirty yellow, round, relatively small patch apically. *Legs*. Coxae dark brown; femora dark brown with dirty yellowish and reddish tinges; tibiae fuscous with a indistinct, narrow, dirty yellow annulation apically; tarsi fuscous. **STRUCTURE, TEXTURE, AND VESTITURE** (Figs. 1–2, 20–23). Dorsum covered with dense, relatively dense, semirecumbent setae. ***Head***. Covered with irregularly distributed, dense, long setae; vertex with two shallow tubercles, each contiguous with an occipital carina and inner margin of each eye; antennal segment I covered with sparse, thick, semirecumbent setae; antennal segment weakly broadened toward apex, mixed with dense, semirecumbent, relatively long setae and with sparse, protruding, thick setae; segments III and IV about two times thinner than segment II, covered with long, protruding, thick, bristlelike setae; labium extending to metacoxae. ***Thorax***. *Mesoscutum and scutellum*. Arched. *Legs*. Tarsi bisegmented; tarsomere II subdivided medially; pretarsal claw without a subapical tooth.

Male genitalia. *Aedeagus* (Fig. 11). Endosoma weakly membranous; DSS long, almost reaching endosoma apically, weakly broadened apically, strongly sinuate at apical half, relatively thin; AES relatively small, occupying basal one fourth of endosoma, nearly triangular at basal two thirds, nearly semicircular on apical one third; MES strongly enlarged, occupying entire surface of endosoma, nearly cylindrical at basal half, strongly broadened on apical half; PES relatively large, occupying more than basal half of endosoma, nearly ellipsoidal on basal two thirds, apical one third serrate, except for smooth extreme apex, weakly curving, strongly tapering and sharply pointed. *Left paramere* (Fig. 12). Apical process weakly tapering toward apex; paramere body relatively thin, not strongly thicker than apical process basally; sensory lobe weakly convex. *Right paramere* (Fig. 13). Curved along entire length, nearly crescent–like; paramere body weakly tapering toward apex, right lateral margin with a weak swelling basally.

Measurements (paratype female/holotype)**.** *Body*. Length 5.3/5.1, width 2.4/2.65. *Head*. Length 0.35/0.25, width 1.3/1.35, interocular distance 0.6/0.65. *Antenna*. Length of segment I 0.53/0.5, II 1.75/1.4, III 0.7/0.7, IV 0.9/1.0. *Labium*. Length of segment I 0.45/0.53, II 0.5/0.55, III 0.38, IV 0.18. *Pronotum*. Length 1.4/1.6, width of anterior margin 1.15/1.1, length of lateral margin 1.25/1.35, width of posterior margin 2.38/2.35.

Etymology. Named after Taksin Artchawakom, director of SERS, who positively supported our research activities in Thailand.

Biology. More than 30 late instar immatures were found on a pile of fungous rotten logs in a dry tropical forest during rainy season. Some of these nymphs were successfully reared on fungi and developed into adults after a few days. Our observations suggest that this species is mycophagous (Figs. 22–25).

Distribution. Thailand (Nakhon Ratchasima).

Type material. Holotype male: Thailand: Nakhon Ratchasima: Sakaerat Silvicultural Research Station [N14°27'49.1" E101°52'15.3"], coll. A. Wolski & T. Yasunaga, 25 September 2013 (DOA). Paratypes: 3 males and 1 females: same data as holotype (USNM & TYCN). All available type materials were late-instar nymphs when captured, and emerged after a few days.

Dashymenia capillosa (Yasunaga, 2000), new combination

(Figs. 3, 4, 14–16)

Bothriomiris capillosus Yasunaga, 2000: 185, 203, Figs. 80, 81 (new species); Gorczyca, 2006: 10 (catalog); Yasunaga & Miyamoto, 2006: 722–723, Figs. 1A, B, 2A, F, 3A–C, 4A, B (diagnosis, male genitalia); Wolski & Gorczyca, 2012: 3, 8–9 (checklist, key to species of *Bothriomiris*, diagnosis).

Diagnosis. Recognised by the following set of characters: antennal segment II dark brown (Fig. 3); scutellum blackish (Fig. 3); endosoma as described below and depicted in Fig. 14.

Most similar to *D. yakushima* in sharing a similar body coloration but this species has the shorter labium and differently shaped male genitalia.

Male genitalia (Figs. 14–16). *Aedeagus* (Fig. 14). Endosoma with AES long, mostly cylindrical, thin and arched slightly broadened and pointed apically; AES situated at apical half of endosoma, relatively broad, cylindrical on apical half, gradually becoming narrower toward apex; MES weakly curved along entire length, situated on basal half of endosoma, nearly ellipsoidal on basal two thirds, thin and cylindrical on apical one third; PES occupying most of basal part of endosoma, basal half nearly triangular, apical half bifurcate, with two sharply pointed branches. *Left paramere* (Fig. 15). Apical process weakly curved with a dorsal margin arcuate and ventral margin sinuate; paramere body relatively broad; sensory lobe weakly convex. *Right paramere* (Fig. 16). Slender; apical process shortened, sharply pointed; paramere body with lateral margins sinuate.

Distribution. Japan (Ishigaki Island), Thailand (Nakhon Ratchasima) (new distributional record).

Dashymenia gorczycai Wolski & Yasunaga, new species

(Figs. 5, 6, 17–19)

Diagnosis. Recognised by the following set of features: antennal segment II with indistinct brown patches; scutellum blackish; endosoma as presented below.

Most similar to *D. conspersa* and *D. gorczycai* in sharing similar coloration of antennal segment II, with brown spots along entire length, and the similar shape of the endosomal MES. This new species can, however, be distinguished by the shape of endosomal sclerites. From *D. conspersa* it can be also distinguished by darker, dark yellow segment II (Fig. 5), whereas *D. conspersa* has segment II contrastingly yellow (Wolski & Gorczyca, 2012: fig. 7).

Description. Male. **COLORATION** (Figs. 5, 6). Dorsum blackish to dark brown, with dirty yellow areas. ***Head***. Dirty yellowish; antennal segment I mostly dirty yellowish, with paler, yellow one fourth and a narrow, brown annulation beyond base; segment II dark yellow with relatively large, blackish patches along entire length, apex with a narrow, blackish annulation; labium blackish yellow. ***Thorax***. *Pronotum*. Blackish. *Scutellum*. Blackish, with a weakly paler, dark brown apex. *Thoracic pleura*. Blackish; evaporative areas fuscous; peritreme dark brown; hemelytron dark brown with a contrastingly yellow patch on apical portion of endocorium and inner angle of cuneus; membrane fuscous. **STRUCTURE, TEXTURE, AND VESTITURE** (Figs. 5, 6). Body elongate oval; dorsum covered with long, semirecumbent setae. ***Head***. Covered with long, erect and semirecumbent setae, weakly rugose; antennal segment I gradually becoming wider toward apex, covered with relatively sparse, almost recumbent setae, except for glabrous basal one fourth; segment II weakly broadened toward apex, covered with dense, semirecumbent setae and with a few stiff, protruding, bristle–like setae. ***Thorax***. *Pronotum*. Calli indistinct. *Scutellum*. Entirely punctate, moderately arched. *Hemelytron*. Membrane with a major cell rectangular, minor cell triangular.

Male genitalia. *Aedeagus* (Fig. 17). Endosoma strongly membranous; DSS long, reaching apex of endosoma, nearly cylindrical, strongly sinuate along entire length; MES situated apicolaterally, relatively small, shorter than half of endosoma, nearly rounded on basal two thirds, strongly tapering, pointed on apical one third; PES relatively large, occupying more than basal half of endosoma, relatively broad and stout, right lateral margin arcuate, left lateral margin somewhat sinuate, with a relatively large, pointed process subapically, apex of PES serrate, except for smooth extreme apex, strongly tapering and pointed. *Left paramere* (Fig. 18). Apical process only slightly arcuate, weakly narrowed apically; paramere body relatively thin, not strongly thicker than apical process; sensory lobe convex. *Right paramere* (Fig. 19). Apical half bottle-shaped, basal half nearly cylindrical, weakly narrowed basally.

Measurements. *Body*. Length 5.6, width 2.5. *Head*. Length 0.73, width 1.4, interocular distance 0.7. *Antenna*. Length of segment I 0.55, II 1.78, III and IV missing in the examined specimen. *Labium*. Length of segment I 0.55, II 0.6, III 0.32, IV 0.35. *Pronotum*. Length 1.55, width of anterior margin 1.05, length of lateral margin 1.4, width of posterior margin 2.4.

Etymology. Named after our colleague and cylapine expert, Jacek Gorczyca.

Biology. Unknown.

Distribution. Thailand (Satun).

Type material. Holotype male: THAILAND: Satun Province, Thale Ban National Park, 6°42'N, 100°10'E, coll. O. Martin, 14–16 December 1991, Zoologisk Musem København (**ZMUC**).

Dashymenia yakushima (Yasunaga & Miyamoto, 2012) new combination

Bothriomiris yakushima Yasunaga & Miyamoto, 2006: 726 (new species, unavailable, due to missing citation of type depository).
Bothriomiris yakushima Yasunaga & Miyamoto, 2012 in Yasunaga et al., 2012: 111 (reinstated as valid species).

Diagnosis. Recognised by the pale brown head, antennal segment I and legs, rather long labium exceeding apex of procoxa, a single thumb-like process on left side of the genital segment, and the weakly curved left paramere with a subapical process. See Yasunaga & Miyamoto (2006) for further diagnostic characters.

Distribution. Japan (Yakushima Island, the well-known World Natural Heritage site).

Specimens examined. 1 male, JAPAN: Kagoshima Pref., Yakushima Is., Ohkawa Timber R'd,, coll. T. Nakata, 8 August 2002 (holotype, NIAES); 1 female, same data (paratype, TYCN).

DISCUSSION

Yasunaga (2000) and Yasunaga & Miyamoto (2006) described four Japanese species of Bothriomirini. Although they recognised that the four species can be subdivided into two morphologically different groups, they included all species in the genus *Bothriomiris*. *Bothriomiris capillosus* and *B. yakushima* are recognised as members of the genus *Dashymenia* and formally transferred to the latter genus in the present study.

Dashymenia can be recognised readily by the following combination of characters: 1) the antennal segment I short and cylindrical (Figs. 2, 5; Wolski & Gorczyca, 2012: figs. 5, 7, 10, 12, 74); 2) the metepisternum polished and shiny, without punctation (Figs. 2, 6; Wolski & Gorczyca, 2012: 69); 3) the ostiolar peritreme convex, devoid of microtrichae, glabrous and shiny (Figs. 2, 6; Wolski & Gorczyca, 2012: 71); and 4) the endosoma with a fully set of strongly developed sclerites (Figs. 11, 14, 17; Wolski & Gorczyca, 2012: figs. 39, 57, 80, 84). In contrast, in *Bothriomiris*, antennal segment I is relatively long, as long as or longer than width of vertex and is constricted at basal one fourth (Wolski & Gorczyca, 2012: figs. 3, 4, 28), the metepisternum is deeply and densely punctate (Wolski & Gorczyca, 2012:

26), the ostiolar peritreme is only weakly convex and entirely covered with the microtrichae (Wolski & Gorczyca, 2012: 27), and the endosoma is simple, usually with only the sclerotized portion of ductus seminis inside the endosoma (DSS) present and devoid of other sclerites (Figs. 7, 10; Wolski & Gorczyca, 2012: 36). All features presented above for *Dashymenia* are clearly found in *Bothriomiris capillosus* and *B. yakushima* and, therefore, we transfer both species to the genus *Dashymenia*.

Nevertheless, the habitat preferences are very similar for *Bothriomiris* and *Dashymenia* species; both adults and immatures usually inhabit fungal rotten logs in humid forests as observed by Yasunaga (2000). All Japanese bothriomirine species of these genera (and also two Thai species) are found only in well–preserved forests, and, therefore, are regarded as good bioindicators for evaluating the quality of natural environments.

ACKNOWLEDGEMENTS

We thank Thomas J. Henry (USNM) and the late Nils Møller Andersen (ZMUC) for kind offering material used in this study. We are also much indebted to Taksin Archawakom (director of SERS: Sakaerat Environmental Research Station, Nakhon Ratchasima, Thailand) who kindly supported our field investigations. Thanks are extended to Michael D. Schwartz (Agriculture and Agri-Food Canada, Ottawa), Dávid Rédei (Nankai University, Tianjin, China), and Thomas J. Henry (USNM) for reviewing the manuscript and providing many valuable comments and suggestions.

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