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Research article

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Delimiting *Cantheconidea* Schouteden 1907, with the description of a new genus (Heteroptera: Pentatomidae: Asopinae)

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Abstract. Among the 44 genera of predatory stink bugs (Asopinae) described for the Old World, there is a notable lack of recent studies. In this research, we aim to fill this gap by investigating the taxonomic history and morphology of species of *Cantheconidea*. As results, we present the redescription of the genus and validate three species: *C. humeralis*, *C. javana* and *C. mitis* comb. nov. A lectotype for *C. mitis* is designated and comments on the type material are given. Additionally, we transfer four species from *Cantheconidea* to the genus *Eocanthecona*: *E. acuta* comb. nov., *E. variabilis* comb. nov., *E. gaugleri* comb. nov. and *E. insularis* comb. nov. To accommodate the unique characteristics of *Cantheconidea cyanacantha*, we describe a new genus, *Cantheconesia* Brugnera & Roca-Cusachs gen. nov., and transfer the species, resulting in *Cantheconesia cyanacantha* gen. et comb. nov. Our study provides detailed redescriptions of species and accompanying images to support taxonomic decisions and presents new distribution records.

Keywords. Oriental, Heteroptera, predatory stink bugs, shield bugs.

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Introduction

Known as predatory stink bugs, the Asopinae is a group of Pentatomidae which comprises about 300 species and 63 genera (Thomas 1992, 1994; Roca-Cusachs *et al.* 2019; Roell *et al.* 2021). This subfamily can be recognized by the subquadrate shape of the head, the robust labium adapted for predatory behaviour, the presence of a pair of pseudoclaspers associated with parameres in the male pygophore, and the phallus composed of a basal theca and thecal shield (Gapud 1991; Thomas 1992; Rider *et al.* 2018; Roell *et al.* 2020).

Among the 44 genera previously described for the Old World (Thomas 1994; Roca-Cusachs *et al.* 2019), *Cantheconidea* Schouteden, 1907 and *Eocanthecona* Bergroth, 1915 are two oriental genera with a connected taxonomic history. These genera share several taxonomic modifications, with species jumping from one genus to another depending on the researcher's interpretation of characters (e.g., Schouteden 1907; Bergroth 1915; Thomas 1994).

Originally, *Cantheconidea* was subdivided in two species groups: A, containing the type species *Cantheconidea javana* (Dallas, 1851), with the metasternum modified to embrace the rostrum, and B, containing species without this modification (Schouteden 1907). Later, Bergroth (1915) formally proposed *Eocanthecona* for species group B. However, other than Bergroth's designation of *Eocanthecona furcellata* (Wolff, 1811) as the type species of *Eocanthecona* and Schouteden's selection of *C. javana* as the type of *Cantheconidea*, neither author indicated which species of *Cantheconidea* constituted group B, and which would therefore be transferred to *Eocanthecona*. Thomas (1994) later transferred fourteen species from *Cantheconidea* to *Eocanthecona*, resulting in six species in *Cantheconidea*, and 21 in *Eocanthecona*. The author also proposed a diagnosis for both genera, which can be distinguished mainly by the presence of a modification on the metasternum (bicarinate and mesially sulcate) of *Cantheconidea*, which is absent in *Eocanthecona* (Thomas 1994). Despite this, he was not able to study the type specimens of many of the species, and on the other hand, many of the non-type material he studied, he could not “vouch for the reliability of all species determinations in the absence of a revisionary study” (Thomas 1994). Additionally, Gapud (2015) and more recently Roca-Cusachs *et al.* (2018) stated that most of the species of Asopinae in the oriental region, due to their predacious and solitary habits, have been difficult to collect, and *Cantheconidea* and some species of *Eocanthecona* are no exception. There are not many specimens in entomological collections, and therefore few specimens are available for comparison.

As an initiative to contribute to the taxonomic delimitation of *Cantheconidea*, we undertook a comprehensive investigation of type-material and historical data, as well as the examination of specimens. In this study, we present the redescriptions of *C. javana* and *C. humeralis* (Distant, 1908), and the description of a new genus for *C. cyanacantha* Stål. Additionally, we propose the transfer of *C. acuta* (Vollenhoven, 1868) and *C. variabilis* (Vollenhoven, 1868) to the genus *Eocanthecona*. To support our findings, we provide images of the studied species, along with newly obtained distribution records.

Material and methods

Specimens were observed and measured under a light stereo microscope. Measurements [mean ± standard deviation (minimum-maximum)] are in millimeters. For genitalia preparation, the pygophore and female abdomen were extracted and macerated in 10% KOH at 70°C for 5 minutes, cleaned with distilled

water, and agglomerate connective tissues were removed manually using entomological pins. General terminology follows Thomas (1992, 1994), genitalic structures follow Baker (1931), Dupuis (1970), Schaefer (1977), Gapon & Konstantinov (2006), Kment & Vilímová (2010) and Roell *et al.* (2020) for the external scent efferent system. Labels of examined specimens were interpreted in verbatim.

Institutional abbreviations

AM	= Australian Museum, Sydney, Australia
ANIC	= Australian National Insect Collection, Canberra, Australia
NHMUK	= The Natural History Museum, London, UK
NHRS	= Naturhistoriska Riksmuseet, Stockholm, Sweden
QM	= Queensland Museum, Brisbane, Australia
RMNH	= Naturalis Biodiversity Center, Leiden, Netherlands
UFRG	= Universidade Federal do Rio Grande do Sul, Departamento de Zoologia, Brazil

Non-type specimens were photographed at the Universidade Federal do Rio Grande do Sul, Brazil, using a Nikon AZ100M microscope coupled with a DS-Fi2 digital camera. The specimens were photographed in multiple focal planes, and the resulting images were stacked to create a single focused image using the NIS Elements software. The origin and authorship of the type specimen images are indicated in the figures' legends. For more information about NHMUK specimens, consult Roell *et al.* 2023. The Philippine specimens used in this work deposited in the UFRG collection were donated by an unknown entomologist. Despite the current laws regarding biological samples from the Philippines, the authors decided to use this material since it represents a new and important record for the country.

For some museum images, we measured features using ImageJ (Schneider *et al.* 2012) based on the scale bar supplied. In cases where accurate measurements could not be made these were excluded from final measurements.

The distribution of species was constructed based on Thomas (1994), the examined specimens, and observations from iNaturalist. The records were mapped on QGIS Lisboa software, version 2.18.21. When coordinates were unavailable, localities were georeferenced to the geodetic center of the city based on online global gazetteers.

Results

Taxonomy

Class Insecta Linnaeus, 1758
Order Hemiptera Linnaeus, 1758
Suborder Heteroptera Latreille, 1810
Family Pentatomidae Leach, 1815
Subfamily Asopinae Spinola, 1850

Genus *Cantheconidea* Schouteden, 1907

Cantheconidea Schouteden, 1907: 44.

Cantheconidea – Thomas 1994: 168.

Type species

Canthecona javana Dallas, 1851.

Diagnosis

Anterolateral margins of pronotum pale, crenulated, and sinuous. Anterior angle of pronotum produced. Humeral angles acute and laterally produced. Posterior half of metafemur distinctly darker. Peritreme disc-type, slightly curved anteriorly; metapleural evaporatorium surrounding the peritreme (except in posterior margin), not reaching the lateral margin of pleura; mesopleural evaporatorium reaching lateral margin of pleura. Presence of a pair of metasternal processes holding the apex of labium. Abdominal tubercle short, not reaching the metacoxae. Valvifers 8 as long as wide, left valvifer 8 usually overlapping right valvifer. Internal female genitalia with capsula seminalis ellipsoid, as long as pars intermedialis; inner duct slightly longer and thinner than pars intermedialis; outer duct about 2 × as long as vesicular area; ring sclerites absent; 1 + 1 secondary thickenings of vaginal intima elongated. Anterior opening of pygophore triangular; dorsal rim concave, with 1 + 1 projections; superior layer of ventral rim rectilinear in ventral view, with convexity medially; inferior layer of ventral rim slightly projected; head of paramere half-moon shape, with acute apex, and small projection in lateral view; pseudoclasper reniform, with stried dorsal sculptures. Phallus with thecal shield more than 2 × as long and as wide as basal theca; presence of acute conjunctival processes; vesica grooved medially.

Redescription

COLORATION. Body elongated; brown or dark brown dorsally, frequently with green and purple iridescence; ventrally brown or dark brown, with yellow and unpunctured macula, mainly in thorax; legs pale yellow, except posterior half of the femur, which is usually dark brown and iridescent, especially metafemur.

HEAD. Rectangular; as long as wide or slightly longer than wide; clypeus and mandibular plates subequal. Labium slightly surpasses metacoxae. Antennae five-segmented and pale yellow.

THORAX. Anterolateral angles of pronotum produced; anterolateral margins of pronotum sinuous, serrated, and paler than disc; humeral angles produced and acute, generally with posterior tooth. Basal angles of scutellum foveate, with diameter similar to ocelli; frenal portion of scutellum longer than postfrenal portion, apex of scutellum pale yellow or concolorous, reaching posterior half of fifth segment of abdomen. Peritreme disc-type, slightly curved anteriorly; metapleural evaporatorium surrounding peritreme, not reaching lateral margin of pleura; mesopleural evaporatorium reaching lateral margin of pleura. Metasternum strongly laterally elevated with labium lying between these processes. Presence of profemoral spine.

ABDOMEN. Apex of connexival segments acute and projected posteriorly. Abdominal tubercle short, not reaching metacoxae.

FEMALE GENITALIA. Valvifers 8 as long as wide, left valvifer 8 usually overlapping right valvifer, posterior margins rectilinear; valvifer 9 rectangular; laterotergites 9 longer than wide, rounded apically, aligned with segment X. Internal female genitalia with capsula seminalis ellipsoid, as long as pars intermedialis; distal annular crest laterally projected, placed slightly before base of capsula seminalis; inner duct slightly longer and thinner than pars intermedialis; outer duct about 2 × as long as vesicular area; ring sclerites absent; 1 + 1 secondary thickenings of vaginal intima elongated.

MALE GENITALIA. Pygophore cuplike; anterior opening triangular; dorsal rim concave, with 1 + 1 projections; superior layer of ventral rim rectilinear in ventral view, with convexity medially; inferior layer of ventral rim slightly projected; head of paramere half-moon shape, with acute apex, and small projection in lateral view; pseudoclasper reniform, with stried dorsal sculptures. Phallus with thecal shield distinctly longer and wider than basal theca; presence of sclerotized and acute conjunctival processes; vesica grooved medially.

Remarks

A pair of metasternal processes which the labium lies between is one of the diagnostic features for the genus. However, a similar condition is also found in *Ealda* Walker, 1867, *Parealda* Schouteden, 1907, *Montrouzierellus* Kirkaldy, 1908, *Australojalla* Thomas, 1994 and *Cantheconesia* Brugnera & Rocacuschs gen. nov. Currently, *Cantheconidea* are recognized by a combination of characters, including: armed profemora, crenulate anterolateral pronotal margin, lateral metasternal margins raised, produced humeri, basal abdominal spine present.

***Cantheconidea humeralis* (Distant, 1908)**

Figs 1a–c, 2, 9b, 10

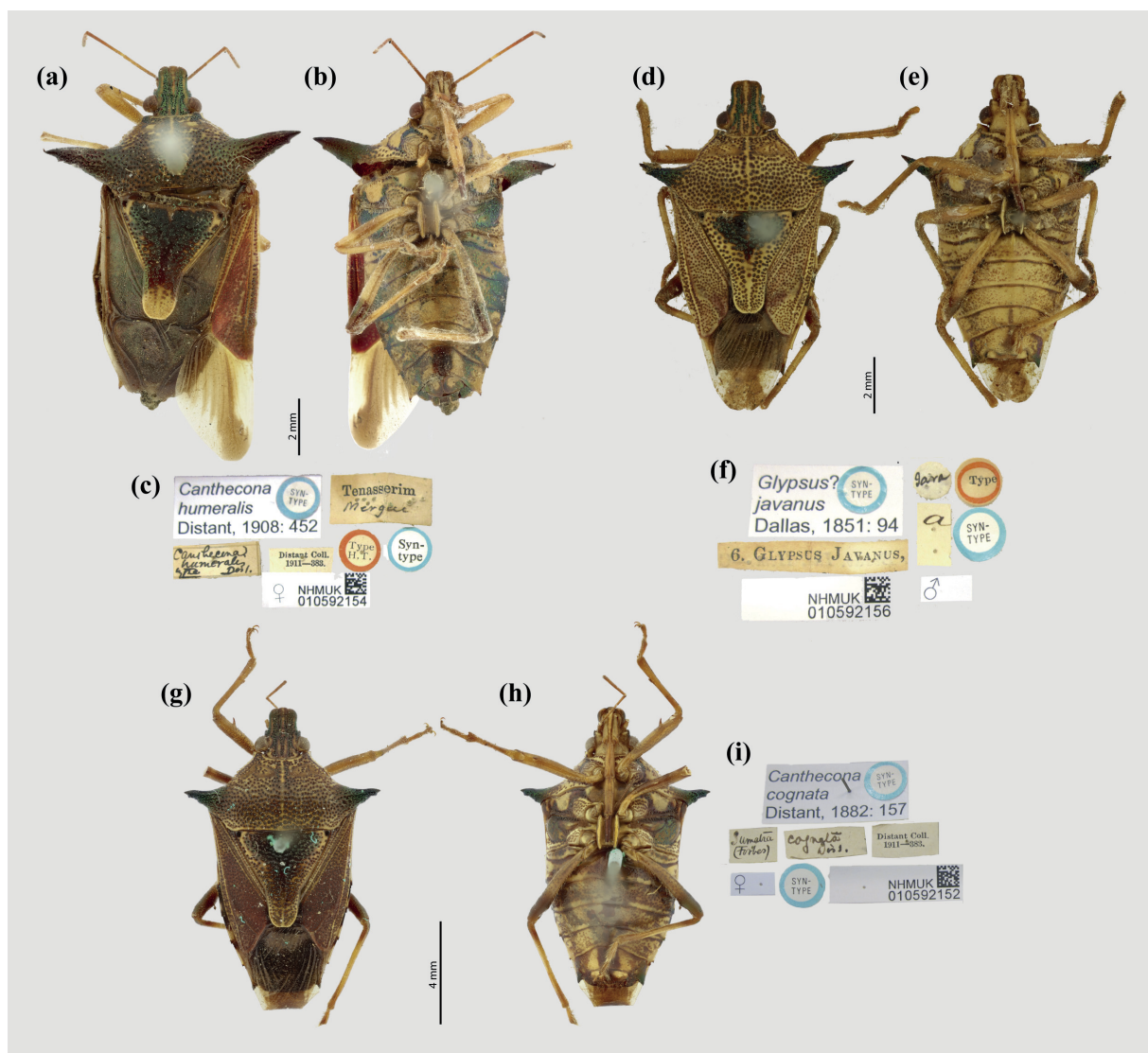


Fig. 1. Type specimens of *Cantheconidea* Schouteden, 1907 in ventral and dorsal view, with their respective labels. **a–c.** *Canthecona humeralis* Distant, 1908, syntype, ♀ (NHMUK010592154). **d–f.** *Glypsus? javanus* Dallas, 1851, syntype, ♂ (NHMUK010592156). **g–i.** *Canthecona cognata* Distant, 1882, syntype, ♀ (NHMUK010592152). Photos: Talita Roell (©2019 Natural History Museum of the United Kingdom).

Canthecona humeralis Distant, 1908: 452.

Cantheconidae [sic] *humeralis* – Kirkaldy 1909: 366.

Cantheconidea humeralis – Hsiao *et al.* 1977: 84. — Thomas 1994: 168.

Canthecona humeralis – Roell *et al.* 2023: 46.

Diagnosis

Dorsal coloration usually dark brown, with iridescent purple and green; the presence of a pair of yellow spots in the anterior pronotum; apex of scutellum is pale yellow.

Type material

Syntype

MYANMAR • 1 ♀; “*Canthecona / humeralis* / Distant. 1908: 452 / SYNTYPE // Tenasserim / Mergue // TYPE / H. T. // SYNTYPE // *Canthecona / humeralis* / Type [?] Dist. // Distant Coll. / 1911–383 // ♀ / NHMUK / 010592154”; NHMUK; NHMUK 010592154 (Fig. 1a–c).

Other material examined

LAOS • 1 ♀; “Haut Mékong. / Nam Ngun // 12 May 1918. / R. V. de Salvaza leg. // Brit. Mus. / 1922-112 // NHMUK / 010935730”; NHMUK; NHMUK 010935730 (Fig. 2a–e).

Records retrieved from iNaturalist

CHINA • Guangxi, Chongzuo; 22.440° N, 107.02° E; 20 Nov. 2022; inaturalist.org/observations/149974944 • Yunnan, Pu'er; 22.573° N, 101.87° E; 23 Jul. 2022; inaturalist.org/observations/137739770 • Yunnan, Xishuangbanna Dai; 21.920° N, 101.28° E; 25 Jun. 2020; inaturalist.org/observations/129387335 • Yunnan, Xishuangbanna Dai; 21.976° N, 101.16° E; 15 Aug. 2022; inaturalist.org/observations/132555614.

THAILAND • Chiang Mai, Chiang Dao; 19.385° N, 98.842° E; 14 Oct. 2018; inaturalist.org/observations/20268883 • Phetchabun, Khao Kho; 16.570° N, 100.89° E; 23 Oct. 2023;

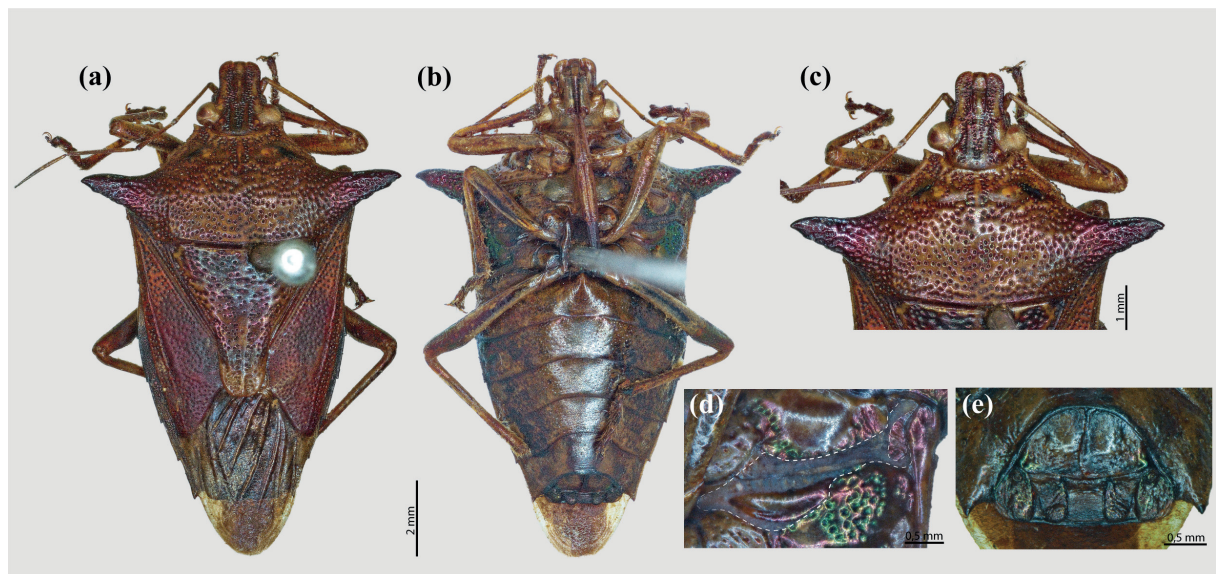


Fig. 2. *Cantheconidea humeralis* Distant, 1908, ♀ (NHMUK 010935730). **a.** Dorsal view. **b.** Ventral view. **c.** Detail of head. **d.** External scent efferent system (dashed line surrounding the evaporatorium). **e.** Genitalia.

inaturalist.org/observations/20268801 • Phetchaburi, Kaeng Krachan; 12.804° N, 99.442° E; 2 Jan. 2023;
inaturalist.org/observations/148179861 • Nakhon Si Thammarat, Ron Phi Pun; 8.2406° N, 99.8056° E;
11 Apr. 2022; inaturalist.org/observations/111737972.

Redescription

Female

COLORATION. General body coloration brown with iridescent green and purple, densely punctured, mainly on dorsal surface. Presence of pair of pale spots in anterior portion of pronotum; apex of scutellum pale. Legs light brown, with posterior portion of metafemur distinctly darker. Ventral surface and connexivum merged with pale and brown, variable among individuals.

HEAD. As long as wide; mandibular plates and clypeus subequal. Apex of labium reaching metacoxae; fourth labiomere darker than preceding; proportion of labial segments: I < II = III > IV. Antennae brown; proportion of antennal segments: I < II > III < IV > V.

THORAX. Anterolateral margins of pronotum pale, crenulated, and sinuose; humeral angles acute and laterally produced. Scutellum triangular, frenal portion longer than postfrenal portion. Corium longer than scutellum, reaching posterior margin of abdominal segment VI; hemelytral membrane dark brown surpassing apex of abdomen. Peritreme disc-type, slightly curved anteriorly; metapleural evaporatorium surrounding peritreme, not reaching lateral margin of pleura; mesopleural evaporatorium reaching lateral margin of pleura (Fig. 2d); presence of pair of metasternal processes holding apex of labium. Presence of profemoral spine.

ABDOMEN. Apex of connexival segments acute and projected posteriorly. Abdominal tubercle short, not reaching the metacoxae.

FEMALE GENITALIA. Valvifers 8 as long as wide, left valvifer 8 usually overlapping right valvifer, posterior margins rectilinear; valvifer 9 rectangular; laterotergites 9 longer than wide, rounded apically, aligned with the segment X.

MEASUREMENTS. (n=1) Head length: 1.51, width: 1.74; pronotum length: 5.64, width: 2.21; scutellum length: 2.7±0.19 (2.3–2.9), width: 2.45±0.18 (2.4–2.8); antennomere length: I 0.22, II 1.04, III 0.94, IV 1.42, V 1.25; labial segments length: I 0.90, II 1.04, III 1.13, IV 0.59±0.82; abdominal length: 4.75, width: 4.28; total length: 10.10.

Male

Unknown.

Distribution

China, Laos, Myanmar, Thailand (Fig. 10).

Cantheconidea javana (Dallas, 1851)

Figs 1d–i, 3–4, 9a, 10

Glypsus? javanus Dallas, 1851: 94.

Canthecona javana – Vollenhoven 1868: 9. — Kirkaldy 1909: 13. — Breddin 1903: 203. — Schouteden 1907: 45.

Canthecona cognata – Distant 1882: 157. — Breddin 1903: 203. — Kirkaldy 1909: 13.

Cantheconidea javana – Thomas 1994: 168. — Roell *et al.* 2023: 50.

Glypsus? javanus – Roell *et al.* 2023: 50.

Diagnosis

Dorsal coloration usually brown or light brown, with iridescent green; disc of pronotum and apex of scutellum uniformly colored.

Type material

Syntypes

INDONESIA • 1 ♂; “*Glypsus? javanus* / Dallas. 1851: 94 / SYNTYPE // Java // TYPE // a // SYNTYPE // 6. *Glypsus Javanus* // ♂ // NHMUK / 010592156”; NHMUK 010592156 (Fig. 1d–f) • 1 ♀; “*Canthecona cognate* / Distant, 1882: 157 / SYNTYPE // Sumatra / (Forbes) // *cognata* / n1 // Distant Coll. / 1911–383. // ♀ // “SYNTYPE // NHMUK / 0100592152”; NHMUK 0100592152 (Fig. 1g–i).

Other material examined

INDONESIA • 1 ♀ “*Variabilis* Voll. // Timor / (Doherty) // Distant Coll. / 1911–383 // NHMUK / 010935774”; NHMUK 010935774 • 1 ♀; “*Acuta* Voll. // Engano / (Doherty) // Distant Coll. / 1911–383 // NHMUK / 010935714”; NHMUK; NHMUK 010935714 • 2 ♂♂ “F.C. DRESCHER / G. Raoeng / Java Bajokidoel / 450–700 Mr. / Leg. H. Lucht / Nov 1937 // Brit. Mus. / 1938–437 // NHMUK / 10935742/10935746”; NHMUK; NHMUK 10935742/10935746 • 1 ♂, 1 ♀; “F.C. DRESCHER / G. Tangkoeban Prahoe / 4000–5000 Voel / Preanger Java / Oct 1937 // Brit. Mus. / 1938–437 // NHMUK / 010935745/010935733”; NHMUK; NHMUK 010935745/010935733 • 1 ♂, 1 ♀; “Java / Horsfield / 60–15 // 60°15' / E. I. C. // NHMUK / 010935747/010935731”; NHMUK; NHMUK 010935747/010935731 • 3 ♀♀; “Katari / Java / Distant Coll. / 1911–383 // NHMUK / 010935732/010935735/010935740”; NHMUK 010935732/010935735/010935740 • 1 ♂; “S Sulawesi Lokomata / Kantepao / 18 Jul 1998 / J. Weiner // *Cantheconidea* / Det. D.A. Rider 2002”; AM.

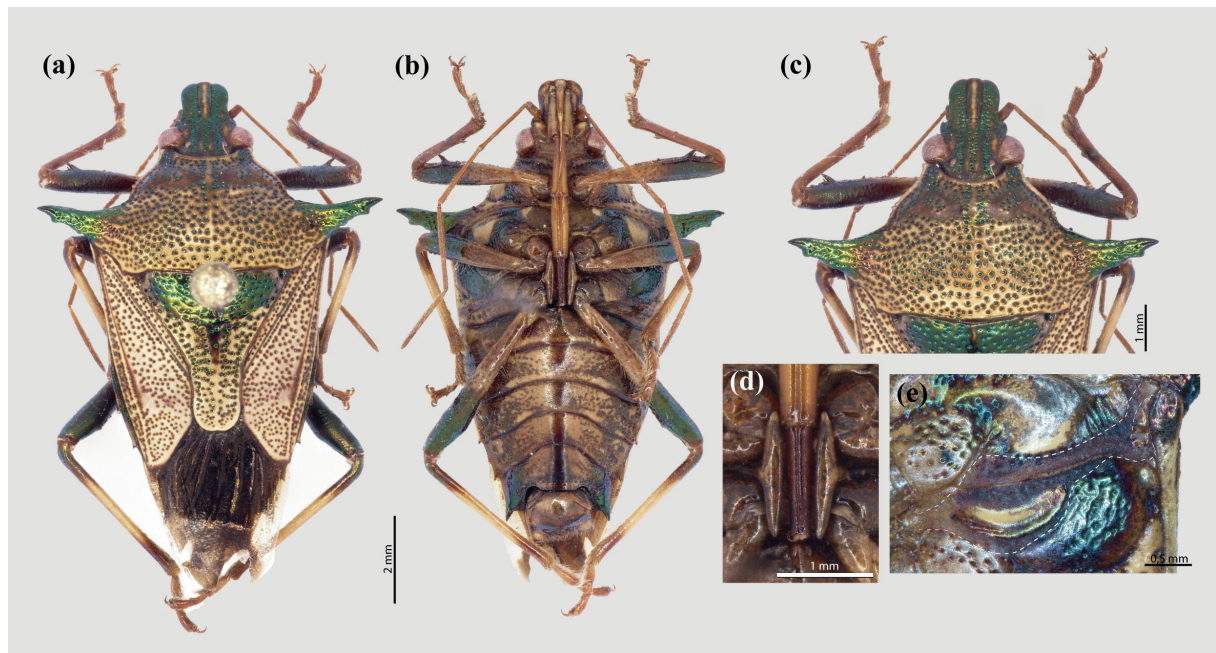


Fig. 3. *Cantheconidea javana* (Dallas, 1851), ♂ (UFRG), from the Philippines. **a.** Dorsal view. **b.** Ventral view. **b.** Detail of head. **d.** Detail of metasternal processes (dashed line surrounding the evaporatorium). **e.** External scent efferent system.

PHILIPPINES • 1 ♀; “Nord Mindanao / Momungan / leg. G. Bottcher / 22 Feb 1915 // Taeuber Coll. B. M. / 1949–474 // NHMUK / 010935739”; NHMUK; NHMUK 010935739 • 1 ♂, 1 ♀; “Philippines / Mindanao / Lanao del Sur / Wao // Sep 2016”; UFRG.

Records retrieved from iNaturalist

INDONESIA • Sumatera Barat, Agam; 0.2662° S, 100.259° E; 16 Jan. 2018; inaturalist.org/observations/53237126 • Jawa Barat, Tasikmalaya; 7.2629° S, 108.09° E; 17 Jan. 2019; inaturalist.org/observations/36872415 • Buleleng, Bali; 8.2806° S, 115.027° E; Jan. 2024; inaturalist.org/observations/199339956.

PHILIPPINES • Negros Oriental, Sibulan; 9.3591° N, 123.180° E; 25 Jul. 2022; inaturalist.org/observations/128948891.

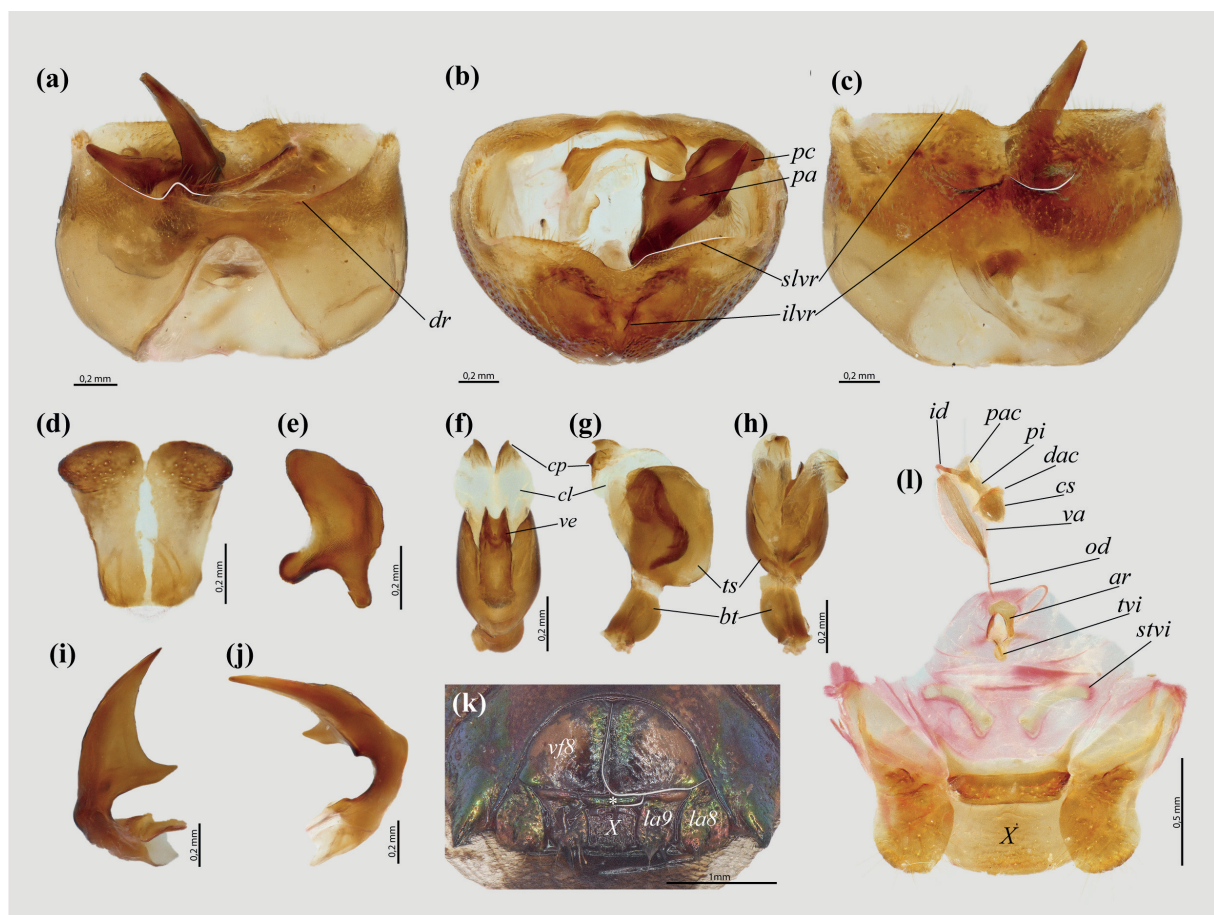


Fig. 4. Male and female genitalia of *Cantheconidea javana* (Dallas, 1851). **a–j.** ♂ (UFRG). **a–c.** Pygophore. **a.** Dorsal view. **b.** Posterior view **c.** Ventral view. **d.** X segment. **e.** Pseudoclasper. **f–h.** Phallus. **f.** Dorsal view. **g.** Lateral view. **h.** Ventral view. **i–j.** Paramere. **k.** External genitalia. **l.** Internal genitalia. Abbreviations: * = valvifer 9; ar = arcus; area; bt = basal theca; cl = conjuntival lobes; cp = conjuntival process; cs = capsula seminalis; dac = distal annular crest; dr = dorsal rim; id = inner duct; ilvr = inferior layer of ventral rim; la8 = laterotergites 8; la9 = laterotergites 9; od = outer duct; pa = paramere; pac = proximal annular crest; pc = pseudoclasper; pi = pars intermedialis; slvr = superior layer of ventral rim; stvi = superior thickening of vaginal intima; ts = thecal shield; tvi = thickening of vaginal intima; va = vesicular; ve = vesica; vf8 = valvifers 8; X = segment X.

MALAYSIA•Sabah,Keningau;5.4433°N,116.45°E;18Jul.2023;inaturalist.org/observations/192708951.

Redescription

COLORATION. General body coloration light brown with iridescent green mainly in dorsal surface of head, humeral angles, anterior portion of scutellum, and posterior portion of femur; dorsal surface densely punctured. Presence of pair of pale spots in anterior portion of pronotum; apex of scutellum pale. Legs light brown, with posterior portion of femur distinctly darker. Ventral surface and connexivum merged with pale and brown, variable among individuals.

HEAD. As long as wide; mandibular plates and clypeus subequal. Apex of labium reaching metacoxae; fourth labiomere darker than preceding; proportion of labial segments: I <= III > IV. Antennae light brown; proportion of antennal segments: I < II > III < IV > V.

THORAX. Anterolateral margins of pronotum pale, crenulated, and sinuose; humeral angles acute and laterally produced. Scutellum triangular, frenal portion longer than postfrenal portion; foveae with similar diameter to ocelli. Corium longer than scutellum, reaching posterior margin of abdominal segment VI; hemelytral membrane dark brown surpassing apex of abdomen. Peritreme disc-type, slightly curved anteriorly; metapleural evaporatorium surrounding peritreme, not reaching lateral margin of pleura; mesopleural evaporatorium reaching lateral margin of pleura (Fig. 3e); presence of pair of metasternal processes holding apex of labium.

ABDOMEN. Apex of connexival segments acute and projected posteriorly. Abdominal tubercle short, not reaching metacoxae.

MALE GENITALIA (Fig. 4). Pygophore cuplike; anterior opening triangular; dorsal rim concave, with 1 + 1 projections; superior layer of ventral rim rectilinear in ventral, with convexity medially; inferior layer of ventral slightly projected; head of paramere half-moon shape, with acute apex, and small projection in lateral view; pseudoclasper reniform, with stried dorsal sculptures. Phallus with thecal shield more than 2 × as long and as wide as basal theca; presence of acute conjunctival processes; vesica grooved medially.

FEMALE GENITALIA (Fig. 4). Valvifers 8 as long as wide, left valvifer 8 usually overlapping right valvifer, posterior margins rectilinear; valvifer 9 rectangular; laterotergites 9 longer than wide, rounded apically, aligned with segment X. Internal female genitalia with capsula seminalis ellipsoid, as long as pars intermedialis; distal annular crest laterally projected, placed slightly before base of capsula seminalis; inner duct slightly longer and thinner than pars intermedialis; outer duct about 2 × as long as vesicular area; ring sclerites absent; 1 + 1 secondary thickenings of vaginal intima elongated.

MEASUREMENTS. (n=4) Head length: 2.12±0.05 (2.07–2.18), width: 2.18±0.05 (2.13–2.24); pronotum length: 2.69±0.04 (2.65–2.73), width: 7.72±0.08 (7.65–7.80); scutellum length: 3.60±0.07 (3.53–3.67), width: 3.70±0.23 (3.47–3.93); antennomere length: I 0.47, II 1.44±0.03 (1.41–1.47), III 1.66±0.07 (1.73–1.59), IV 1.64±0.24 (1.40–1.88), V 1.60±0.07 (1.53–1.67); labial segments length: I 1.09 ± 0.03 (1.07–1.12), II 1.44±0.03 (1.41–1.47), III 1.38±0.02 (1.35–1.40), IV 1.06; abdominal length: 4.91±0.03 (4.88–4.93), width: 4.79±0.21 (4.59–5.00); total length: 10.51±0.16 (10.35–10.67).

Remarks

The exact location of NHMUK 010935774 from Timor Island is not given by the labels. We chose to restrict the distribution of species in Indonesia; however, *C. javana* also probably occurs in Timor-Leste.

Distribution

Indonesia, Philippines (new record), Malaysia (new record) (Fig. 10).

Cantheconidea mitis (Vollenhoven, 1868) comb. nov.
Figs 5c–d, i–j, 10

Canthecona mitis Vollenhoven, 1868: 7.

Platynopus mitis – Walker 1868: 529.

Canthecona mitis – Stål 1870: 229.

Cantheconidea mitis – Kirkaldy 1909: 13.

Eocanthecona mitis – Thomas 1994: 176.

Diagnosis

As specimens have not been examined in person, we have provided a redescription based on photographs for this species. *Cantheconidea mitis* comb. nov. can be differentiated from the two other species of *Cantheconidea* by its smaller and blunt humeri, which lack a clear secondary apex. Color in life: Fig. 5j.

Type material

Lectotype (here designated)

TIMOR • 1 ♀; “Wienec[ke] / Timor // COTYPUS // Museum Leiden / *Cantheconidea* / *mitis* Voll. / Det // RMNH.INS. / 1629595”; RMNH; RMNH 1629595 (Fig. 5c–d).

Paralectotypes (here designated)

TIMOR • 1 ♀; “Wieneck[e] / Timor / 12 // COTYPUS // Museum Leiden / *Cantheconidea* / *mitis* Voll. / Det // RMNH.INS. / 1629594”; RMNH; RMNH 1629594 [*Eocanthecona* cf. *vollenhoveni*, Maynard det. 2024] (Fig. 5a–b). – **Ambon island** • 1 ♀; “Forsten / Amboina // COTYPUS // Museum Leiden / *Cantheconidea* / *mitis* v. Voll. / Det // RMNH.INS. / 1629596”; RMNH; RMNH 1629596 [*Montrouzierellus* nr. *falleni*, Maynard det. 2024] (Fig. 5e–f).

Other material examined

NEW GUINEA • 1 ♀; “N. Guinea / N.E. / Asiki / Feb, 1972”; QM [same species as cotype: RMNH; RMNH.INS.1629596].

TIMOR • 1 ♀; “Wienecke / Timor 5 / Museum Leiden / *Cantheconidea* / *variabilis* Voll. // COTYPUS // RMNH.INS. / 1093149”; RMNH; RMNH 1093149 [cotype of *C. variabilis* (see revisions in progress)]
• 1 ♀; “Wienecke / Timor I // Museum Leiden / *Cantheconidea* / *variabilis* Voll. // COTYPUS // RMNH.INS. / 1093153”; RMNH; RMNH 1093153 [cotype of *C. variabilis* (see revisions in progress)]
• 1 ♂; “Deyr. Timor // Museum Leiden / *Cantheconidea* / *variabilis* Voll. // COTYPUS // RMNH.INS. / 1093156”; RMNH; RMNH 1093156 [cotype of *C. variabilis* (see revisions in progress)] (Fig. 5g–h)
• 1 ♀; “Deyr. Timor // Museum Leiden / *Cantheconidea* / *variabilis* Voll. // COTYPUS // RMNH.INS. / 1092852”; RMNH; RMNH 1092852 [cotype of *C. variabilis* (see revisions in progress)].

Records retrieved from iNaturalist

TIMOR-LESTE • Pulus Ira Spring, Lautém; 8.3739° S, 127.10° E; 3 Apr. 2020; inaturalist.org/observations/42282876 (Fig. 5j).

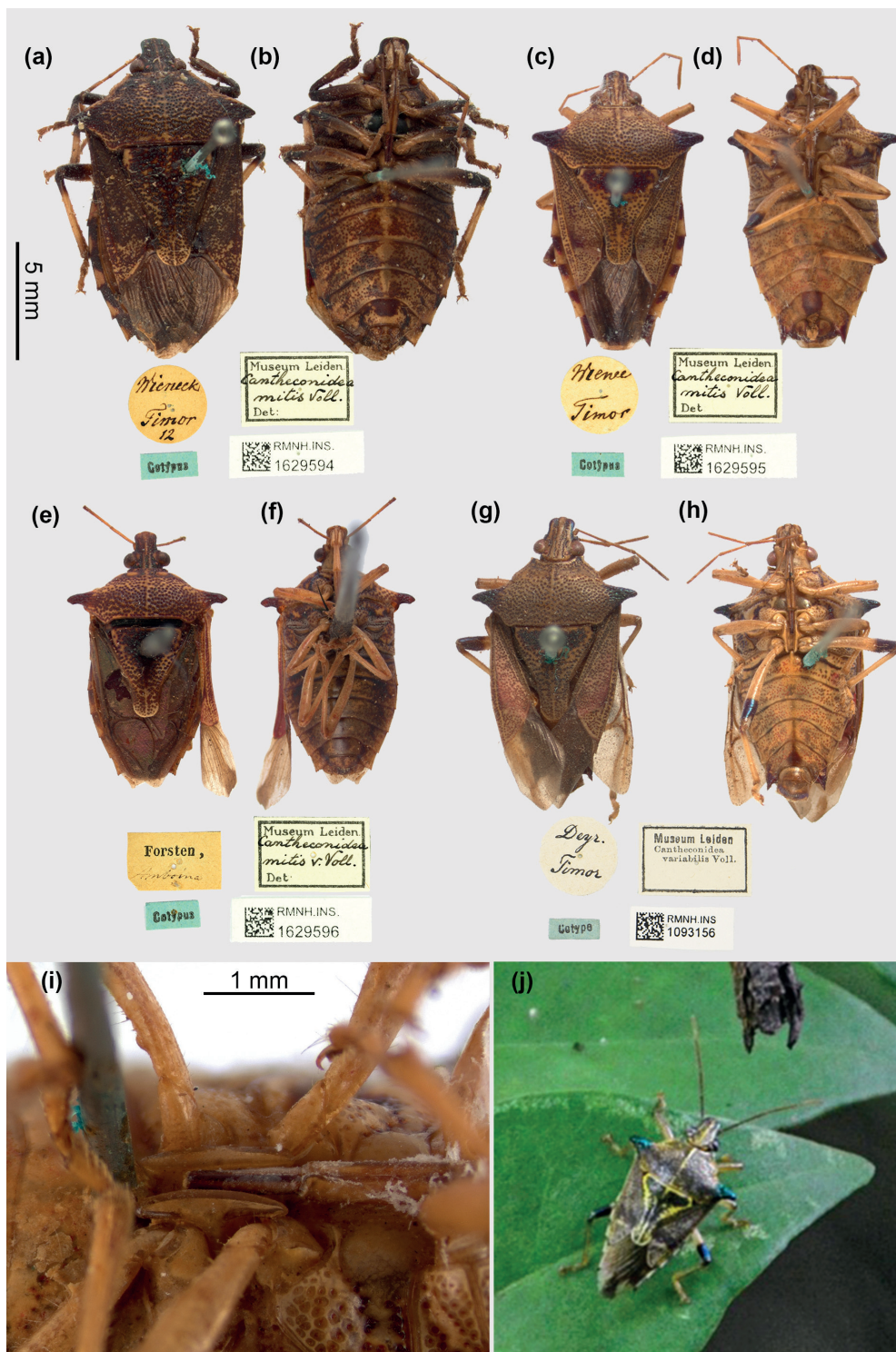


Fig. 5. *Cantheconidea mitis* (Vollenhoven, 1868) comb. nov. **a–b, e–f.** Paralectotypes. **c–d, i.** Lectotype, ♀ (RMNH.INS.1629595). **g–h, j.** Non-types. **a–b.** Paralectotype, ♀ (RMNH.INS.1629594). **e–f.** Paralectotype, ♀ (RMNH.INS.1629596). **g–h.** *Cantheconidea mitis* (Vollenhoven, 1868) comb. nov. (RMNH.INS.1093156; cotype of *Eocanthecona variabilis* (Vollenhoven, 1868) comb. nov., ♂. **j.** Live specimen from Lautém (Timor-Leste). **a, c, e.** Dorsal view. **b, d, f.** Ventral view. **i.** Details of the metasternum. Photos: a–i = ©Charlotte Hartong and Luc Willemse (2023–2024), Naturalis Biodiversity Center; j = ©Jafet Potenzo Lopes (2020).

Redescription

COLORATION. Body dorsal coloration yellow-brown with darker patches on scutellum (transverse dark band in anterior third) and sometimes in posterior third of hemelytral corium. Body ventral coloration lighter than dorsum, yellow to light brown, moderately punctate. Hemelytral membrane smoky, with hyaline spots on outer edges; when wings held together membrane appears dark with two outer hyaline spots. Midline of head, pronotum and scutellum typically with thin, yellow strip (unpunctured, often interrupted in middle of the scutellum or posterior region of pronotum).

HEAD. Mandibular plates and clypeus subequal. Green-blue iridescence on outer edges of mandibular plates, with longitudinal rows of punctures on inner edge of mandibular plates diverging into several single rows of punctures from eyes and extending posteriorly. Antennae 5-segmented, yellow to light-brown; proportion of labial segments: I < II < III < IV > V. Labium 4-segmented: I < II ≈ III > IV. Labium apex reaching between meso- and metacoxae, at rest lying between elevated lateral metasternal processes (Fig. 5i).

THORAX. Anterolateral margins of pronotum crenulated and sinuous. Anterior angle of pronotum slightly produced. Humeri moderately laterally produced, sometimes directed slightly posteriorly, with blunt, single iridescent blue-green apex. Legs yellow to light-brown. Profemora armed with moderately long spine. Protibiae not foliate. Hind femora with posterior blue-green iridescent band which continues onto tibiae near joint.

ABDOMEN. Connexival segments with banded pattern (apical half of each segment with blue-green iridescence patch), this pattern visible ventrally as very narrow patches laterally. Abdominal segments spinose, most prominent on segment VII with blue-green iridescence on these processes dorsally and ventrally. Metathoracic scent gland peritreme curved. Basal abdominal spine on abdominal segment III short (reaches posteriorly to the metacoxae). Abdominal segment VII with central dark spot.

MEASUREMENTS. Based on photographs (n=5): head length: 1.7 ± 0.2 (1.5–1.9), width: 2.2 ± 0.1 (2.1–2.3); anteocular length: 0.9 ± 0.1 (0.8–1); pronotum length: 2.7 ± 0.2 (2.6–3), width: 7.2 ± 0.3 (7–7.6); scutellum length: 4 ± 0.3 (3.8–4.4), width: 3.6 ± 0.2 (3.4–3.8); antennomere length: I 0.4 ± 0 (0.4–0.4), II 1.1 ± 0.1 (1–1.2), III 1.3 ± 0.2 (1.1–1.5), IV 1.6 ± 0.1 (1.5–1.7), V 1.5 ± 0 (1.5–1.5); labial segments length: I 1 ± 0.1 (0.9–1), II 1.3 ± 0.1 (1.2–1.3), III 1.2 ± 0.2 (0.9–1.4), IV 1.1 ± 0.1 (1–1.2); abdominal width: 5.5 ± 0.4 (5.1–5.9); total length: 12.5 ± 0.9 (11.8–13.8).

Distribution

Timor.

Remarks

There are three cotypes for *Canthecona mitis* which represent three species from three different asopine genera. This includes a species of *Cantheconidea* (RMNH.INS.1629595), *Eocanthecona* (cf. *vollenhoveni*: RMNH.INS.1629594; Fig. 5a–b) and *Montrouzierellus* (sp.1 nr. *falleni*: RMNH.INS.1629596; Fig. 5e–f). The illustration and original description by Vollenhoven (1868) mostly align with the specimen of *Cantheconidea* (RMNH.INS.1629595; Fig. 5 c–d). This specimen also clearly fits the current definition of *Cantheconidea*. In contrast, the remaining cotypes lack the diagnostic features of *Cantheconidea*: the *Eocanthecona* cotype, with a flat metasternum (rather than laterally elevated), and the *Montrouzierellus* cotype, with a smooth (rather than crenulate) anterolateral pronotal margin. It is worth noting that the metasternum of the *Montrouzierellus* cotype is obscured by the pin; however, examination of a non-type specimen from New Guinea confirms this morphological species has raised lateral metasternal margins. Additionally, Vollenhoven (1868) refers to both the *Eocanthecona* and

Montrouzierellus cotypes by locality and coloration, as if they represent intraspecific morphological color variants: [translated into English] ‘An individual from Timor is somewhat darker in color and has shaded brown forelegs [RMNH.INS.1629594]; that of Amboina is dotted with reddish-brown and has the edge of the abdomen and the legs concolorous’ [RMNH.INS.1629596]. Together these points lend support that specimen RMNH.INS.1629595 is likely the main cotype that Vollenhoven based his description of *Canthecona mitis* on. We designate cotype RMNH.INS.1629595 as the lectotype of *Cantheconidea mitis* comb. nov. to clarify its identity. The two other cotypes (RMNH.INS.1629594, -96) are no longer considered *C. mitis* and are designated as paralectotypes. Four other specimens of *C. mitis* were identified from photographs of the *C. variabilis* cotypes (reviewed and identified as not belonging to *E. variabilis* in the present study, see *Eocanthecona variabilis* comb. nov. section).

Genus *Eocanthecona* Bergroth, 1915

Eocanthecona gaugleri (Schneider, 1940) comb. nov.

Cantheconidea gaugleri Schneider, 1940: 206 (illustrations and photographs: figs 31, 33–35).

Cantheconidea gaugleri – Thomas 1994: 168.

Type specimen

Lost (see Remarks).

Distribution

Indonesia: Sumatra.

Remarks

In his description of this species, Schneider (1940) provided figures of the dorsal habitus, life cycle, immatures, and prey of the species in a quite complete integrative approach for that time. However, he did not provide ventral characters or a photograph/illustration of the ventral side of the species. In the original publication, Schneider mentioned the Entomologisches Institut der Eidgenössischen Technischen Hochschule, Zürich as the institution where the type of *C. gaugleri* is stored. This institute existed until 1992 and became the Entomological Collection of the Swiss Federal Institute of Technology (ETH). In his original publication, Schneider also described the lepidopteran species *Sura uncaria* (Schneider, 1940), which should also be at ETH.

Interestingly, the type of this species is missing in the ETH collection (Michael Greeff pers. com.). Additionally, old loan forms, reaching back to 1956, have also been consulted with no positive results (Michael Greeff pers. com.). However, it is worth mentioning that in the original publication by Schneider it says the following (translated into English): “Based on a letter from Dr H.C. Blöte, Rijksmuseum Leiden (currently Naturalis), *C. gaugleri* is very similar to *C. acuta* V. Vollenh.” The curator of the Heteroptera section has tried to locate such specimens at the Naturalis collection, as it would have been possible that the type of *C. gaugleri* was on loan to Blöte and never returned to the ETH. Despite his efforts, the specimen was not found at Naturalis either (Max Caspers pers. com.).

Eocanthecona acuta (Vollenhoven, 1868) comb. nov.

Fig. 6a–c, g–h

Canthecona acuta Vollenhoven, 1868: 9.

Cantheconidea acuta – Schouteden 1907: 45. — Kirkaldy 1909: 12. — Thomas 1994: 168.

Type material

Paratype

TIMOR • 1 ♀; “Timor // Mus. / Leyden // *acuta* / Typ. Voll // PARATYPUS // NHRS-GULI / 000027280”; NHRS; NHRS 000027280 (Fig. 6a–c).

Other material examined

TIMOR • 1 ♀; “Wienecke / Timor 5 // Museum Leiden / *Cantheconidea* / *acuta* Voll. / Det // COTYPUS // RMNH.INS / 1093147”; RMNH; RMNH 1093147 (Fig. 6g–h) • 1 ♂; “Wienecke / Timor I // Museum Leiden / *Cantheconidea* / *acuta* Voll. / Det // COTYPUS // RMNH.INS. / 1092854”; RMNH; RMNH 1092854 • 1 ♀; “Wienecke / Timor 5 // Museum Leiden / *Cantheconidea* / *variabilis* Voll. / Det // COTYPUS // RMNH.INS.1092855”; RMNH; RMNH 1092855 – **North Maluku** • 1 ♀; “Bernstein / Noord / Halmaheira // Museum Leiden / *Cantheconidea* / *acuta* Voll. / Det // COTYPUS // RMNH.INS.1092853”; RMNH; RMNH 1092853.

Distribution

Timor, North Maluku.

Eocanthecona variabilis (Vollenhoven, 1868) comb. nov.

Figs 5g–h, 6d–f, i–j

Canthecona variabilis Vollenhoven, 1868: 8.

Cantheconidea variabilis – Schouteden 1907b: 46. — Kirkaldy 1909: 13. — Thomas 1994: 168. — Roell *et al.* 2020: 4.

Type material

Paratype

TIMOR 1 ♀; “Timor // Mus. / Leyden // *variabilis* / Typ. Voll. // PARATYPUS // NHRS-GULI / 000027290”; NHRS; NHRS 000027290 (Fig. 6d–f).

Material examined

TIMOR • 1 ♀; “Wienecke / Timor // Museum Leiden / *Cantheconidea* / *variabilis* Voll. // COTYPUS // RMNH.INS / 1093148”; RMNH; RMNH 1093148 (Fig. 6i–j) • 1 ♀; “Wienecke / Timor 5 // Museum Leiden / *Cantheconidea* / *variabilis* Voll. // COTYPUS // RMNH.INS / 1093149”; RMNH; RMNH 1093149 • 1 ♂; “Wienecke / Timor // Museum Leiden / *Cantheconidea* / *variabilis* Voll. // COTYPUS // RMNH.INS / 1093150”; RMNH; RMNH 1093150 • 1 ♀; “Wienecke / Timor 5 // Museum Leiden / *Cantheconidea* / *variabilis* Voll. // COTYPUS // RMNH.INS / 1093151”; RMNH; RMNH 1093151 • 1 ♀; “Wienecke / Timor // Museum Leiden / *Cantheconidea* / *variabilis* Voll. // COTYPUS // RMNH.INS / 1093152”; RMNH; RMNH 1093152 • 1 ♀; “Wienecke / Timor I // Museum Leiden / *Cantheconidea* / *variabilis* Voll. // COTYPUS // RMNH.INS / 1093153”; RMNH; RMNH 1093153 • 1 ♂; “Wienecke / Timor I // Museum Leiden / *Cantheconidea* / *variabilis* Voll. // COTYPUS // RMNH.INS / 1093154”; RMNH; RMNH 1093154 • 1 ♀; “Wienecke / Timor I // Museum Leiden / *Cantheconidea* / *variabilis* Voll. // COTYPUS // RMNH.INS / 1093155”; RMNH; RMNH 1093155 • 1 ♂; “Deyr. / Timor // Museum Leiden / *Cantheconidea* / *variabilis* Voll. // COTYPUS // RMNH.INS / 1093156”; RMNH; RMNH 1093156 (Fig. 5g–h) • 1 ♀; “Deyr. / Timor. // Museum Leiden / *Cantheconidea* / *variabilis* Voll. // COTYPUS // RMNH.INS / 1092852”; RMNH; RMNH 1092852.

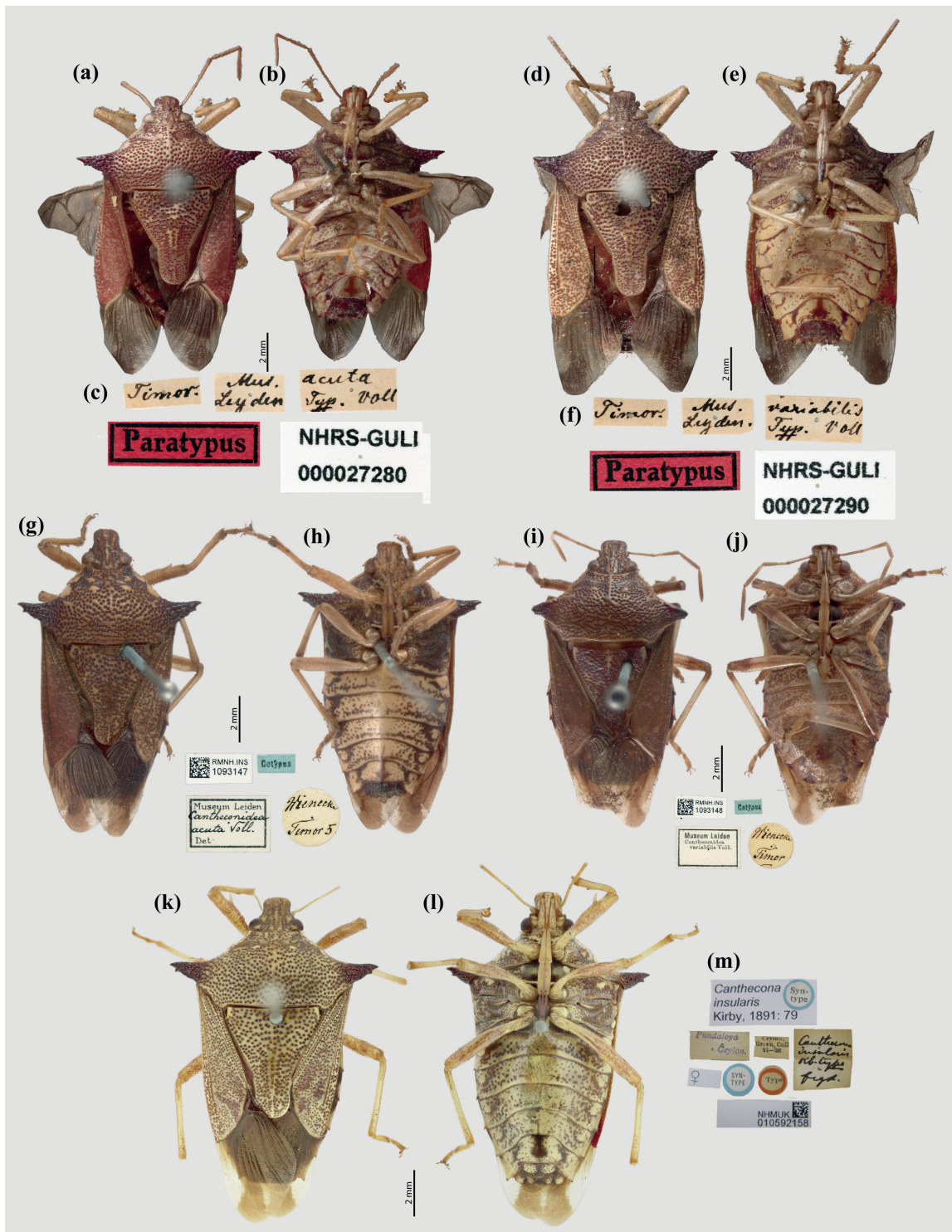


Fig. 6. Type specimens in dorsal and ventral view, and respective labels. **a–c, g–h.** *Eocanthecona acuta* (Vollenhoven, 1868) comb. nov. **a–c.** Paratype, ♀ (NHRS.GULI 000027280). **g–h.** Cotype, ♀ (RMNH.INS 1093147). – **d–f, i–j.** *Eocanthecona variabilis* (Vollenhoven, 1868) comb. nov. **d–f.** Paratype, ♀ (NHRS.GULI 000027290). **i–j.** Cotype, ♀ (RMNH.INS.1093148). – **k–m.** *Eocanthecona insularis* (Kirby, 1891), syntype, ♀ (NHMUK 010592158). Photos: a–f = ©Gunvi Lindberg 2019, Naturhistoriska Riksmuseet. g–j = ©Charlotte Hartong and Luc Willemse (2023–2024); k–m = ©Talita Roell 2019, Natural History Museum of the United Kingdom.

Distribution

Timor.

Remarks

There are three species in the type series for *E. variabilis* comb. nov., which include a single paratype and 10 cotypes. The paratype of *E. variabilis* shows similarity with *E. acuta* sens. lat., but further research is necessary to confirm if they are the same species and to revise morphologically similar species of *Eocanthecona* across the Indo-Pacific region. The cotypes of *E. variabilis* are different species from the paratype and include a mix of *Eocanthecona* (cf. *vollenhoveni*: RMNH.INS.1093148, RMNH.INS.109314850 to -109314852, RMNH.INS.109314854 to -109314855) and *Cantheconidea mitis* (RMNH.INS.1093149, -1093153, -1093156, RMNH.INS.1092852). Consequently, the *C. variabilis* cotypes are no longer considered *E. variabilis*. The two illustrations of *C. variabilis* from the original description do not match the appearance of the paratype, namely the paratype has spinose rather than the illustrated blunt humeri (Vollenhoven 1868: pl. 1 figs 7–8). We suspect the illustrations were based on cotypes rather than the paratype.

Eocanthecona insularis (Kirby, 1891) comb nov.
Figs 6k–m,10

Canthecona insularis Kirby, 1981: 79.

Cantheconidea insularis – Kirkaldy 1909: 13. — Thomas 1994: 168.

Canthecona insularis – Roell *et al.* 2023: 50.

Type material**Syntype**

SRI LANKA • 1 ♀ “*Canthecona / insularis / Kirby, 1891: 79 / SYNTYPE // Pundaloya / Ceylon. // Ceylon / Green Coll / 91-26 // ♀ // SYNTYPE // TYPE // NHMUK / 010592158*”; NHMUK; NHMUK 010592158 (Fig. 6k–m).

Distribution

Sri Lanka.

Remarks about the new combinations in *Eocanthecona* Bergroth, 1915

By examining the photos of the type specimens of the three above mentioned species (Fig. 6), it becomes evident that they lack the metasternal processes, which differentiate *Eocanthecona* from *Cantheconidea*. Based on this observation, we propose new combinations of these species within the genus *Eocanthecona*, now containing 25 species. *Eocanthecona* was originally described by Bergroth in 1915 to include species with a non-specialized metasternum. Initially, only *E. furcellata* and *Eocanthecona eburnea* Bergroth, 1915 were established as members of the genus, but the author noted that it was equivalent to Schouteden’s section B of *Cantheconidea*. Subsequently, Thomas (1994) transferred 19 species from *Cantheconidea* to *Eocanthecona* based on the metasternum characteristic.

In general, *Eocanthecona* are currently recognized by a combination of features: profemora armed, basal abdominal spine present, flat metasternum and crenulate anterolateral pronotal margin. It is important to emphasize the urgent need for a comprehensive systematic revision of *Eocanthecona*, which entails examining the type specimens to confirm the validity of the species, and to establish a robust diagnosis to contribute with its identification.

Cantheconesia Brugnera & Roca-Cusachs gen. nov.

urn:lsid:zoobank.org:act:3EEDDE3C-90D2-4A84-B31D-932FBA0541E7

Type species

Cantheconesia cyanacantha (Stål, 1870).

Etymology

The name derives from ‘*Cantheconidea*’, because of its similarity and taxonomic history + termination ‘esia’ from the Melanesia and Polynesia subregions, where the species occurs.

Diagnosis

Head as long as wide. Anterolateral margins of pronotum crenulated and sinuous. Anterior angle of pronotum slightly produced. Humeral angles acute and slightly produced. Legs uniformly pale-yellow colored. Basal angles of scutellum with black and ellipsoid foveae. Peritreme disc-type, rectilinear; metapleural evaporatorium surrounding peritreme, not reaching lateral margin of pleura; mesopleural evaporatorium concentrated in two different areas, not reaching lateral margin of pleura. Presence of pair of metasternal processes holding apex of labium, with region between and surrounding processes black.

Cantheconesia cyanacantha (Stål, 1870) gen. et comb. nov.

Figs 7–8, 10

Type material

Holotype

FIJI • 1 ♂; “Ins. / Fidschi // Harry // TYPE. // Typus // NHRS-GULI / 000027281”; NHRS; NHRS 000027281 (Fig. 7).

Other material examined

FIJI • 1 ♂; “Fiji / Surra R. N. Paine // Press by / Imp. Bur. Ent. / Brit. Mus. / 1927-209 // NHMUK / 010935723”; NHMUK; NHMUK 010935723 (Fig. 8a–k).

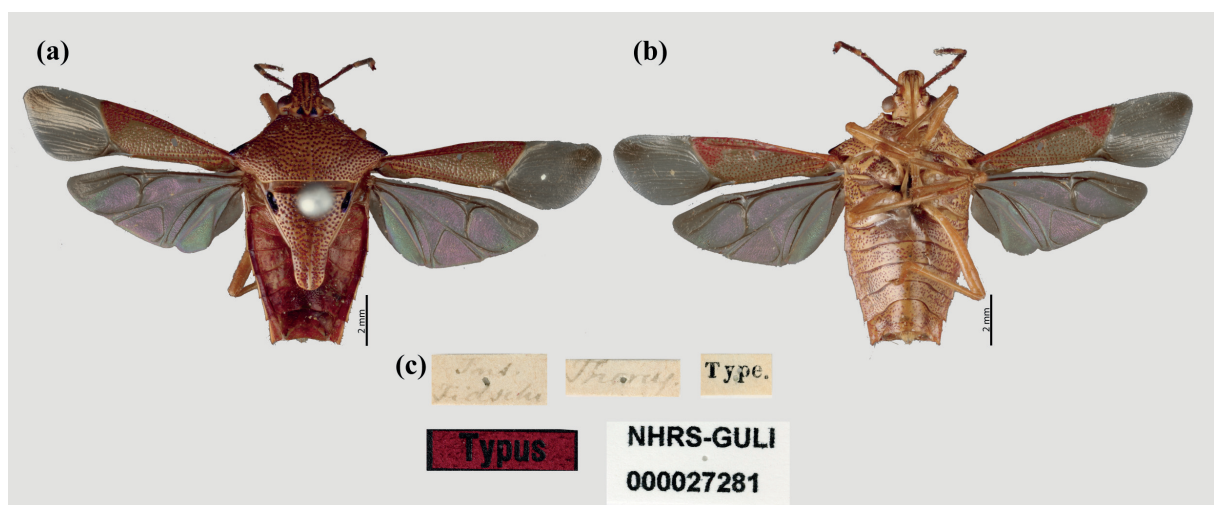


Fig. 7. *Cantheconesia cyanacantha* (Stål, 1870) gen. et comb. nov., holotype, ♂ (NHRS-GULI 000027281). **a.** Dorsal view. **b.** Ventral view. Photos: ©Gunvi Lindberg 2019, Naturhistoriska Riksmuseet.

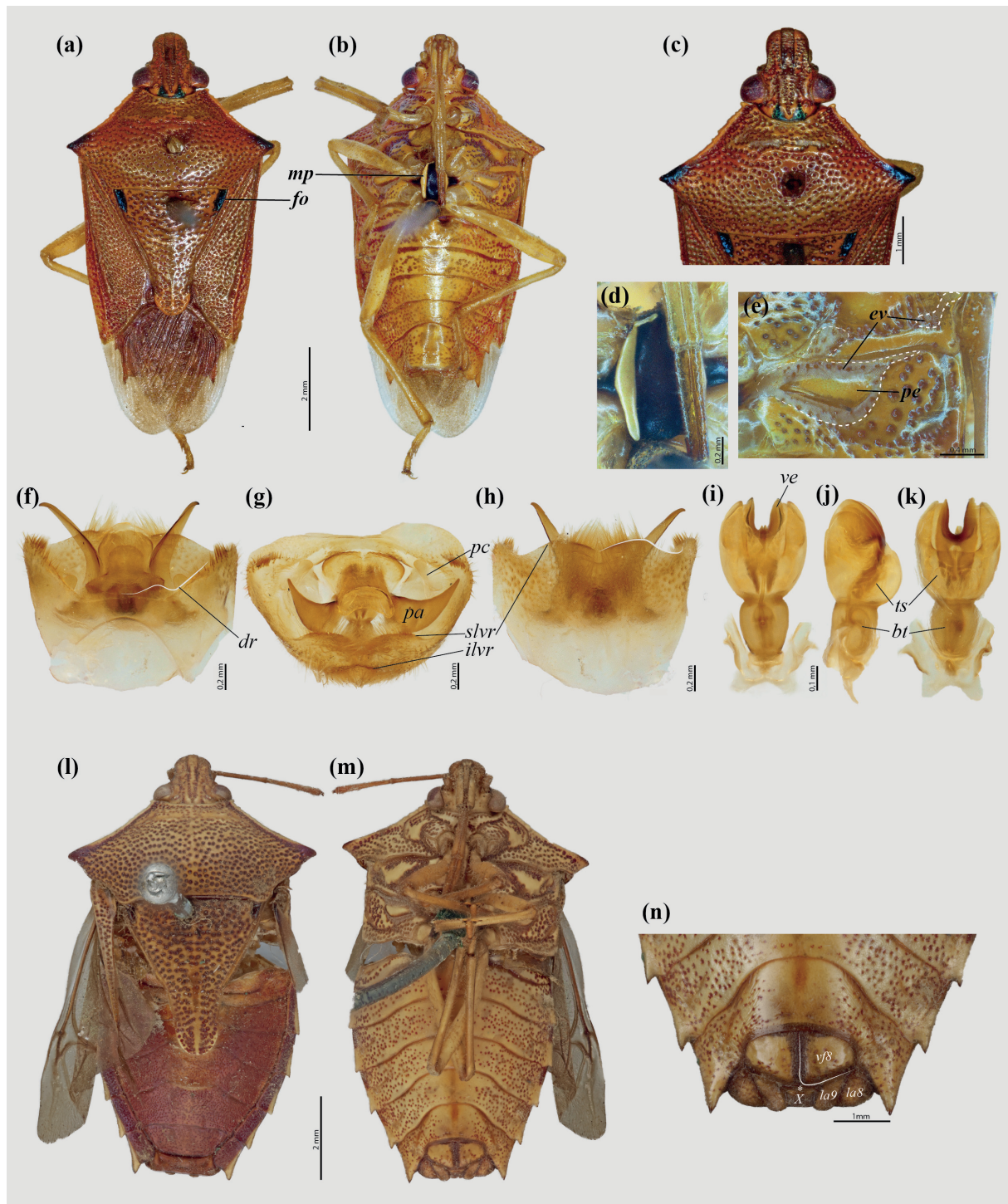


Fig. 8. *Cantheconesia cyanacantha* (Stål, 1870) gen. et comb. nov. **a–k.** ♂ (NHMUK 010935723). **l–n.** ♀ (ANIC). **a–c, m–l.** Habitus. **a, c, l.** Dorsal view. **b, m.** Ventral view. **d.** Metasternal processes. **e.** External scent efferent system (dashed line surrounding the evaporatorium). **f–h.** Pygophore. **f.** Dorsal view. **g.** Posterior view. **h.** Ventral view. **i–k.** Phallus. **i.** Dorsal view. **j.** Lateral view. **k.** Ventral view. **n.** Female external genitalia. Abbreviations: *=valvifer 9; bt=basal theca; dr=dorsal rim; fo=foveae; ev=evaporatorium; ilvr=inferior layer of ventral rim; la8=laterotergites 8; la9=laterotergites 9; mp=metasternal processes; pa=paramere; pc=pseudoclasper; pe=peritreme; slvr=superior layer of ventral rim; ts=thecal shield; ve=vesical; vf8=valvifers 8; X=segment X.

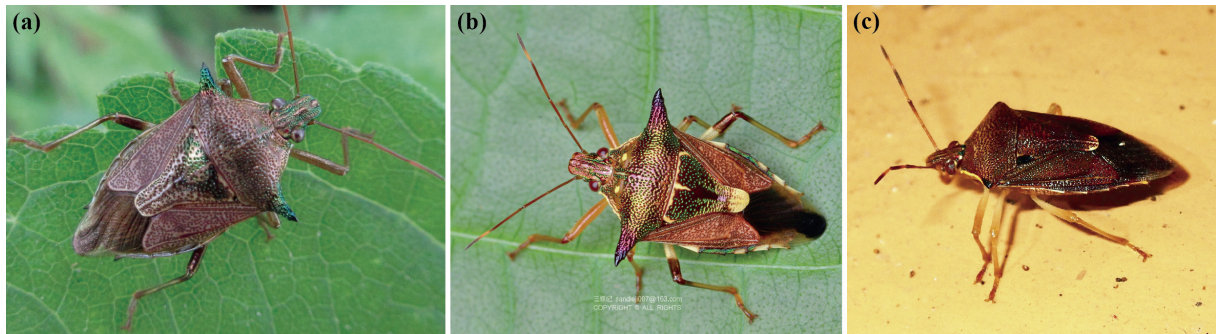


Fig. 9. Species in life of *Cantheconidea* Schouteden, 1907 and *Cantheconesia* Brugnera & Roca-Cusachs gen. nov. **a.** *Cantheconidea javana* (Dallas, 1851) from Sumatra (Indonesia). **b.** *Cantheconidea humeralis* (Distant, 1908) from Yunnan (China). **c.** *Cantheconesia cyanacantha* (Stål, 1870) gen. et comb. nov. from Central (Fiji). Photos: a. ©onidiras (2018); b. ©Yriassic Yan (2020); c. ©Albert Kang (2018).

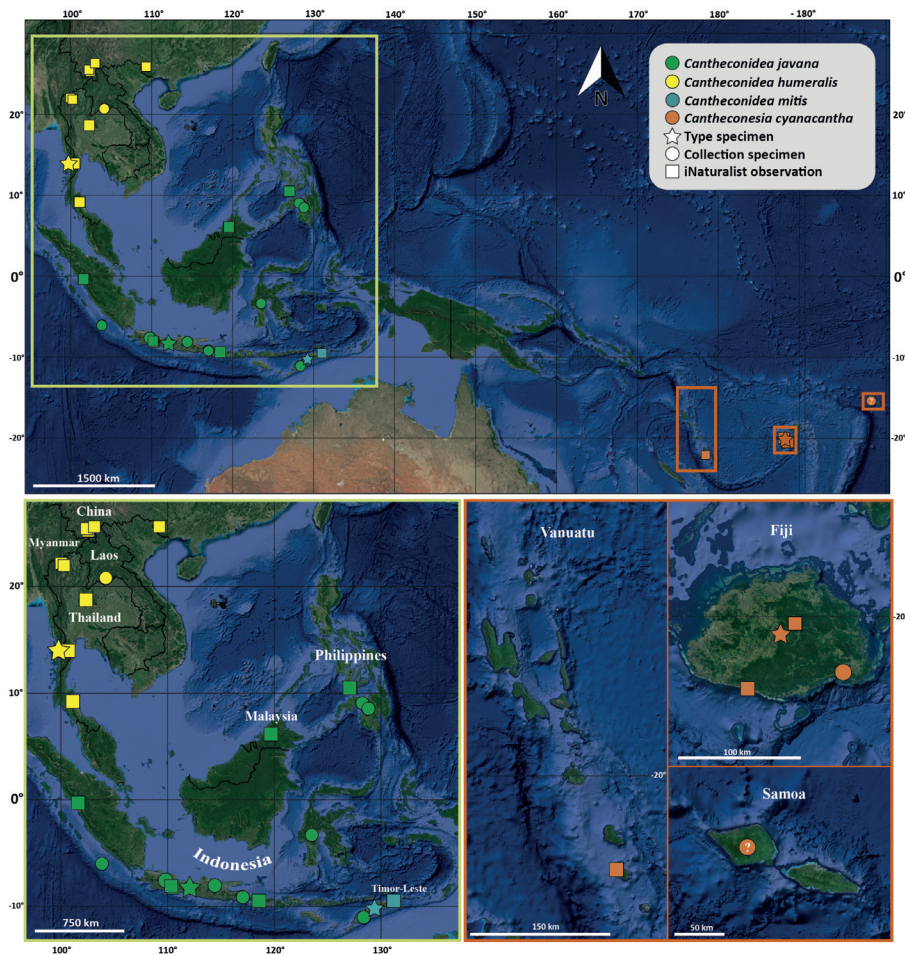


Fig. 10. Geographic distribution of *Cantheconidea* Schouteden, 1907 and *Cantheconesia* Brugnera & Roca-Cusachs gen. nov. The points marked for each species are for the type specimens, specimens examined in this paper, and for records retrieved from iNaturalist. The question mark (?) in Samoa indicates the absence of an exact location.

SAMOA • 1 ♀; “Samoa // *Platynopus* // W.W. Froggatt / Collection (ANIC)”; ANIC (Fig. 8l–m).

Records retrieved from iNaturalist

FIJI • Central, Naitasiri; 17.713° S, 178.07° E; 2 Oct. 2018; inaturalist.org/observations/57897374
• Western, Nadroga/Navosa; 18.202° S, 177.69° E; 14 Oct. 2022; inaturalist.org/observations/138679311.

VANUATU • Lowanatom; 19.506° S, 169.24° E; 30 Nov. 2022; inaturalist.org/observations/143424559.

Redescription

COLORATION. General body coloration light brown; dorsal and ventral surface densely punctured. Posterior portion of dorsal head, humeral angles, and foveae black. Legs light brown.

HEAD. As long as wide; mandibular plates and clypeus subequal. Apex of labium reaching metacoxae; fourth labiomere darker than preceding; proportion of labial segments: I < II = III > IV. Antennae light brown; proportion of antennal segments: I < II > III < IV > V.

THORAX. Anterolateral margins of pronotum pale, crenulated, and rectilinear; humeral angles acute. Scutellum triangular, frenal portion longer than postfrenal portion; foveae elongated, more than 3 × the diameter of ocelli. Corium longer than scutellum, reaching posterior margin of abdominal segment VI; hemelytral membrane light brown surpassing apex of abdomen. Peritreme disc-type, rectilinear; metapleural evaporatorium surrounding peritreme, not reaching lateral margin of pleura; mesopleural evaporatorium concentrated in two different places, not reaching lateral margin of pleura (Fig. 8e); presence of pair of metasternal processes holding apex of labium, region between and surrounding processes black.

ABDOMEN. Apex of connexival segments acute and projected posteriorly. Abdominal tubercle short, not reaching metacoxae.

MALE GENITALIA. Pygophore cuplike; anterior opening oval; dorsal rim sinuose; superior layer of ventral rim concave in ventral view; inferior layer of ventral slightly projected; head of paramere sickle-like, with acute apex; pseudoclasper small and slender, tongue-like shaped. Phallus with thecal shield distinctly longer and wider than basal theca; processes of conjunctiva absent; vesica U-shaped.

FEMALE GENITALIA (Fig. 8n). Valvifers 8 as long as wide, juxtaposed, posterior margins rectilinear; valvifer 9 rectangular; laterotergites 9 longer than wide, rounded apically, surpassing segment X.

MEASUREMENTS. (n=1, NHMUK 010935723) Head length: 1.61, width: 1.88; pronotum length: 2.27, width: 5.09; scutellum length: 3.05, width: 2.82; antennomeres missing; labial segments length: I 0.93, II 1.16, III 1.16, IV 0.85 (0.5–0.6); abdominal length: 3.65, width: 4.01; total length: 9.75.

Distribution

Fiji, Vanuatu (new record), Samoa (new record) (Fig. 10).

Discussion

The taxonomic delimitation and classification of species of Asopinae has been the target of recent studies. While not many, some taxonomic data have been published, especially regarding Neotropical and Palearctic taxa (e.g., Salini 2016; Brugnera *et al.* 2020; Roca-Cusachs *et al.* 2020); Sampaio *et al.* 2023. However, considering the growing relevance of predatory stink bugs for biological control (Plata-Rueda *et al.* 2022), this attention can be classified as insufficient. The lack of robust and updated taxonomic data of species of Asopinae leads to misidentifications (Brugnera *et al.* 2022) and hides a

diversity that is waiting to be discovered. Also, the shortage of researchers dedicated to the group and low science funding in some world regions perpetuates this problem. The publication of a catalog of the type-specimens of more than a hundred species of Asopinae (Roell *et al.* 2023), and observations from citizen science websites such as iNaturalist.org, have vastly improved the availability of data on species of Asopinae, enabling this research and future taxonomic studies of predatory stink bugs.

In this manuscript, we aimed to contribute the little explored taxonomy of Indo-Pacific taxa, using *Cantheconidea* as our main target. By investigating the type specimens, and based on morphological characters, we redefined the genus, validating three species (previously with six species, *sensu* Thomas 1994): *C. humeralis*, *C. javana* and *C. mitis* *comb. nov.* The presence of the metasternal processes is a main diagnostic character for *Cantheconidea* and was crucial for our decision to transfer *C. acuta*, *C. variabilis*, *C. insularis* and *C. gaugleri* to *Eocanthecona*, since the types examined clearly lack this feature. The validity of *Eocanthecona gaugleri* *comb. nov.* still needs to be confirmed after the examination of specimens from Sumatra, and can only be achieved after a deeper investigation on the taxonomy of *Eocanthecona*, currently with 25 species.

Cantheconidea cyanacantha, here transferred to a new genus, *Cantheconesia* Brugnera & Roca-Cusachs *gen. nov.*, also presents the metasternal processes; however, other relevant features were used to support our decision. Namely, (1) the larger size of the foveae, (2) the humeral angles short, (3) the reduced pseudoclaspers, (4) the different proportion of the basal theca and thecal shield of the phallus, (5) the absence of processes in the apex of the conjunctival lobes, and (6) the geographical distribution. The three species of *Cantheconidea* are distributed in the Indomalayan realm (Southeast Asia), while *Cantheconesia cyanacantha* *gen. et comb. nov.* occurs in the Pacific, currently known from Fiji, Samoa and Vanuatu. Interestingly, two other genera with metasternal processes are also restricted to adjacent Pacific islands: *Ealda* to New Caledonia and *Paraealda* to the Mariana Islands, both monotypic. The morphology of the metasternal processes and genitalia are not described in the original description or elsewhere; however, photos and illustrations in dorsal view (see Schouteden 1907: 52, pl. 5 fig. 3; Roell *et al.* 2023: 59, figs 113–114) show the differences in the size of the humeral angles, the morphology of the pronotum and foveae when comparing with *Cantheconesia* Brugnera & Roca-Cusachs *gen. nov.*

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