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Issid planthoppers from Bach Ma and Phong Dien in Central Vietnam. (III) Tribe Sarimini (Hemiptera: Fulgoromorpha: Issidae)

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Abstract. Sixteen species of Issidae (Hemiptera: Fulgoromorpha) belonging to the tribe Sarimini were collected in recent years in Bach Ma National Park and Phong Dien District in Thừa Thiên-Huế Province in Central Vietnam. Among these, fourteen are new to science, and five new genera were recognized. Three species belong to the new genus *Bachmarima* gen. nov., erected for the new species *Bachmarima expansa* gen. et sp. nov. (type species) from Bach Ma and Phong Dien, *B. recta* gen. et sp. nov. from Bach Ma, Phong Dien, and Da Krong Nature Reserve (Quang Tri Province), and *B. valida* gen. et sp. nov. from Bach Ma, Phong Dien, and Da Krong Nature Reserve (Quang Tri Province); three species belong to the new genus *Caimocus* gen. nov., erected for the new species *Caimocus elephas* gen. et sp. nov. (type species) from Bach Ma, and Hoang Hoa (Quang Tri Province), *C. robustus* gen. et sp. nov. from Bach Ma, and *C. sinuatus* gen. et sp. nov. from Bach Ma; one species belongs to the new genus *Civetissus* gen. nov., erected for the new species *Civetissus pagumoides* gen. et sp. nov. (type species) from Bach Ma; one species belongs to the new genus *Lobosarima* gen. nov., erected for the new species *Lobosarima lobata* gen. et sp. nov. (type species) from Bach Ma, Phong Dien, and Ba Na-Nui Chua Nature Reserve (Da Nang Province); one species belongs to the new genus *Retirima* gen. nov., erected for the new species *Retirima angulata* gen. et sp. nov. (type species) from Bach Ma. The genus *Eusarima* Yang, 1994 is recorded from Vietnam for the first time, with three new species: *Eusarima bachmana* sp. nov. from Bach Ma, *E. boevei* sp. nov. from Bach Ma and *Eusarima bourgoini* sp. nov. from Bach Ma, Phong Dien, and Ba Na-Nui Chua Nature Reserve (Da Nang Province). The distribution of the genus *Longieusarima* Wang, Bourgoïn & Zhang, 2017 is greatly expanded to the south with one new species *Longieusarima bachmana* sp. nov. from Bach Ma. The genus *Microsarimodes* Chang & Chen, 2019 is recorded from Vietnam for the first time, with one new species: *Microsarimodes backeljau* sp. nov. from Bach Ma. The diversity of the family Issidae and tribe Sarimini in Vietnam, and the delimitation of the species and genera of Sarimini, are briefly discussed. These fourteen species add to the eight species of the tribe Hemisphaeriini and to the eight species of the tribe Parahiraciini previously recorded/described from Thừa Thiên-Huế Province, which now counts 30 described species of Issidae. The Vietnamese fauna now counts 84 species in 42 genera in this family.

Keywords. Bach Ma National Park, biodiversity, Fulgoroidea, Indochina, Phong Dien District.

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Introduction

The family Issidae Spinola, 1839 is a large family of planthoppers (Hemiptera: Fulgoromorpha), which currently contains more than 1100 species in about 230 genera (Bourgoin 2025), representing about 8% of the species of Fulgoromorpha. Although it has a worldwide distribution, the fauna of some major regions such as tropical Africa, New Guinea and Australia, remain very poorly documented (Gnezdilov & Fletcher 2010; Gnezdilov 2013b; Gnezdilov *et al.* 2022; Constant & Semeraro 2023).

We have added one new genus and seven new species of the tribe Parahiraciini Cheng & Yang, 1991 (Constant & Pham 2024b) and one new genus and seven new species of Hemisphaeriini Melichar, 1906 (Constant & Pham 2025a) within the two first parts of the present study treating the corresponding tribes from Thừa Thiên-Huế Province in Central Vietnam, as well as one new genus and species of Sarimini Wang, Zhang & Bourgoin, 2016 and two new species of Parahiraciini (Constant & Pham 2025b; Constant *et al.* 2025), to a complete checklist of the Issidae fauna of Vietnam that we published recently (Constant & Pham 2024a). Hence, the Issidae fauna of Vietnam now counts in total 68 species in 35 genera. The Vietnamese issid planthoppers show a high level of endemism, with the large majority of the species found only in this country.

Within the Issidae, the tribe Sarimini Wang, Zhang & Bourgoin, 2016 counts 31 genera and about 140 species worldwide (Bourgoin 2025; Constant & Pham 2025b), and eight species in seven genera in Vietnam (Constant & Pham 2024a, 2025b). However, the record of one genus and species in this country, *Sarima illibata* Melichar, 1903, remains doubtful, as the species was originally described from Sri Lanka, and its identification was not based on the study of male genitalia (Melichar 1903; Pham & Ta 2009; Constant & Pham 2024a). We underlined the obvious need for more research, as $\frac{2}{3}$ of the provinces in the country remain undocumented in terms of Issidae (Constant & Pham 2024a). Furthermore, the assessment of the actual endemism is impeded by the poor knowledge of the fauna of the neighbouring countries. Indeed, the fauna of Laos is currently comprised of only six species (Gnezdilov 2014; Constant 2021; Bourgoin 2025) and that of Cambodia of four species (Constant & Bartlett 2019; Constant & Pham 2025b).

Our study of recent material of Issidae collected during fieldwork in Bach Ma National Park and Phong Dien District in Thừa Thiên-Huế Province in Central Vietnam, revealed a total of sixteen species belonging to the tribe Sarimini. Fourteen of them were found to be new to science, with nine species representing five new genera. Two species are only known from female specimens, one in the genus *Tetrica* Stål, 1866 and one belonging to a probably new genus. So far, sixteen species of Issidae, eight in the tribe Parahiraciini and eight in the tribe Hemisphaeriini, were recorded from this province as a result from the same collecting effort (Constant & Pham 2024b, 2025a).

The present paper aims to describe five new genera and fourteen new species in the tribe Sarimini; it is the third and last part of a study of the Issidae from Bach Ma National Park and Phong Dien District, the first part dealing with the Parahiraciini (Constant & Pham 2024b), and the second part with the Hemisphaeriini (Constant & Pham 2025a), respectively.

Material and methods

The specimens were captured by hand using small transparent vials with which they were slowly covered or by sweeping the lower vegetation, bushes and lower branches of trees in the forest, along trails, or along the road.

The photographs of habitats and live specimens were taken with an Olympus Tough 6 camera; some specimens were placed in a fine mesh cage when necessary but in this case, it is mentioned in the caption. The collection specimens were photographed with a Leica EZ4W stereo microscope with integrated camera, and the images were stacked with CombineZ software and optimized with Adobe Photoshop CS3; all photographs were taken by JC. The distribution maps were produced with SimpleMapp (Shorthouse 2010). The genitalia were extracted after soaking the abdomen in a 10% solution of potassium hydroxide (KOH) at room temperature for about 12 hours. Some drops of saturated alcoholic Chlorazol black solution were added for contrasting when necessary (Carayon 1969). The pygofer was separated from the abdomen and the aedeagus dissected with a needle blade for examination. The whole was thoroughly rinsed in 70% ethanol, then placed in glycerine for preservation in a tube attached to the pin of the corresponding specimen. The hind wings were glued with white glue on a small white cardboard rectangle attached to the pin of the corresponding specimen.

The external morphological terminology follows O'Brien & Wilson (1985) and for the terminalia, Bourgoin & Huang (1990), Gnezdilov (2003) and Gnezdilov *et al.* (2014b). The metatibiotarsal formula gives the number of spines on (side of metatibia) apex of metatibia/apex of first metatarsus/apex of second metatarsus. The terminology of the wing venation follows Bourgoin *et al.* (2015). The higher classification follows the most recent one as published by Gnezdilov *et al.* (2022).

The precise map of the collecting spots in Bach Ma National Park and the habitats photographs referred to in the biology sections are available from the second part of this study on Issidae, dealing with the tribe Hemisphaeriini (Constant & Pham 2025a).

Institutional abbreviations

RBINS = Royal Belgian Institute of Natural Sciences, Brussels, Belgium.

VNMN = Vietnam National Museum of Nature, Hanoi, Vietnam.

Abbreviations for measurements

The measurements were taken as in Constant (2004) and the following abbreviations are used:

BB = maximum breadth of the body
BF = maximum breadth of the frons
BTg = maximum breadth of the tegmen
BV = maximum breadth of the vertex
BW = maximum breadth of the hind wing
LF = length of the frons in median line
LT = total length (apex of head to apex of tegmina)
LTg = maximum length of the tegmen
LV = length of the vertex in median line
LW = maximum length of the hind wing

Abbreviations for male terminalia

ae = aedeagus

An = anal tube

bl = basal lobe of the periandrium

ca = capitulum of the gonostylus
co = connective of the aedeagus
dl = dorsal lobe of the periandrium
dsp = dorsal spinose process of the periandrium
G = gonostylus
ldp = laterodorsal process of the periandrium
lvl = lamina of the ventral lobe
lvp = lateroventral process of the aedeagus
Py = pygofer
te = tectiductus of the aedeagus
vl = ventral lobe of the periandrium

Results

Taxonomy

Class Insecta Linnaeus, 1758
Order Hemiptera Linnaeus, 1758
Suborder Auchenorrhyncha Duméril, 1806
Infraorder Fulgoromorpha Evans, 1946
Superfamily Fulgoroidea Latreille, 1807
Family Issidae Spinola, 1839
Subfamily Issinae Spinola, 1839

Tribe **Sarimini** Wang, Zhang & Bourgoïn, 2016

Type genus

Sarima Melichar, 1903.

Diagnosis

The tribe Sarimini was defined by Wang *et al.* (2016) based on a combination of characters of the hind wings: three lobed, with Pcu-A1 lobe more or less as wide as ScP-R-MP-Cu lobe, and Pcu single or branched; Pcu and A1 anastomosing on a short or longer distance; A2 non branched.

Checklist of the Sarimini of Vietnam

Bachmarima expansa gen. et sp. nov.
Bachmarima recta gen. et sp. nov.
Bachmarima valida gen. et sp. nov.
Caimocus elephas gen. et sp. nov.
Caimocus robustus gen. et sp. nov.
Caimocus sinuatus gen. et sp. nov.
Civetissus pagumoides gen. et sp. nov.
Dactylissus armillarius Gnezdilov & Soulier-Perkins, 2014
Darwallia barbata Gnezdilov & Bourgoïn, 2014
Eusarima bachmana sp. nov.
Eusarima boevei sp. nov.
Eusarima bourgoïni sp. nov.

Keosarima konkakinha Constant & Pham, 2025
Lobosarima lobata gen. et sp. nov.

Longieusarima bachmana sp. nov.

Longieusarima lunulia Wang, Bourgoïn & Zhang, 2017

Microsarimodes backeljau sp. nov.

Parallelissus fuscus Meng, Qin & Wang, 2020

Pseudocoruncanius nigrifrons Gnezdilov, 2022

Pseudocoruncanius obliquus Constant & Pham, 2024

Retirima angulata gen. et sp. nov.

Sarima illibata Melichar, 1903 (doubtful record, see Constant & Pham 2024a: 80)

Key to the genera of Sarimini Wang, Zhang & Bourgoïn, 2016 of Vietnam

1. Vein ScP of the tegmen rather short, not extending beyond midlength of tegmen (Fig. 2A) 2
 - Vein ScP of the tegmen long, extending well beyond midlength of tegmen (Fig. 14A) 4
2. Tegmina strongly elongate, at least 2.5 × as long as wide (Fig. 41A, C); vertex rather elongate, about as long in midline, as wide (Fig. 41A) *Longieusarima* Wang, Bourgoïn & Zhang, 2017
 - Tegmina moderately elongate, at most 2.3 × as long as wide (Figs 2A, 14A); vertex strongly transverse, at least twice as wide as long in midline (Fig. 1A) 3
3. Median carina on the frons complete, extending from the dorsal margin to the frontoclypeal suture (Fig. 1E); anal tube more elongate, about 2.8 × as long as wide in dorsal view (Fig. 3C); capitulum of the gonostyli strongly elongate (Fig. 3A–B, D) *Bachmarima* gen. nov.
 - Median carina on the frons incomplete, not reaching to the frontoclypeal suture (Gnezdilov *et al.* 2014: figs 11, 28, 31); anal tube less elongate, about 2.5 × as long as wide in dorsal view (Gnezdilov *et al.* 2014: fig. 21); capitulum of the gonostyli rather short (Gnezdilov *et al.* 2014: fig. 18) *Dactylissus* Gnezdilov & Bourgoïn, 2014
4. Vertex elongate, at least as long in midline, as broad (Fig. 23A; Gnezdilov *et al.* 2014: fig. 3) 5
 - Vertex transverse, at least 1.5 × as wide as long in midline (Fig. 28A) 6
5. Head strongly projecting anteriorly in a pointed process (Fig. 23A); frons about as long in midline, as wide, without median and peridiscal carinae (Fig. 23E); tegmina elongate, about 2.4 × as long as wide (Fig. 24A) *Civetissus* gen. nov.
 - Head not projecting anteriorly in a pointed process (Gnezdilov *et al.* 2014: fig. 3); frons about 1.5 × as long in midline, as wide, with a distinct median carina (Gnezdilov *et al.* 2014: fig. 4); tegmina moderately elongate, about 2.0 × as long as wide (Gnezdilov *et al.* 2014: fig. 6) *Darwallia* Gnezdilov, 2010
6. Median carina of frons incomplete, limited to upper half (Fig. 46E; Constant & Pham 2024a: fig. 35d) 7
 - Median carina of frons complete, reaching to frontoclypeal suture (Fig. 13E) 9
7. Frons distinctly transverse, about 1.5 × as wide as long in midline (Constant & Pham 2024a: fig. 35d); tegmina elongate, at least 2.5 × as long as wide (Constant & Pham 2024a: fig. 35a, c) *Pseudocoruncanius* Meng, Qin & Wang, 2020
 - Frons rather narrow, about 1.1 × as wide as long in midline (Fig. 45E); tegmina moderately elongate, about 2.3 × as long as wide (Fig. 45A, C) 8

8. Vertex moderately tranverse, at most $1.7 \times$ as wide as long in midline (Fig. 45A); gonostyli with a massive, subtriangular capitulum without distinct neck (Fig. 46B) *Microsarimodes* Chang & Chen, 2019
– Vertex distinctly tranverse, about $2.0 \times$ as wide as long in midline (Constant & Pham 2024a: fig. 33a); gonostyli with a distinctly elongate capitulum with distinct neck (Constant & Pham 2024a: fig. 34a) *Parallelissus* Meng, Qin & Wang, 2020
9. Median carina of vertex complete, extending at least along basal portion of the clypeus (Fig. 37B, E) 10
– Median carina of vertex complete, but not supassing frontoclypeal suture (Fig. 13B, E) 11
10. Tegmina with distinct epipleuron (Constant & Pham 2025b: fig. 2b); anal tube of male strongly elongate, at least $3.0 \times$ as long as wide in dorsal view (Constant & Pham 2025b: fig. 3c); laterodorsal process of the periandrium bearing an apical hook directed dorsad, and an elongate shaft directed cephalad (Constant & Pham 2025b: fig. 4a–d) *Keosarima* Constant, 2025
– Tegmina without epipleuron (Fig. 38B); anal tube of male subquadrate, about $2.2 \times$ as long as wide in dorsal view (Fig. 39D); periandrium without laterodorsal process (Fig. 40A–D) *Lobosarima* gen. nov.
11. Tegmina with narrow but distinct epipleuron and with dense network of pale cross-veins (Fig. 50A–B); periandrium with a pair of strong laterodorsal processes arising in proximal portion of the dorsal lobe (Fig. 52E–F), and the apex of the dorsal lobe distinctly acuminate (Fig. 52B) *Retirima* gen. nov.
– Tegmina without distinct epipleuron and without dense network of pale cross-veins (Fig. 14A–B); periandrium without a pair of strong laterodorsal processes arising in proximal portion of the dorsal lobe, and the apex of the dorsal lobe rounded (Fig. 16A–C) 12
12. Lateroventral processes of the aedeagus with a posterior hook (Fig. 16F); anal tube in dorsal view oboval, widening towards the posterior (Fig. 15D); anterodorsal margin of the gonostyli concave (Fig. 15A) *Caimocus* gen. nov.
– Lateroventral processes of the aedeagus without a posterior hook (Fig. 30H); anal tube in dorsal view elongate and more or less parallel-sided (Fig. 29D); anterodorsal margin of the gonostyli distinctly rounded (Fig. 29A) *Eusarima* Yang, 1994

Remark

The genus *Sarima* Melichar, 1903 was excluded from the key until its presence in Vietnam can be confirmed.

Genus *Bachmarima* gen. nov.

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Type species

Bachmarima expansa gen. et sp. nov. by present designation.

Diagnosis

The genus *Bachmarima* gen. nov. can be differentiated from the other genera of Sarimini by the following combination of characters: (1) the vertex more than twice as wide as long in dorsal view; (2) the frons with complete median carina and obsolete peridiscal carinae, weakly distinct only in dorsal portion of frons; (3) the tegmina elongate, about $2.2 \times$ as long as wide, with distinct lateral hump slightly before

basal $\frac{1}{3}$ hiding costal margin in dorsal aspect, and with rather narrow but distinct epipleuron; (4) the vein ScP of the tegmen rather short, curved and not extending beyond midlength of tegmen; (5) the first fork of MP and the first fork of CuA at about the same level, slightly beyond half length of tegmen; (6) the anal tube elongate, dorsoventrally flattened, and sublanceolate, rather narrow in dorsal view; (7) the massive gonostyli, with capitulum elongate, strongly projecting dorsad and with poorly distinct neck, and with anterodorsal margin distinctly rounded; (8) the aedeagus with a single pair of elongate, subapical, lateroventral processes, and with the dorsal lobe of the periandrium expanded lateroventrally in basal portion.

Differential diagnosis

The most similar genera are *Dactylissus* Gnezdilov & Bourgoïn, 2014, *Neosarima* Yang, 1994, *Sarimissus* Wang, Zhang & Bourgoïn, 2019, *Sarimites* Meng, Qin & Wang, 2020, *Sinesarima* Yang, 1994 and *Yangissus* Chen, Zhang & Chang, 2014. However, *Bachmarima* gen. nov. can be separated from all of these genera by showing a complete median carina on the frons, extending from the dorsal margin to the frontoclypeal suture, while it does not reach the latter in the other genera.

Additionally, *Bachmarima* gen. nov. can be separated (1) from *Dactylissus* (see illustrations in Gnezdilov *et al.* 2014a: figs 18–21) by the more elongate anal tube, about $2.8 \times$ as long as wide in dorsal view ($2.5 \times$ in *Dactylissus*) and the strongly elongate capitulum of the gonostyli (rather short in *Dactylissus*); (2) from *Neosarima* (see illustrations in Chan & Yang 1994: figs 43–44) by the less elongate tegmina, about $2.2 \times$ as long as wide ($2.5 \times$ in *Neosarima*), the more elongate anal tube, about $2.8 \times$ as long as wide in dorsal view ($2.5 \times$ in *Neosarima*) and the strongly elongate capitulum of the gonostyli (rather short in *Neosarima*); (3) from *Sarimissus* (see illustrations in Wang *et al.* 2019: figs 1–11) by the frons nearly $1.2 \times$ as wide as long in midline (1.0 time in *Sarimissus*), the vein ScP+RA of tegmen rather short, curved towards RP (longer and subparallel to RP in *Sarimissus*) and the capitulum of the gonostyli in lateral view tapering towards pointed apex (parallel-sided with rounded apex in *Sarimissus*); (4) from *Sarimites* (see illustrations in Zhang *et al.* 2020: figs 173–174) by the strongly elongate capitulum of the gonostyli (short in *Sarimites*) and by the lateroventral processes of the aedeagus arising subapically (in middle portion of aedeagus in *Sarimites*); (5) from *Sinesarima* (see illustrations in Chan & Yang 1994: figs 40–42) by the less elongate tegmina, about $2.2 \times$ as long as wide ($2.5 \times$ in *Sinesarima*), the more transverse vertex, about $2.2 \times$ as wide as long in midline ($1.7 \times$ in *Sinesarima*), by the strongly elongate capitulum of the gonostyli (short and somewhat foliate in *Sinesarima*) and by the lateroventral processes of the aedeagus arising subapically (in middle portion of aedeagus in *Sinesarima*); (6) from *Yangissus* (see illustrations in Chen *et al.* 2014: figs 2–82) by the less elongate tegmina, about $2.2 \times$ as long as wide ($2.9 \times$ in *Yangissus*), the more elongate anal tube, about $2.8 \times$ as long as wide in dorsal view ($2.4 \times$ in *Yangissus*), the strongly elongate capitulum of the gonostyli (short in *Yangissus*) and the periandrium without processes (dorsal lobe of periandrium with elaborate processes in *Yangissus*).

Etymology

The genus name is formed by the combination of ‘Bach Ma’, the national park where the genus was first discovered, and ‘*Sarima*’, the type genus of the tribe Sarimini. Gender feminine.

Description

Medium sized (around 5.0–6.0 mm), very convex, moderately elongate, rather robust-bodied.

COLOUR. Mostly brown with paler markings on frons, often with symmetrical, zigzagged markings of white wax on tegmina.

HEAD. Vertex distinctly broader than long in midline (about $2.2 \times$), weakly concave with obsolete median carina; anterior margin forming a widely obtuse angle, posterior one rather deeply concave; all margins

moderately carinate. Frons weakly convex, narrowly visible from above, nearly $1.2 \times$ as wide as long in midline, smooth with distinct complete median carina, and obsolete peridiscal carina marked by paler colour; maximum breadth slightly under level of antennae; dorsal margin weakly concave. Anteroventral angle of genae slightly projecting anteriorly. Ocelli present, under eye. Clypeus triangular, convex, smooth, not keeled or carinate. Labium with last segment longer than broad, shorter than penultimate. Antennae with scape short, ring-shaped, and bulbous pedicel.

THORAX. Pronotum subtriangular, projecting anteriorly in a blunt straight angle, about $\frac{2}{3}$ as long in midline, as mesonotum; smooth with anterior margin carinate and pair of impressed points on each side of paler median line; lateral fields very narrow behind eyes; paranotal lobes without tubercles/carinae, and with posteroventral angle rounded. Mesonotum subtriangular with posterolateral margins slightly incurved, smooth, weakly convex with shallow depression before scutellum; incomplete, rather distinct, sublateral carinae.

TEGMINA. Distinctly convex, elongate, about $2.2 \times$ as long as wide, with longitudinal veins elevated; costal margin forming a broadly rounded angle at basal $\frac{4}{5}$; apical margin rounded; distinct lateral hump including vein ScP+RA slightly before basal $\frac{1}{3}$, hiding costal margin in dorsal aspect; costal margin hidden by vein RP in distal $\frac{2}{5}$, in dorsal view; rather narrow but distinct epipleuron; clavus closed, reaching $\frac{4}{5}$ of tegmen length. Venation: ScP+R rather short; ScP+RA rather short, curved towards RP but not fused, and not extending beyond midlength of tegmen; RP unforked, long and sinuate; first fork of MP around midlength of tegmen, MP1 with three terminales; first fork of CuA at about same level, slightly beyond half length of tegmen; Pcu and A1 fused at about $\frac{2}{3}$ of clavus length, Pcu+A1 reaching apex of clavus; cross-veins more numerous and more strongly marked along costal margin and in distal half of tegmen.

HIND WINGS. Well developed, with three distinct lobes (Sarimini type) more or less equal in width; mostly brown. Venation: ScP+R and CuA furcate; MP simple, sinuate; second branch of CuA fused distally with CuP; Pcu and A1 fused on basal half, Pcu unforked and A2 simple; one transverse vein between second branch of ScP+R and MP, and between MP and first branch of CuA.

LEGS. Moderately elongate and slender, with pro- and mesofemora and pro- and mesotibiae slightly flattened dorsoventrally, tibiae more slender than corresponding femora; posteroventral margin of pro- and mesofemora with row of minute teeth in distal portion; pro- and mesotarsi rather elongate. Metatibiae with two lateral spines in distal half and seven apical spines. Metatarsi rather short with first segment about as long as combined length of remaining segments. First metatarsomere with two latero-apical and 7 intermediate spines arranged in arc. Metatibiotarsal formula: (2) 7/9/2.

Male terminalia

Pygofer short, about $2.4 \times$ as high as long at midheight in lateral view, with posterior margin broadly rounded in lateral view; in caudal view suboval, $1.3 \times$ as high as wide. Gonostyli massive, moderately convex, with posterior margin roundly projecting caudad in lateral view, and anterodorsal margin distinctly rounded; capitulum elongate, strongly projecting dorsad and with poorly distinct neck, curved anterodorsad and evenly tapering towards apex in lateral view, with basilateral laminate process directed lateroventrad in caudal view. Anal tube elongate, dorsoventrally flattened, and sublanceolate, rather narrow, about $2.8 \times$ as long as wide in dorsal view and with anal opening in basal $\frac{1}{4}$; in lateral view, weakly downcurved. Aedeagus symmetrical, curved posterodorsad in lateral view. Ventral lobe of periandrium laminate, spatulate. Dorsal lobe of periandrium wide, abruptly tapering in distal portion towards more or less truncate apex, and expanded lateroventrally in basal portion, forming lamina sometimes more or less covering distal portion of lateroventral processes of aedeagus; laterodorsal processes of periandrium arising ventrally from basal portion of dorsal lobe, pointed and curved towards

the posterior and with lateral tooth. Aedeagus (sensu stricto) surpassing dorsal and ventral lobes of perianthrium, bifid, and with robust lateroventral process arising subapically and curved ventrocephalad. Connective well developed, corpus connective long, regularly curved in lateral view, tectiductus well developed, conical with anteroventral apodemes and wide anterior foramen.

Distribution

Vietnam: Thừa Thiên-Huế and Quang Tri provinces.

Species included

Bachmarima expansa gen. et sp. nov.

Bachmarima recta gen. et sp. nov.

Bachmarima valida gen. et sp. nov.

Bachmarima expansa gen. et sp. nov.

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Figs 1–5

Diagnosis

Bachmarima expansa gen. et sp. nov. can be recognized by (1) the moderately elongate lateroventral processes of the aedeagus, reaching midlength of the aedeagus (*lvp* – Figs 3E–L, 4D–F); (2) the dorsal lobe of the perianthrium strongly expanded into a lamina lateroventrally and with lateral margins rounded in basal portion in dorsal view (*dl* – Figs 3E–L, 4A).

Differential diagnosis

The new species is close to *Bachmarima recta* gen. et sp. nov. and *Bachmarima valida* gen. et sp. nov. but *B. recta* shows much longer lateroventral processes of the aedeagus (*lvp* – Fig. 8D–F), reaching near base of the aedeagus sensu stricto (only reaching midlength in *B. expansa*: *lvp* – Fig. 4D–F), while in *B. valida*, the process reaches only the distal 1/3 of aedeagus (*lvp* – Fig. 12D–F).

Etymology

The species epithet ‘*expansa*’ is a Latin adjective meaning ‘expanded’; it refers to the dorsal lobe of the perianthrium distinctly, roundly expanded lateroventrally in this species.

Type material

Holotype

VIETNAM • ♂; Thừa Thiên-Huế Province, Bach Ma National Park; 16°13'38" N, 107°51'20" E; 500–600 m a.s.l.; 10–20 May 2023; J. Constant and L. Semeraro leg.; pheasant trail; VNMN.

Paratypes

VIETNAM – Thừa Thiên-Huế Province • 4 ♂♂; same data as for holotype; VNMN • 8 ♂♂; same data as for holotype; I.G.: 34.640; RBINS • 3 ♂♂; Bach Ma National Park; 16°13'38" N, 107°51'20" E; 350–600 m a.s.l.; 18 Oct. 2024; J. Constant, L. Semeraro and T.T.H. Nguyen leg.; pheasant trail; I.G.: 34.893; RBINS • 4 ♂♂; Bach Ma National Park; [16°13'38" N, 107°51'20" E]; 289 m a.s.l.; 29 May 2023; pheasant trail; T.T.H. Nguyen leg.; VNMN • 6 ♂♂; Bach Ma National Park, near ranger station; 16°08'37" N, 107°49'36" E; 300–600 m a.s.l.; 18 May 2023; J. Constant and L. Semeraro leg.; I.G.: 34.640; RBINS • 5 ♂♂; same data as for preceding; VNMN • 5 ♂♂; Bach Ma National Park, Nam Dong District, ranger station; 16°08'37" N, 107°49'36" E; 150–500 m a.s.l.; 19 Oct. 2024; J. Constant, L. Semeraro and T.T.H. Nguyen leg.; I.G.: 34.640; RBINS • 4 ♂♂; same data as for preceding; VNMN

• 1 ♂; Bach Ma National Park, Yes Hue Eco; 16°13'05" N, 107°43'27" E; 200–300 m a.s.l.; 17 May 2023; J. Constant and L. Semeraro leg.; I.G.: 34.640; RBINS • 1 ♂; Bach Ma National Park; 16°11'44" N, 107°50'44" E; 1200–1300 m a.s.l.; 22 May 2023; J. Constant and L. Semeraro leg.; roadside; I.G.: 34.640; RBINS • 1 ♂; Bach Ma National Park; 30 May 2023; T.T.H. Nguyen leg.; summit trail; light trap; VNMN • 1 ♂; same data as for preceding; [by] net; VNMN • 2 ♂♂; Bach Ma National Park; 15 Mar. 2023; V.T. Trung leg.; VNMN • 2 ♂♂; Thừa Thiên-Huế Province, Bach Ma National Park, road to Bach Ma Peak; 16°11'45.73" N, 107°51'46.34" E; 1325 m a.s.l.; 14 Sept. 2024; T.T.H. Nguyen leg.; [by] net; AU00657 and AU00658; VNMN • 1 ♂; Phong Dien District; 16°30'27" N, 107°16'05" E; 350–400 m a.s.l.; 23 May 2023; J. Constant and L. Semeraro leg.; I.G.: 34.640; RBINS • 2 ♂♂; same data as for preceding; VNMN.

Description

MEASUREMENTS AND RATIOS. LT: ♂ (n = 10): 5.7 mm (5.5–5.9); LT/BB = 1.94; LTg/BTg = 2.20; LW/BW = 1.23; BV/LV = 2.23; LF/BF = 0.85.

HEAD (Fig. 1A–E). Vertex brown, often with paler marking on each side and obsolete median carina yellowish; $2.2 \times$ as broad as long in midline, slightly constricted in middle; disc weakly concave; anterior margin slightly, angularly projecting anteriorly; posterior margin rather deeply concave; all margins moderately carinate. Frons brown, weakly convex, smooth with distinct, strongly curved yellow marking on each side of complete median carina, sometimes more or less merging together on carina, and obsolete peridiscal carina marked with yellowish (mostly in dorsal portion of frons); yellow marking along fronto-clypeal suture, wider in middle. Genae yellowish brown with anteroventral angle slightly projecting anteriorly. Clypeus triangular, convex, smooth, not keeled or carinate; anteclypeus brown with sides yellowish; postclypeus blackish brown. Labium brown with last segment longer than broad, shorter than penultimate. Antennae with scape short, ring-shaped, yellowish, and pedicel bulbous, yellowish with basal $\frac{1}{3}$ brown.

THORAX (Fig. 1A, C–E). Pronotum brown with paler, yellowish median line, more visible in anterior portion; subtriangular, projecting anteriorly; smooth with anterior margin carinate and pair of impressed points on each side of midline; lateral fields very narrow behind eyes; paranotal lobes brown, yellowish under eye and with black marking along ventral margin; posteroventral angle rounded. Mesonotum brown, often with carinae marked with yellowish, smooth, weakly convex with shallow depression before scutellum sometimes containing obsolete median carina; sublateral (peridiscal) carinae incomplete but rather distinct. Tegulae yellowish brown.

TEGMINA (Figs 1A–D, 2A–B, 4). Brown with main veins slightly darker, elevated, and cross-veins weakly raised and darker, or paler along costal margin; often with zigzagged marking of white wax more or less following claval joint with posterior branch reaching MP vein, and transverse marking subapically; distinctly convex, and about $2.2 \times$ as long as wide, with distinct lateral hump including vein ScP+RA slightly before basal $\frac{1}{3}$; rather narrow but distinct, yellowish epipleuron; clavus closed, reaching $\frac{4}{5}$ of tegmen length. Venation as in genus description.

HIND WINGS (Fig. 1F). Blackish brown; veins generally black, darker than background; well developed, with three distinct lobes (Sarimini type) more or less equal in width; indentation between ScP-R-MP-Cu and Pcu-A1 lobes moderately deep. Venation as in genus description.

LEGS (Figs 1A–E, 2C–D). Yellowish brown, paler than tegmina; distal portion of metafemora and basal portion of metatibiae darkened; all spines of posterior legs black apically. Anterior and median legs slightly flattened dorsoventrally, tibiae more slender than corresponding femora; posteroventral margin of pro- and mesofemora with row of minute teeth in distal portion; pro- and mesotarsi rather elongate.

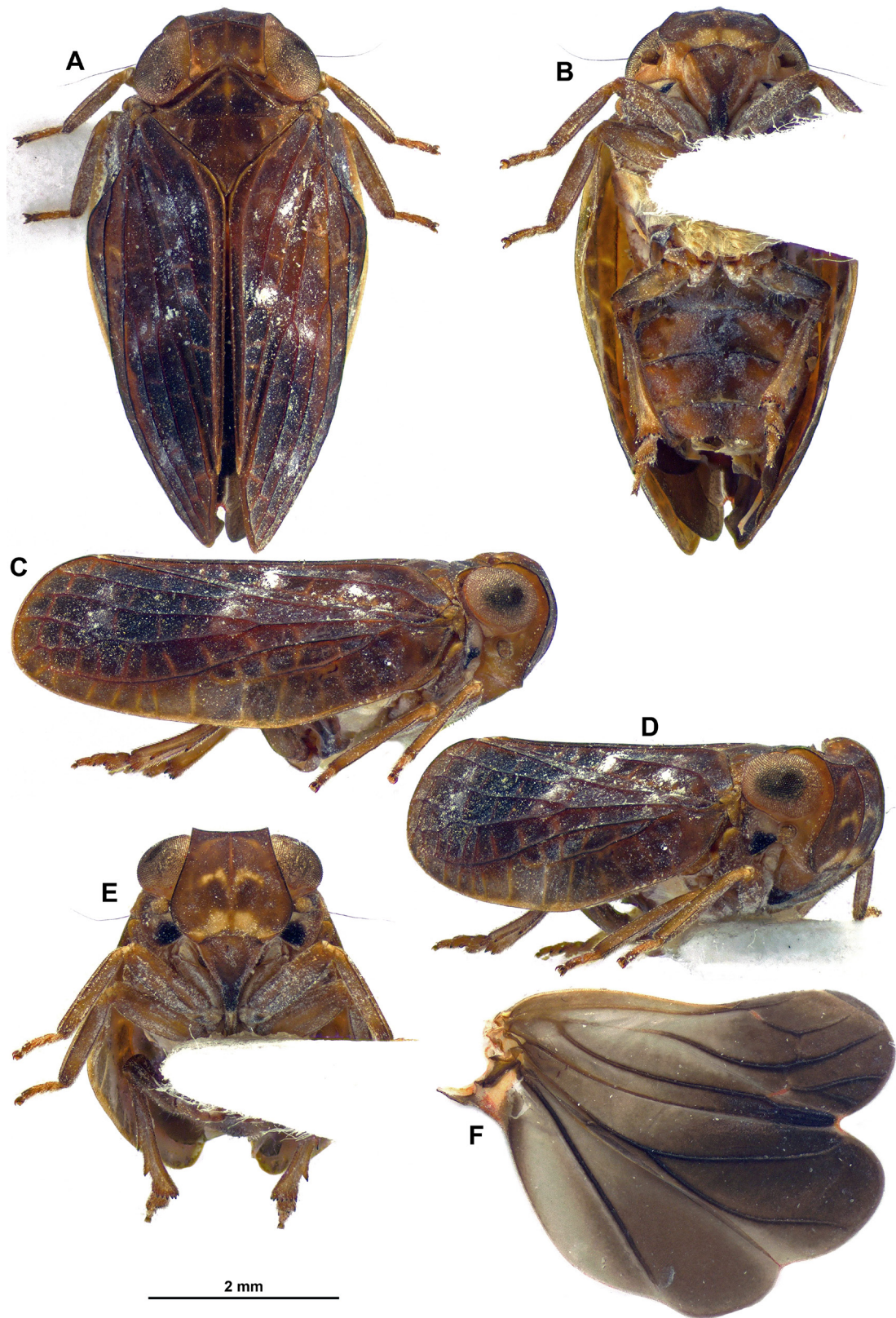


Fig. 1. *Bachmarima expansa* gen. et sp. nov., dissected paratype, ♂ (RBINS). **A.** Habitus, dorsal view. **B.** Habitus, ventral view. **C.** Habitus, lateral view. **D.** Habitus, anterolateral view. **E.** Habitus, perpendicular view of frons. **F.** Right hind wing.

Metatibiae with two lateral spines in distal half, and seven apical spines. Metatarsi rather short with first segment about as long as combined length of remaining segments. First metatarsomere with two latero-apical and 7 intermediate spines arranged in arc. Metatibiotarsal formula: (2) 7/9/2.

ABDOMEN (Fig. 1B). Brown with median area darker.

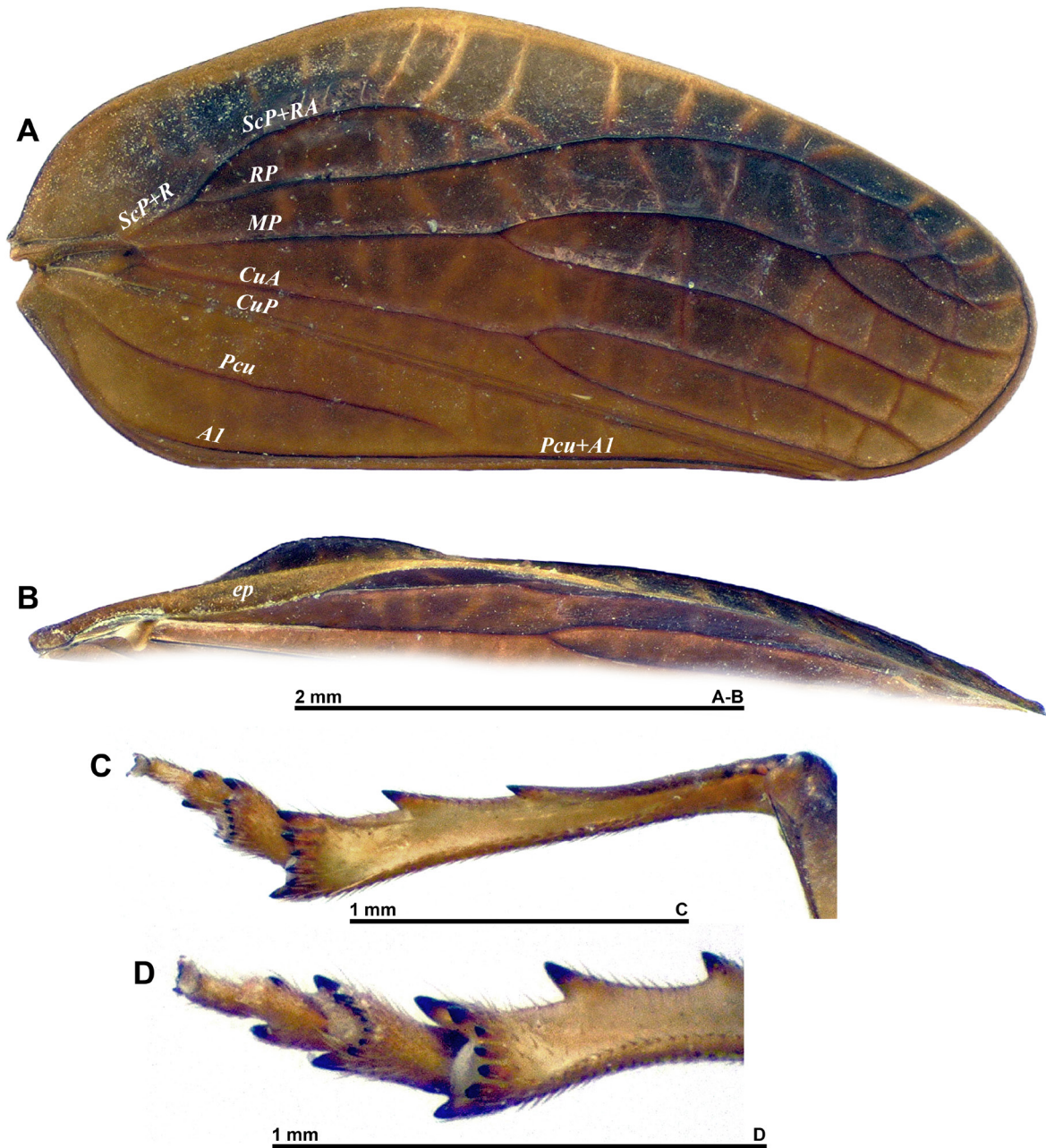


Fig. 2. *Bachmarima expansa* gen. et sp. nov., paratype, ♂ (RBINS). **A.** Right tegmen, perpendicular view. **B.** Right tegmen, ventral view. **C.** Right tibia and tarsus, ventral view. **D.** Distal portion of right tibia and tarsus, ventral view. Abbreviations: see Material and methods.

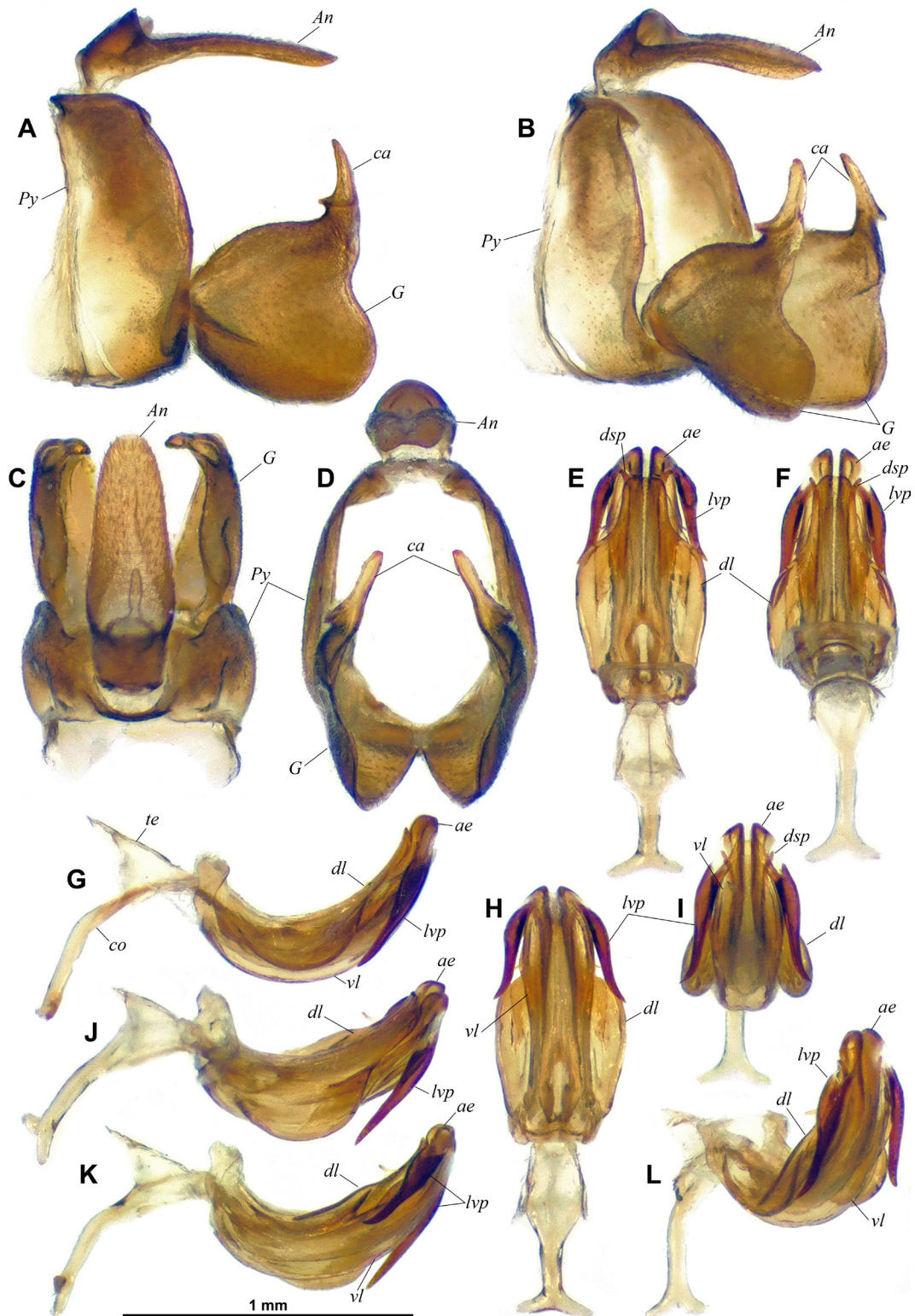


Fig. 3. *Bachmarima expansa* gen. et sp. nov., holotype, ♂ (VNMN), terminalia. **A–D.** Pygofer, anal tube and gonostyli. **A.** Left lateral view. **B.** Posterolateral view. **C.** Dorsal view. **D.** Caudal view. **E–L.** Aedeagus. **E.** Dorsal view. **F.** Anterodorsal view. **G.** Left lateral view. **H.** Ventral view. **I.** Posteroventral view. **J.** Left laterodorsal view. **K.** Left lateroventral view. **L.** Posterolateral view. Abbreviations: see Material and methods.

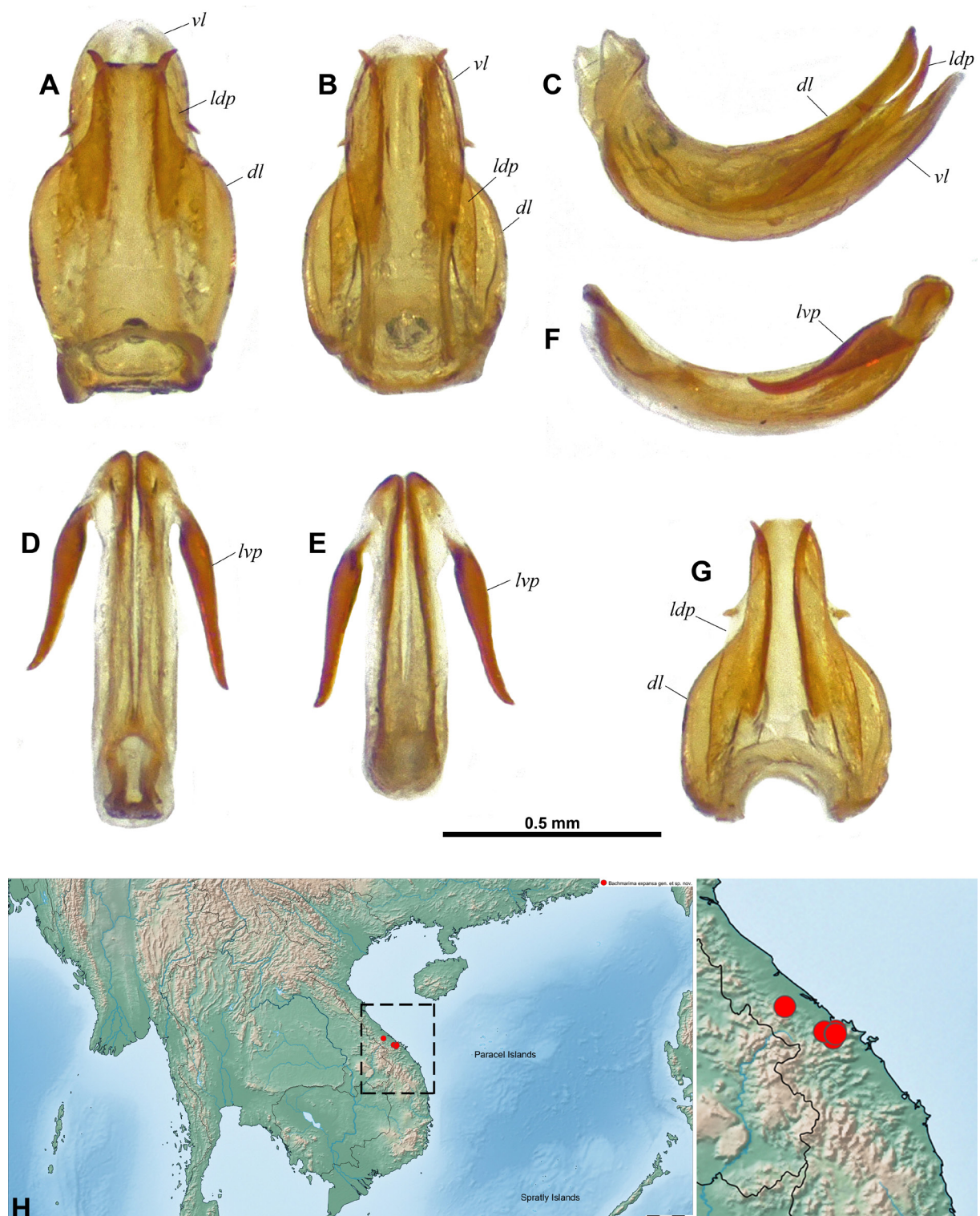


Fig. 4. *Bachmarima expansa* gen. et sp. nov. **A–G.** Holotype, ♂ (VNMN), aedeagus. **A–C.** Periandrium. **A.** Dorsal view. **B.** Posteroventral view. **C.** Left lateral view. **D–F.** Aedeagus s. str. **D.** Dorsal view. **E.** Posteroventral view. **F.** Left lateral view. **G.** Dorsal lobe of periandrium, ventral view. **H.** Distribution map. Abbreviations: see Material and methods.



Fig. 5. *Bachmarima expansa* gen. et sp. nov., live specimens in Bach Ma National Park, pheasant trail, 18 Oct. 2024 (photographed in cage). A–B. Specimen 1. C–D. Specimen 2. E–F. Specimen 3.

MALE TERMINALIA (Figs 3–4). Pygofer (*Py* – Fig. 3A–D) short, about $2.4 \times$ as high as long at midheight in lateral view, with posterior margin broadly rounded in lateral view; in caudal view suboval, $1.3 \times$ as high as wide; dorsally abruptly, deeply notched. Gonostyli (*G* – Fig. 3A–D) massive, moderately convex, with anterodorsal margin rounded, then abruptly sinuate at base of capitulum; ventral margin rounded; posterior margin roundly projecting caudad in lateral view and sinuate towards base of capitulum; capitulum (*ca* – Fig. 3A–B, D) elongate, digitiform, strongly projecting dorsad and with poorly distinct neck, curved anterodorsad and evenly tapering towards apex in lateral view, in caudal view slightly directed mesad and with basilateral laminate process directed lateroventrad. Anal tube (*An* – Fig. 3A–D) elongate, dorsoventrally flattened, and sublanceolate, weakly grooved medially beyond anal opening (in basal $\frac{1}{4}$), rather narrow, about $2.8 \times$ as long as wide in dorsal view; in lateral view abruptly narrowing at anal opening, then weakly downcurved. Aedeagus (*ae* – Figs 3E–L, 4) symmetrical, curved posterodorsad in lateral view. Ventral lobe of periandrium (*vl* – Figs 3G–I, K–L, 4A–C) laminate, spatulate with apical margin rounded, shorter and much narrower than dorsal lobe. Dorsal lobe of periandrium (*dl* – Figs 3E–L, 4A–C, G) strongly expanded into lamina lateroventrally, with sides rounded in dorsal view in proximal portion, then sinuately, strongly tapering towards truncate apex, lamina covering distal portion of lateroventral processes of aedeagus; laterodorsal processes of periandrium (*ldp* – Figs 3E–F, I, 4A–C, G) pointed and curved towards the posterior and with lateral tooth. Aedeagus (sensu stricto, *ae* – Figs 3E–L, 4D–F) surpassing dorsal and ventral lobes of periandrium, bifid, each shaft widening distally to obliquely truncate apex; robust lateroventral processes (*lvp* – Figs 3E–L, 4D–F) arising subapically, weakly curved ventrocephalad and (in caudal view) slightly sinuate, reaching to midlength of aedeagus. Connective (*co* – Fig. 3G) well developed, corpus connective long, regularly curved in lateral view, tectiductus (*te* – Fig. 3G) well developed, conical with anteroventral apodemes and wide anterior foramen.

Biology

Bachmarima expansa gen. et sp. nov. was collected in the months of March, May, September and October at altitudes between 150 and 1325 m a.s.l., in moist evergreen tropical forest. The specimens were sitting on small branches and leaves, on lower vegetation, bushes and trees. In Bach Ma National Park, it was found at the following collecting site/habitats (Constant & Pham 2025a: fig. 2a): “Yes Hue Eco” (Constant & Pham 2025a: fig. 2a(1), b), “pheasant trail” (Constant & Pham 2025a: figs 2a(2), 3a), “roadside” (Constant & Pham 2025a: figs 2a(4), 4a), “summit” (Constant & Pham 2025a: figs 2a(5), 4b) and “ranger station” (Constant & Pham 2025a: figs 2a(6), 5a), and in Phong Dien district (Constant & Pham 2025a: fig. 5b).

Distribution

Vietnam: Thừa Thiên-Huế Province, Bach Ma National Park and Phong Dien District (Fig. 4H).

Bachmarima recta gen. et sp. nov.

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Figs 6–9

Diagnosis

Bachmarima recta gen. et sp. nov. can be recognized by (1) the strongly elongate lateroventral processes of the aedeagus, reaching near base of the aedeagus (*lvp* – Figs 7G–L, 8D–F); (2) the dorsal lobe of the periandrium strongly expanded into a lamina lateroventrally and with lateral margins more or less straight in basal portion in dorsal view (*dl* – Figs 7E–L, 8A).

Differential diagnosis

The new species is close to *Bachmarima expansa* gen. et sp. nov. but the latter shows much shorter lateroventral processes of the aedeagus (*lvp* – Fig. 4D–F), only reaching midlength of the aedeagus s. str. (reaching near base of aedeagus in *B. recta*: *lvp* – Fig. 8D–F).

Etymology

The species epithet ‘*recta*’ is a Latin adjective meaning ‘straight’; it refers to the dorsal lobe of the perianthrium with sides straight, subparallel in proximal portion in this species.

Type material

Holotype

VIETNAM • ♂; Thừa Thiên-Huế Province, near ranger station; 16°08'37" N, 107°49'36" E; 300–600 m a.s.l.; 18 May 2023; J. Constant and L. Semeraro leg.; VNMN.

Paratypes

VIETNAM – **Quang Tri Province** • 1 ♂; Da Krong Nature Reserve; 16°37' N, 106°47' E; 5–10 Jul. 2011; J. Constant and J. Bresseel leg.; I.G.: 31.933; RBINS • 1 ♂; same data as for preceding; VNMN.
– **Thừa Thiên-Huế Province** • 2 ♂♂; same data as for holotype; VNMN • 3 ♂♂; same data as for holotype; I.G.: 34.640; RBINS • 1 ♂; Bach Ma National Park, Yes Hue Eco; 16°13'05" N, 107°43'27" E; 200–300 m a.s.l.; 17 May 2023; J. Constant and L. Semeraro leg.; I.G.: 34.640; RBINS • 1 ♂; same data as for preceding; VNMN • 1 ♂; Bach Ma National Park, Yes Hue Eco; 16°13'05" N, 107°43'27" E; 152 m a.s.l.; 1 Jun. 2023; T.T.H. Nguyen leg.; VNMN • 1 ♂; Bach Ma National Park; 16°12' N, 107°52' E; 15–16 Jul. 2011; J. Constant and J. Bresseel leg.; summit; day [time] collecting; I.G.: 31.933; RBINS • 1 ♂; Thừa Thiên-Huế Province, Bach Ma National Park; 16°11'18" N, 107°50'56" E; 1300–1400 m a.s.l.; 11–21 May 2023; J. Constant and L. Semeraro leg.; summit; I.G.: 34.640; RBINS • 1 ♂; Bach Ma National Park; 30 May 2023; T.T.H. Nguyen leg.; summit trail; light trap; VNMN • 1 ♂; same data as for preceding; [by] net; VNMN • 6 ♂♂; Bach Ma National Park; 16°13'38" N, 107°51'20" E; 500–600 m a.s.l.; 10–20 May 2023; J. Constant and L. Semeraro leg.; pheasant trail; I.G.: 34.640; RBINS • 2 ♂♂; same data as for preceding; VNMN • 1 ♂; Bach Ma National Park; 16°13'38" N, 107°51'20" E; 350–600 m a.s.l.; 18 Oct. 2024; J. Constant, L. Semeraro and T.T.H. Nguyen leg.; pheasant trail; I.G.: 34.893; RBINS • 2 ♂♂; Bach Ma National Park; [16°13'38" N, 107°51'20" E]; 289 m a.s.l.; 29 May 2023; T.T.H. Nguyen leg.; pheasant trail; VNMN • 2 ♂♂; Bach Ma National Park; 16°13'41.18" N, 107°51'16.82" E; 344 m a.s.l.; 15 Sep. 2024; Hoai leg.; pheasant trail, [by] net; AU00493 and AU00495; VNMN • 1 ♂; Bach Ma National Park, Do Quyen Waterfall; 16°11'28.83" N, 107°50'54.94" E; 1141 m a.s.l.; May 2023; T.T.H. Nguyen leg.; [by] net; AU00659; VNMN • 1 ♂; Bach Ma National Park; 16°11'44" N, 107°50'44" E; 1200–1300 m a.s.l.; 22 May 2023; J. Constant and L. Semeraro leg.; roadside; I.G.: 34.640; RBINS • 6 ♂♂; Bach Ma National Park, Nam Dong District, ranger station; 16°08'37" N, 107°49'36" E; 150–500 m a.s.l.; 19 Oct. 2024; J. Constant, L. Semeraro and T.T.H. Nguyen leg.; I.G.: 34.640; RBINS • 5 ♂♂; same data as for preceding; VNMN • 1 ♂; Bach Ma National Park; 600 m a.s.l.; 8 May 2003; V.T. Hoang leg.; VNMN • 7 ♂♂; Phong Dien District; 16°30'27" N, 107°16'05" E; 350–400 m a.s.l.; 23 May 2023; J. Constant and L. Semeraro leg.; I.G.: 34.640; RBINS • 7 ♂♂; same data as for preceding; VNMN.

Description

MEASUREMENTS AND RATIOS. LT: ♂ (n = 10): 5.6 mm (5.3–5.9); LT/BB = 1.97; LTg/BTg = 2.20; LW/BW = 1.19; BV/LV = 2.23; LF/BF = 0.86.

HEAD (Fig. 6A–E). Vertex brown, often with paler marking on each side and at posterior angles, and obsolete median carina yellowish; 2.2 × as broad as long in midline, slightly constricted in middle; disc

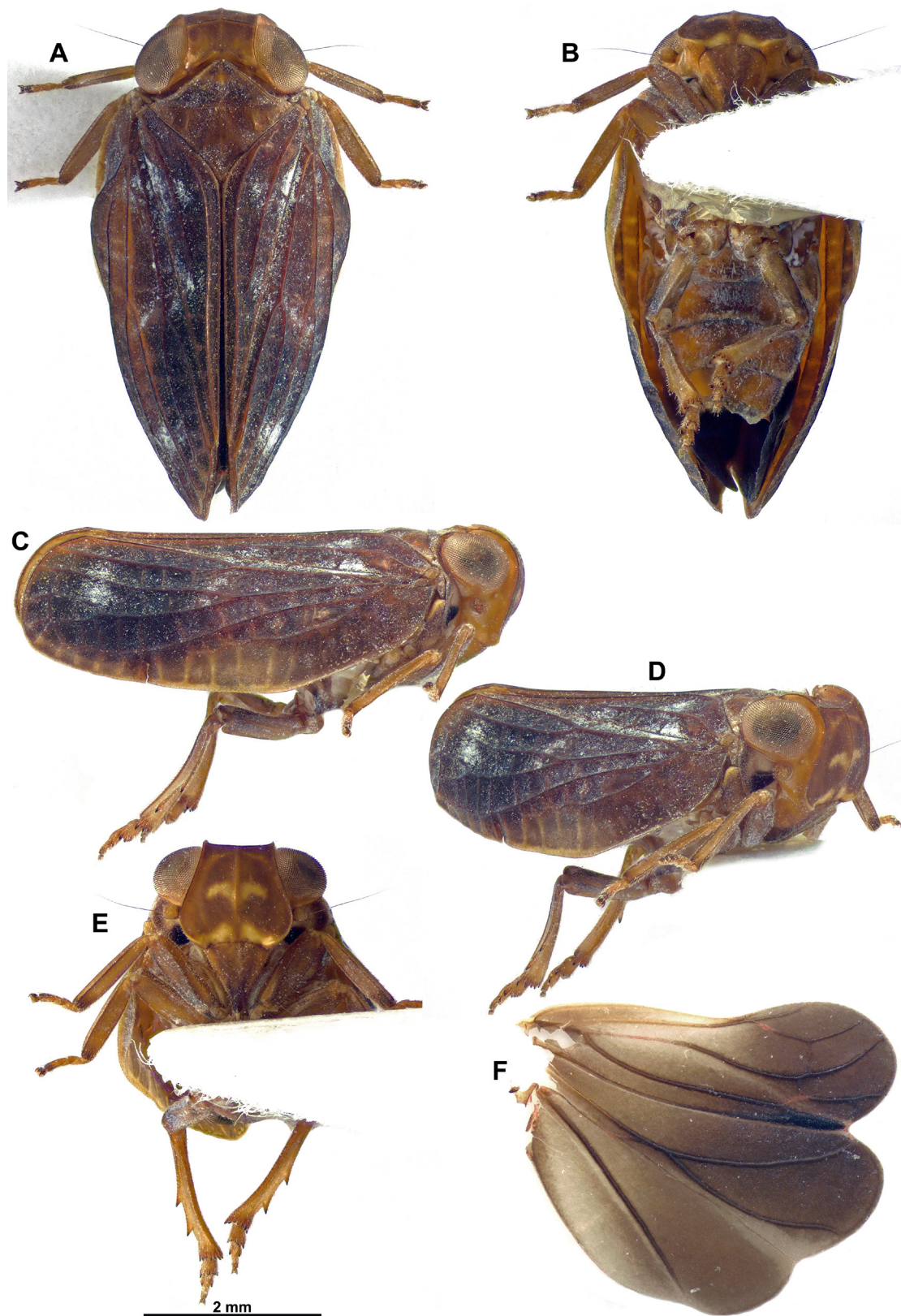


Fig. 6. *Bachmarima recta* gen. et sp. nov., dissected paratype, ♂ (RBINS). **A.** Habitus, dorsal view. **B.** Habitus, ventral view. **C.** Habitus, lateral view. **D.** Habitus, anterolateral view. **E.** Habitus, perpendicular view of frons. **F.** Right hind wing.

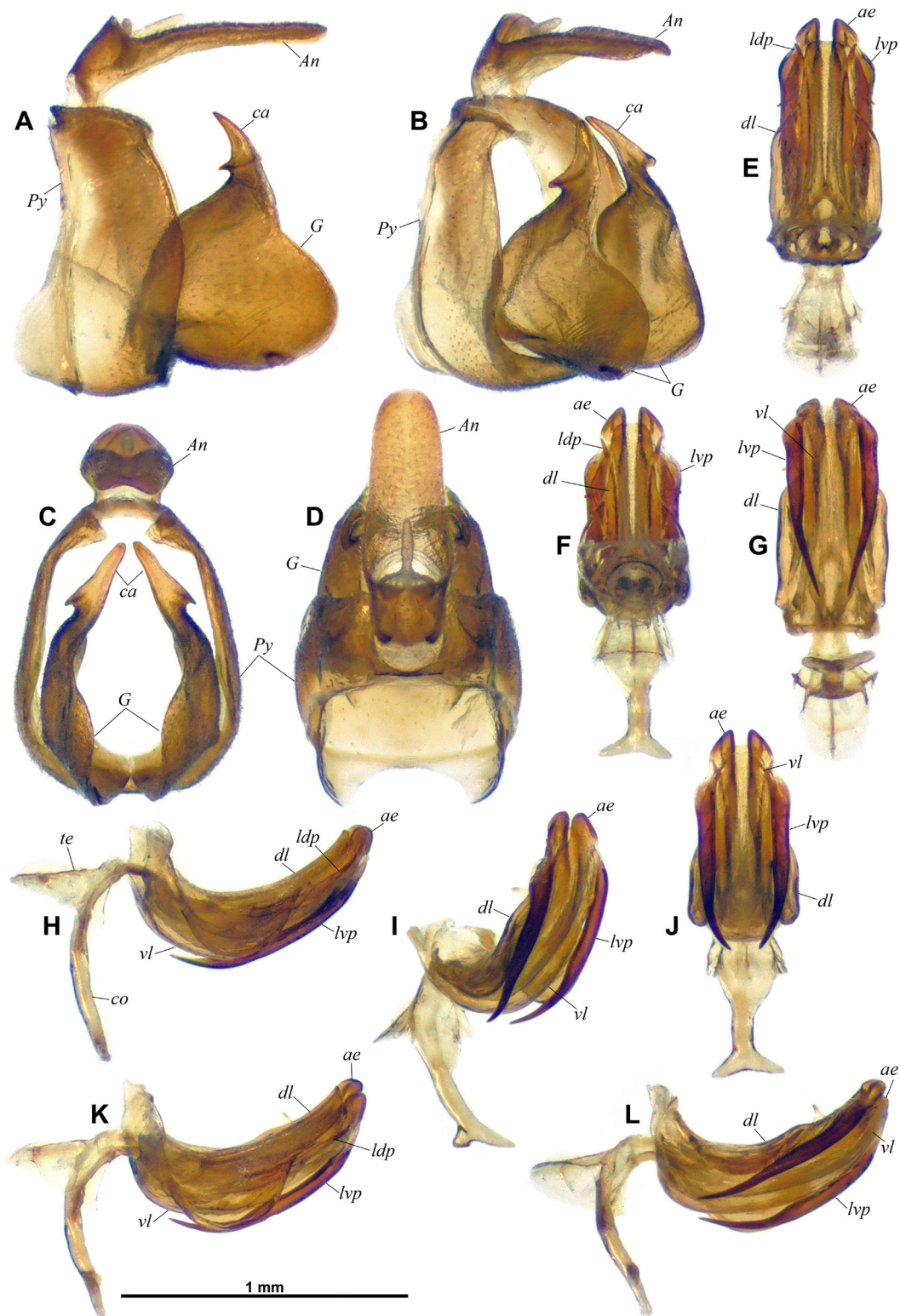


Fig. 7. *Bachmarima recta* gen. et sp. nov., holotype, ♂ (VNMN), terminalia. **A–D.** Pygofer, anal tube and gonostyli. **A.** Left lateral view. **B.** Posterolateral view. **C.** Caudal view. **D.** Dorsal view. **E–L.** Aedeagus. **E.** Dorsal view. **F.** Anterodorsal view. **G.** Ventral view. **H.** Left lateral view. **I.** Posterolateral view. **J.** Posteroventral view. **K.** Left laterodorsal view. **L.** Left lateroventral view. Abbreviations: see Material and methods.

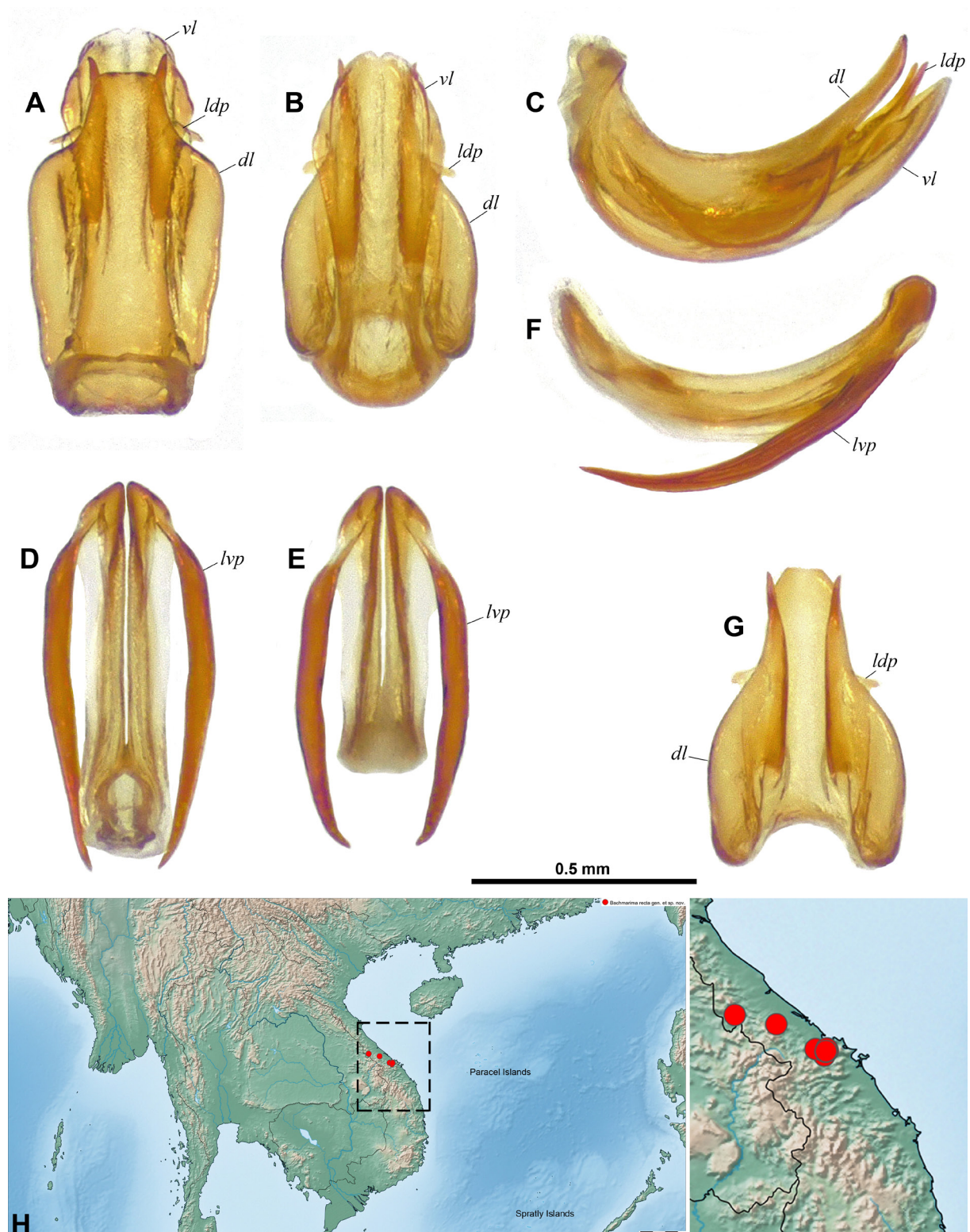


Fig. 8. *Bachmarima recta* gen. et sp. nov. **A–G.** Paratype, ♂ (RBINS), aedeagus. **A–C.** Periandrium. **A.** Dorsal view. **B.** Posteroventral view. **C.** Left lateral view. **D–F.** Aedeagus s. str. **D.** Dorsal view. **E.** Posteroventral view. **F.** Left lateral view. **G.** Dorsal lobe of periandrium, ventral view. **H.** Distribution map. Abbreviations: see Material and methods.

weakly concave; anterior margin slightly, angularly projecting anteriorly; posterior margin rather deeply concave; all margins moderately carinate. Frons brown, weakly convex, smooth with distinct, strongly curved yellow marking on each side of complete median carina, sometimes more or less merging together on carina, and obsolete peridiscal carina marked with yellowish (mostly in dorsal portion of frons); yellow marking along fronto-clypeal suture, wider in middle, usually interrupted by median carina. Genae yellowish brown with anteroventral angle slightly projecting anteriorly. Clypeus triangular, convex, smooth, not keeled or carinate; anteclypeus brown with sides yellowish; postclypeus darker brown. Labium brown with last segment longer than broad, shorter than penultimate. Antennae with scape short, ring-shaped, yellowish, and pedicel bulbous, yellowish with basal $\frac{1}{3}$ brown.

THORAX (Fig. 6A, C–E). Pronotum brown with paler, yellowish median line, more visible in anterior portion; subtriangular, projecting anteriorly; smooth with anterior margin carinate and pair of impressed points on each side of midline; lateral fields very narrow behind eyes; paranotal lobes brown, pale yellowish under eye and with black marking along ventral margin; posteroventral angle rounded. Mesonotum brown, often with carinae and lateral angles marked with yellowish, smooth, weakly convex with shallow depression before scutellum sometimes containing obsolete median carina; sublateral (peridiscal) carinae incomplete but rather distinct. Tegulae yellowish brown.

TEGMINA (Figs 6A–D, 9). Brown with main veins slightly darker, elevated, and cross-veins weakly raised and darker, or paler along costal margin; often with zigzagged marking of white wax more or less following claval joint with posterior branch reaching MP vein, and transverse marking subapically; distinctly convex, and about $2.2 \times$ as long as wide, with distinct lateral hump including vein ScP+RA slightly before basal $\frac{1}{3}$; rather narrow but distinct, yellowish epipleuron; clavus closed, reaching $\frac{4}{5}$ of tegmen length. Venation as in genus description.

HIND WINGS (Fig. 6F). Blackish brown; veins generally darker than background; well developed, with three distinct lobes (Sarimini type) more or less equal in width; indentation between ScP-R-MP-Cu and Pcu-A1 lobes moderately deep. Venation as in genus description.

LEGS (Fig. 6A–E). Yellowish brown, paler than tegmina; distal portion of metafemora and basal portion of metatibiae darker; all spines of posterior legs black apically. Anterior and median legs slightly flattened dorsoventrally, tibiae more slender than corresponding femora; posteroventral margin of pro- and mesofemora with row of minute teeth in distal portion; pro- and mesotarsi rather elongate. Metatibiae with two lateral spines in distal half, and seven apical spines. Metatarsi rather short with first segment about as long as combined length of remaining segments. First metatarsomere with two latero-apical and 7 intermediate spines arranged in arc. Metatibiotarsal formula: (2) 7/9/2.

ABDOMEN (Fig. 6B). Brown with median area darker.

MALE TERMINALIA (Figs 7–8). Pygofer (*Py* – Fig. 7A–D) short, about $2.4 \times$ as high as long at midheight in lateral view, with posterior margin broadly rounded in lateral view; in caudal view suboval, $1.3 \times$ as high as wide; dorsally abruptly, deeply notched. Gonostyli (*G* – Fig. 7A–D) massive, moderately convex, with anterodorsal margin rounded, then abruptly sinuate at base of capitulum; ventral margin rounded; posterior margin roundly projecting caudad in lateral view and angular at base of capitulum; capitulum (*ca* – Fig. 7A–B, D) elongate, digitiform, strongly projecting dorsad and with poorly distinct neck, curved anterodorsad and evenly tapering towards apex in lateral view, in caudal view slightly directed mesad and with basilateral laminate process directed lateroventrad. Anal tube (*An* – Fig. 7A–D) elongate, dorsoventrally flattened, and sublanceolate, weakly grooved medially beyond anal opening (in basal $\frac{1}{4}$), rather narrow, about $2.8 \times$ as long as wide in dorsal view; in lateral view abruptly narrowing at anal opening, then weakly downcurved. Aedeagus (*ae* – Figs 7E–L, 8) symmetrical, curved posterodorsad in lateral view. Ventral lobe of periandrium (*vl* – Figs 7G, I–J, L, 8A–C) laminate, spatulate with apical

margin shortly notched, shorter and much narrower than dorsal lobe. Dorsal lobe of periandrium (*dl* – Figs 7E–L, 8A–C, G) strongly expanded into lamina lateroventrally, with sides straight, subparallel in dorsal view in proximal portion, then sinuately, strongly tapering towards parallel-sided distal portion and truncate apex, lamina partly covering lateroventral processes of aedeagus; laterodorsal processes of periandrium (*ldp* – Figs 7E–F, H, K, 8A–C, G) pointed and curved towards the posterior and with lateral tooth. Aedeagus (sensu stricto, *ae* – Figs 7E–L, 8D–F) surpassing dorsal and ventral lobes of periandrium, bifid, each shaft widening distally to obliquely truncate apex; robust, strongly elongate lateroventral processes (*lvp* – Figs 7E–L, 8D–F) arising subapically, weakly curved ventrocephalad and (in ventral view) curved mesad in distal portion and reaching basal $\frac{1}{4}$ of aedeagus length. Connective (*co* – Fig. 7G) well developed, corpus connective long, regularly curved in lateral view, tectiductus (*te* – Fig. 7G) well developed, conical with anteroventral apodemes and wide anterior foramen.

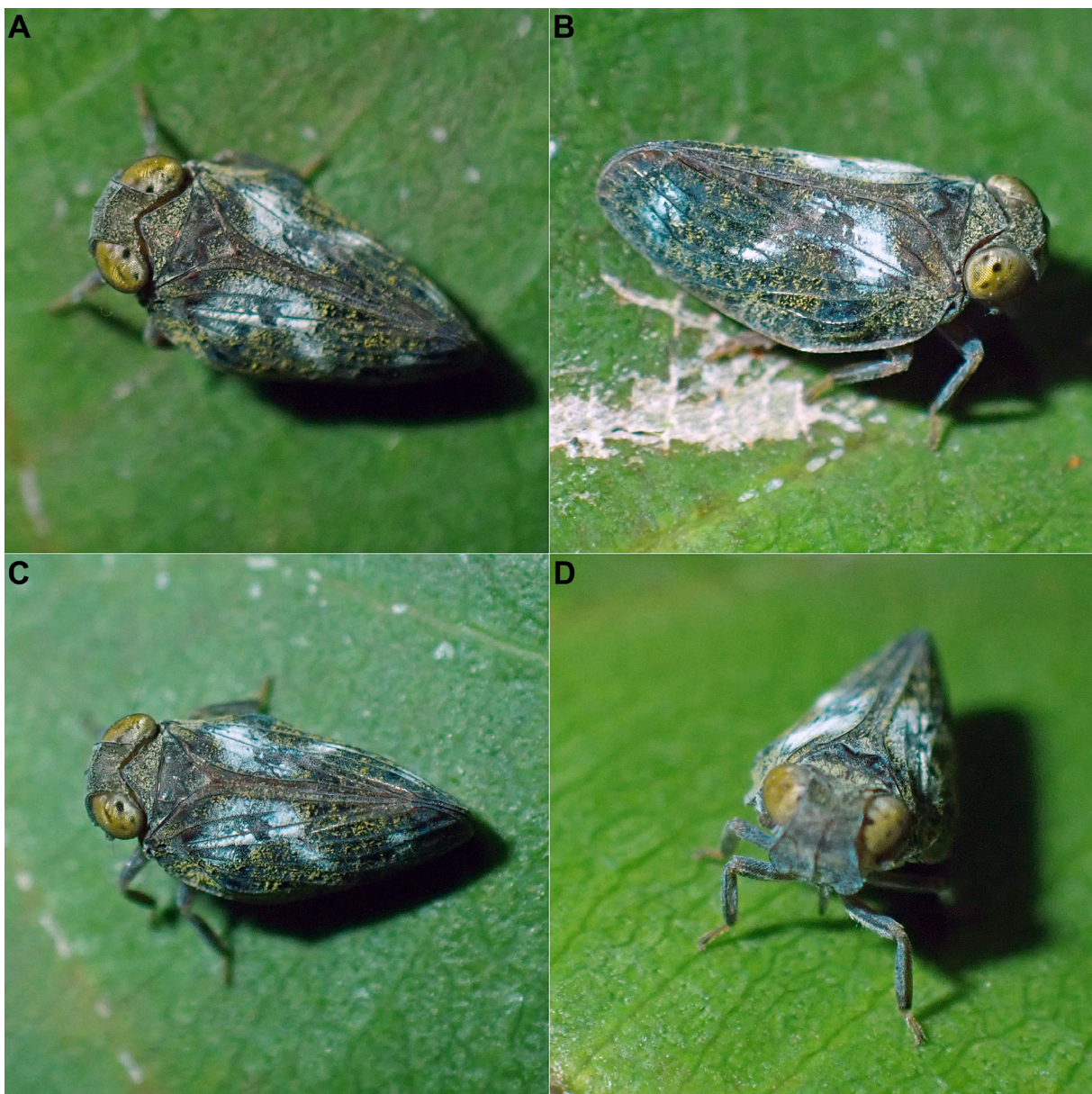


Fig. 9. *Bachmarima recta* gen. et sp. nov. **A–D.** Live specimen in Bach Ma National Park, pheasant trail, 18 Oct. 2024 (photographed in cage).

Biology

Bachmarima recta gen. et sp. nov. was collected in the months of May, June, July, September and October at altitudes between 200 and 1400 m a.s.l., in moist evergreen tropical forest. The specimens were sitting on small branches and leaves, on lower vegetation, bushes and trees. In Bach Ma National Park, it was found at the following collecting site/habitats (Constant & Pham 2025a: fig. 2a): “Yes Hue Eco” (Constant & Pham 2025a: fig. 2a(1), b), “pheasant trail” (Constant & Pham 2025a: figs 2a(2), 3a), “roadside” (Constant & Pham 2025a: figs 2a(4), 4a), “summit” (Constant & Pham 2025a: figs 2a(5), 4b) and “ranger station” (Constant & Pham 2025a: figs 2a(6), 5a), and in Phong Dien district (Constant & Pham 2025a: fig. 5b).

Distribution

Vietnam: Thừa Thiên-Huế Province, Bach Ma National Park and Phong Dien District, and Quang Tri Province, Da Krong Nature Reserve (Fig. 8H).

Bachmarima valida gen. et sp. nov.

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Figs 10–12

Diagnosis

Bachmarima valida gen. et sp. nov. can be recognized by (1) the short, robust lateroventral processes of the aedeagus, reaching to distal $\frac{1}{3}$ of the aedeagus sensu stricto (*lvp* – Figs 11E–L, 12D–F); (2) the dorsal lobe of the periandrium strongly expanded into a lamina lateroventrally and with lateral margins moderately rounded in basal portion in dorsal view (*dl* – Figs 11E–L, 12A).

Differential diagnosis

The new species is close to *Bachmarima expansa* gen. et sp. nov. but the latter shows much longer lateroventral processes of the aedeagus (*lvp* – Fig. 4D–F), reaching midlength of the aedeagus sensu stricto (reaching only to distal $\frac{1}{3}$ of aedeagus in *B. valida*: *lvp* – Fig. 12D–F).

Etymology

The species epithet ‘*valida*’ is a Latin adjective meaning ‘robust’; it refers to the short and robust lateroventral process of the aedeagus in this species.

Type material

Holotype

VIETNAM • ♂; Thừa Thiên-Huế Province, Bach Ma National Park; 16°13'38" N, 107°51'20" E; 500–600 m a.s.l.; 10–20 May 2023; J. Constant and L. Semeraro leg.; pheasant trail; VNMN.

Paratypes

VIETNAM – **Quang Tri Province** • 1 ♂; Da Krong Nature Reserve; 16°37' N, 106°47' E; 5–10 Jul. 2011; J. Constant and J. Bresseel leg.; I.G.: 31.933; RBINS. – **Thừa Thiên-Huế Province** • 1 ♂; same data as for holotype; VNMN • 3 ♂♂; same data as for holotype; I.G.: 34.640; RBINS • 1 ♂; Bach Ma National Park; 16°12' N, 107°52' E; [1400 m a.s.l.]; 15–16 Jul. 2011; J. Constant and J. Bresseel leg.; summit; day [time] collecting; I.G.: 31.933; RBINS • 1 ♂; Bach Ma National Park, stairs going up to Hai Vong Dai; 16°11'53.77" N, 107°51'26.92" E; 1272 m a.s.l.; May 2023; T.T.H. Nguyen leg.; by net; AU 00483; VNMN • 1 ♂; same data as preceding; 16 Sept. 2024; AU00778; VNMN • 1 ♂; Bach Ma National Park, near ranger station; 16°08'37" N, 107°49'36" E; 300–600 m a.s.l.; 18 May 2023; J. Constant and L. Semeraro leg.; I.G.: 34.640; RBINS • 1 ♂; Nam Dong District, Bach Ma National Park, ranger station; 16°08'37" N, 107°49'36" E; 150–500 m; 19 Oct. 2024; J. Constant, L. Semeraro and T.T.H. Nguyen leg.;

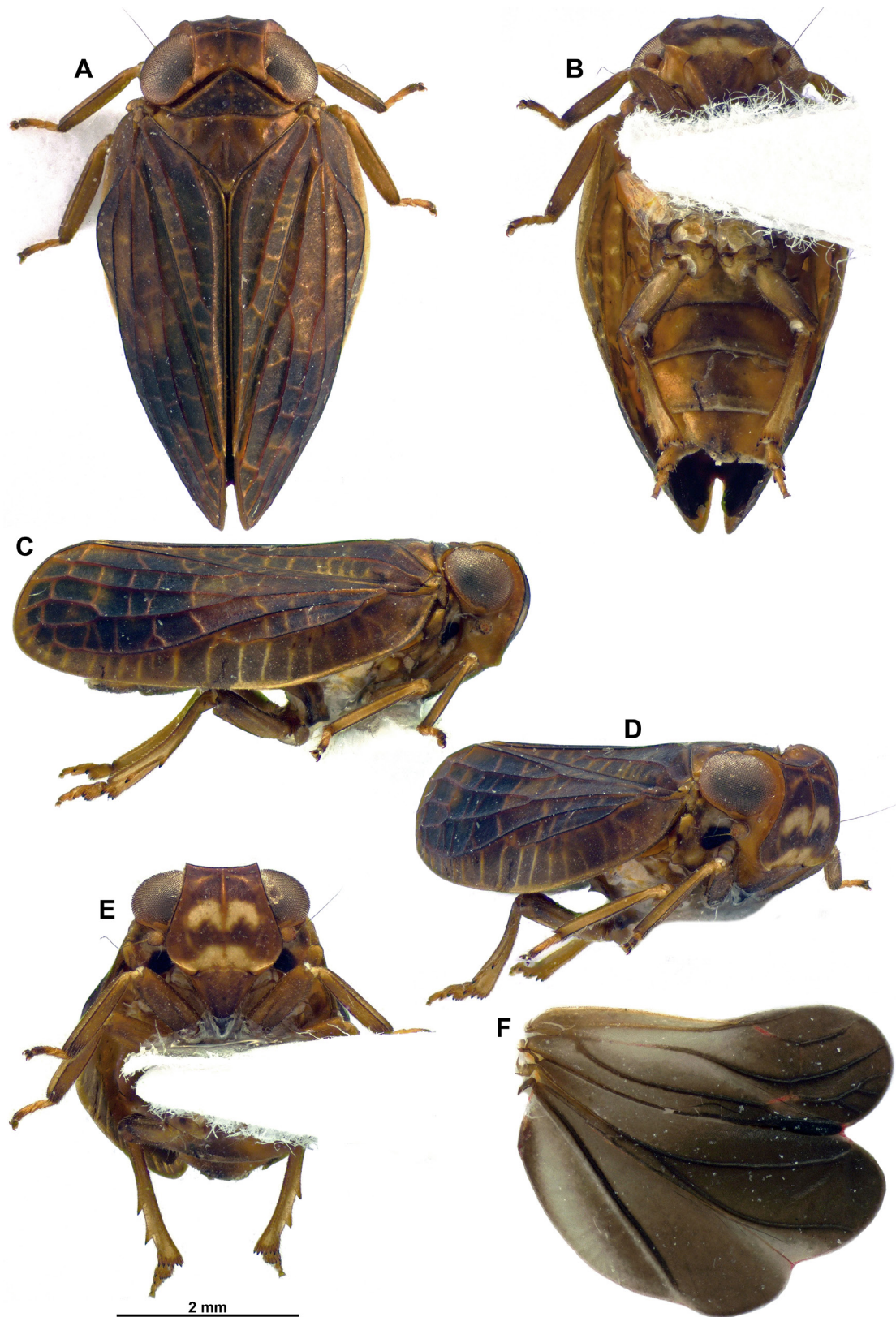


Fig. 10. *Bachmarima valida* gen. et sp. nov., dissected holotype, ♂ (VNMN). **A.** Habitus, dorsal view. **B.** Habitus, ventral view. **C.** Habitus, lateral view. **D.** Habitus, anterolateral view. **E.** Habitus, perpendicular view of frons. **F.** Right hind wing.

VNMN • 1 ♂; Bach Ma National Park, Yes Hue Eco; 16°13'05" N, 107°43'27" E; 152 m a.s.l.; 1 Jun. 2023; T.T.H. Nguyen leg.; VNMN • 1 ♂; Phong Dien District; 16°30'27" N, 107°16'05" E; 350–400 m a.s.l.; 23 May 2023; J. Constant and L. Semeraro leg.; VNMN.

Description

MEASUREMENTS AND RATIOS. LT: ♂ (n = 10): 5.6 mm (5.3–5.8); LT/BB = 1.88; LTg/BTg = 2.20; LW/BW = 1.18; BV/LV = 2.23; LF/BF = 0.86.

HEAD (Fig. 10A–E). Vertex brown, often paler on sides and obsolete median carina yellowish brown; $2.2 \times$ as broad as long in midline, slightly constricted in middle; disc weakly concave; anterior margin slightly, angularly projecting anteriorly; posterior margin rather deeply concave; all margins moderately carinate. Frons brown, weakly convex, smooth with generally well-developed, strongly curved yellow marking on each side of complete median carina, often more or less merging together on carina, and weak peridiscal carina marked with paler colour (mostly in dorsal portion of frons); yellow marking along fronto-clypeal suture generally well developed, wider in middle. Genae yellowish brown with anteroventral angle slightly projecting anteriorly. Clypeus triangular, convex, smooth, not keeled or carinate; anteclypeus brown with sides yellowish; postclypeus blackish brown. Labium brown with last segment longer than broad, shorter than penultimate. Antennae with scape short, ring-shaped, yellowish, and pedicel bulbous, yellowish with basal $\frac{1}{3}$ brown.

THORAX (Fig. 10A, C–E). Pronotum brown (generally darker than vertex) with weak paler, yellowish median line, more visible in anterior portion; subtriangular, projecting anteriorly; smooth with anterior margin carinate, some small tubercles, and pair of impressed points on each side of midline; lateral fields very narrow behind eyes; paranotal lobes brown, pale yellowish under eye and with strong black marking along ventral margin; posteroventral angle rounded. Mesonotum brown, often with carinae marked with paler colour, smooth, weakly convex with shallow depression before scutellum sometimes containing obsolete median carina; sublateral (peridiscal) carinae incomplete but rather distinct. Tegulae yellowish brown.

TEGMINA (Fig. 10A–D). Brown with main veins slightly darker, elevated, and cross-veins weakly raised and usually paler than background; often with zigzagged marking of white wax more or less following claval joint with posterior branch reaching MP vein, and transverse marking subapically; distinctly convex, and about $2.2 \times$ as long as wide, with distinct lateral hump including vein ScP+RA slightly before basal $\frac{1}{3}$; rather narrow but distinct, yellowish epipleuron; clavus closed, reaching $\frac{4}{5}$ of tegmen length. Venation as in genus description.

HIND WINGS (Fig. 10F). Blackish brown; veins darker than background, generally black; well developed, with three distinct lobes (Sarimini type) more or less equal in width; indentation between ScP-R-MP-Cu and Pcu-A1 lobes moderately deep. Venation as in genus description.

LEGS (Fig. 10A–E). Yellowish brown, paler than tegmina; distal portion of metafemora and basal portion of metatibiae darkened; all spines of posterior legs black apically. Anterior and median legs slightly flattened dorsoventrally, tibiae more slender than corresponding femora; posteroventral margin of pro- and mesofemora with row of minute teeth in distal portion; pro- and mesotarsi rather elongate. Metatibiae with two lateral spines in distal half, and seven apical spines. Metatarsi rather short with first segment about as long as combined length of remaining segments. First metatarsomere with two latero-apical and 7 intermediate spines arranged in arc. Metatibiotarsal formula: (2) 7/9/2.

ABDOMEN (Fig. 10B). Brown with median area darker.

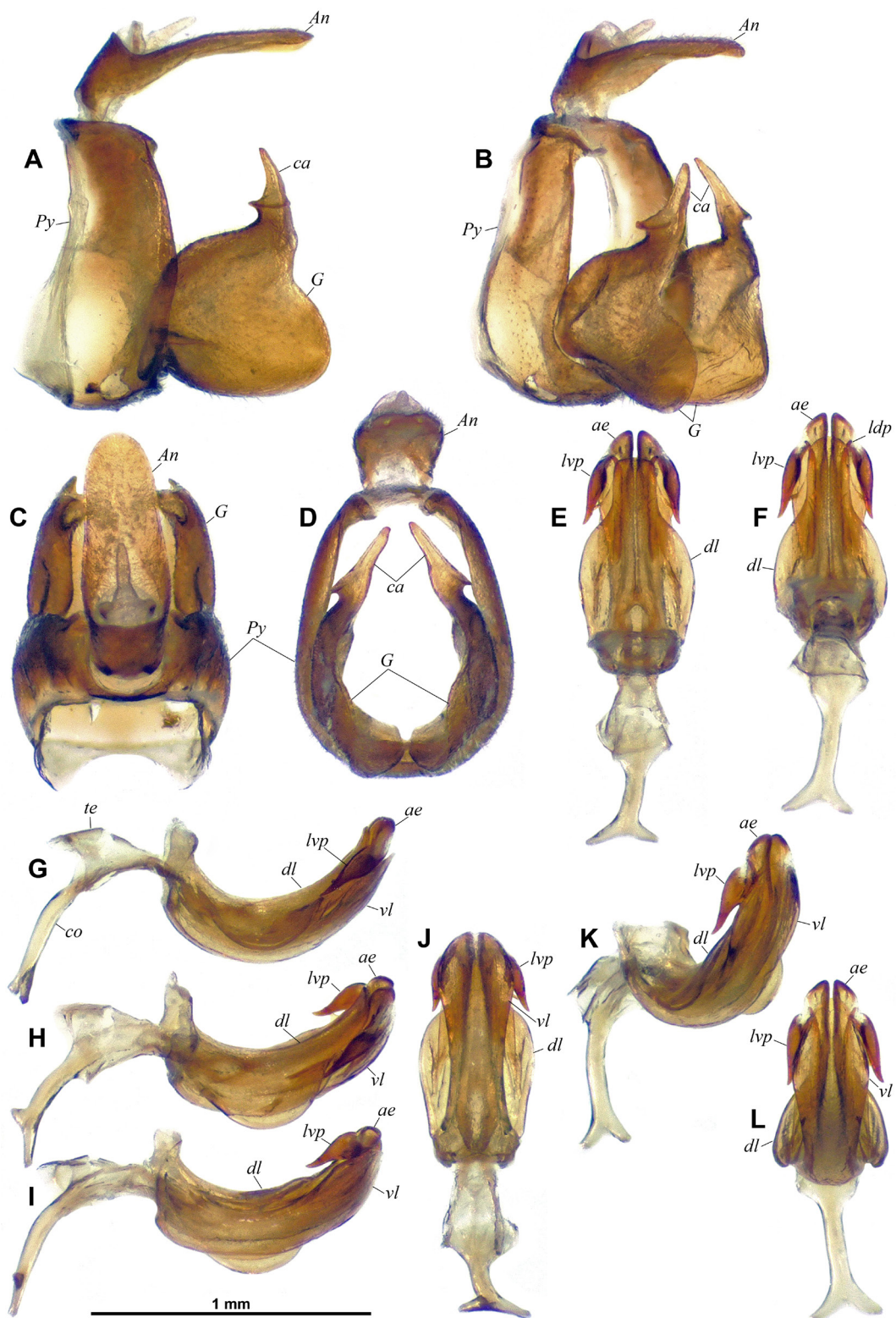


Fig. 11. *Bachmarima valida* gen. et sp. nov., holotype, ♂ (VNMN), terminalia. A–D. Pygofer, anal tube and gonostyli. A. Left lateral view. B. Posterolateral view. C. Dorsal view. D. Caudal view. E–L. Aedeagus. E. Dorsal view. F. Anterodorsal view. G. Left lateral view. H. Left laterodorsal view. I. Left lateroventral view. J. Ventral view. K. Posterolateral view. L. Posteroventral view. Abbreviations: see Material and methods.

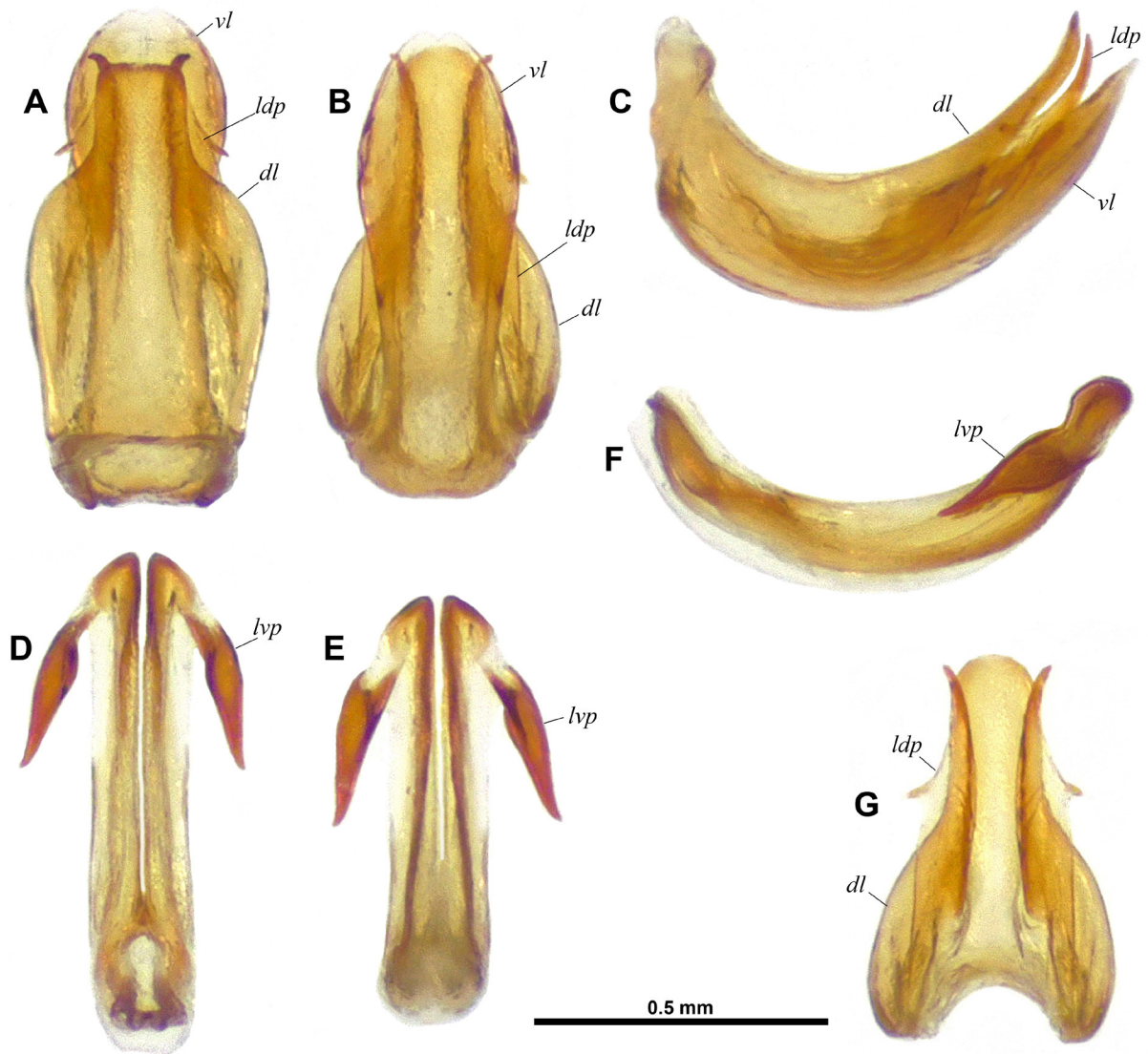


Fig. 12. *Bachmarima valida* gen. et sp. nov. **A–G.** Paratype, ♂ (VNMN), aedeagus. **A–C.** Perianthium. **A.** Dorsal view. **B.** Posteroventral view. **C.** Left lateral view. **D–F.** Aedeagus s. str. **D.** Dorsal view. **E.** Posteroventral view. **F.** Left lateral view. **G.** Dorsal lobe of perianthium, ventral view. **H.** Distribution map. Abbreviations: see Material and methods.

MALE TERMINALIA (Figs 11–12). Pygofer (*Py* – Fig. 11A–D) short, about $2.5 \times$ as high as long at midheight in lateral view, with posterior margin broadly rounded in lateral view; in caudal view suboval, $1.3 \times$ as high as wide; dorsally abruptly, deeply notched. Gonostyli (*G* – Fig. 11A–D) massive, moderately convex, with anterodorsal margin distinctly rounded, then abruptly sinuate at base of capitulum; ventral margin rounded; posterior margin roundly projecting caudad in lateral view and sinuate towards base of capitulum; capitulum (*ca* – Fig. 11A–B, D) elongate, digitiform, strongly projecting dorsad and with poorly distinct neck, curved anterodorsad and evenly tapering towards apex in lateral view, in caudal view slightly directed mesad and with basilateral laminate process directed lateroventrad. Anal tube (*An* – Fig. 11A–D) elongate, dorsoventrally flattened, and sublanceolate, weakly grooved medially beyond anal opening (in basal $\frac{1}{4}$), rather narrow, about $2.7 \times$ as long as wide in dorsal view; in lateral view abruptly narrowing at anal opening, then weakly downcurved. Aedeagus (*ae* – Figs 11E–L, 12) symmetrical, curved posterodorsad in lateral view. Ventral lobe of periandrium (*vl* – Figs 11G–L, 12A–C) laminate, spatulate with apical margin rounded with weak middle indentation, shorter and much narrower than dorsal lobe. Dorsal lobe of periandrium (*dl* – Figs 11E–L, 12A–C, G) strongly expanded into lamina lateroventrally, with sides rounded in dorsal view in proximal portion, then sinuately, strongly tapering towards truncate apex, lamina never covering distal portion of lateroventral processes of aedeagus; laterodorsal processes of periandrium (*ldp* – Figs 11F, 12A–C, G) pointed and curved towards the posterior and with lateral tooth. Aedeagus (sensu stricto, *ae* – Figs 11E–L, 12D–F) surpassing dorsal and ventral lobes of periandrium, bifid, each shaft widening distally to obliquely truncate apex; short and robust lateroventral processes (*lvp* – Figs 11E–L, 12D–F) arising subapically, weakly curved ventrocephalad and (in caudal view) slightly sinuate, reaching to about distal third of aedeagus. Connective (*co* – Fig. 3G) well developed, corpus connective long, regularly curved in lateral view, tectiductus (*te* – Fig. 3G) well developed, conical with anteroventral apodemes and wide anterior foramen.

Biology

Bachmarima valida gen. et sp. nov. was collected in the months of May, June, July, September and October at altitudes between 150 and 1400 m a.s.l., in moist evergreen tropical forest. The specimens were sitting on small branches and leaves, on lower vegetation, bushes and trees. In Bach Ma National Park, it was found at the following collecting site/habitats (Constant & Pham 2025a: fig. 2a): “Yes Hue Eco” (Constant & Pham 2025a: fig. 2a(1), b), “pheasant trail” (Constant & Pham 2025a: figs 2a(2), 3a), “summit (Constant & Pham 2025a: figs 2a(5), 4b) and “ranger station” (Constant & Pham 2025a: figs 2a(6), 5a).

Distribution

Vietnam: Thừa Thiên-Huế Province, Bach Ma National Park and Phong Dien District, and Quang Tri Province, Da Krong Nature Reserve (Fig. 12H).

Genus *Caimocus* gen. nov.

[urn:lsid:zoobank.org:act:0FC1514C-01ED-4EAE-BEA8-3311A984AD7B](https://doi.org/10.21203/rs.3.rs-5711111/v1)

Type species

Caimocus elephas gen. et sp. nov., by present designation.

Diagnosis

The genus *Caimocus* gen. nov. can be differentiated from all other genera of Sarimini by the following combination of characters: (1) the vertex less than $2 \times$ as wide as long in dorsal view; (2) the frons with complete median carina and rather weak peridiscal carinae, mostly distinct in dorsal portion of frons; (3) the tegmina elongate, about $2.3 \times$ as long as wide, with distinct lateral hump slightly before basal $\frac{1}{3}$

hiding costal margin in dorsal aspect, and without distinct epipleuron; (4) the vein ScP of the tegmen long, weakly curved and reaching margin of tegmen around distal $\frac{1}{5}$ of tegmen length; (5) the first fork of MP and the first fork of CuA at about the same level, around half length of tegmen; (6) the anal tube moderately elongate, dorsoventrally flattened, and oboval, widening from base towards apical portion in dorsal view; (7) the massive gonostyli, with capitulum elongate, strongly projecting anterodorsad and with poorly distinct neck, and with anterodorsal margin distinctly concave; (8) the aedeagus with a single pair of elongate, subapical, lateroventral processes bearing a posterior hook curved posterodorsad, and with the dorsal lobe of the periandrium expanded lateroventrally in basal portion.

Differential diagnosis

The most similar genera are *Duplexissus* Wang, Zhang & Bourgoïn, 2019, *Eusarima* Yang, 1994, *Jagannata* Distant, 1906, *Lobosarima* gen. nov., *Parasarima* Yang, 1994 and *Retirima* gen. nov. However, *Caimocus* gen. nov. can be separated from all of these genera by showing a posterior hook on the lateroventral processes of the aedeagus (absent in the other genera) and the oboval anal tube in dorsal view, widening towards the posterior (elongate and more or less parallel-sided in the other genera).

Additionally, *Caimocus* gen. nov. can be separated (1) from *Duplexissus* (see illustrations in Wang *et al.* 2019: figs 12–22) by the concave anterodorsal margin of the gonostyli (distinctly rounded in *Duplexissus*) and the dorsal lobe of the periandrium without apical elongate process directed cephalad (process present on dorsal lobe of periandrium of *Duplexissus*); (2) from *Eusarima* (see illustrations in Chan & Yang 1994: fig. 45) by the concave anterodorsal margin of the gonostyli (distinctly rounded in *Eusarima*); (3) from *Jagannata* (see illustrations in Distant 1906: fig. 171) by the transverse vertex, much wider than long in midline, and with anterior margin more or less truncate (vertex slightly longer than wide, and angularly produced anteriorly in *Jagannata*); (4) from *Lobosarima* gen. nov. (see Figs 37–40) by lack of a pair of basal dorsolateral lobes of the periandrium (present in *Lobosarima*), the dorsal lobe of periandrium wider than ventral lobe in proximal half (dorsal lobe narrower than ventral lobe basally in *Lobosarima*), the lack of a gap between the dorsal and ventral lobes of the periandrium in lateral view (large gap in ventral portion of periandrium in *Lobosarima*), the capitulum of the gonostyli digitiform and tapering towards apex (anteroposteriorly compressed, falcate in *Lobosarima*); (5) from *Parasarima* (see illustrations in Chan & Yang 1994: fig. 39) by the complete carina of the frons, reaching frontoclypeal suture (carina visible only in dorsal half of the frons in *Parasarima*), and by the posterior portion of the gonostyli forming a distinct rounded lobe (gonostyli without posterior lobe in *Parasarima*); (6) from *Retirima* gen. nov. (see Figs 49–52) by the tegmina without dense network of pale cross-veins (present in *Retirima*), the capitulum of the gonostyli digitiform and tapering towards the apex (anteroposteriorly compressed and falcate in *Retirima*), and the apex of the dorsal lobe of the periandrium rounded (distinctly acuminate in *Retirima*).

Etymology

The genus name is derived from ‘cái móc’, the Vietnamese word for ‘hook’, and refers to the basal hook on the lateroventral process of the aedeagus present in the species of the new genus. Gender masculine.

Description

Medium sized (around 5.4–6.0 mm), very convex, moderately elongate, rather robust-bodied.

COLOUR. Mostly brown.

HEAD. Vertex distinctly broader than long in midline (about 1.9 ×), weakly concave with weak median carina; anterior margin forming a widely obtuse angle, posterior one rather deeply concave; all margins moderately carinate. Frons weakly convex, narrowly visible from above, nearly 1.1–1.2 × as wide as long in midline, smooth with distinct complete median carina, and peridiscal carina distinct in dorsal

half portion of frons; tubercles between peridiscal carina and lateral margin; maximum breadth slightly under level of antennae; dorsal margin weakly concave to nearly straight. Anteroventral angle of genae slightly projecting anteriorly. Ocelli present, under eye. Clypeus triangular, convex, smooth, not keeled or carinate. Labium with last segment longer than broad, shorter than penultimate. Antennae with scape short, ring-shaped, and bulbous pedicel.

THORAX. Pronotum subtriangular, projecting anteriorly in rounded angle, about $0.63 \times$ as long in midline, as mesonotum; smooth with anterior margin carinate and pair of impressed points on each side of paler median carina; lateral fields with tubercles, very narrow behind eyes; paranotal lobes with tubercles along external margin, and with posteroventral angle rounded. Mesonotum subtriangular with posterolateral margins slightly incurved, smooth, weakly convex with distinct median and sublateral carinae; shallow depression before scutellum; some tubercles on lateral angles.

TEGMINA. Distinctly convex, elongate, about $2.3\text{--}2.4 \times$ as long as wide, with longitudinal veins elevated; costal margin broadly rounded laterad at basal $2/5$; apical margin rounded; distinct lateral hump including vein ScP+RA slightly before basal $1/3$, hiding costal margin in dorsal aspect; costal margin hidden by vein RP in distal $2/5$, in dorsal view; no distinct epipleuron; clavus closed, surpassing $3/4$ of tegmen length. Venation: ScP+R rather short; ScP+RA long, reaching external margin of tegmen around distal $1/5$ of tegmen length; RP unforked, long and weakly curved; first fork of MP slightly before midlength of tegmen, MP1 with three terminales; first fork of CuA at about same level, around half length of tegmen; Pcu and A1 fused slightly beyond half length of clavus, Pcu+A1 reaching apex of clavus; cross-veins more numerous and more strongly marked along costal margin and in distal half of tegmen.

HIND WINGS. Well developed, with three distinct lobes (Sarimini type) more or less equal in width; mostly brown. Venation: ScP+R and CuA furcate; MP simple, sinuate; second branch of CuA fused distally with CuP; Pcu and A1 fused on basal half, Pcu unforked and A2 simple; one transverse vein between second branch of ScP+R and MP, and between MP and first branch of CuA.

LEGS. Moderately elongate, slender, with pro- and mesofemora and pro- and mesotibiae slightly flattened dorsoventrally, tibiae more slender than corresponding femora; posteroventral margin of pro- and mesofemora with row of minute teeth; pro- and mesotarsi rather elongate. Metatibiae with two lateral spines in distal half and six apical spines. Metatarsi rather short with first segment about as long as combined length of remaining segments. First metatarsomere with two latero-apical and six intermediate spines arranged in arc. Metatibiotarsal formula: (2) 6/8/2.

MALE TERMINALIA. Pygofer short, about $2.0 \times$ as high as long at midheight in lateral view, with posterior margin broadly rounded in lateral view; in caudal view suboval, $1.3 \times$ as high as wide. Gonostyli rather massive, moderately convex, with posterior portion roundly projecting caudad into a posterior lobe in lateral view, and anterodorsal margin (weakly) concave; capitulum elongate, strongly projecting dorsad and with rather long neck, curved anterodorsad and more or less evenly tapering towards apex in lateral view, with lateral tooth. Anal tube moderately elongate, dorsoventrally flattened and oboval, widening from base towards apical portion in dorsal view, about $1.7 \times$ as long as wide and with anal opening in basal $1/3$; in lateral view, weakly downcurved. Aedeagus symmetrical, curved posterodorsad in lateral view. Ventral lobe of periandrium laminate, spatulate. Dorsal lobe of periandrium moderately wide, evenly tapering in distal portion towards rounded apex, and moderately expanded lateroventrally in basal portion, forming lamina; laterodorsal processes of periandrium arising ventrally from basal portion of dorsal lobe, shaft-shaped, apically pointed and curved posterodorsad. Aedeagus (sensu stricto) slightly surpassing dorsal and ventral lobes of periandrium but shorter than laterodorsal processes of periandrium, bifid in distal portion, and with robust lateroventral processes arising in distal third, curved ventrocephalad, with a posterior hook curved posterodorsad. Connective well developed, corpus

connective long, slightly curved in lateral view, tectiductus well developed, conical with anteroventral apodemes and wide anterior foramen.

Distribution

Vietnam: Thừa Thiên-Huế and Quang Tri provinces.

Species included

Caimocus elephas gen. et sp. nov.

Caimocus robustus gen. et sp. nov.

Caimocus sinuatus gen. et sp. nov.

Caimocus elephas gen. et sp. nov.

[urn:lsid:zoobank.org:act:989549B0-E24A-4334-BFED-EA2CB56B6FAB](https://zoobank.org/act:989549B0-E24A-4334-BFED-EA2CB56B6FAB)

Figs 13–16

Diagnosis

Caimocus elephas gen. et sp. nov. can be recognized by the elongate, moderately, evenly curved lateroventral processes of the aedeagus (*lvp* – Figs 15E–L, 16D–F).

Differential diagnosis

The new species is close to *Caimocus robustus* gen. et sp. nov. and *C. sinuatus* gen. et sp. nov., but it can be separated from them by the shape of the lateroventral processes of the aedeagus (*lvp* – Fig. 16D–F) elongate (rather slender) and moderately, evenly curved while they are robust and strongly curved mesad in *C. robustus* (*lvp* – Fig. 19E–G), and distinctly sinuate in distal portion in *C. sinuatus* (*lvp* – Fig. 22E–H).

Etymology

The species epithet ‘*elephas*’ is a Latin noun (derived from ancient Greek ‘ελεφας’) meaning ‘elephant’. It refers to the shape of the lateroventral processes of the aedeagus reminiscent of elephant tusks and it is used as a noun in apposition.

Type material

Holotype

VIETNAM • ♂; Thừa Thiên-Huế Province, Bach Ma National Park; 16°11'18" N, 107°50'56" E; 1300–1400 m a.s.l.; 11–21 May 2023; J. Constant and L. Semeraro leg.; summit; VNMN.

Paratypes

VIETNAM – **Quang Tri Province** • 1 ♂; Huong Hoa, Huong Phung, Deo Sa Mu; [16°48'00" N, 106°35'10" E]; 900–1000 m a.s.l.; 4 Jun. 2006; H.T. Pham leg.; Ho 2352; VNMN. – **Thừa Thiên-Huế Province** • 2 ♂♂; same data as for holotype; VNMN • 5 ♂♂; same data as holotype; I.G.: 34.640; RBINS • 1 ♂; Bach Ma National Park; 16°11'18" N, 107°50'56" E; 1200–1300 m a.s.l.; 22 May 2023; J. Constant and L. Semeraro leg.; roadside; I.G.: 34.640; RBINS • 1 ♂; Bach Ma National Park, stairs going up to Hai Vong Dai; 16°11'53.77" N, 107°51'26.92" E; 1272 m a.s.l.; May 2023; [by] net; H.T.T. Nguyen leg.; AU00699; VNMN • 1 ♂; Bach Ma National Park; [16°13'38" N, 107°51'20" E]; [300–400 m a.s.l.]; 29 Mar. 2021; V.T. Trung leg.; pheasant trail, Malaise trap; VNMN.

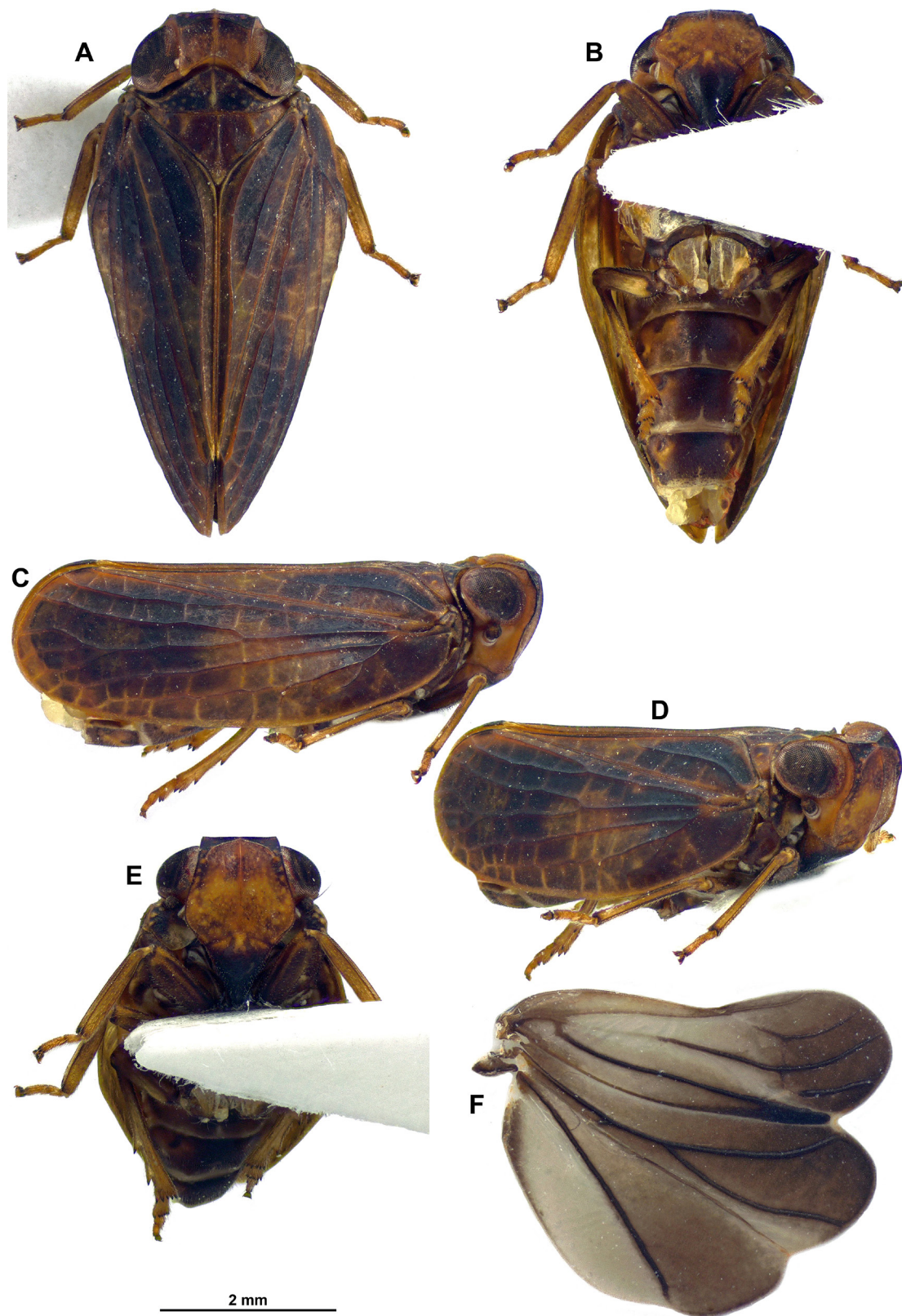


Fig. 13. *Caimocus elephas* gen. et sp. nov., dissected paratype, ♂ (RBINS). **A.** Habitus, dorsal view. **B.** Habitus, ventral view. **C.** Habitus, lateral view. **D.** Habitus, anterolateral view. **E.** Habitus, perpendicular view of frons. **F.** Right hind wing.

Description

MEASUREMENTS AND RATIOS. LT: ♂ (n = 10): 5.7 mm (5.4–6.0); LT/BB = 2.02; LTg/BTg = 2.29; LW/BW = 1.20; BV/LV = 1.91; LF/BF = 0.85.

HEAD (Fig. 13A–E). Vertex brown, often paler in posterior portion, with weak median carina yellowish; $1.9 \times$ as broad as long in midline, slightly constricted in middle; disc weakly concave; anterior margin angularly projecting anteriorly (widely obtuse angle); posterior margin rather deeply concave; all margins moderately carinate. Frons variegated brown, with paler transverse area in middle; distinctly darker dorsally, between peridiscal carina and dorsal margin; weakly convex, smooth with distinct, complete median carina; peridiscal carina distinct mostly in dorsal portion of frons; some yellowish tubercles along lateral margins. Genae yellowish brown with anteroventral angle slightly projecting anteriorly. Clypeus triangular, convex, smooth, not keeled or carinate; anteclypeus dark brown with base yellowish; postclypeus black-brown. Labium yellow-brown with last segment longer than broad, shorter than penultimate. Antennae with scape short, ring-shaped, yellowish brown, and pedicel bulbous, dark brown.

THORAX (Fig. 13A, C–E). Pronotum brown, usually darker than vertex and mesonotum, with paler, yellowish median carina and yellowish tubercles in lateral fields; subtriangular, projecting anteriorly; generally smooth with anterior margin carinate and pair of impressed points on each side of midline; lateral fields very narrow behind eyes; paranotal lobes dark brown, pale yellowish along ventral margin and with yellowish tubercles along external margin; posteroventral angle rounded. Mesonotum brown, often with carinae and some tubercles in lateral angles marked with yellowish, smooth, weakly convex with shallow depression before scutellum; median carina distinct, sublateral (peridiscal) carinae distinct. Tegulae yellowish brown.

TEGMINA (Figs 13A–D, 14A–B). Brown with paler poorly defined median band and apical portion; main veins more or less concolourous, elevated, and cross-veins weakly raised and generally paler than background; distinctly convex, and about $2.3 \times$ as long as wide, with distinct lateral hump including vein ScP+RA slightly before basal $\frac{1}{3}$; without distinct epipleuron; clavus closed, surpassing $\frac{3}{4}$ of tegmen length. Venation as in genus description.

HIND WINGS (Fig. 13F). Blackish brown, turning slightly darker in distal portion; veins generally darker than background; well developed, with three distinct lobes (Sarimini type) more or less equal in width; indentation between ScP-R-MP-Cu and Pcu-A1 lobes moderately deep. Venation as in genus description.

LEGS (Figs 13A–E, 14C–D). Yellowish brown, paler than tegmina; apex of pro- and mesotibiae, pro- and mesofemora, distal portion of metafemora and basal portion of metatibiae darker; all spines of posterior legs black apically. Anterior and median legs slightly flattened dorsoventrally, tibiae more slender than corresponding femora; posteroventral margin of pro- and mesofemora with row of minute teeth; pro- and mesotarsi rather elongate. Metatibiae with two lateral spines in distal half, and six apical spines. Metatarsi rather short with first segment about as long as combined length of remaining segments. First metatarsomere with two latero-apical and six intermediate spines arranged in arc. Metatibiotarsal formula: (2) 6/8/2.

ABDOMEN (Fig. 13B). Brown with median area darker.

MALE TERMINALIA (Figs 15–16). Pygofer (*Py* – Fig. 15A–D) short, about $2.1 \times$ as high as long at midheight in lateral view, with posterior margin broadly rounded in lateral view; in caudal view suboval, $1.3 \times$ as high as wide; dorsally deeply notched. Gonostyli (*G* – Fig. 15A–D) relatively massive, moderately convex, with anterodorsal margin weakly concave, then upcurved at base of capitulum; ventral margin rounded; posterior portion roundly projecting caudad into a posterior lobe in lateral view, forming

nearly right angle at base of capitulum; capitulum (*ca* – Fig. 15A–C) elongate, digitiform, strongly projecting dorsad and with rather long neck, curved anterodorsad and evenly tapering towards apex in lateral view, in caudal view sinuate, moderately flattened antero-posteriorly, and with basilateral tooth directed lateroventrad. Anal tube (*An* – Fig. 15A–D) moderately elongate, dorsoventrally flattened, oboval, evenly widening from base towards rounded apical margin in dorsal view, about $1.7 \times$ as long as wide in dorsal view, anal opening in basal $\frac{1}{3}$; in lateral view abruptly narrowing at anal opening, then weakly downcurved. Aedeagus (*ae* – Figs 15E–L, 16) symmetrical, curved posterodorsad in lateral view. Ventral lobe of periandrium (*vl* – Figs 15E–J, 16A–C) laminate, spatulate with apical margin round, slightly shorter than dorsal lobe and aedeagus sensu stricto. Dorsal lobe of periandrium (*dl* – Figs 15E–H, J–L, 16A–C, G) in proximal $\frac{2}{3}$, moderately expanded into lamina lateroventrally, with sides evenly tapering in distal portion towards rounded apex, lamina partly covering lateroventral

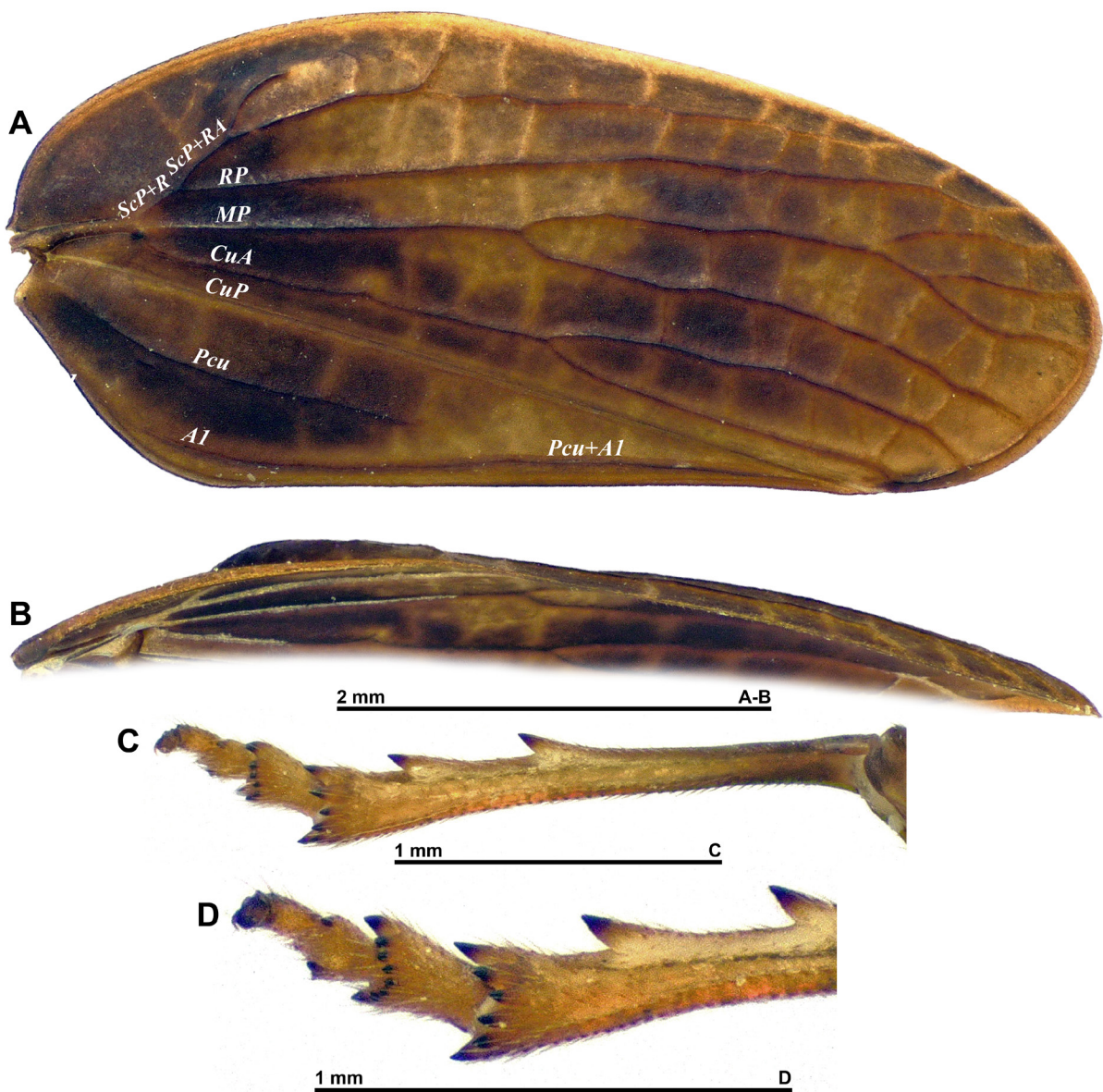


Fig. 14. *Caimocus elephas* gen. et sp. nov., paratype, ♂ (RBINS). **A.** Right tegmen, perpendicular view. **B.** Right tegmen, ventral view. **C.** Right tibia and tarsus, ventral view. **D.** Distal portion of right tibia and tarsus, ventral view. Abbreviations: see Material and methods.

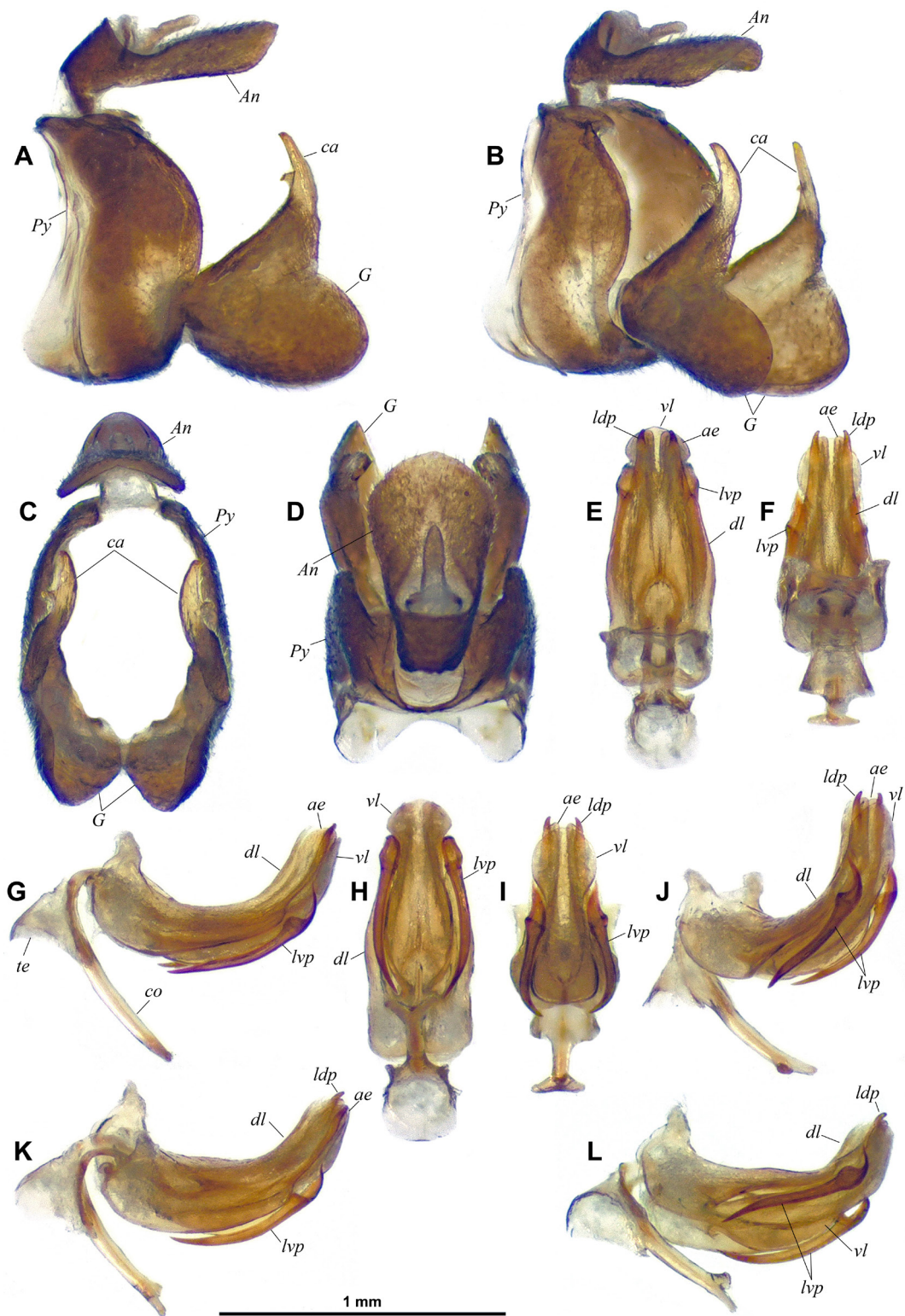


Fig. 15. *Caimocus elephas* gen. et sp. nov., holotype, ♂ (VNMN), terminalia. **A–D.** Pygofer, anal tube and gonostyli. **A.** Left lateral view. **B.** Posterolateral view. **C.** Caudal view. **D.** Dorsal view. **E–L.** Aedeagus. **E.** Dorsal view. **F.** Anterodorsal view. **G.** Left lateral view. **H.** Ventral view. **I.** Posteroventral view. **J.** Posterolateral view. **K.** Left laterodorsal view. **L.** Left lateroventral view. Abbreviations: see Material and methods.

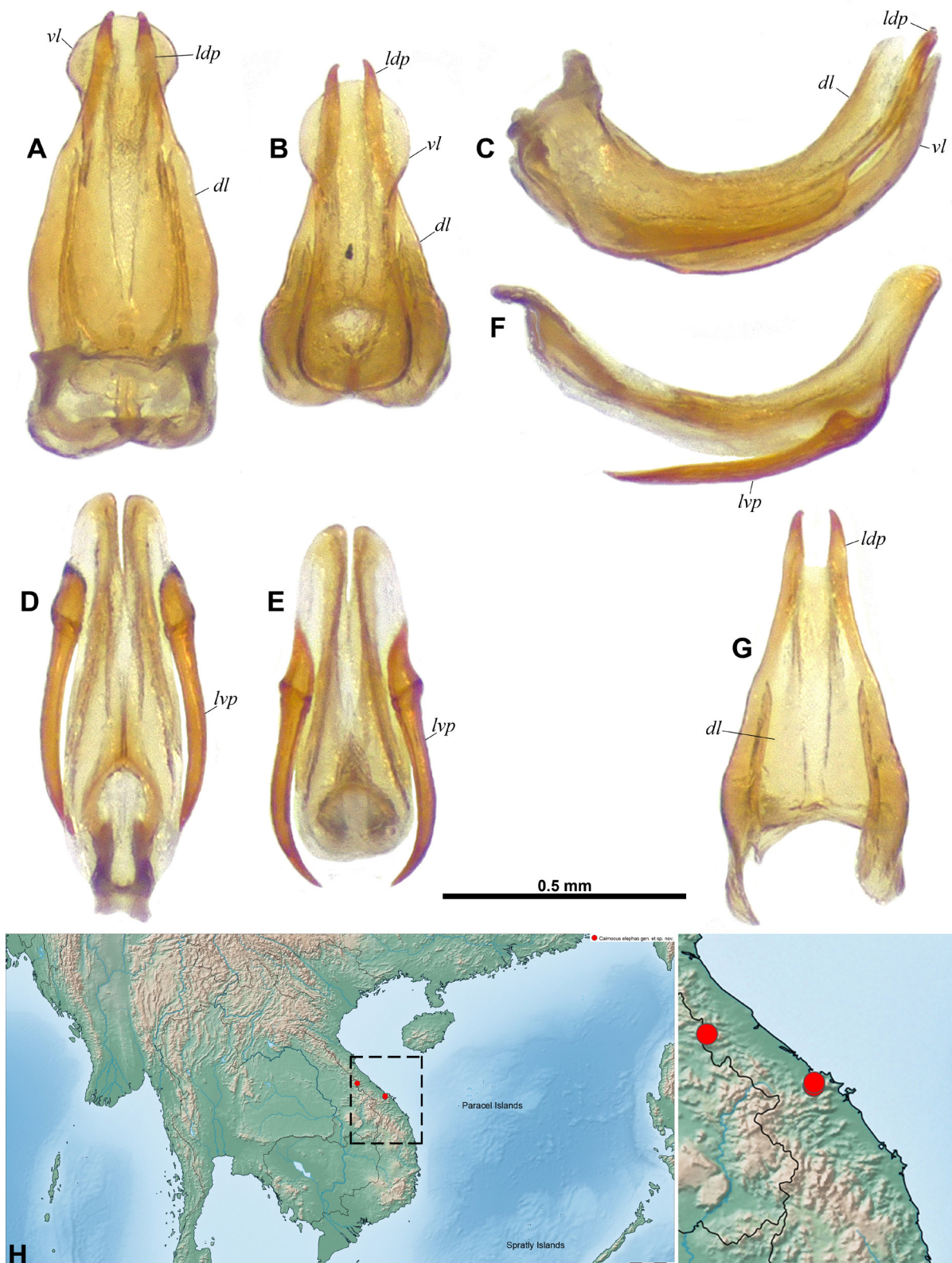


Fig. 16. *Caimocus elephas* gen. et sp. nov. **A–G.** Holotype, ♂ (VNMN), aedeagus. **A–C.** Periandrium. **A.** Dorsal view. **B.** Posteroventral view. **C.** Left lateral view. **D–F.** Aedeagus s. str. **D.** Dorsal view. **E.** Posteroventral view. **F.** Left lateral view. **G.** Dorsal lobe of periandrium, ventral view. **H.** Distribution map. Abbreviations: see Material and methods.

processes of aedeagus; laterodorsal processes of periandrium (*ldp* – Figs 15E–G, I–L, 16A–C, G) arising ventrally from basal portion of dorsal lobe, shaft-shaped, curved posterodorsad, then pointed and slightly curved mesad apically. Aedeagus (sensu stricto, *ae* – Figs 15E–G, I–K, 16D–F) slightly shorter than laterodorsal processes of periandrium, bifid, each shaft more or less parallel-sided to rounded apex; lateroventral processes (*lvp* – Figs 15E–L, 16D–F) arising in distal 1/3, directed cephalad, generally robust and elongate (rather slender) and moderately, evenly curved mesad in ventral view, weakly curved in lateral view, inflated at base and with posterior hook curved posterodorsad. Connective (*co* – Fig. 15G) well developed, corpus connective long, weakly curved in lateral view, tectiductus (*te* – Fig. 15G) well developed, conical with anteroventral apodemes and wide anterior foramen.

Biology

Caimocus elephas gen. et sp. nov. was collected in the months of March, May and June at altitudes between 300 and 1400 m a.s.l., in moist evergreen tropical forest. The specimens were sitting on small branches and leaves, on lower vegetation, bushes and trees. In Bach Ma National Park, it was found at the following collecting site/habitats (Constant & Pham 2025a: fig. 2a): “pheasant trail” (Constant & Pham 2025a: figs 2a(2), 3a), “roadside” (Constant & Pham 2025a: figs 2a(4), 4a), and “summit” (Constant & Pham 2025a: figs 2a(5), 4b).

Distribution

Vietnam: Thừa Thiên-Huế Province, Bach Ma National Park, and Quang Tri Province, Deo Sa Mu (Fig. 16H).

Caimocus robustus gen. et sp. nov.

[urn:lsid:zoobank.org:act:EA4436A8-7DE5-487B-8726-F385152BD150](https://zoobank.org/urn:lsid:zoobank.org:act:EA4436A8-7DE5-487B-8726-F385152BD150)

Figs 17–19

Diagnosis

Caimocus robustus gen. et sp. nov. can be recognized by the robust and strongly curved mesad lateroventral processes of the aedeagus (*lvp* – Figs 18G–L, 19E–G).

Differential diagnosis

The new species is close to *Caimocus elephas* gen. et sp. nov. and *Caimocus sinuatus* gen. et sp. nov. but it can be separated from both other species by the shape of the lateroventral processes of the aedeagus (*lvp* – Fig. 19E–G) robust and strongly curved mesad while they are elongate (rather slender) and moderately, evenly curved in *C. elephas* (*lvp* – Fig. 16D–F), and distinctly sinuate in distal portion in *C. sinuatus* (*lvp* – Fig. 22E–H).

Etymology

The species epithet ‘*robustus*’ is a Latin adjective meaning ‘robust’. It refers to the robust shape of the lateroventral processes of the aedeagus.

Type material

Holotype

VIETNAM • ♂; Thừa Thiên-Huế Province, Bach Ma National Park; 16°11'18" N, 107°50'56" E; 1300–1400 m a.s.l.; 11–21 May 2023; J. Constant and L. Semeraro leg.; summit; VNMN.

Paratypes

VIETNAM – Thừa Thiên-Huế Province • 1 ♂; same data as for holotype; VNMN • 3 ♂♂; same data as for holotype; I.G.: 34.640; RBINS.

Description

MEASUREMENTS AND RATIOS. LT: ♂ (n = 5): 5.7 mm (5.6–5.7); LT/BB = 2.08; LTg/BTg = 2.40; LW/BW = 1.25; BV/LV = 2.14; LF/BF = 0.84.

HEAD (Fig. 17A–E). Vertex pale brown, darker in anterior portion, with yellowish weak median carina; $2.1 \times$ as broad as long in midline, slightly constricted in middle; disc weakly concave; anterior margin angularly projecting anteriorly (widely obtuse angle); posterior margin rather deeply concave; all margins moderately carinate. Frons variegated brown, with paler transverse area in middle; distinctly darker dorsally, between peridiscal carina and dorsal margin; weakly convex, smooth with distinct, complete median carina; peridiscal carina distinct mostly in dorsal portion of frons; some yellowish tubercles along lateral margins. Genae yellowish with anteroventral angle slightly projecting anteriorly. Clypeus triangular, convex, smooth, not keeled or carinate; anteclypeus dark brown with base and (partly) sides yellowish; postclypeus black brown. Labium yellow-brown with last segment longer than broad, shorter than penultimate. Antennae with scape short, ring-shaped, yellowish brown, and pedicel bulbous, dark brown.

THORAX (Fig. 17A, C–E). Pronotum dark brown, paler in anterior portion, generally darker than vertex, with paler, yellowish median carina and yellowish tubercles more or less in rows, in lateral fields; subtriangular, projecting anteriorly; generally smooth with anterior margin carinate and pair of impressed points on each side of midline; lateral fields very narrow behind eyes; paranotal lobes dark brown, darker with yellowish tubercles in external side portion, pale yellowish along ventral margin; posteroventral angle rounded. Mesonotum brown, often with carinae, apex of scutellum and some tubercles in lateral angles marked with yellowish, smooth, weakly convex with shallow depression before scutellum; median carina distinct, sublateral (peridiscal) carinae distinct. Tegulae yellowish brown.

TEGMINA (Figs 17A–D). Brown with paler poorly defined median band (often largely interrupted dorsally) and apical portion; CuP paler than background, other main veins more or less concolourous, elevated; cross-veins weakly raised and generally paler than background; distinctly convex, and about $2.4 \times$ as long as wide, with distinct lateral hump including vein ScP+RA slightly before basal $\frac{1}{2}$; without distinct epipleuron; clavus closed, surpassing $\frac{3}{4}$ of tegmen length. Venation as in genus description.

HIND WINGS (Fig. 17F). Blackish brown, turning slightly darker in distal portion; veins generally darker than background; well developed, with three distinct lobes (Sarimini type) more or less equal in width; indentation between ScP-R-MP-Cu and Pcu-A1 lobes moderately deep. Venation as in genus description.

LEGS (Fig. 17A–E). Yellowish brown, paler than tegmina; apex of pro- and mesotibiae, pro- and mesofemora, distal and external portions of metafemora and basal portion of metatibiae darker; all spines of posterior legs black apically. Anterior and median legs slightly flattened dorsoventrally, tibiae more slender than corresponding femora; posteroventral margin of pro- and mesofemora with row of minute teeth; pro- and mesotarsi rather elongate. Metatibiae with two lateral spines in distal half, and six apical spines. Metatarsi rather short with first segment about as long as combined length of remaining segments. First metatarsomere with two latero-apical and six intermediate spines arranged in arc. Metatibiotarsal formula: (2) 6/8/2.

ABDOMEN (Fig. 17B). Pale brown on lateral portion, median area darker.

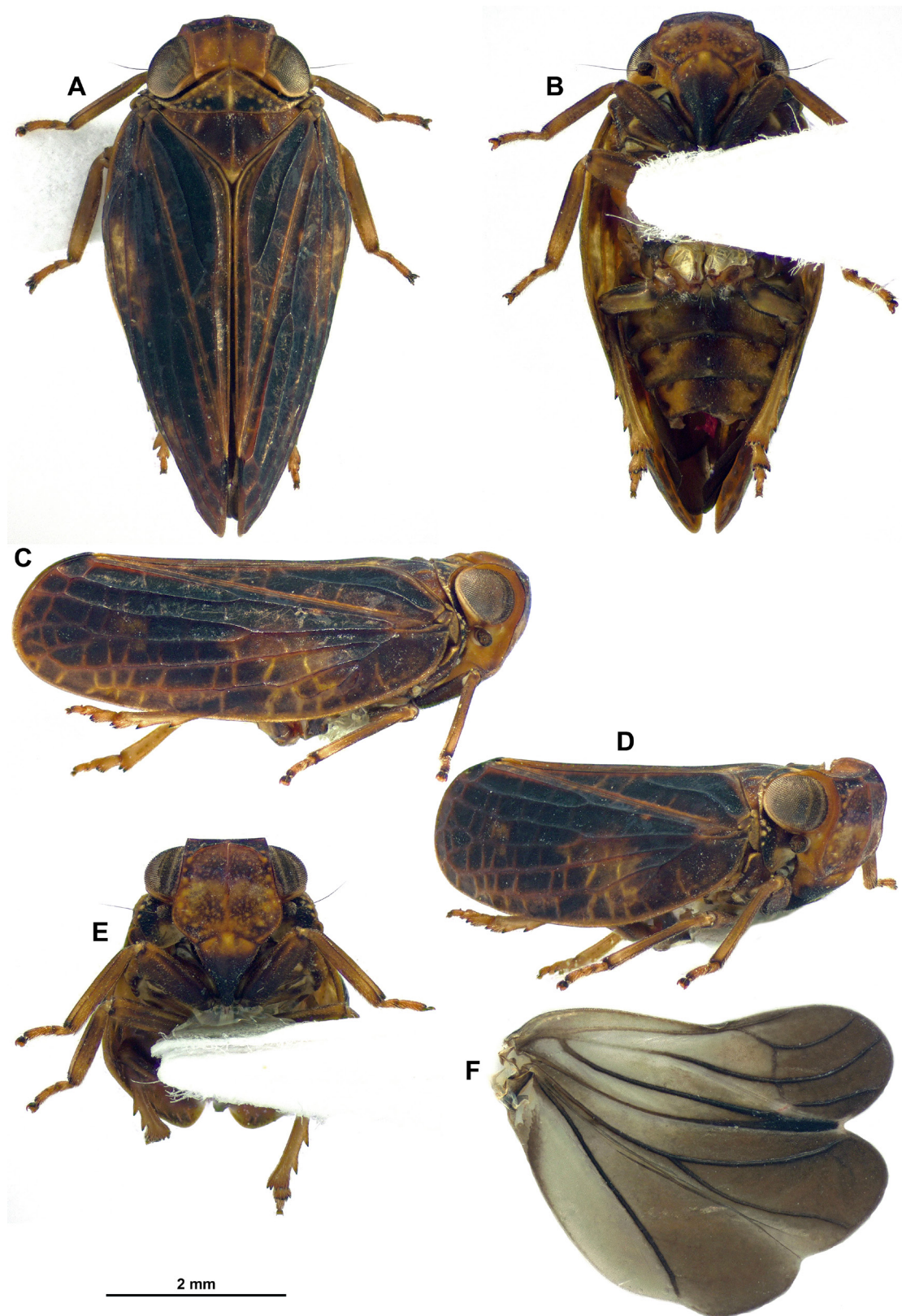


Fig. 17. *Caimocus robustus* gen. et sp. nov., dissected paratype, ♂ (RBINS). A. Habitus, dorsal view. B. Habitus, ventral view. C. Habitus, lateral view. D. Habitus, anterolateral view. E. Habitus, perpendicular view of frons. F. Right hind wing.

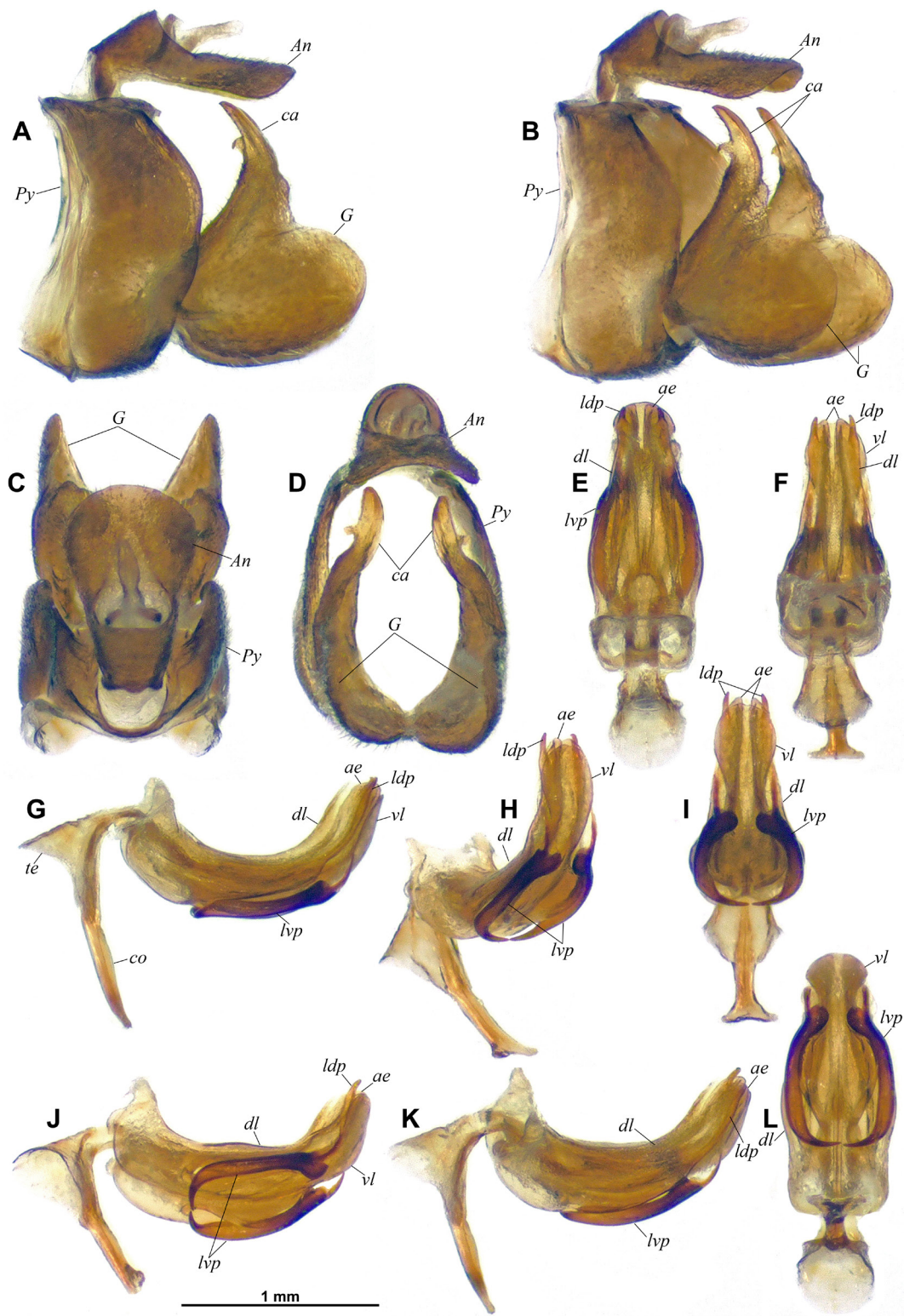


Fig. 18. *Caimocus robustus* gen. et sp. nov., holotype, ♂ (VNMN), terminalia. A–D. Pygofer, anal tube and gonostyli. A. Left lateral view. B. Posterolateral view. C. Dorsal view. D. Caudal view. E–L. Aedeagus. E. Dorsal view. F. Anterodorsal view. G. Left lateral view. H. Posterolateral view. I. Posteroventral view. J. Left lateroventral view. K. Left laterodorsal view. L. Ventral view. Abbreviations: see Material and methods.

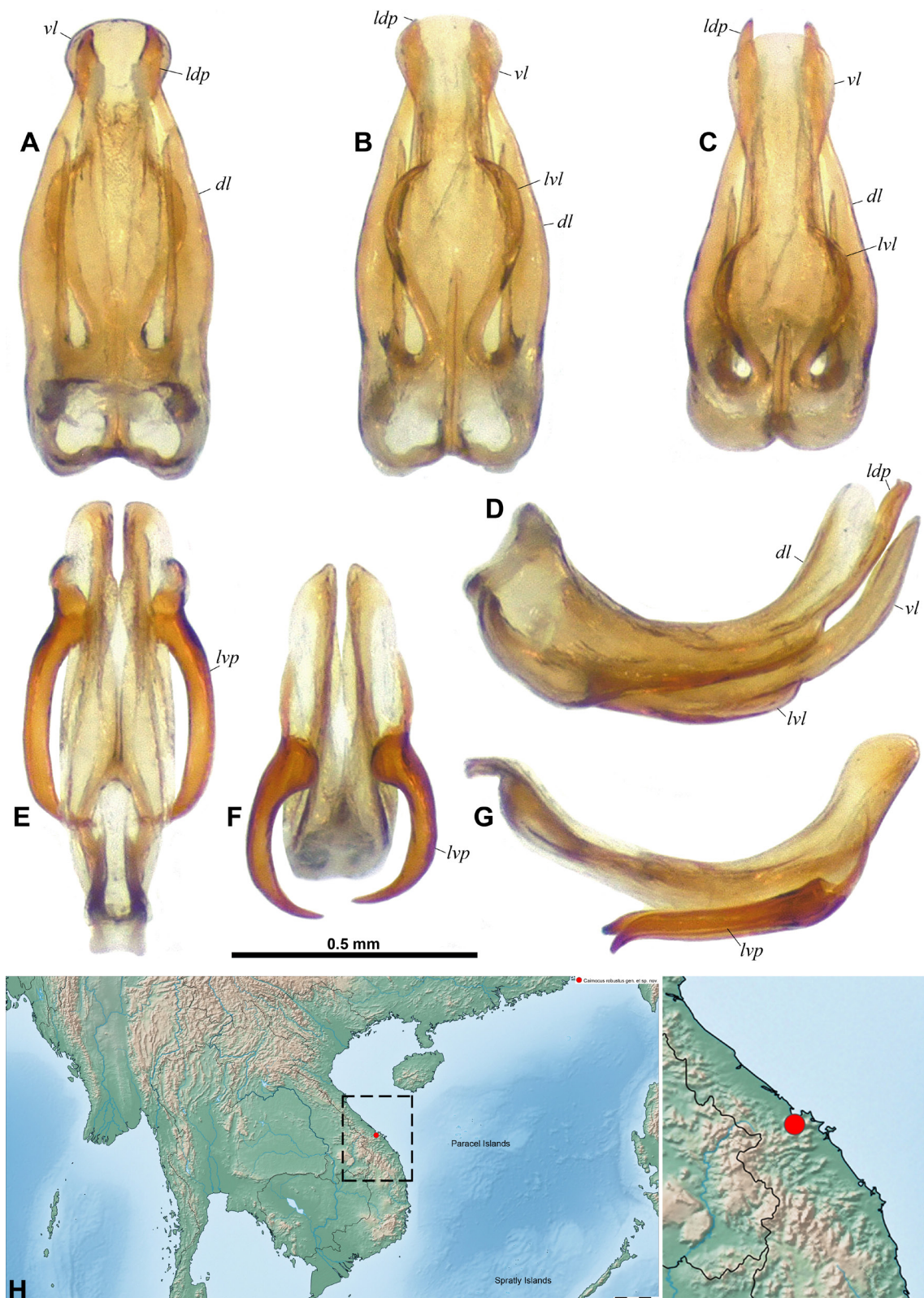


Fig. 19. *Caimocus robustus* gen. et sp. nov. A–G. Holotype, ♂ (VNMN), aedeagus. A–D. Periandrium. A. Dorsal view. B. Ventral view. C. Posteroventral view. D. Left lateral view. E–G. Aedeagus s. str. E. Dorsal view. F. Posteroventral view. G. Left lateral view. H. Distribution map. Abbreviations: see Material and methods.

MALE TERMINALIA (Figs 18–19). Pygofer (*Py* – Fig. 18A–D) short, about $2.3 \times$ as high as long at midheight in lateral view, with posterior margin broadly rounded in lateral view; in caudal view suboval, about $1.4 \times$ as high as wide; dorsally deeply notched. Gonostyli (*G* – Fig. 18A–D) relatively massive, moderately convex, with anterodorsal margin concave, then upcurved at base of capitulum; ventral margin rounded; posterior portion roundly projecting caudad into a posterior lobe in lateral view, forming nearly right angle at base of capitulum; capitulum (*ca* – Fig. 18A–B, D) elongate, digitiform, strongly projecting dorsad and with rather long neck, curved anterodorsad and evenly tapering towards apex in lateral view, in caudal view sinuate, flattened antero-posteriorly, and with basilateral tooth directed lateroventrad. Anal tube (*An* – Fig. 18A–D) moderately elongate, dorsoventrally flattened, oboval, evenly widening from base towards rounded apical margin in dorsal view, about $1.5 \times$ as long as wide in dorsal view, anal opening in basal $\frac{1}{3}$; in lateral view abruptly narrowing at anal opening, then more or less straight. Aedeagus (*ae* – Figs 18E–L, 19) symmetrical, curved posterodorsad in lateral view. Ventral lobe of periandrium (*vl* – Figs 18F–J, L, 19A–C) laminate, rather elongate, spatulate with apical margin round, slightly shorter than dorsal lobe and aedeagus sensu stricto; in basal portion, distinct, rounded lateral lamina (*lvl* – Fig. 19B–D) concealing (combined with dorsal lobe) middle portion of lateroventral processes of aedeagus. Dorsal lobe of periandrium (*dl* – Figs 18E–L, 19A–D) in proximal $\frac{2}{3}$, moderately expanded into lamina lateroventrally, with sides slightly sinuate, evenly tapering in distal portion towards rounded apex, lamina partly covering lateroventral processes of aedeagus; laterodorsal processes of periandrium (*ldp* – Figs 18E–K, 19A–D) arising ventrally from basal portion of dorsal lobe, shaft-shaped, curved posterodorsad, then pointed and slightly curved mesad apically. Aedeagus (sensu stricto, *ae* – Figs 18E–K, 19E–G) slightly shorter than laterodorsal processes of periandrium, bifid, each shaft more or less parallel-sided to rounded apex; lateroventral processes (*lvp* – Figs 18E, G–L, 19E–G) arising in distal $\frac{1}{3}$, directed cephalad, robust, elongate, distinctly curved laterad basally, then slightly curved (more or less parallel), and strongly curved mesad in distal portion, weakly curved in lateral view, pointed apically, inflated at base and with slender, elongate posterior hook curved posterodorsad. Connective (*co* – Fig. 18G–K) well developed, corpus connective long, weakly curved in lateral view, tectiductus (*te* – Fig. 18G–L) well developed, conical with anteroventral apodemes and wide anterior foramen.

Biology

Caimocus robustus gen. et sp. nov. was collected in May at altitudes between 1300 and 1400 m a.s.l., in moist evergreen tropical forest. The specimens were sitting on small branches and leaves, on lower vegetation, bushes and trees. In Bach Ma National Park, it was found at the following collecting site/habitats (Constant & Pham 2025a: fig. 2a): “summit” (Constant & Pham 2025a: figs 2a(5), 4b).

Distribution

Vietnam: Thừa Thiên-Huế Province, Bach Ma National Park (Fig. 19H).

Caimocus sinuatus gen. et sp. nov.

[urn:lsid:zoobank.org:act:57030DAC-D4C5-48D4-B36C-789CD5683229](https://zoobank.org/act:57030DAC-D4C5-48D4-B36C-789CD5683229)

Figs 20–22

Diagnosis

Caimocus sinuatus gen. et sp. nov. can be recognized by the elongate lateroventral processes of the aedeagus distinctly sinuate in distal portion (*lvp* – Figs 21G–L, 22E–G).

Differential diagnosis

The new species is close to *Caimocus elephas* gen. et sp. nov. and *C. robustus* gen. et sp. nov., but it can be separated from them by the shape of the lateroventral processes of the aedeagus (*lvp* – Fig. 22E–H) elongate (rather slender) and distinctly sinuate in distal portion while they are moderately, evenly curved

in *C. elephas* (*lvp* – Fig. 16D–F), and robust and strongly curved mesad in *C. robustus* (*lvp* – Fig. 19E–G).

Etymology

The species epithet ‘*sinuatus*’ is a Latin adjective meaning ‘sinuate’. It refers to the sinuate shape of the lateroventral processes of the aedeagus.

Type material

Holotype

VIETNAM • ♂; Thừa Thiên-Huế Province, Bach Ma National Park, road to Bach Ma Peak; 16°11'45.73" N, 107°51'46.34" E; 1325 m a.s.l.; 14 Sep. 2024; H.T.T Nguyen leg.; [by] net; AU0696; VNMN.

Paratype

VIETNAM – Thừa Thiên-Huế Province • 1 ♂; Bach Ma National Park; 16°11'18" N, 107°50'56" E; 1300–1400 m a.s.l.; 11–21 May 2023; J. Constant and L. Semeraro leg.; summit; I.G.: 34.640; RBINS.

Description

MEASUREMENTS AND RATIOS. LT: ♂ (n = 1): 5.5 mm; LT/BB = 2.14; LTg/BTg = 2.45; LW/BW = 1.23; BV/LV = 1.96; LF/BF = 0.91.

HEAD (Fig. 20A–E). Vertex brown, slightly paler laterally in posterior portion, with weak median carina yellowish; $1.9 \times$ as broad as long in midline, slightly constricted in middle; disc weakly concave; anterior margin more or less angularly projecting anteriorly (widely obtuse angle); posterior margin rather deeply concave; all margins moderately carinate. Frons variegated brown, with paler transverse area in middle; distinctly darker dorsally, between peridiscal carina and dorsal margin; weakly convex, smooth with distinct, complete median carina; peridiscal carina distinct mostly in dorsal portion of frons; some yellowish tubercles along lateral margins. Genae yellowish brown with anteroventral angle slightly projecting anteriorly. Clypeus triangular, convex, smooth, not keeled or carinate; anteclypeus dark brown with base yellowish; postclypeus black brown. Labium yellow-brown with last segment longer than broad, shorter than penultimate. Antennae with scape short, ring-shaped, yellowish brown, and pedicel bulbous, dark brown.

THORAX (Fig. 20A, C–E). Pronotum brown, darker than vertex and mesonotum, with paler, yellowish median carina and yellowish tubercles in lateral fields; subtriangular, projecting anteriorly; generally smooth with anterior margin carinate and pair of impressed points on each side of midline; lateral fields very narrow behind eyes; paranotal lobes blackish brown, pale yellowish along ventral margin and with yellowish tubercles along external margin; posteroventral angle rounded. Mesonotum brown, with carinae and some tubercles in lateral angles paler; smooth, weakly convex with shallow depression before yellowish scutellum; median carina distinct, sublateral (peridiscal) carinae distinct. Tegulae brown.

TEGMINA (Fig. 20A–D). Brown with paler poorly defined median band and apical portion; main veins more or less concolourous, elevated, and cross-veins weakly raised and generally paler than background; distinctly convex, and about $2.4 \times$ as long as wide, with distinct lateral hump including vein ScP+RA slightly before basal $\frac{1}{3}$; without distinct epipleuron; clavus closed, surpassing $\frac{3}{4}$ of tegmen length. Venation as in genus description.

HIND WINGS (Fig. 20F). Blackish brown, turning slightly darker in distal portion; veins generally darker than background; well developed, with three distinct lobes (Sarimini type) more or less equal in width; indentation between ScP-R-MP-Cu and Pcu-A1 lobes moderately deep. Venation as in genus description.

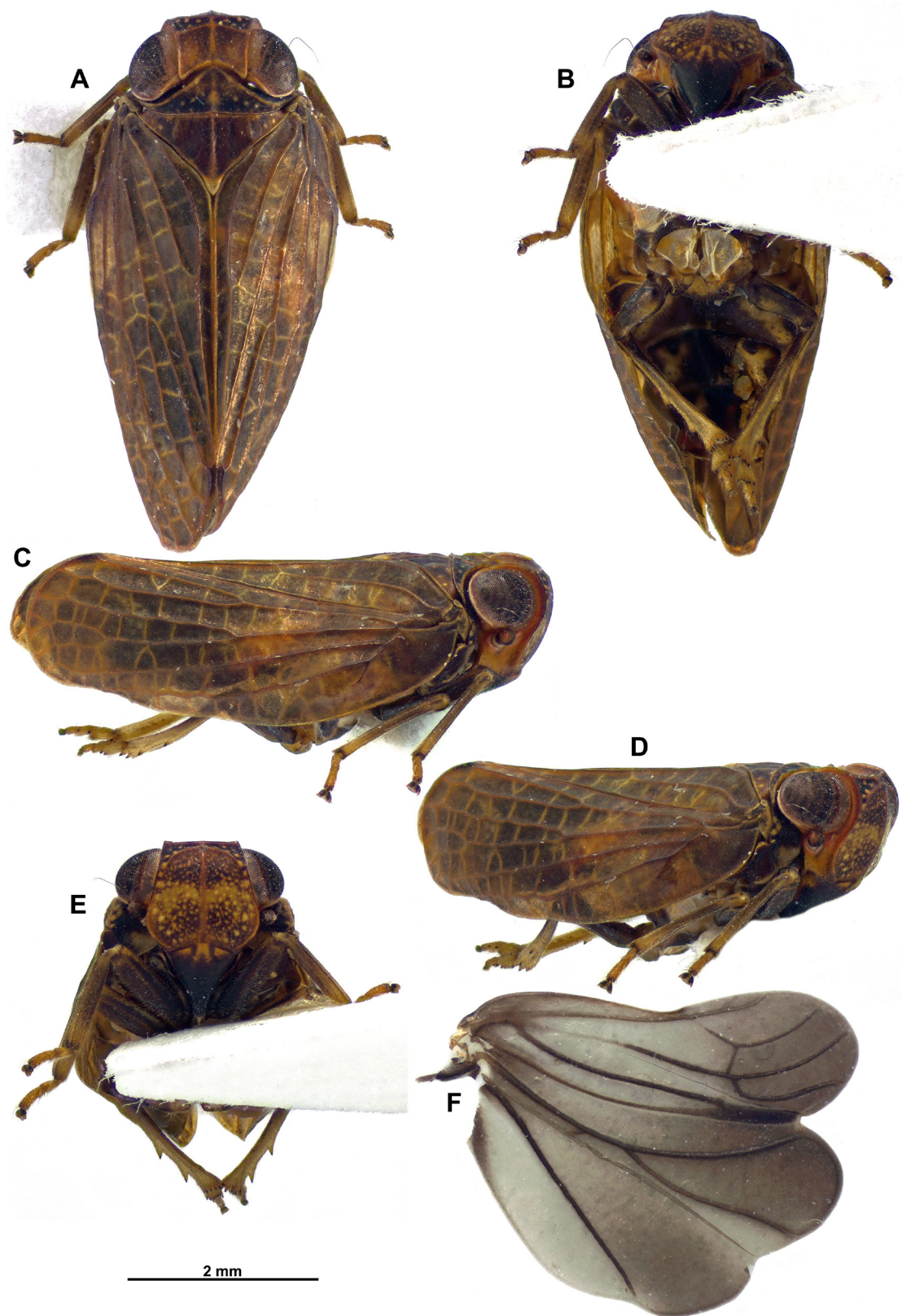


Fig. 20. *Caimocus sinuatus* gen. et sp. nov., dissected paratype, ♂ (RBINS). A. Habitus, dorsal view. B. Habitus, ventral view. C. Habitus, lateral view. D. Habitus, anterolateral view. E. Habitus, perpendicular view of frons. F. Right hind wing.

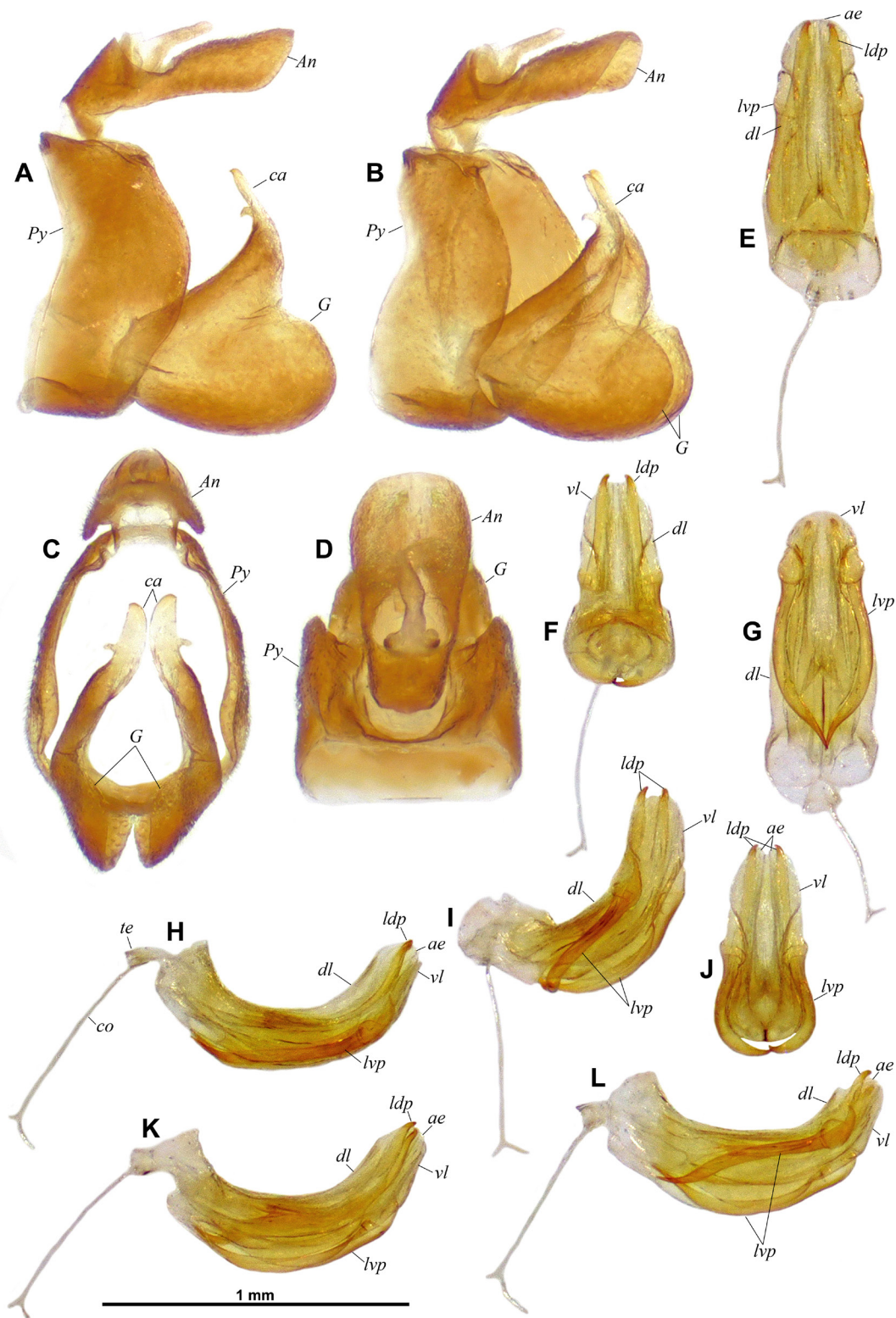


Fig. 21. *Caimocus sinuatus* gen. et sp. nov., holotype, ♂ (VNMN), terminalia. **A–D.** Pygofer, anal tube and gonostyli. **A.** Left lateral view. **B.** Posterolateral view. **C.** Caudal view. **D.** Dorsal view. **E–L.** Aedeagus. **E.** Dorsal view. **F.** Anterodorsal view. **G.** Ventral view. **H.** Left lateral view. **I.** Posterolateral view. **J.** Posteroventral view. **K.** Left laterodorsal view. **L.** Left lateroventral view. Abbreviations: see Material and methods.

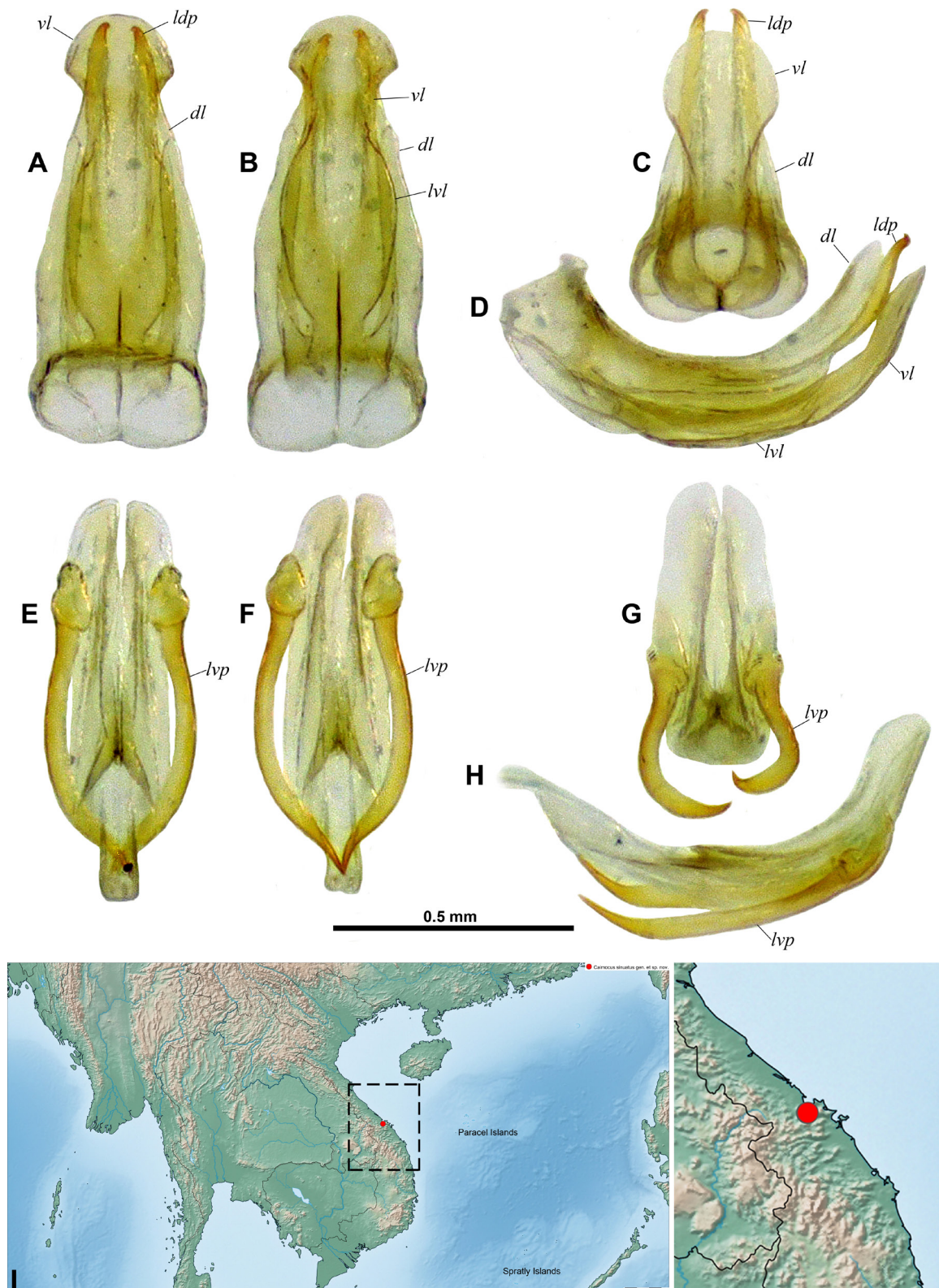


Fig. 22. *Caimocus sinuatus* gen. et sp. nov. A–H. Holotype, ♂ (VNMN), aedeagus. A–D. Perianthrium. A. Dorsal view. B. Ventral view. C. Posteroventral view. D. Left lateral view. E–H. Aedeagus s. str. E. Dorsal view. F. Ventral view. G. Posteroventral view. H. Left lateral view. I. Distribution map. Abbreviations: see Material and methods.

LEGS (Fig. 20A–E). Seen from above, yellowish brown, paler than tegmina; apex of pro- and mesotibiae (narrowly), pro- and mesofemora, most surface of metafemora and basal portion of metatibiae dark brown; pro- and mesofemora with anteapical portion paler, yellowish; all spines of posterior legs black apically. Anterior and median legs slightly flattened dorsoventrally, tibiae more slender than corresponding femora; posteroventral margin of pro- and mesofemora with row of minute teeth; pro- and mesotarsi rather elongate. Metatibiae with two lateral spines in distal half, and six apical spines. Metatarsi rather short with first segment about as long as combined length of remaining segments. First metatarsomere with two latero-apical and six intermediate spines arranged in arc. Metatibiotarsal formula: (2) 6/8/2.

ABDOMEN (Fig. 20B). Yellowish brown with median area and a spot along basal margin of segments on each side, dark brown.

MALE TERMINALIA (Figs 21–22). Pygofer (*Py* – Fig. 21A–D) short, about $2.1 \times$ as high as long at midheight in lateral view, with posterior margin broadly rounded in lateral view; in caudal view suboval, $1.3 \times$ as high as wide; dorsally deeply notched. Gonostyli (*G* – Fig. 21A–D) relatively massive, moderately convex, with anterodorsal margin weakly concave, then distinctly upcurved at base of capitulum; ventral margin rounded; posterior portion roundly projecting caudad into a posterior lobe in lateral view, forming nearly right angle at base of capitulum; capitulum (*ca* – Fig. 21A–C) elongate, digitiform, strongly projecting dorsad and with rather long neck, curved anterodorsad and evenly tapering towards anteriorly pointed apex in lateral view, in caudal view sinuate, flattened antero-posteriorly, and with basilateral tooth curved lateroventrad. Anal tube (*An* – Fig. 21A–D) rather elongate, dorsoventrally flattened, oboval, evenly widening from base towards rounded apical margin in dorsal view, about $2.0 \times$ as long as wide in dorsal view, anal opening in basal $\frac{1}{3}$; in lateral view abruptly narrowing at anal opening, then weakly downcurved. Aedeagus (*ae* – Figs 21E–L, 22) symmetrical, curved posterodorsad in lateral view. Ventral lobe of periandrium (*vl* – Figs 21F–L, 22A–D) laminate, spatulate with apical margin round, slightly shorter than dorsal lobe and aedeagus sensu stricto; in basal portion, distinct, moderately rounded lateral lamina (*lvl* – Fig. 22B, D) concealing (combined with dorsal lobe) middle portion of lateroventral processes of aedeagus. Dorsal lobe of periandrium (*dl* – Figs 21E–I, K–L, 16A–D) in proximal $\frac{2}{3}$, moderately expanded into lamina lateroventrally, with sides evenly tapering in distal portion towards rounded apex, lamina partly covering lateroventral processes of aedeagus; laterodorsal processes of periandrium (*ldp* – Figs 21E–F, H–L, 22A, C–D) arising ventrally from basal portion of dorsal lobe, shaft-shaped, curved posterodorsad and sinuate in distal portion in lateral view, pointed and slightly curved mesad apically. Aedeagus (sensu stricto, *ae* – Figs 21E, H, J–L, 22E–H) slightly shorter than laterodorsal processes of periandrium, bifid, each shaft more or less parallel-sided to rounded apex; lateroventral processes (*lvp* – Figs 21E, G–L, 22E–H) arising in distal $\frac{1}{3}$, directed cephalad, generally robust and elongate (rather slender) and moderately, evenly curved mesad to sinuate distal portion in ventral view, weakly curved to more distinctly upcurved distal portion in lateral view, inflated at base and with posterior distinct, moderately developed hook curved posterodorsad.

Remark

Connective (*co* – Fig. 21H) and tectiductus (*te* – Fig. 21H) not well developed in the examined specimen, regarded as somewhat teneral.

Biology

Caimocus sinuatus gen. et sp. nov. was collected in May and September at altitudes between 1300 and 1400 m a.s.l., in moist evergreen tropical forest. The specimens were sitting on small branches and leaves, on lower vegetation, bushes and trees. In Bach Ma National Park, it was found at the following collecting site/habitats (Constant & Pham 2025a: fig. 2a): “summit” (Constant & Pham 2025a: figs 2a(5), 4b).

Distribution

Vietnam: Thừa Thiên-Huế Province, Bach Ma National Park (Fig. 22I).

Genus *Civetissus* gen. nov.

[urn:lsid:zoobank.org:act:2A5D574F-4BAE-4BE2-8139-6A50BAEDC7C5](https://doi.org/10.21203/rs.3.rs-5747474/v1)

Type species

Civetissus pagumoides gen. et sp. nov. by present designation.

Diagnosis

The genus *Civetissus* gen. nov. can be differentiated from the other genera of Sarimini by the following combination of characters: (1) the head strongly projecting anteriorly in a pointed process, with vertex longer than wide; (2) the frons about as long in midline, as wide, without median and peridiscal carinae; (3) the tegmina elongate, about $2.4 \times$ as long as wide, with distinct lateral hump slightly around basal $\frac{1}{4}$ hiding costal margin in dorsal aspect, and with distinct epipleuron; (4) the vein ScP of the tegmen long, weakly curved and reaching margin of tegmen around distal $\frac{1}{5}$ of tegmen length; (5) the first fork of MP at about $\frac{2}{5}$ of tegmen length, more basal than the first fork of CuA at about $\frac{3}{5}$; M1 forked at about $\frac{3}{4}$ of tegmen; (6) the anal tube elongate, dorsoventrally flattened, widening from base towards anal opening, and tapering in distal portion in dorsal view; (7) the gonostyli with anterodorsal margin angularly rounded, and with capitulum rather short and curved anterodorsad; (8) the aedeagus (sensu stricto) with a single pair of elongate, shaft-like, lateroventral processes arising at about distal $\frac{1}{3}$, and the laterodorsal process of the perianthrium bearing an elongate shaft directed cephalad.

Differential diagnosis

The most similar genus is *Pseudocoruncanus* Meng, Qin & Wang, 2020. However, *Civetissus* gen. nov. can be separated by its head strongly projecting anteriorly in a pointed process, with vertex longer than wide, and frons about as long in midline, as wide, while *Pseudocoruncanus* shows a broadly rounded anterior margin of the vertex/dorsal margin of frons, a strongly transverse vertex, about twice as wide as long in midline, and a strongly transverse frons, about $1.5 \times$ as wide as long in midline (see illustrations in Constant & Pham 2024a: fig. 35); the peridiscal carina of the frons is weak but distinct in *Pseudocoruncanus*, while it is obsolete in *Civetissus*, and on the tegmen, the fork of MP1 is very distal in *Pseudocoruncanus* ($\frac{5}{6}$ of tegmen length), while it is distinctly more basal in *Civetissus* ($\frac{3}{4}$ of tegmen length).

Etymology

The genus name is formed by the combination of ‘civette’ (French) meaning ‘civet’, and *Issus* Brullé, 1832, the type genus of the family Issidae. Several names were derived from ‘civette’ like the genus *Civettictis* Pocock, 1915 or the species *C. civetta* (Schreber, 1776), as well the the common name ‘civet’, used for the members of the family Viverridae (Mammalia, Carnivora). The new genus name refers to the pointed head and markings which are reminiscent of some members of the family Viverridae; the gender is masculine.

Description

Rather large (6.3–7.5 mm), very convex, rather elongate with pointed head.

COLOUR. Mostly brown or reddish brown with paler markings on head and thorax, and black rings on pro- and mesotibiae.

HEAD. Vertex distinctly projecting anteriorly, slightly longer in midline, than broad, more or less flat with obsolete median carina; anterior margin angular with narrowly rounded apex, posterior one distinctly concave; all margins weakly carinate. Frons convex, oblique in lateral view, narrowly visible from above, slightly wider than long in midline, smooth without median carina and with peridiscal carina obsolete; maximum breadth slightly above level of antennae; dorsal margin strongly projecting anteriorly in subtriangular process. Anteroventral angle of genae distinctly projecting anteriorly, anterior margin slightly carinate under eye; narrow groove between eye and margin stopping under ocellus. Clypeus triangular, convex, smooth, not keeled or carinate. Labium with last segment longer than broad, shorter than penultimate. Antennae with scape short, ring-shaped, and subcylindrical; barrel-shaped pedicel.

THORAX. Pronotum transverse with anterior margin rounded and posterior margin slightly bisinuate, about $0.55 \times$ as long in midline, as mesonotum; smooth with anterior margin finely carinate and pair of impressed points on each side of median line; lateral fields very narrow behind eyes; paranotal lobes without tubercles/carinae, and with posteroventral angle angularly rounded. Mesonotum subtriangular with posterolateral margins slightly incurved, smooth, weakly convex with shallow depression before scutellum; no distinct carinae.

TEGMINA. Convex, elongate, about $2.4 \times$ as long as wide, with longitudinal veins elevated and cross-veins weakly elevated; costal margin forming a broadly rounded angle at basal $\frac{2}{5}$; apical margin obliquely rounded; distinct lateral hump including vein ScP+RA around basal $\frac{1}{4}$, hiding costal margin in dorsal aspect; costal margin more or less hidden by vein RP in distal $\frac{3}{4}$, in dorsal view; distinct epipleuron; clavus closed, reaching about $\frac{3}{4}$ of tegmen length. Venation: ScP+R rather short; ScP+RA long, reaching external margin of tegmen around distal $\frac{1}{5}$ of tegmen length; RP unforked, long and weakly curved; first fork of MP at about $\frac{2}{5}$ of tegmen length, more basal than the first fork of CuA at about $\frac{3}{5}$; M1 with two terminales, forked at about $\frac{3}{4}$ of tegmen; Pcu and A1 fused slightly beyond halflength of clavus, Pcu+A1 reaching apex of clavus; cross-veins more numerous and more strongly marked in distal half of tegmen.

HIND WINGS. Well developed, with three distinct lobes (Sarimini type) more or less equal in width; mostly brown. Venation: ScP+R and CuA furcate; MP simple, sinuate; second branch of CuA fused distally with CuP; Pcu and A1 fused on basal half, Pcu unforked and A2 simple; one transverse vein between second branch of ScP+R and MP, and (more basally) between MP and first branch of CuA.

LEGS. Rather short, slender, with pro- and mesofemora and pro- and mesotibiae slightly flattened dorsoventrally, tibiae more slender than corresponding femora; posteroventral margin of pro- and mesofemora with row of minute teeth; pro- and mesotarsi elongate and slender. Metatibiae with two lateral spines in distal half and eight apical spines. Metatarsi moderately elongate with first segment about as long as combined length of remaining segments. First metatarsomere with two latero-apical and seven intermediate spines arranged in arc ventrally. Metatibiotarsal formula: (2) 8/9/2.

MALE TERMINALIA. Pygofer short, about $2.8 \times$ as high as long at midheight in lateral view; in caudal view suboval, $1.4 \times$ as high as wide. Gonostyli rather large, moderately convex, with posterior margin roundly projecting caudad in lateral view, and anterodorsal margin distinctly angularly rounded; capitulum rather short and curved anterodorsad in lateral view, curved mesad in caudal view, with distinct neck and lateral hook, distally laminate antero-posteriorly. Anal tube elongate, dorsoventrally flattened, widening from base to around anal opening and tapering in distal portion in dorsal view; in lateral view, slightly downcurved. Aedeagus elongate, symmetrical, moderately curved posterodorsad in lateral view; base of periandrium dorsally with laminate projection directed caudad. Ventral lobe of periandrium laminate, constricted in middle portion, and spatulate in distal portion. Dorsal lobe of periandrium elongate, notched apically and with strong median carina (fin-shaped); elongate shaft arising apically and strongly recurved cephalad in basal portion. Aedeagus (sensu stricto) bifid from basal portion and more or less

truncate apically, with pair of elongate, shaft-like, lateroventral processes arising at about distal $\frac{2}{3}$ of length. Connective well developed, corpus connective long, straight in lateral view, tectiductus well developed, conical with anteroventral apodemes and wide anterior foramen.

Distribution

Vietnam: Thừa Thiên-Huế Province.

Species included

Civetissus pagumoides gen. et sp. nov.

Civetissus pagumoides gen. et sp. nov.

[urn:lsid:zoobank.org:act:497BDF2C-4594-4810-9EEF-DAC931ECF9CF](https://zoobank.org/act:497BDF2C-4594-4810-9EEF-DAC931ECF9CF)

Figs 23–27

Diagnosis

Civetissus pagumoides gen. et sp. nov. is the only species in the genus *Civetissus* gen. nov. The contrasted markings of the head and other parts of the body and the characters of the male terminalia, are probably relevant diagnostic features to recognize the species, e.g., the elongate, tapering anal tube in dorsal view, the shape of the gonostyli, including the capitulum in lateral view, the shafts and dorsal fin-shaped process of the periandrium, and the size and shape (curvature) of the lateroventral processes of the aedeagus (Figs 23–26).

Differential diagnosis

The most similar species belong to the genus *Pseudocoruncanus* Meng, Qin & Wang, 2020, from which *C. pagumoides* gen. et sp. nov. can be separated by the characters given above for the genus.

Etymology

The species epithet ‘*pagumoides*’ is derived from to the civet genus *Paguma* Gray, 1831 (Mammalia: Carnivora: Viverridae) and refers to the colouration of the head of the planthopper (dark brown/black with pale median line) which is reminiscent of the head of the masked palm-civet, *Paguma larvata* (Hamilton-smith, 1827).

Type material

Holotype

VIETNAM • ♂; Thừa Thiên-Huế Province; 16°13'38" N, 107°51'20" E; 500–600 m a.s.l.; 10–20 May 2023; J. Constant and L. Semeraro leg.; pheasant trail; VNMN.

Paratypes

VIETNAM – Thừa Thiên-Huế Province • 1 ♂, 1 ♀; same data as for holotype; I.G.: 34.640; RBINS • 1 ♂; Nam Dong District, Bach Ma National Park, ranger station; 16°08'37" N, 107°49'36" E; 150–500 m; 19 Oct. 2024; J. Constant, L. Semeraro, T.T.H. Nguyen leg.; I.G.: 34.893; RBINS • 2 ♀♀; Bach Ma National Park, YesHue Eco; 16°13'05" N, 107°43'27" E; 200–300 m a.s.l.; 17 May 2023; J. Constant and L. Semeraro leg.; VNMN.

Description

MEASUREMENTS AND RATIOS. LT: ♂ (n = 3): 6.4 mm (6.3–6.5), ♀ (n = 3): 7.3 mm (7.2–7.5); LT/BB = 2.48; LTg/BTg = 2.44; LW/BW = 1.31; BV/LV = 0.92; LF/BF = 0.94.

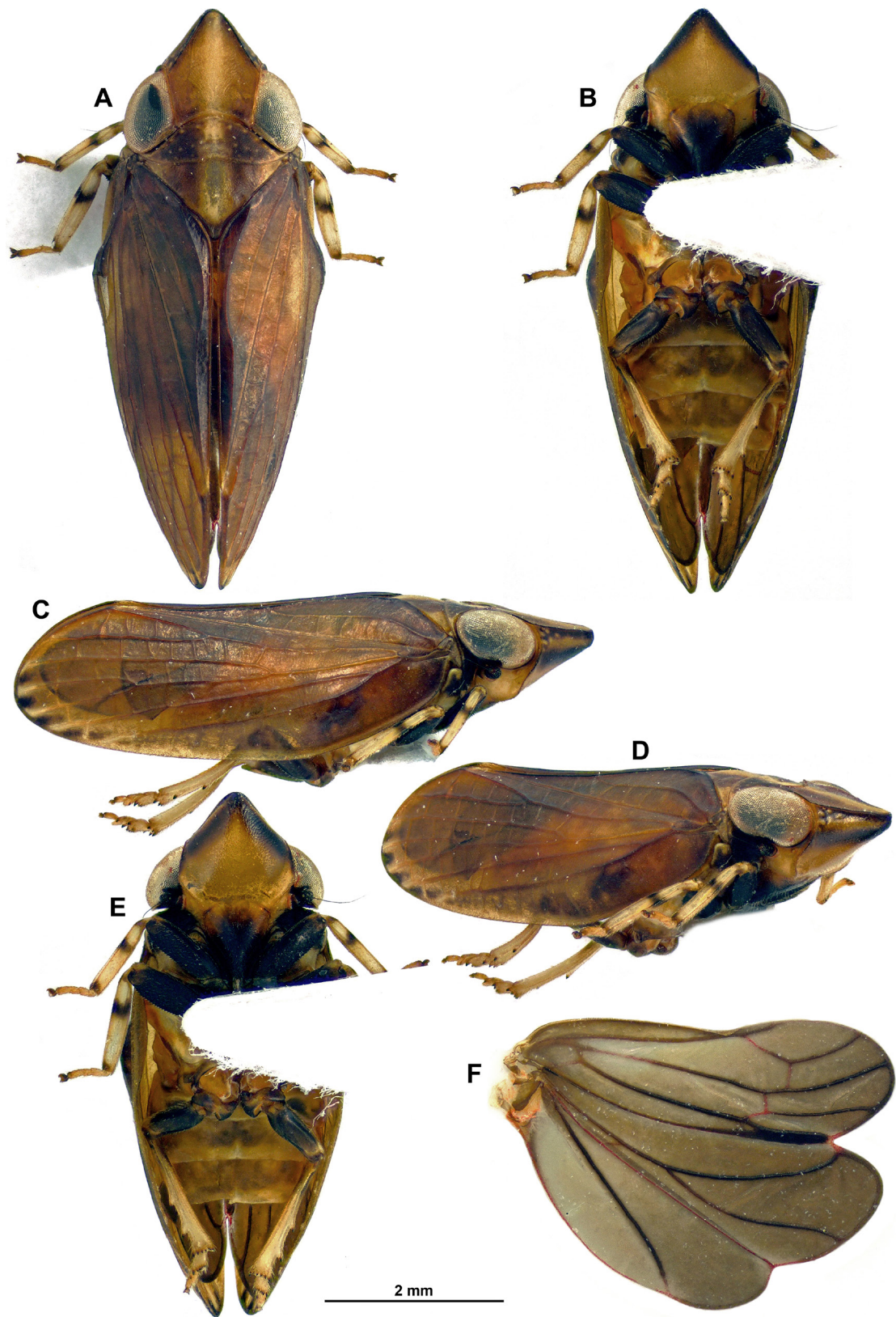


Fig. 23. *Civetissus pagumoides* gen. et sp. nov., dissected holotype, ♂ (VNMN). A. Habitus, dorsal view. B. Habitus, ventral view. C. Habitus, lateral view. D. Habitus, anterolateral view. E. Habitus, perpendicular view of frons. F. Right hind wing.

HEAD (Figs 23A–E, 27). Vertex brown to blackish brown with distinct median line yellowish white to pale red; triangularly projecting anteriorly with narrowly rounded apex; $1.1 \times$ as long in midline, as broad, more or less flat with obsolete median carina; posterior margin distinctly concave; all margins weakly carinate. Frons with lower portion and fine line under dorsal margin, pale yellowish or reddish, and upper portion blackish brown, convex, oblique in lateral view, narrowly visible from above, about $1.1 \times$ as wide as long in midline, smooth without median carina, and with peridiscal carina obsolete; maximum breadth slightly above level of antennae; dorsal margin strongly projecting anteriorly in subtriangular process. Genae concolourous with frons, lower portion pale and upper portion, down to lower margin of eye, blackish; anteroventral angle distinctly projecting anteriorly, anterior margin slightly carinate under eye; narrow groove between eye and margin stopping under ocellus. Clypeus dark brown with basal portion narrowly yellowish, to completely black, triangular, convex, smooth, not keeled or carinate.

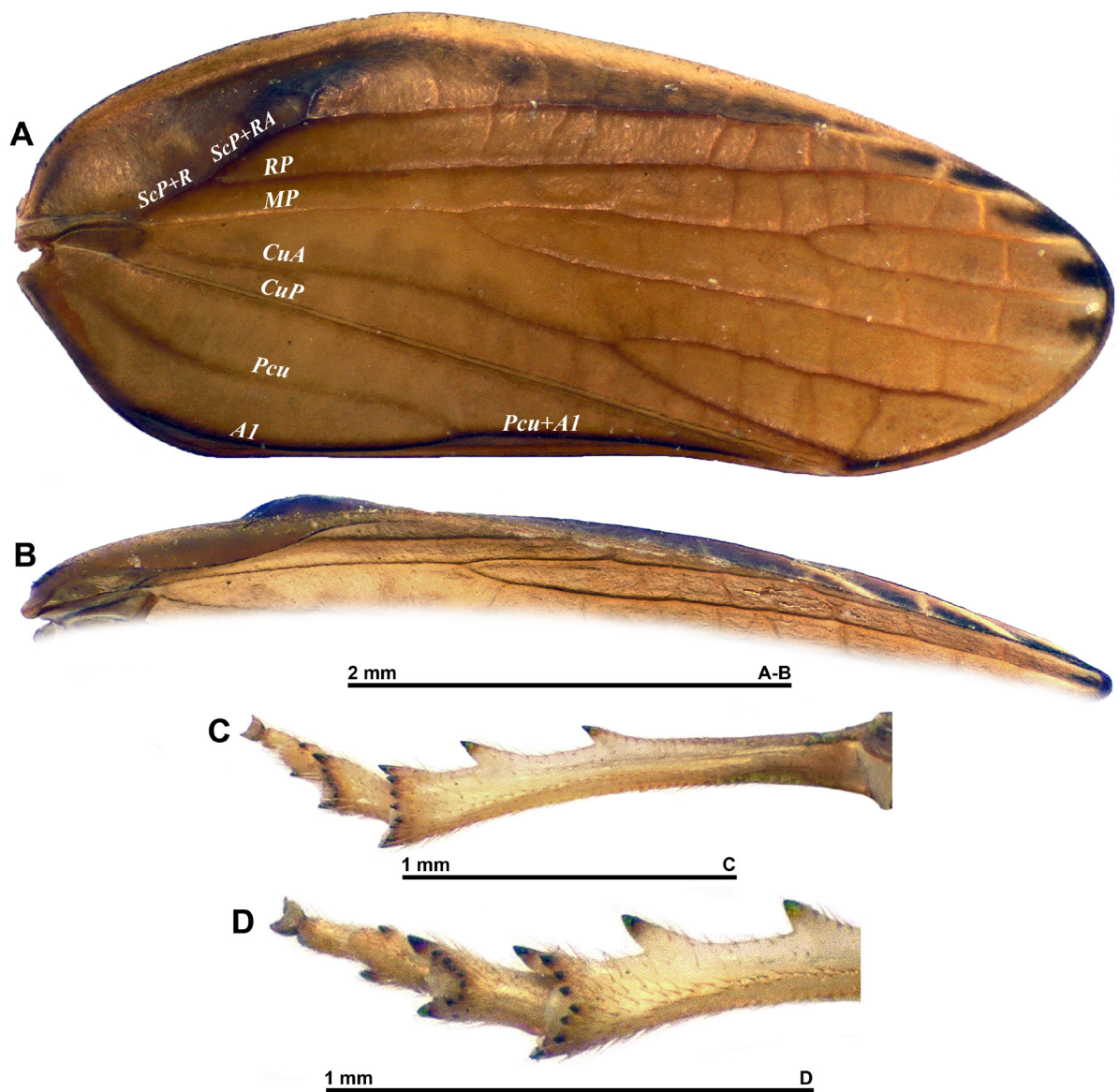


Fig. 24. *Civetissus pagumoides* gen. et sp. nov., holotype, ♂ (VNMN). **A.** Right tegmen, perpendicular view. **B.** Right tegmen, ventral view. **C.** Right tibia and tarsus, ventral view. **D.** Distal portion of right tibia and tarsus, ventral view. Abbreviations: see Material and methods.

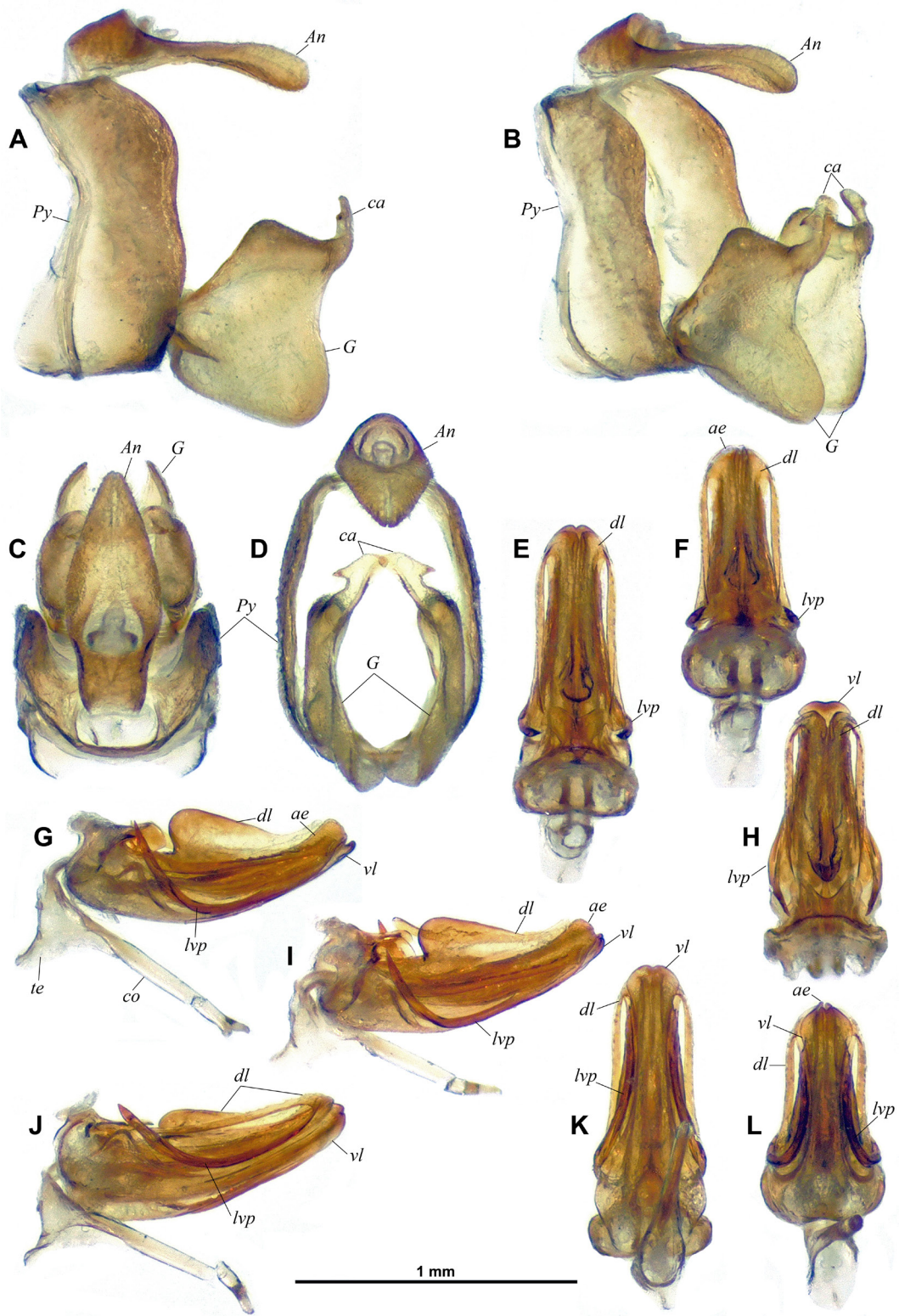


Fig. 25. *Civetissus pagumoides* gen. et sp. nov., holotype, ♂ (VNMN), terminalia. **A–D.** Pygofer, anal tube and gonostyli. **A.** Left lateral view. **B.** Posterolateral view. **C.** Dorsal view. **D.** Caudal view. **E–L.** Aedeagus. **E.** Dorsal view. **F.** Anterodorsal view. **G.** Left lateral view. **H.** Posterodorsal view. **I.** Left laterodorsal view. **J.** Left lateroventral view. **K.** Ventral view. **L.** Posteroventral view. Abbreviations: see Material and methods.

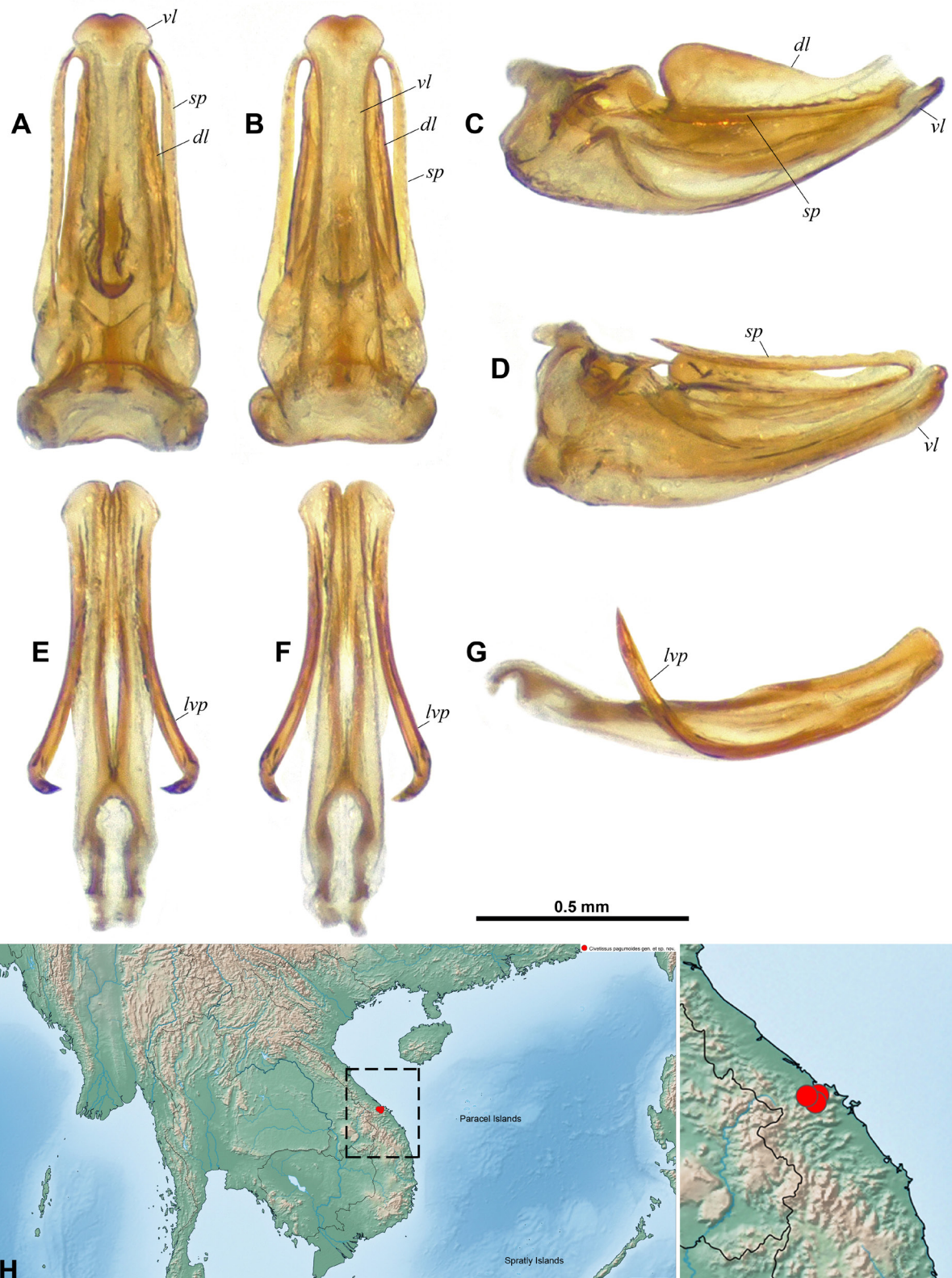


Fig. 26. *Civetissus pagumoides* gen. et sp. nov. **A–G.** Holotype, ♂ (VNMN), aedeagus. **A–D.** Perianthrium. **A.** Dorsal view. **B.** Ventral view. **C.** Left lateral view. **D.** Lateroventral view. **E–G.** Aedeagus s. str. **E.** Dorsal view. **F.** Ventral view. **G.** Left lateral view. **H.** Distribution map. Abbreviations: see Material and methods.

Labium yellowish, with last segment longer than broad, shorter than penultimate. Antennae black with scape short, ring-shaped, and subcylindrical, barrel-shaped pedicel.

THORAX (Figs 23A, C–E, 27). Pronotum brown to blackish with distinct median line and often small blunt tubercles, yellowish white to pale red; transverse with anterior margin rounded and posterior margin slightly bisinuate, about $0.55 \times$ as long in midline, as mesonotum; smooth with anterior margin finely carinate and pair of weak impressed points on each side of median line; lateral fields very narrow behind eyes; paranotal lobes black without tubercles/carinae, and with posteroventral angle angularly rounded. Mesonotum brown to blackish with distinct median line yellowish white to pale red; subtriangular with posterolateral margins slightly incurved, smooth, weakly convex with shallow depression before scutellum; no distinct carinae. Tegulae yellowish.

TEGMINA (Figs 23A–D, 24A–B, 27). Brown to blackish or reddish brown, with darker poorly defined band along costal margin, and latter narrowly pale yellowish along basal $4/5$; apical cells with more or less elongate black marking (veins paler), often missing in cubital area; veins more or less concolourous, vein A1-Pcu+A1 often black. Convex, elongate, about $2.4 \times$ as long as wide, with longitudinal veins elevated and cross-veins weakly elevated; costal margin forming a broadly rounded angle at basal $2/5$; slightly tapering in distal $3/5$, apical margin obliquely rounded; distinct lateral hump including vein ScP+RA around basal $1/4$, hiding costal margin in dorsal aspect; costal margin more or less hidden by vein RP in distal $3/4$, in dorsal view; distinct epipleuron; clavus closed, reaching about $3/4$ of tegmen length. Venation as in genus description.

HIND WINGS (Fig. 23F). Blackish brown, turning slightly darker in distal portion; veins generally darker than background, with red portions; well developed, with three distinct lobes (Sarimini type) more or less equal in width; indentation between ScP-R-MP-Cu and Pcu-A1 lobes moderately deep. Venation as in genus description.

LEGS (Figs 23A–E, 24C–D, 27). Femora black with more or less distinct preapical pale ring; tibiae and tarsi yellowish white, pro- and mesotibiae with basal spot, ring before half length and apex, black, metatibiae black in basal portion; all spines of posterior legs black apically. Legs rather short, slender, with pro- and mesofemora and pro- and mesotibiae slightly flattened dorsoventrally, tibiae distinctly more slender than corresponding femora; posteroventral margin of pro- and mesofemora with row of minute teeth; pro- and mesotarsi elongate and slender. Metatibiae slightly curved with two lateral spines in distal half and eight apical spines. Metatarsi moderately elongate with first segment about as long as combined length of remaining segments. First metatarsomere with two latero-apical and seven intermediate spines arranged in arc ventrally. Metatibiotarsal formula: (2) 8/9/2.

ABDOMEN (Fig. 23B). Yellowish brown with basal area of segments darker.

MALE TERMINALIA. Pygofer (*Py* – Fig. 25A–D) short, about $2.8 \times$ as high as long at midheight in lateral view, with posterior margin bisinuate, with distinct angle dorsally, and anterior margin distinctly incurved; in caudal view suboval, $1.4 \times$ as high as wide; hind margin dorsally deeply and widely notched. Gonostyli (*G* – Fig. 25A–D) rather large, moderately convex, with posterior margin roundly projecting caudad in a short lobe in lateral view, with dorsal portion of hind margin sinuate, and anterodorsal margin distinctly angularly (right angle) rounded; capitulum (*ca* – Fig. 25A–B, D) rather short and distinctly curved anterodorsad in lateral view, curved mesad in caudal view, distally laminate antero-posteriorly with distinct neck and lateral hook pointed lateroventrad. Anal tube (*An* – Fig. 25A–D) elongate, about $2.5 \times$ as long in midline, as wide, dorsoventrally flattened, widening from base to around anal opening, slightly grooved in midline and tapering in distal portion in dorsal view (lateral margin broadly rounded); in lateral view, slightly downcurved. Aedeagus (Figs 25E–L, 26) elongate, symmetrical, moderately curved posterodorsad in lateral view; base of periandrium dorsally with laminate projection directed



Fig. 27. *Civetissus pagumoides* gen. et sp. nov. Live specimens in Bach Ma National Park (photographed in cage). A–E. Pheasant trail, 20 May 2023. F. Nam Dong, near ranger station, 19 Oct. 2024.

caudad. Ventral lobe of periandrium (*vl* – Figs 25G–L, 26A–D) laminate, widening basally on short distance, then tapering, constricted in middle portion, and spatulate in distal portion with rounded apical margin notched in middle. Dorsal lobe of periandrium (*dl* – Figs 25E–L, 26A–D) elongate, deeply notched apically and with strong median carina (fin-shaped) raised at right angle basally, then rounded to oblique slope towards the posterior; elongate shaft (*sp* – Figs 25E–L, 26A–D) arising apically, directed laterally and strongly recurved cephalad in basal portion, more or less straight, dorsally irregularly dentate and with distal portion spatulate, moderately widening and upcurved. Aedeagus (sensu stricto, *ae* – Figs 25F–G, I, L, 26E–G) very elongate, bifid from basal portion and more or less roundly truncate apically, with pair of elongate, shaft-like, lateroventral processes (*lvp* – Figs 25E–L, 26E–G) arising at about distal $\frac{2}{3}$ of length, directed cephalad and curved mesodorsad in distal portion, and reaching to base of periandrium. Connective (*co* – Fig. 25G) well developed, corpus connective long, straight in lateral view, tectiductus (*te* – Fig. 25G) well developed, conical with anteroventral apodemes and wide anterior foramen.

Biology

Civetissus pagumoides gen. et sp. nov. was collected in the months of May and October at altitudes between 150 and 600 m a.s.l., in moist evergreen tropical forest. The specimens were sitting on small branches and leaves, on lower vegetation and bushes. In Bach Ma National Park, it was found at the following collecting site/habitats (Constant & Pham 2025a: fig. 2a): “Yes Hue Eco” (Constant & Pham 2025a: fig. 2a(1), b), “pheasant trail” (Constant & Pham 2025a: figs 2a(2), 3a), and “ranger station” (Constant & Pham 2025a: figs 2a(6), 5a).

Distribution

Vietnam: Thừa Thiên-Huế Province, Bach Ma National Park (Fig. 26H).

Genus *Eusarima* Yang, 1994

Eusarima Yang in Chang & Yang, 1994: 108.

Type species

Eusarima contorta Yang, 1994, by original designation.

Diagnosis

The genus *Eusarima* can be differentiated from the other genera of Sarimini by the following combination of characters, according to Gnezdilov (2013a) and Zhang *et al.* (2020): (1) the frons with distinct and complete median and peridiscal (sublateral) carinae, joining below upper margin (subgenus *Eusarima*), or at level of upper margin (subgenus *Nepalius* Dlabola, 1997); (2) the vertex transverse, 1.6–2.0 × as wide as long; (3) the tegmina quite elongate, without epipleuron (= hypocostal plate) (subgenus *Eusarima*), or with an epipleuron (= hypocostal plate) (subgenus *Nepalius* Dlabola, 1997); (4) the tegmina with veins ScP long, reaching over midlength of tegmen, RP and CuA with 2 branches each and MP with 2–4 branches; (5) the hind wings well developed, three-lobed; (6) the hind tibiae with two lateral spines; (7) the periandrium with a pair of subapical processes; (8) the aedeagus with pair of ventral hooks arising from its apical half and directed cephalad.

Remarks

The genus *Eusarima* contains two subgenera: *Eusarima* Yang, 1994 and *Nepalius* Dlabola, 1997 (type species: *Nepalius hellerianus* Dlabola, 1997). *Nepalius* was synonymized under *Eusarima* by Gnezdilov (2009), and soon later, treated as a valid subgenus of *Eusarima* by Gnezdilov & Mozaffarian (2011). The two subgenera can be separated by the characters of the median and peridiscal carinae of the frons, fused

under upper margin of frons in *Eusarima*, at level of upper margin in *Nepalius*, and the epipleuron (= hypocostal plate) of the tegmen, absent in *Eusarima*, and present in *Nepalius*; *Eusarima (Eusarima)* is recorded from China and Taiwan, and is here newly recorded from Vietnam, while *Eusarima (Nepalius)* is known from Nepal and Iran (Gnezdilov & Mozaffarian 2011).

The three species of *Eusarima (Eusarima)* from Central Vietnam treated below differ from the other species in the subgenus by having the anterodorsal margin of the gonostylus weakly rounded, and not angularly curved at base of capitulum (compare with illustrations in Chan & Yang 1994: figs 45–72), and/or the subapical processes/dorsal spinose process (*dsp*) of the periandrium arising very distally and reaching or surpassing level of dorsal and ventral lobes of periandrium. Hence, the three new species are compared between them in the differential diagnosis given in the corresponding sections.

Species included

Eusarima bachmana sp. nov.

Eusarima boevei sp. nov.

Eusarima bourgoini sp. nov.

Eusarima (Eusarima) bachmana sp. nov.

[urn:lsid:zoobank.org:act:7401895E-EF92-42BE-B9EF-0036B8E75311](https://zoobank.org/act:7401895E-EF92-42BE-B9EF-0036B8E75311)

Figs 28–30

Diagnosis

Eusarima (Eusarima) bachmana sp. nov. can be recognized by the following combination of characters: (1) the frons uniformly yellow-brown (Fig. 28E); (2) the anterodorsal margin of the gonostyli moderately, evenly convex in lateral view (*G* – Fig. 29A); (3) the anal tube in dorsal view (*An* – Fig. 29D), elongate (about $2.6 \times$ as long as wide), dorsoventrally flattened, slightly widening from base to level of anal opening in basal $\frac{1}{3}$, then slightly tapering to parallel-sided portion ending in round apical margin; (4) the dorsal lobe of the periandrium more or less parallel-sided in dorsal view (*dl* – Fig. 30A), distally forming a rounded lobe with, on each side, a dorsal spinose process (*dsp* – Fig. 30C) upcurved and somewhat spiralate (sinuate in caudal view); (5) the lateroventral processes of the aedeagus (*lvp* – Fig. 30F–H) robust, arising in distal $\frac{1}{6}$, curved ventrocephalad in lateral view and reaching at least halflength of aedeagus.

Differential diagnosis

Eusarima (Eusarima) bachmana sp. nov. can be separated from *E. (Eusarima) boevei* sp. nov. by its uniformly yellow-brown frons (showing a transverse yellowish band in the latter) and its longer lateroventral processes of the aedeagus reaching to at least halflength of the aedeagus (not surpassing $\frac{3}{5}$ of aedeagus length in the latter); it can be separated from *E. (Eusarima) bourgoini* sp. nov. by the lateroventral processes of the aedeagus, much longer, reaching the base of the aedeagus in the latter species.

Etymology

The species epithet refers to Bach Ma National Park, where the species was first discovered.

Type material

Holotype

VIETNAM • ♂; Thừa Thiên-Huế Province, Bach Ma National Park; 16°11'18" N, 107°50'56" E; 1300–1400 m a.s.l.; 11–21 May 2023; J. Constant and L. Semeraro leg.; summit; VNMN.

Paratypes

VIETNAM – Thừa Thiên-Huế Province • 1 ♂; same data as for holotype; VNMN • 2 ♂♂; same data as for holotype; I.G.: 34.640; RBINS.

Description

MEASUREMENTS AND RATIOS. LT: ♂ (n = 4): 5.5 mm (5.5–5.6); LT/BB = 1.90; LTg/BTg = 2.20; LW/BW = 1.29; BV/LV = 2.07; LF/BF = 0.89.

HEAD (Fig. 28A–E). Vertex yellow-brown, often paler in posterior portion, with fine, obsolete median carina; $2.1 \times$ as broad as long in midline, slightly constricted in middle; disc weakly concave; anterior margin angularly projecting anteriorly (widely obtuse angle); posterior margin rather deeply concave; all margins moderately carinate. Frons yellow-brown; weakly convex, smooth with distinct median carina reaching dorsal margin above but not reaching fronto-clypeal suture; peridiscal carina distinct nearly down to fronto-clypeal suture, crossing median carina slightly under dorsal margin; some yellowish tubercles along lateral margins; dorsal margin more or less straight; widest at level of antennae. Genae yellow-brown, paler than frons, with anteroventral angle weakly projecting anteriorly; ocelli present. Clypeus coloured as frons, sometimes apex darker; subtriangular, convex, smooth, with small basal median hump but not keeled or carinate, with fronto-clypeal suture curved. Labium yellow-brown with last segment longer than broad, shorter than penultimate. Antennae with scape short, ring-shaped, yellow-brown, and pedicel bulbous, yellow-brown with distinct basiventral black marking.

THORAX (Fig. 28A, C–E). Yellow-brown. Pronotum with weak, paler median carina; subtriangular, projecting anteriorly; smooth with anterior margin carinate and pair of impressed points on each side of midline; lateral fields very narrow behind eyes; paranotal lobes with posteroventral angle rounded. Mesonotum yellow-brown, with median and peridiscal (sublateral) carinae distinct and slightly paler, smooth, weakly convex with shallow depression before scutellum. Tegulae yellowish brown.

TEGMINA (Fig. 28A–D). Uniformly yellow-brown with main veins more or less concolourous (sometimes darker), elevated, and cross-veins weakly raised and generally paler than background; distinctly convex, and about $2.2 \times$ as long as wide, with weak lateral hump including vein ScP+RA slightly before basal $\frac{1}{3}$, not hiding broadly rounded lateral margin in dorsal aspect; apical margin rounded; no epipleuron; clavus closed, reaching to about $\frac{3}{4}$ of tegmen length. Venation: ScP+R rather short; ScP+RA long, curved, reaching external margin of tegmen around distal $\frac{1}{5}$ of tegmen length; RP unforked, long and weakly curved; first fork of MP around $\frac{2}{5}$ of tegmen, MP1 with two terminales; first fork of CuA more distal, slightly before halflength of tegmen; Pcu and A1 fused at about $\frac{3}{5}$ of length of clavus, Pcu+A1 reaching apex of clavus; cross-veins numerous, more or less evenly spaced.

HIND WINGS (Fig. 28F). Blackish brown, turning slightly darker in distal portion, and with paler area along costal margin, around midlength; veins generally darker than background; well developed, with three distinct lobes (Sarimini type) more or less equal in width; indentation between ScP-R-MP-Cu and Pcu-A1 lobes moderately deep. Venation: ScP+R and CuA furcate; MP simple, sinuate; second branch of CuA fused distally with CuP; Pcu and A1 fused on basal half, Pcu unforked and A2 simple; one transverse vein between second branch of ScP+R and MP, and between MP and first branch of CuA.

LEGS (Fig. 28A–E). Yellow brown, slightly paler than tegmina; all spines of posterior legs black apically. Anterior and median legs slightly flattened dorsoventrally, tibiae more slender than corresponding femora; posteroventral margin of pro- and mesofemora with row of minute teeth; pro- and mesotarsi moderately elongate. Metatibiae with two lateral spines in distal half, and six apical spines. Metatarsi rather short with first segment about as long as combined length of remaining segments. First metatarsomere with two latero-apical and six intermediate spines arranged in arc. Metatibiotarsal formula: (2) 6/8/2.

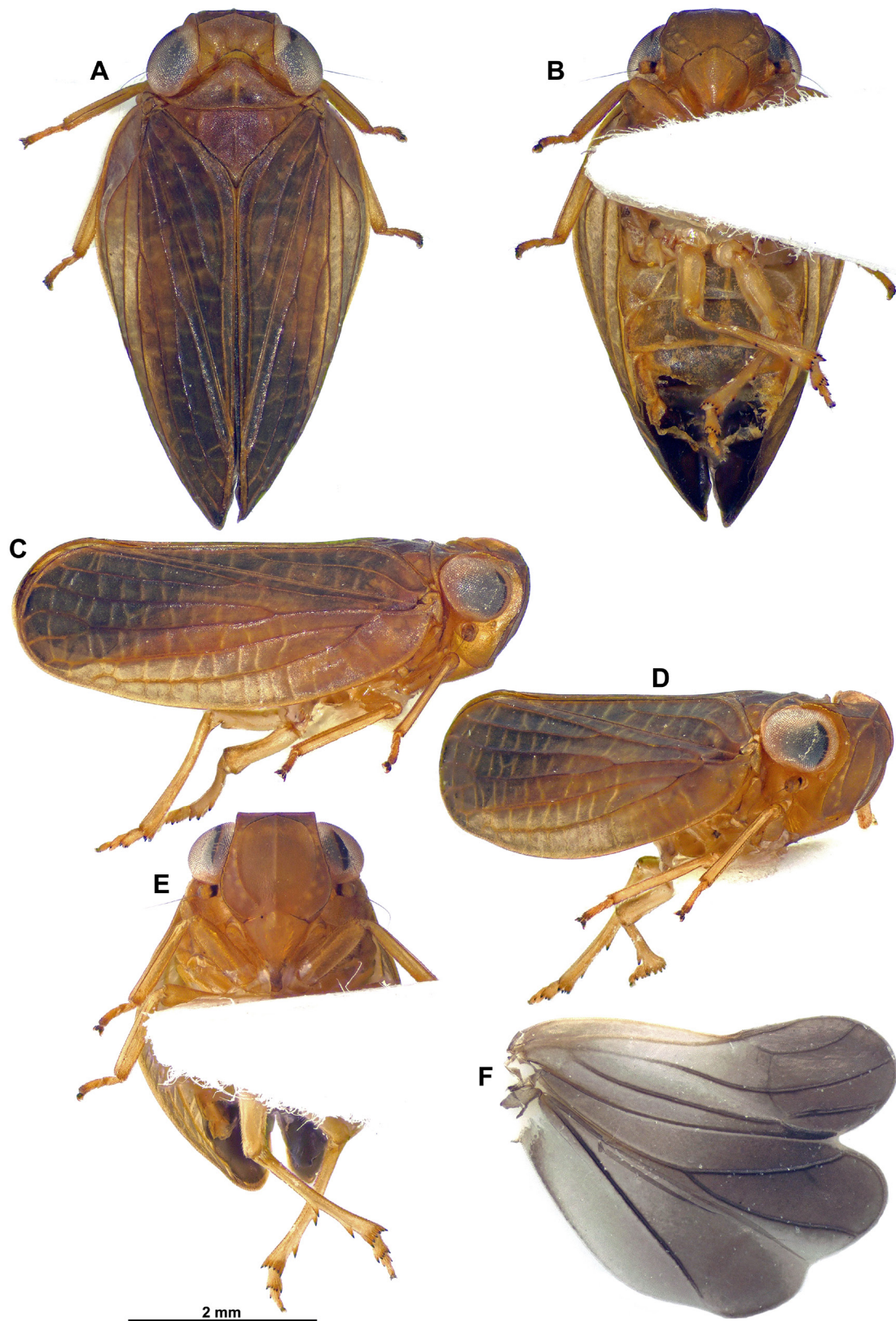


Fig. 28. *Eusarima bachmana* gen. et sp. nov., dissected paratype, ♂ (RBINS). **A.** Habitus, dorsal view. **B.** Habitus, ventral view. **C.** Habitus, lateral view. **D.** Habitus, anterolateral view. **E.** Habitus, perpendicular view of frons. **F.** Right hind wing.

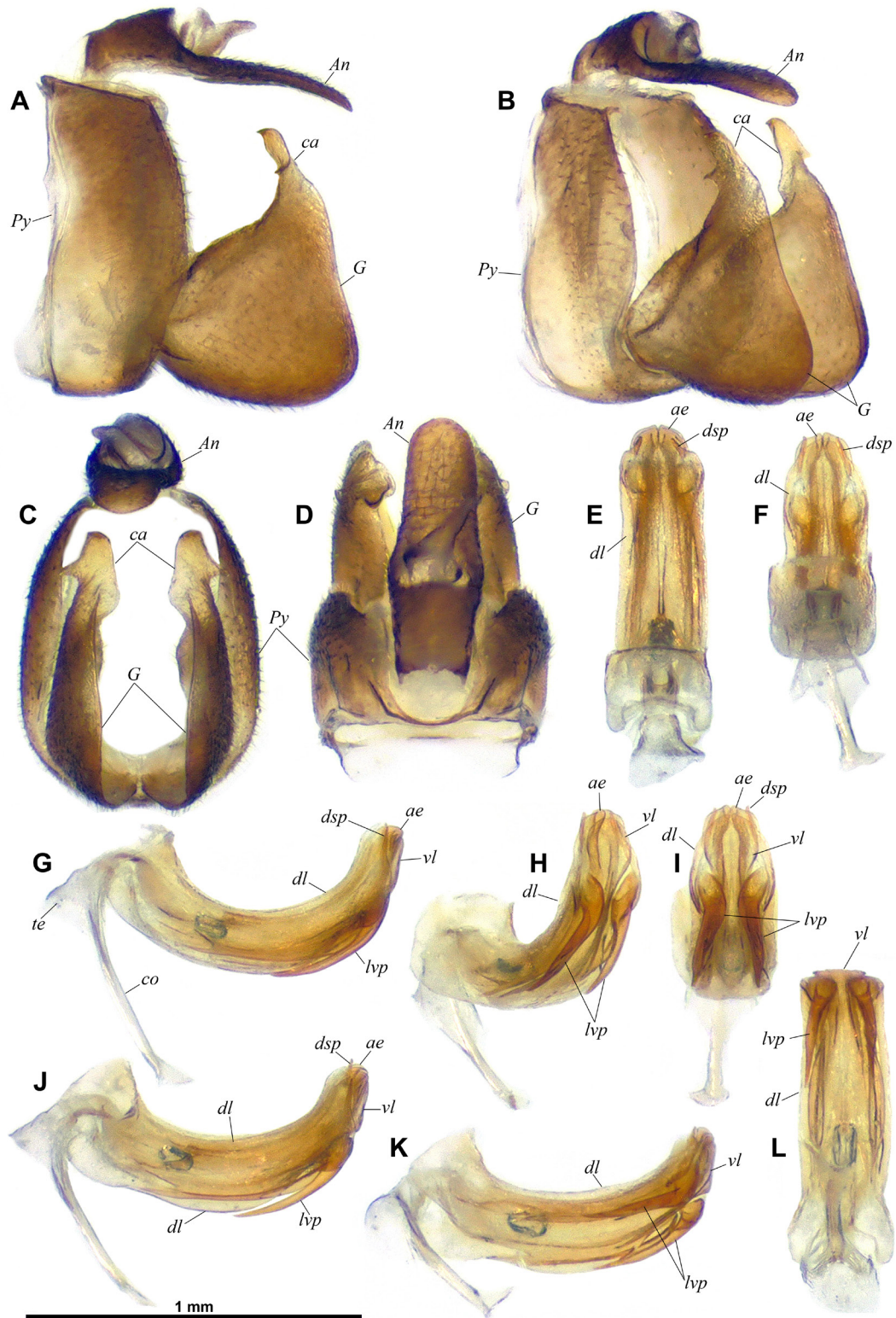


Fig. 29. *Eusarima bachmana* gen. et sp. nov., holotype, ♂ (VNMN), terminalia. **A–D.** Pygofer, anal tube and gonostyli. **A.** Left lateral view. **B.** Posterolateral view. **C.** Caudal view. **D.** Dorsal view. **E–L.** Aedeagus. **E.** Dorsal view. **F.** Anterodorsal view. **G.** Left lateral view. **H.** Posterolateral view. **I.** Posteroventral view. **J.** Left laterodorsal view. **K.** Left lateroventral view. **L.** Ventral view. Abbreviations: see Material and methods.

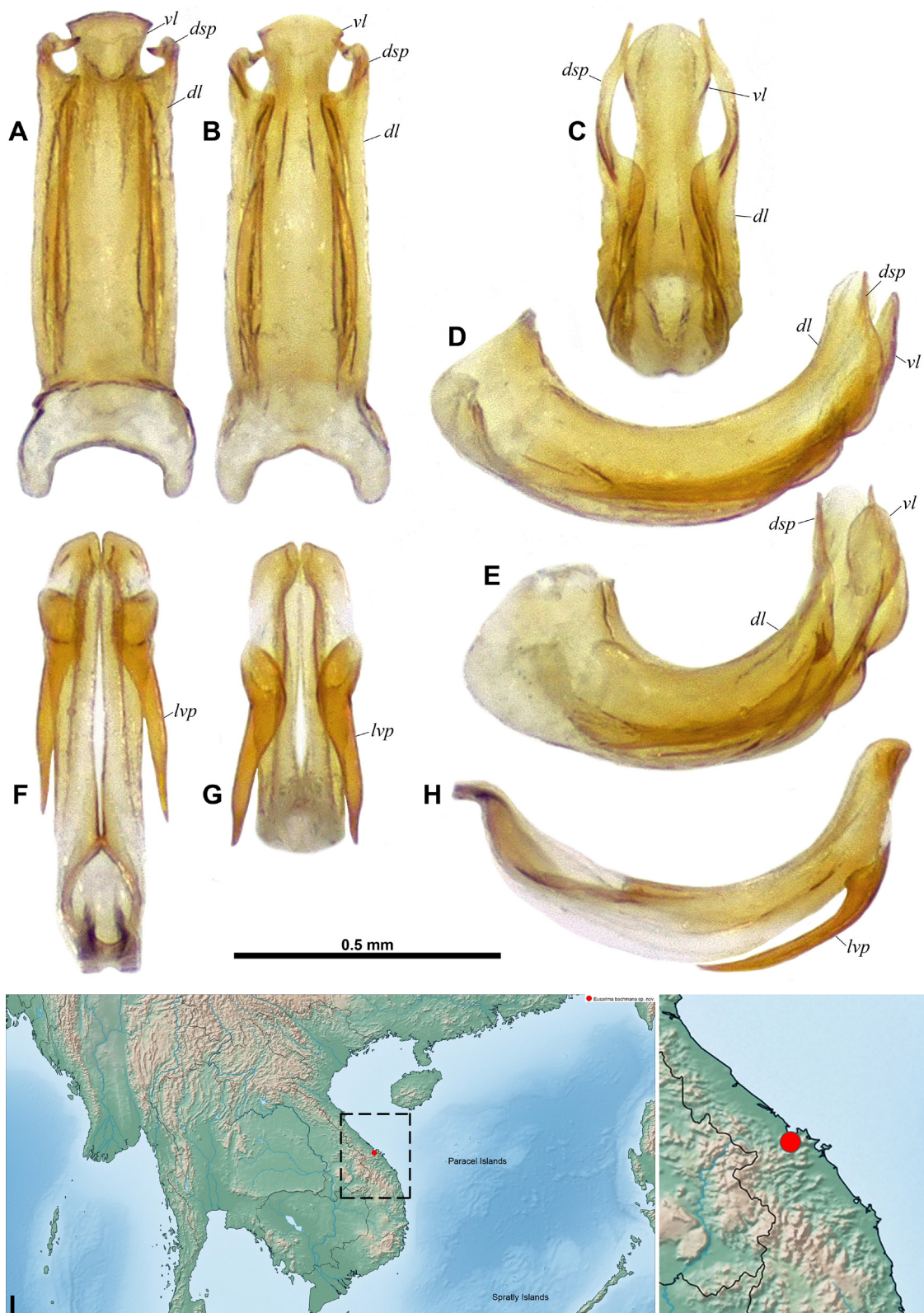


Fig. 30. *Eusarima bachmana* gen. et sp. nov. A–H. Holotype, ♂ (VNMN), aedeagus. A–E. Perianthrium. A. Dorsal view. B. Ventral view. C. Posteroventral view. D. Left lateral view. E. Posterolateral view. F–H. Aedeagus s. str. F. Dorsal view. G. Posteroventral view. H. Left lateral view. I. Distribution map. Abbreviations: see Material and methods.

ABDOMEN (Fig. 28B). Yellow-brown.

MALE TERMINALIA (Figs 29–30). Pygofer (*Py* – Fig. 29A–D) short, about $2.5 \times$ as high as long at midheight in lateral view, with posterior margin broadly rounded in lateral view; in caudal view suboval, $1.3 \times$ as high as wide; dorsally deeply notched. Gonostyli (*G* – Fig. 29A–D) relatively massive, moderately convex, with anterodorsal margin moderately, evenly convex, then upcurved at base of capitulum; ventral margin nearly straight with posterior angle rounded; posterodorsal margin weakly incurved, with a distinct hump at base of capitulum in lateral view; capitulum (*ca* – Fig. 29A–C) rather elongate and anteroposteriorly flattened, projecting dorsad and with moderate neck, apical point directed cephalad, in lateral view, posterior margin extending ventrad and curved to reach apex of basilateral spine curved lateroventrad; inner margin more or less straight in caudal view. Anal tube (*An* – Fig. 29A–D) distinctly elongate, dorsoventrally flattened, slightly widening from base to level of anal opening, then slightly tapering to parallel-sided portion ending in round apical margin, and about $2.6 \times$ as long as wide in dorsal view, anal opening in basal $\frac{1}{3}$; in lateral view abruptly narrowing at anal opening, then weakly sinuate, downcurved in distal portion. Aedeagus (*ae* – Figs 29E–L, 30) symmetrical, elongate, distinctly curved posterodorsad in lateral view, more so in distal portion. Ventral lobe of periandrium (*vl* – Figs 29G–L, 30A–E) laminate, slightly tapering towards spatulate distal portion, with apical margin round; slightly shorter than dorsal lobe and aedeagus s. str. Dorsal lobe of periandrium (*dl* – Figs 29E–L, 30A–D) more or less parallel-sided in dorsal view, distally forming rounded lobe with, on each side, dorsal spinose process (*dsp* – Figs 29E–I, 30A–E) upcurved, somewhat spiralate (sinuate in caudal view); basally to spinose process, reflexed lobe developed mesoventrad and partly concealing ventral lobe ventrally. Aedeagus (sensu stricto, *ae* – Figs 29E–J, 30F–H) slightly shorter than spinose processes of periandrium, bifid, each shaft more or less parallel-sided to obliquely truncate apex; lateroventral processes (*lvp* – Figs 29G–L, 30F–H) robust, arising in distal $\frac{1}{6}$ and reaching at least half length of aedeagus, curved ventrocephalad in lateral view, sinuate (inflated, then strongly curved laterad basally) in caudal view, rather elongate (= $\frac{1}{2}$ of length of aedeagus) and more or less evenly tapering towards pointed apex. Connective (*co* – Fig. 29G) well developed, corpus connective long, weakly curved in lateral view, tectiductus (*te* – Fig. 29G) rather well developed, conical with anteroventral apodemes and wide anterior foramen.

Biology

Eusarima bachmana sp. nov. was collected in May at altitudes between 1300 and 1400 m a.s.l., in moist evergreen tropical forest. The specimens were sitting on small branches and leaves, on lower vegetation, bushes and trees. In Bach Ma National Park, it was found at the following collecting site/habitats (Constant & Pham 2025a: fig. 2a): “summit” (Constant & Pham 2025a: figs 2a(5), 4b).

Distribution

Vietnam: Thừa Thiên-Huế Province, Bach Ma National Park (Fig. 30I).

Eusarima (Eusarima) boevei sp. nov.

[urn:lsid:zoobank.org:act:CAC62EAF-8CA4-4102-A866-AC711C0CC1F1](https://zoobank.org/act:CAC62EAF-8CA4-4102-A866-AC711C0CC1F1)

Figs 31–33

Diagnosis

Eusarima (Eusarima) boevei sp. nov. can be recognized by the following combination of characters: (1) the frons brown with wide yellowish transverse band on disc (Fig. 31E); (2) the anterodorsal margin of the gonostyli slightly, evenly convex in lateral view (*G* – Fig. 32A); (3) the anal tube in dorsal view (*An* – Fig. 32D), elongate (about $2.5 \times$ as long as wide), dorsoventrally flattened, slightly widening from base to level of anal opening in basal $\frac{1}{3}$, then evenly tapering to a rounded apex; (4) the dorsal lobe of

the periandrium more or less parallel-sided in dorsal view (*dl* – Fig. 33A), distally forming a rounded lobe with, on each side, a dorsal spinose process (*dsp* – Fig. 33C) upcurved, sinuate in caudal view; (5) the lateroventral processes of the aedeagus (*lvp* – Fig. 33F–H) robust and rather short, arising in distal $\frac{1}{6}$, curved ventrocephalad in lateral view and not surpassing level of $\frac{3}{5}$ of the aedeagus.

Differential diagnosis

Eusarima (Eusarima) boevei sp. nov. can be separated from *E. (Eusarima) bachmana* sp. nov. by its frons brown with a transverse yellowish band (uniformly yellow-brown in the latter) and its shorter lateroventral processes of the aedeagus not surpassing $\frac{3}{5}$ of aedeagus length (reaching to at least half length of the aedeagus in the latter); it can be separated from *E. (Eusarima) bourgoini* sp. nov. by the lateroventral processes of the aedeagus, much longer, reaching the base of the aedeagus in the latter species, which additionally doesn't show a yellowish band of the frons.

Etymology

The species epithet is a patronym dedicated to Dr Jean-Luc Boevé (RBINS) in acknowledgement of his support to the work of the authors over the years.

Type material

Holotype

VIETNAM • ♂; [Thừa Thiên-Huế Province], Bach Ma National Park; 16°12' N, 107°52' E; [1300–1400 m a.s.l.]; 15–16 Jul. 2011; J. Constant and J. Bresseel leg.; summit, daytime collecting; I.G.: 31.933; RBINS.

Description

MEASUREMENTS AND RATIOS. LT: ♂ (n = 1): 5.9 mm; LT/BB = 1.79; LTg/BTg = 2.16; LW/BW = 1.21; BV/LV = 2.00; LF/BF = 0.90.

HEAD. (Fig. 31A–E). Vertex brown, paler in posterior angles, with fine, yellowish, obsolete median carina; $2.0 \times$ as broad as long in midline, slightly constricted in middle; disc weakly concave; anterior margin angularly projecting anteriorly (widely obtuse angle); posterior margin rather deeply concave; all margins carinate. Frons brown with wide yellowish transverse band on disc; weakly convex, smooth with distinct median carina reaching dorsal margin above but not reaching fronto-clypeal suture; peridiscal carina distinct nearly down to fronto-clypeal suture, crossing median carina slightly under dorsal margin; numerous yellowish tubercles along lateral margins; dorsal margin more or less straight (weakly convex in middle portion); widest at level of antennae. Genae yellow-brown, paler than frons, with anteroventral angle weakly projecting anteriorly; ocelli present. Clypeus coloured as frons, apex slightly darker; subtriangular, convex, smooth, with small basal median hump but not keeled or carinate, with fronto-clypeal suture curved. Labium yellow-brown with last segment longer than broad, shorter than penultimate. Antennae with scape short, ring-shaped, yellow-brown, and pedicel bulbous, yellow-brown with distinct basal black incomplete ring.

THORAX (Fig. 31A, C–E). Brown. Pronotum with weak, paler median carina; subtriangular, projecting anteriorly; smooth with anterior margin carinate and pair of impressed points on each side of midline; lateral fields with some paler tubercles, and very narrow behind eyes; paranotal lobes yellowish brown, turning dark brown along lateral margin, with posteroventral angle rounded. Mesonotum with median and peridiscal (sublateral) carinae distinct and slightly paler, smooth, weakly convex with shallow depression before paler scutellum. Tegulae brown.

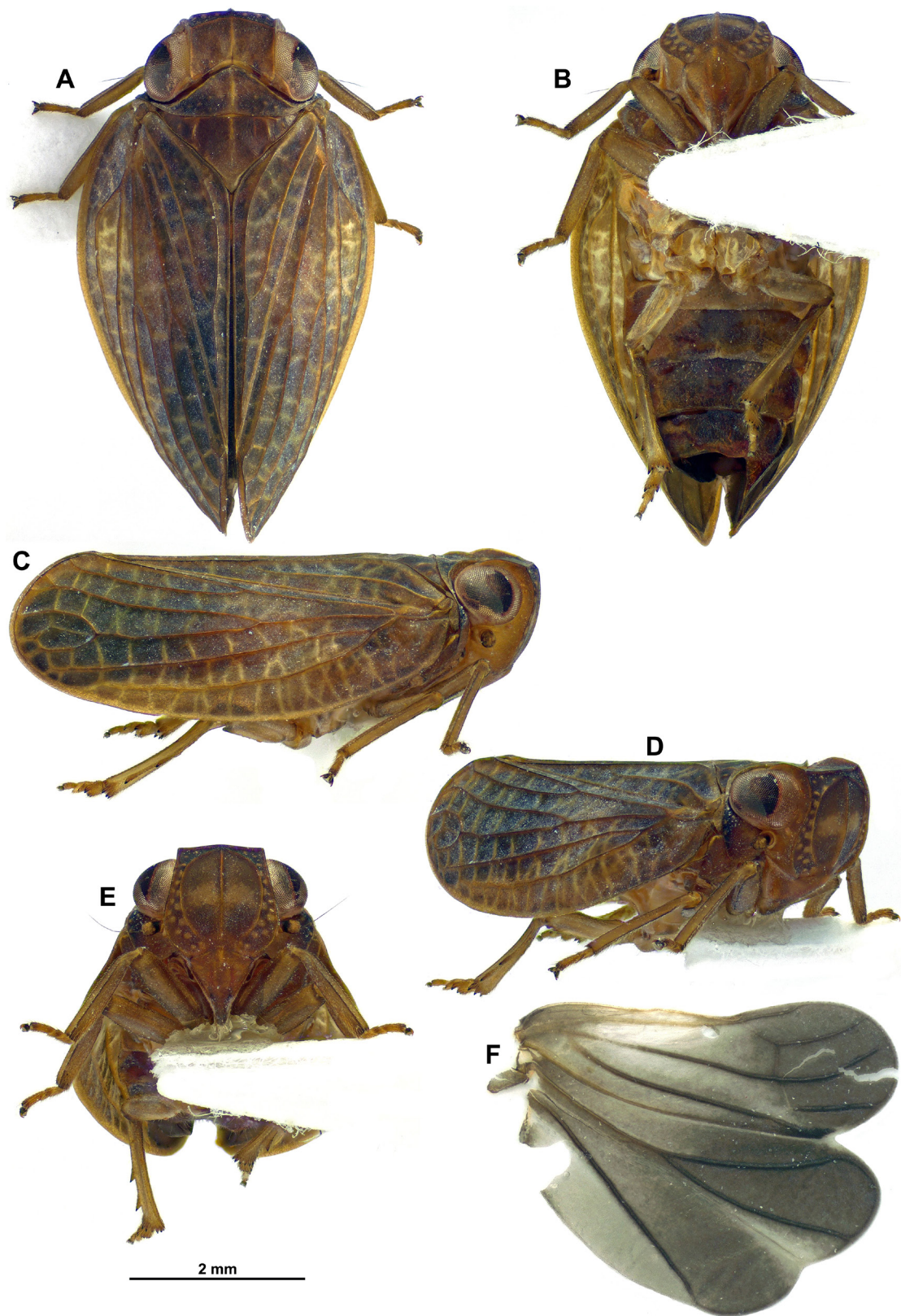


Fig. 31. *Eusarima boevei* gen. et sp. nov., dissected holotype, ♂ (RBINS). A. Habitus, dorsal view. B. Habitus, ventral view. C. Habitus, lateral view. D. Habitus, anterolateral view. E. Habitus, perpendicular view of frons. F. Right hind wing.

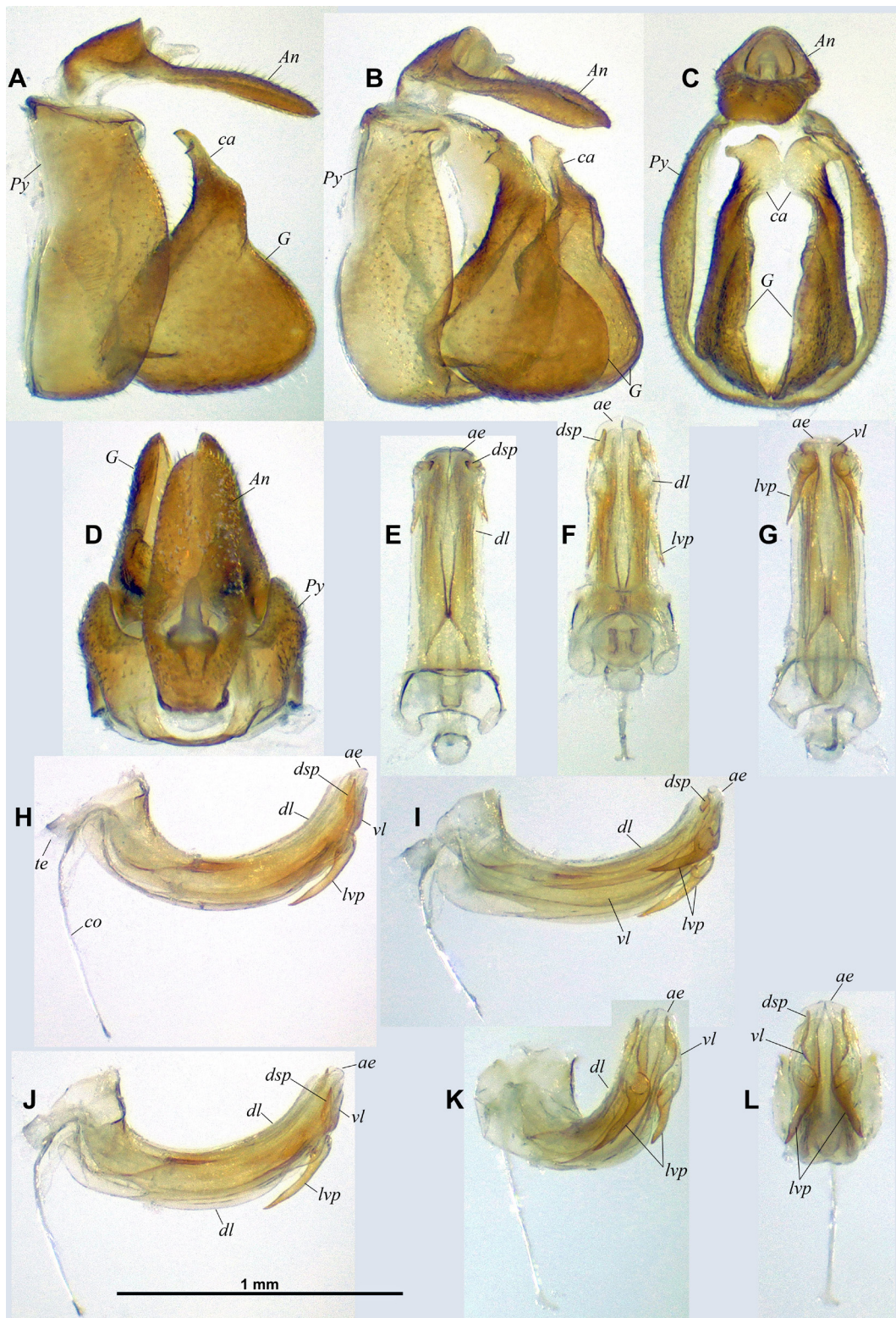


Fig. 32. *Eusarima boevei* gen. et sp. nov., holotype, ♂ (RBINS), terminalia. A–D. Pygofer, anal tube and gonostyli. A. Left lateral view. B. Posterolateral view. C. Caudal view. D. Dorsal view. E–L. Aedeagus. E. Dorsal view. F. Anterodorsal view. G. Ventral view. H. Left lateral view. I. Left lateroventral view. J. Left laterodorsal view. K. Posterolateral view. L. Posteroventral view. Abbreviations: see Material and methods.

TEGMINA (Fig. 31A–D). Uniformly brown with main veins more or less concolourous (sometimes darker), elevated, and cross-veins weakly raised and paler than background; distinctly convex, and about $2.2 \times$ as long as wide, with weak lateral hump including vein ScP+RA slightly before basal $\frac{1}{3}$, not hiding broadly rounded lateral margin in dorsal aspect; apical margin rounded; no distinct epipleuron; clavus closed, reaching to slightly beyond $\frac{3}{4}$ of tegmen length. Venation: ScP+R rather short; ScP+RA long, curved, reaching external margin of tegmen around distal $\frac{1}{5}$ of tegmen length; RP unforked, long and weakly curved; first fork of MP and CuA slightly before half length, with first fork of CuA slightly more distal; MP1 with two terminales; Pcu and A1 fused at about $\frac{3}{5}$ of length of clavus, Pcu+A1 reaching apex of clavus; cross-veins numerous.

HIND WINGS (Fig. 31F). Blackish brown, turning slightly darker in distal portion, and with paler area along costal margin, before midlength; veins generally darker than background; well developed, with three distinct lobes (Sarimini type) more or less equal in width; indentation between ScP-R-MP-Cu and Pcu-A1 lobes moderately deep. Venation: ScP+R and CuA furcate; MP simple, sinuate; second branch of CuA fused distally with CuP; Pcu and A1 fused on basal half, Pcu unforked and A2 simple; one transverse vein between second branch of ScP+R and MP, and between MP and first branch of CuA.

LEGS (Fig. 31A–E). Yellow brown, slightly paler than tegmina; all spines of posterior legs black apically. Anterior and median legs slightly flattened dorsoventrally, tibiae more slender than corresponding femora; posteroventral margin of pro- and mesofemora with row of minute teeth; pro- and mesotarsi moderately elongate. Metatibiae with two lateral spines in distal half, and six apical spines. Metatarsi rather short with first segment about as long as combined length of remaining segments. First metatarsomere with two latero-apical and six intermediate spines arranged in arc. Metatibiotarsal formula: (2) 6/8/2.

ABDOMEN (Fig. 31B). Yellow-brown with median portion darker.

MALE TERMINALIA (Figs 32–33). Pygofer (*Py* – Fig. 32A–D) short, about $2.4 \times$ as high as long at midheight in lateral view, with posterior margin rounded in lateral view; in caudal view suboval, $1.3 \times$ as high as wide; dorsally deeply notched. Gonostyli (*G* – Fig. 32A–D) relatively massive, moderately convex, with anterodorsal margin slightly, evenly convex, then upcurved at base of capitulum; ventral margin slightly rounded with posterior angle rounded; posterodorsal margin roundly projecting caudad into a posterior lobe in lateral view, forming obtuse angle, and with second obtuse angle more dorsad (curved cephalad) at base of capitulum in lateral view; capitulum (*ca* – Fig. 32A–C) rather slender in lateral view and anteroposteriorly flattened, projecting anterodorsad and with moderate neck, apical point directed cephalad, in lateral view, posterior margin extending ventrad and curved to reach apex of basilateral spine curved lateroventrad; inner margin distinctly rounded in caudal view. Anal tube (*An* – Fig. 32A–D) distinctly elongate, dorsoventrally flattened, slightly widening from base to level of anal opening, then slightly, evenly tapering to round apical margin, and about $2.5 \times$ as long as wide in dorsal view, anal opening in basal $\frac{1}{3}$; in lateral view abruptly narrowing at anal opening, then weakly sinuate, more or less straight in distal portion. Aedeagus (*ae* – Figs 32E–L, 33) symmetrical, elongate, distinctly curved posterodorsad in lateral view. Ventral lobe of periandrium (*vl* – Figs 32G–L, 33A–E) laminate, slightly tapering towards spatulate distal portion, with apical margin slightly notched; slightly shorter than dorsal lobe and aedeagus sensu stricto. Dorsal lobe of periandrium (*dl* – Figs 32E–L, 33A–E) more or less parallel-sided in dorsal view, distally forming rounded lobe with, on each side, dorsal spinose process (*dsp* – Figs 32E–F, H–I, L, 33A–E) upcurved, sinuate in caudal view; basally to spinose process, reflexed lobe developed mesoventrad and partly concealing ventral lobe ventrally. Aedeagus (sensu stricto, *ae* – Figs 32E–L, 33F–H) surpassing spinose processes of periandrium, bifid, each shaft more or less parallel-sided to obliquely truncate apex; lateroventral processes (*lvp* – Figs 32G–L, 33F–H) robust, rather short ($\frac{1}{3}$ of length of aedeagus), arising in distal $\frac{1}{6}$ and not surpassing level of $\frac{3}{5}$ of aedeagus, curved ventrocephalad in lateral view, moderately sinuate (inflated then strongly curved laterad basally)

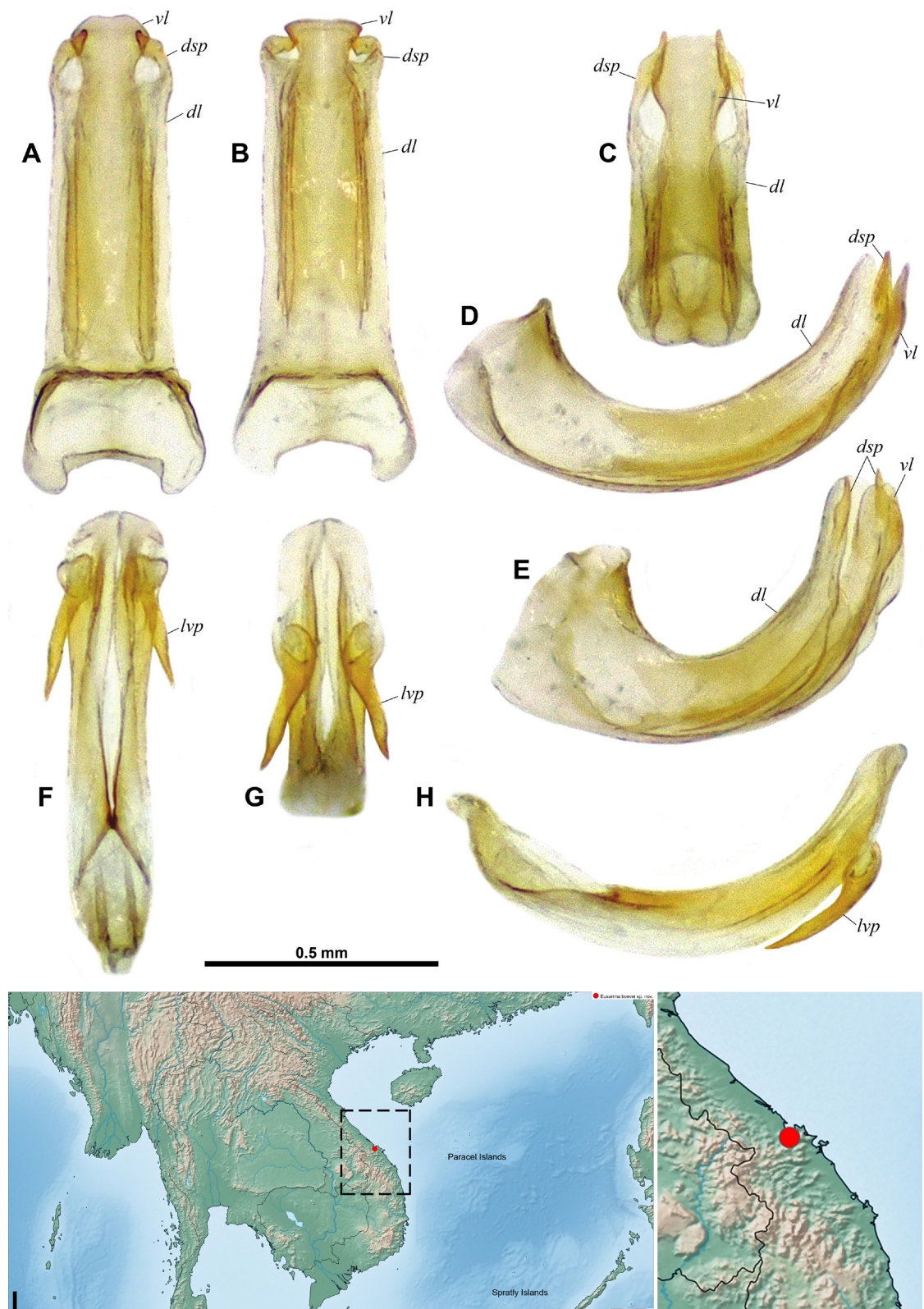


Fig. 33. *Eusarima boevei* gen. et sp. nov. **A–H.** Holotype, ♂ (RBINS), aedeagus. **A–E.** Periandrium. **A.** Dorsal view. **B.** Ventral view. **C.** Posteroventral view. **D.** Left lateral view. **E.** Posterolateral view. **F–H.** Aedeagus s. str. **F.** Dorsal view. **G.** Posteroventral view. **H.** Left lateral view. **I.** Distribution map. Abbreviations: see Material and methods.

in caudal view, moderately elongate and rather abruptly tapering towards pointed apex in distal portion. Connective (*co* – Fig. 32H) well developed, corpus connective long, slender, weakly curved in lateral view, tectiductus (*te* – Fig. 32H) moderately developed, conical with anteroventral apodemes and wide anterior foramen.

Biology

Eusarima boevei sp. nov. was collected in July at altitudes between 1300 and 1400 m a.s.l., in moist evergreen tropical forest. The specimen was collected by sweeping lower vegetation and bushes. In Bach Ma National Park, it was found at the following collecting site/habitats (Constant & Pham 2025a: fig. 2a): “summit” (Constant & Pham 2025a: figs 2a(5), 4b).

Distribution

Vietnam: Thừa Thiên-Huế Province, Bach Ma National Park (Fig. 33I).

Eusarima (Eusarima) bourgoini sp. nov.

[urn:lsid:zoobank.org:act:A9B8C76B-F692-4892-890F-92B25FFB5BF2](https://zoobank.org/urn:lsid:zoobank.org:act:A9B8C76B-F692-4892-890F-92B25FFB5BF2)

Figs 34–36

Diagnosis

Eusarima (Eusarima) bourgoini sp. nov. can be recognized by the following combination of characters: (1) the frons yellowish brown, darker towards dorsal margin, with dorsal and lateral margins finely lined in black (Fig. 34E); (2) the anterodorsal margin of the gonostyli slightly, evenly convex in lateral view (*G* – Fig. 35A); (3) the anal tube in dorsal view (*An* – Fig. 35C), elongate (about 2.6 × as long as wide), dorsoventrally flattened, slightly widening from base to level of anal opening in basal 1/3, then slightly tapering to a round apical margin; (4) the dorsal lobe of the perianthium more or less parallel-sided in dorsal view (*dl* – Fig. 36A), distally forming a rounded lobe with, on each side, a dorsal spinose process (*dsp* – Fig. 36C) upcurved and sinuate in caudal view; (5) the lateroventral processes of the aedeagus (*lvp* – Fig. 36F–H) extremely elongate and slender, arising in distal 1/6 and reaching base of aedeagus.

Differential diagnosis

Eusarima (Eusarima) bourgoini sp. nov. can be separated from both *E. (Eusarima) bachmana* sp. nov. and *E. (Eusarima) boevei* sp. nov. by the lateroventral processes of the aedeagus, much longer, reaching the base of the aedeagus while they reach at best halflength of the aedeagus in the two other species; it can be additionally separated from *E. (Eusarima) boevei* by the lack of a transverse yellowish band on the frons.

Etymology

The species epithet is a patronym dedicated to Prof. Dr Thierry Bourgoïn (Muséum national d’Histoire naturelle, Paris, France) in acknowledgement of his support to the work of the authors over the years.

Type material

Holotype

VIETNAM • ♂; Thừa Thiên-Huế Province, Bach Ma National Park; 16°11’44” N, 107°50’44” E; 1200–1300 m a.s.l.; 22 May 2023; J. Constant and L. Semeraro leg.; roadside; VNMMN.

Paratypes

VIETNAM – Da Nang Province • 1 ♂; Ba Na-Nui Chua Nature Reserve; 16°00’ N, 108°01’ E; 16–19 Jul. 2017; J. Constant and J. Bresseel leg.; GTI Project; I.G.: 33.498; RBINS. – Thừa Thiên-Huế

Province • 1 ♂; same data as for holotype; I.G.: 34.640; RBINS • 3 ♂♂; Bach Ma National Park; 16°11'18" N, 107°50'56" E; 1300–1400 m a.s.l.; 11–21 May 2023; J. Constant and L. Semeraro leg.; summit; I.G.: 34.640; RBINS • 1 ♂; same data as for preceding; VNMN • 3 ♂♂; Bach Ma National Park; 16°13'38" N, 107°51'20" E; 500–600 m a.s.l.; 10–20 May 2023; J. Constant and L. Semeraro leg.; pheasant trail; I.G.: 34.640; RBINS • 3 ♂♂; same data as for preceding; VNMN • 1 ♂; Bach Ma National Park; 30 May 2023; T.T.H. Nguyen leg.; summit trail; light trap; VNMN • 1 ♂; Bach Ma National Park, road to Bach Ma Peak; 16°11'45.73" N, 107°51'46.34" E; 1325 m a.s.l.; May 2023; T.T.H. Nguyen leg.; [by] net; AU00672 VNMN • 1 ♂; same data as for preceding; AU00673; VNMN • 1 ♂; Phong Dien District; 16°30'27" N, 107°16'05" E; 350–400 m a.s.l.; 23 May 2023; J. Constant and L. Semeraro leg.; I.G.: 34.640; RBINS • 1 ♂; same data as for preceding; VNMN.

Description

MEASUREMENTS AND RATIOS. LT: ♂ (n = 10): 5.4 mm (5.3–5.6); LT/BB = 2.03; LTg/BTg = 2.30; LW/BW = 1.21; BV/LV = 2.01; LF/BF = 0.98.

HEAD (Fig. 34A–E). Vertex brown, paler in posterior angles, with fine, yellowish, obsolete median carina; $2.0 \times$ as broad as long in midline, slightly constricted in middle; disc weakly concave; anterior margin angularly projecting anteriorly (widely obtuse angle); posterior margin rather deeply concave; all margins carinate. Frons yellowish brown, darker towards dorsal margin, with dorsal and lateral margins finely lined in black; weakly convex, smooth with distinct median carina reaching dorsal margin above but not reaching fronto-clypeal suture; peridiscal carina distinct nearly down to fronto-clypeal suture, crossing median carina slightly under dorsal margin; some yellowish tubercles along lateral margins; dorsal margin more or less straight (weakly convex in middle portion); widest at level of antennae. Genae yellow, paler than frons, with anteroventral angle weakly projecting anteriorly; ocelli present. Clypeus coloured as frons, apex slightly darker; subtriangular, convex, smooth, with small basal median hump but not keeled or carinate, with fronto-clypeal suture curved. Labium yellow-brown with last segment longer than broad, shorter than penultimate. Antennae with scape short, ring-shaped, yellow-brown, and pedicel bulbous, yellow-brown with distinct basal black incomplete ring.

THORAX (Fig. 34A, C–E). Brown. Pronotum darker in posterior portion; weak, paler median carina; subtriangular, projecting anteriorly; smooth with anterior margin carinate and pair of impressed points on each side of midline; lateral fields with some paler tubercles, forming two lines (along posterior margin, and oblique following midwidth), and very narrow behind eyes; paranotal lobes yellowish, turning dark brown along lateral margin (behind eye down to lateroventral angle), with posteroventral angle rounded and some yellowish tubercles along lateral margin. Mesonotum with median and peridiscal (sublateral) carinae distinct and slightly paler; smooth, weakly convex with shallow depression before paler scutellum. Tegulae yellowish brown.

TEGMINA (Fig. 34A–D). Brown with main veins more or less concolourous (sometimes darker), elevated, and cross-veins weakly raised and paler than background; distinctly convex, and about $2.3 \times$ as long as wide, with weak lateral hump including vein ScP+RA slightly around basal $\frac{1}{4}$, not hiding broadly rounded lateral margin in dorsal aspect; apical margin rounded; no distinct epipleuron; clavus closed, reaching to around $\frac{4}{5}$ of tegmen length. Venation: ScP+R rather short; ScP+RA long, curved, reaching external margin of tegmen around distal $\frac{1}{5}$ of tegmen length; RP unforked, long and weakly curved; first fork of MP and CuA around halflength, with first fork of CuA slightly more distal; MP1 with two or three terminales; Pcu and A1 fused at about $\frac{3}{5}$ of length of clavus, Pcu+A1 reaching apex of clavus; cross-veins numerous.

HIND WINGS (Fig. 34F). Blackish brown, turning slightly darker in distal portion, and with slightly paler area along costal margin, before midlength; veins generally darker than background; well developed,

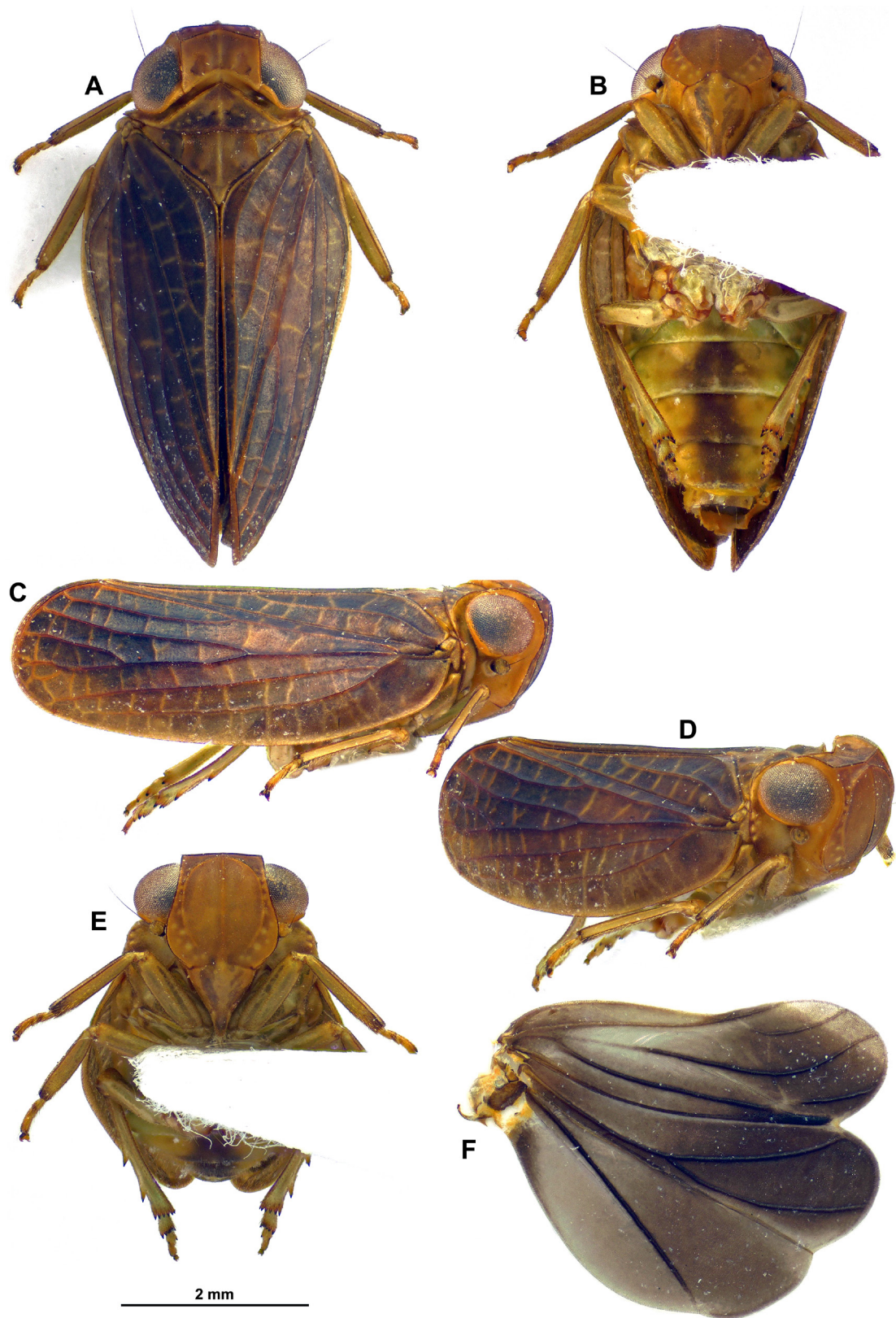


Fig. 34. *Eusarima bourgoini* gen. et sp. nov., dissected paratype, ♂ (RBINS). A. Habitus, dorsal view. B. Habitus, ventral view. C. Habitus, lateral view. D. Habitus, anterolateral view. E. Habitus, perpendicular view of frons. F. Right hind wing.

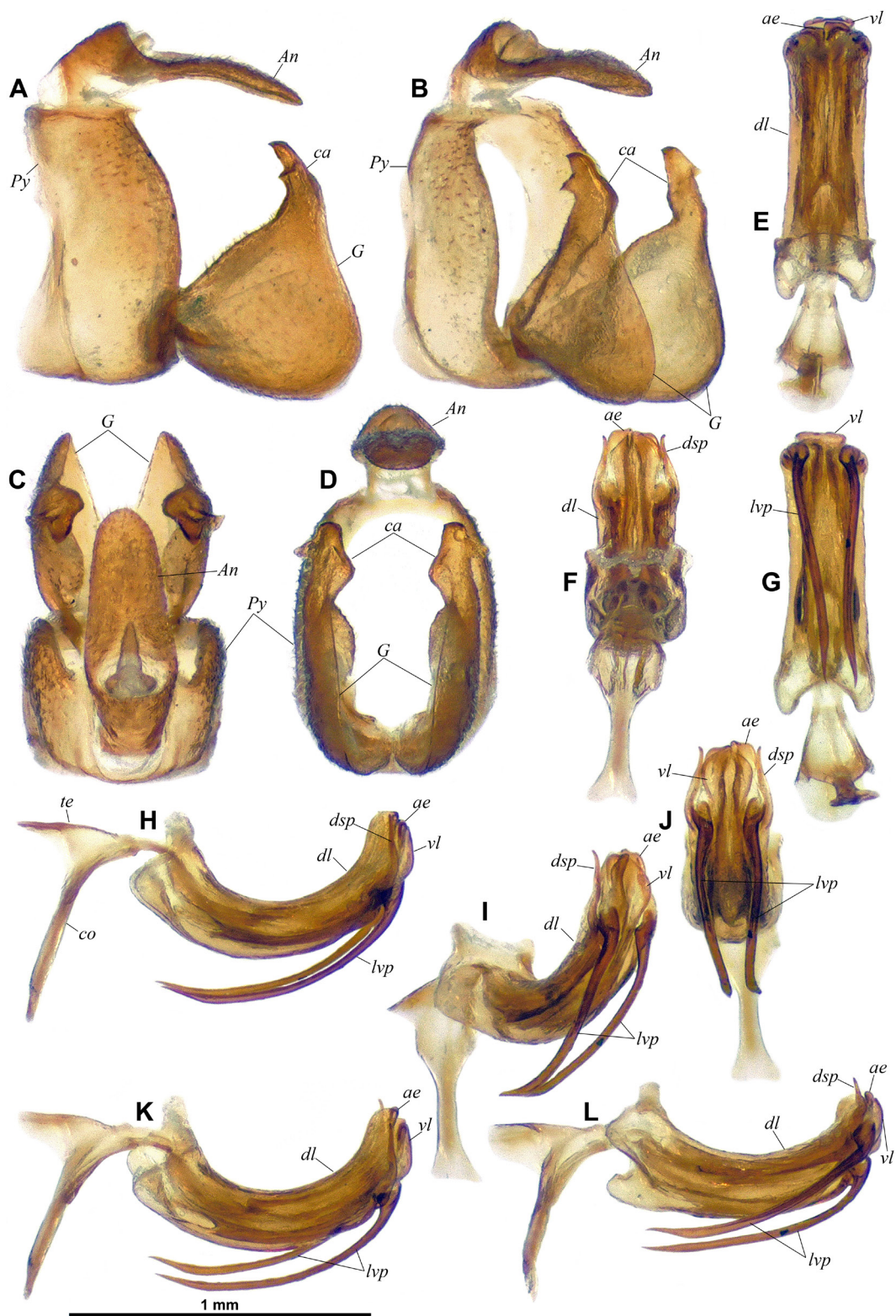


Fig. 35. *Eusarima bourgoini* gen. et sp. nov., holotype, ♂ (VNMN), terminalia. **A–D.** Pygofer, anal tube and gonostyli. **A.** Left lateral view. **B.** Posterolateral view. **C.** Dorsal view. **D.** Caudal view. **E–L.** Aedeagus. **E.** Dorsal view. **F.** Anterodorsal view. **G.** Ventral view. **H.** Left lateral view. **I.** Posterolateral view. **J.** Posteroventral view. **K.** Left laterodorsal view. **L.** Left lateroventral view. Abbreviations: see Material and methods.

with three distinct lobes (Sarimini type) more or less equal in width; indentation between ScP-R-MP-Cu and Pcu-A1 lobes moderately deep. Venation: ScP+R and CuA furcate; MP simple, sinuate; second branch of CuA fused distally with CuP; Pcu and A1 fused on basal half, Pcu unforked and A2 simple; one transverse vein between second branch of ScP+R and MP, and between MP and first branch of CuA.

LEGS (Fig. 34A–E). Yellow brown, slightly paler than tegmina, with apex of pro- and mesotibiae, and of pro- and mesotarsi, infusate; all spines of posterior legs black apically. Anterior and median legs slightly flattened dorsoventrally, tibiae more slender than corresponding femora; posteroventral margin of pro- and mesofemora with row of minute teeth; pro- and mesotarsi moderately elongate. Metatibiae with two lateral spines in distal half, and six apical spines. Metatarsi rather short with first segment about as long as combined length of remaining segments. First metatarsomere with two latero-apical and five intermediate spines arranged in arc. Metatibiotarsal formula: (2) 6/7/2.

ABDOMEN (Fig. 34B). Yellow-brown with median portion darker.

MALE TERMINALIA (Figs 35–36). Pygofer (*Py* – Fig. 35A–D) short, about $2.2 \times$ as high as long at midheight in lateral view, with posterior margin rounded in lateral view, slightly sinuate in ventral portion; in caudal view suboval, $1.4 \times$ as high as wide; dorsally deeply notched. Gonostyli (*G* – Fig. 35A–D) relatively massive, moderately convex, with anterodorsal margin slightly, evenly convex, then distinctly upcurved at base of capitulum; ventral margin weakly rounded, with posterior angle rounded; posterodorsal margin weakly incurved, with a distinct hump at base of capitulum in lateral view; capitulum (*ca* – Fig. 35A–D) moderately elongate and anteroposteriorly flattened, projecting anterodorsad and with moderate neck, apical point directed cephalad, in lateral view, posterior margin extending ventrad and curved to reach apex of basilateral spine curved lateroventrad; inner margin slightly emarginate with basal hump in caudal view. Anal tube (*An* – Fig. 35A–D) distinctly elongate, dorsoventrally flattened, slightly widening from base to level of anal opening, then slightly, evenly tapering to round apical margin, and about $2.6 \times$ as long as wide in dorsal view, anal opening around basal $\frac{1}{3}$; in lateral view abruptly narrowing at anal opening, then moderately downcurved in distal portion. Aedeagus (*ae* – Figs 35E–L, 36) symmetrical, elongate, distinctly curved posterodorsad in lateral view. Ventral lobe of periandrium (*vl* – Figs 35G–L, 36E, G–L) laminate, slightly tapering towards spatulate distal portion, with apical margin rounded; slightly shorter than dorsal lobe and aedeagus sensu stricto. Dorsal lobe of periandrium (*dl* – Figs 35E–L, 36A–E) more or less parallel-sided in dorsal view, distally forming rounded lobe with, on each side, slender dorsal spinose process (*dsp* – Figs 35F, H–L, 36A–E) upcurved, sinuate in caudal view; basally to spinose process, reflexed lobe developed mesoventrad and narrowly concealing ventral lobe ventrally. Aedeagus (sensu stricto, *ae* – Figs 35E–F, H–L, 36F–H) about same level as spinose processes of periandrium, bifid, each shaft more or less parallel-sided to obliquely truncate apex (apical margin weakly sinuate); lateroventral processes (*lvp* – Figs 35G–L, 36F–H) extremely elongate and slender, arising in distal $\frac{1}{6}$ and reaching base of aedeagus, curved ventrocephalad in lateral view, sinuate (inflated then strongly curved laterad basally) in caudal view, tapering towards pointed apex in distal portion. Connective (*co* – Fig. 35H) well developed, corpus connective long, weakly curved in lateral view, tectiductus (*te* – Fig. 35H) well developed, conical with anteroventral apodemes and wide anterior foramen.

Biology

Eusarima bourgoini sp. nov. was collected in the months of May and July, at altitudes between 350 and 1400 m a.s.l., in moist evergreen tropical forest. The specimens were sitting on small branches and leaves, on lower vegetation, bushes and trees. In Bach Ma National Park, it was found at the following collecting site/habitats (Constant & Pham 2025a: fig. 2a): “pheasant trail” (Constant & Pham 2025a: figs 2a(2), 3a), “roadside” (Constant & Pham 2025a: figs 2a(4), 4a), and “summit” (Constant & Pham 2025a: figs 2a(5), 4b).

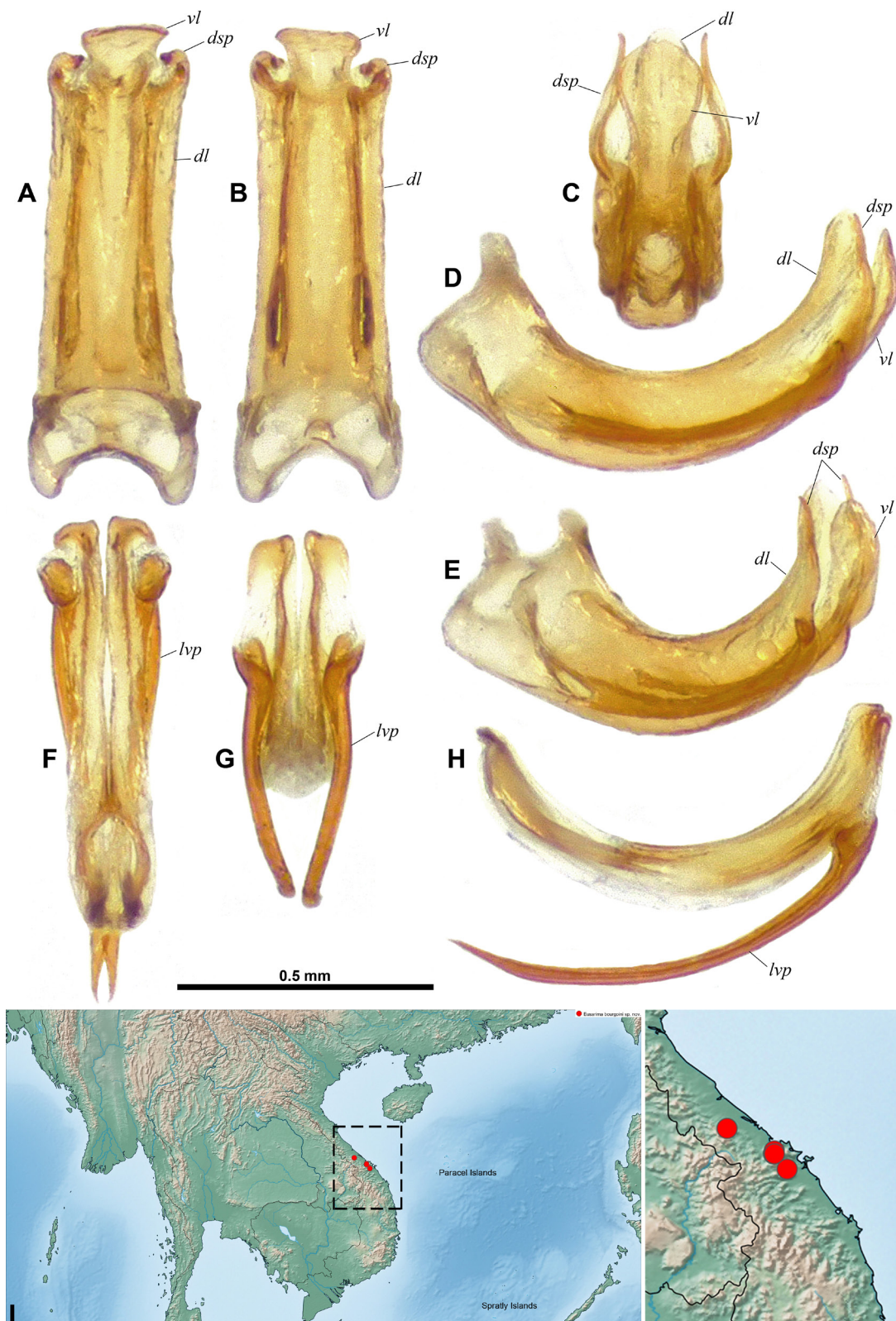


Fig. 36. *Eusarima bourgoini* gen. et sp. nov. **A–H.** Holotype, ♂ (VNMN), aedeagus. **A–E.** Perianthrium. **A.** Dorsal view. **B.** Ventral view. **C.** Posteroventral view. **D.** Left lateral view. **E.** Posterolateral view. **F–H.** Aedeagus s. str. **F.** Dorsal view. **G.** Posteroventral view. **H.** Left lateral view. **I.** Distribution map. Abbreviations: see Material and methods.

Distribution

Vietnam: Thừa Thiên-Huế Province, Bach Ma National Park and Phong Dien District, and Da Nang Province, Ba Na-Nui Chua Nature Reserve (Fig. 36I).

Genus *Lobosarima* gen. nov.

[urn:lsid:zoobank.org:act:F7915A97-2AB5-4B7C-86CE-12DF3FB545B3](https://doi.org/10.21203/rs.3.rs-10000000)

Type species

Lobosarima lobata gen. et sp. nov., by present designation.

Diagnosis

The genus *Lobosarima* gen. nov. can be differentiated from all other genera of Sarimini by the following combination of characters: (1) the vertex nearly $2 \times$ as wide as long in dorsal view; (2) the frons with complete median carina, extending down to basal portion of clypeus, and peridiscal carinae only distinct in dorsal portion of frons; (3) the tegmina elongate, about $2.4 \times$ as long as wide, with distinct lateral hump slightly before basal $\frac{1}{5}$ hiding costal margin in dorsal aspect, and without distinct epipleuron; (4) the vein ScP of the tegmen long, weakly curved and reaching margin of tegmen around distal $\frac{1}{5}$ of tegmen length; (5) the first fork of MP and the first fork of CuA at about the same level, around halflength of tegmen; (6) the anal tube moderately elongate and rather wide, dorsoventrally flattened, oboval/subrectangular, apically truncate in dorsal view; (7) the rather massive gonostyli with anterodorsal margin oblique, with capitulum elongate, strongly projecting anterodorsad and with poorly distinct neck, digitiform in lateral view, and falcate in caudal view; (8) the aedeagus with a single pair of elongate, anteapical, anterodorsally curved, lateroventral processes without posterior hook, at rest more or less concealed by the lateral extension of the dorsal lobe of the periandrium bearing a tooth, and the basal lobe of the periandrium.

Differential diagnosis

The most similar genera are *Caimocus* gen. nov., *Duplexissus* Wang, Zhang & Bourgoïn, 2019, *Eusarima* Yang, 1994, *Jagannata* Distant, 1906, *Parasarima* Yang, 1994, and *Retirima* gen. nov. However, *Lobosarima* gen. nov. can be separated from all of these genera by the frons with a complete median carina, extending down to the basal portion of the clypeus, the pair of basal dorsolateral lobes of the periandrium, the dorsal lobe of the periandrium showing a ventral hook, and narrower than the ventral lobe basally, the distinct gap between the dorsal and ventral lobes of the periandrium in lateral view.

Additionally, *Lobosarima* gen. nov. can be separated (1) from *Duplexissus* (see illustrations in Wang *et al.* 2019: figs 12–22) by the oblique anterodorsal margin of the gonostyli (distinctly rounded in *Duplexissus*) and the dorsal lobe of the periandrium without apical elongate process directed cephalad (process present on dorsal lobe of periandrium of *Duplexissus*); (2) from *Eusarima* (see illustrations in Chan & Yang 1994: fig. 45) by the oblique anterodorsal margin of the gonostyli (distinctly rounded in *Eusarima*), the subrectangular anal tube in dorsal aspect (elongate and tapering towards apex in *Eusarima*) and the lack of dorsal spinose processes in the apical portion of the dorsal lobe of the periandrium (present in *Eusarima*); (3) from *Jagannata* (see illustrations in Distant 1906: fig. 171) by the transverse vertex, much wider than long in midline, and with anterior margin more or less truncate (vertex slightly longer than wide, and angularly produced anteriorly in *Jagannata*); (4) from *Caimocus* gen. nov. (see Figs 13–22) by the capitulum of the gonostyli anteroposteriorly compressed and falcate (digitiform and tapering towards the apex in *Caimocus*); (5) from *Parasarima* (see illustrations in Chan & Yang 1994: fig. 39) by the complete carina of the frons, reaching slightly beyond frontoclypeal suture (carina visible only in dorsal half of the frons in *Parasarima*), and by the posterior portion of the gonostyli forming a distinct rounded lobe (gonostyli without posterior lobe in *Parasarima*); (6) from *Retirima* gen. nov.

(see Figs 49–52) by the tegmina without dense network of pale cross-veins (present in *Retirima*), the dorsal lobe of the periandrium simple (periandrium with a pair of strong laterodorsal processes arising in proximal portion of the dorsal lobe in *Retirima*), and the apex of the dorsal lobe rounded (distinctly acuminate in *Retirima*).

Etymology

The genus name is the combination of ‘*lobus*’ (Latin), meaning ‘lobe’, and ‘*Sarima*’, the name of the type genus of the tribe Sarimini. It refers to the basal lobes on the periandrium. Gender feminine.

Description

Medium sized (around 5.5–6.1 mm), very convex, rather elongate and robust-bodied.

COLOUR. Mostly brown.

HEAD. Vertex distinctly broader than long in midline (about $1.9 \times$), weakly concave with weak median carina; anterior margin forming a widely obtuse angle, posterior one rather deeply concave; all margins moderately carinate. Frons weakly convex, narrowly visible from above, about $1.1\text{--}1.2 \times$ as wide as long in midline, smooth with distinct complete median carina extending down to basal portion of clypeus, and peridiscal carina distinct in dorsal portion of frons; few tubercles between peridiscal carina and lateral margin; maximum breadth slightly under level of antennae; dorsal margin weakly concave. Anteroventral angle of genae not projecting anteriorly. Ocelli present, under eye. Clypeus triangular, convex, smooth. Labium with last segment longer than broad, shorter than penultimate. Antennae with scape short, ring-shaped, and barrel-shaped pedicel.

THORAX. Pronotum subtriangular, projecting anteriorly in rounded angle, about $0.63 \times$ as long in midline, as mesonotum; smooth with anterior margin distinctly carinate and pair of impressed points on each side of paler median carina; lateral fields with tubercles, very narrow behind eyes; paranotal lobes with tubercles along external margin, and with posteroventral angle rounded. Mesonotum subtriangular with posterolateral margins slightly incurved, smooth, weakly convex with distinct median and sublateral carinae; shallow depression before scutellum.

TEGMINA. Distinctly convex, elongate, about $2.4 \times$ as long as wide, with longitudinal veins elevated; costal margin broadly rounded laterad around basal $\frac{2}{5}$; apical margin rounded; distinct lateral hump including vein ScP+RA slightly after basal $\frac{1}{5}$, hiding costal margin in dorsal aspect; costal margin hidden by vein RP in distal $\frac{2}{5}$, in dorsal view; no distinct epipleuron; clavus closed, reaching about $\frac{4}{5}$ of tegmen length. Venation: ScP+R rather short; ScP+RA long, reaching to around distal $\frac{1}{5}$ of tegmen length; RP unforked, long and weakly curved; first fork of MP and CuA veins around midlength of tegmen, MP1 with two terminales; Pcu and A1 fused slightly before halflength of clavus, Pcu+A1 reaching apex of clavus; cross-veins more numerous and more strongly marked along costal margin and in distal half of tegmen.

HIND WINGS. Well developed, with three distinct lobes (Sarimini type) more or less equal in width; mostly brown. Venation: ScP+R and CuA furcate; MP simple, sinuate; second branch of CuA fused distally with CuP; Pcu and A1 fused on basal half, Pcu unforked and A2 simple; transverse vein between second branch of ScP+R and MP, and between MP and first branch of CuA.

LEGS. Somewhat elongate, slender, with pro- and mesofemora and pro- and mesotibiae slightly flattened dorsoventrally, tibiae more slender than corresponding femora; posteroventral margin of pro- and mesofemora with row of minute teeth; pro- and mesotarsi rather elongate. Metatibiae with two lateral spines in distal half and six apical spines. Metatarsi rather short with first segment about as long as

combined length of remaining segments. First metatarsomere with two latero-apical and six intermediate spines arranged in arc. Metatibiotarsal formula: (2) 6/8/2.

MALE TERMINALIA. Pygofer short, about $2.4 \times$ as high as long at midheight in lateral view, with posterior margin broadly rounded in lateral view; in caudal view oval (sides subparallel), $1.4 \times$ as high as wide. Gonostyli rather massive, moderately convex, with posterior portion roundly projecting caudad into a posterior lobe in lateral view and with anterodorsal margin oblique; capitulum elongate, strongly projecting anterodorsad and with poorly distinct neck, digitiform in lateral view, falcate (inner margin rounded) in caudal view and with rather small lateral tooth. Anal tube moderately elongate and rather wide, dorsoventrally flattened, oboval/subrectangular, apically truncate in dorsal view, about $2.2 \times$ as long as wide and with anal opening in basal $\frac{1}{3}$; in lateral view, weakly downcurved. Aedeagus symmetrical, curved posterodorsad in lateral view, with pair of distinct basal lobes dorsally. Ventral lobe of periandrium laminate, spatulate, evenly constricted in middle and wider basally than dorsal lobe. Dorsal lobe of periandrium with sides sinuate in dorsal view and with lateral margins downcurved in large middle portion; large gap between dorsal and ventral lobes in proximal portion, in lateral view. Aedeagus (sensu stricto) elongate, bifid, each shaft roundly tapering apically in dorsal view; pair of elongate lateroventral processes (without posterior hook) arising anteapically, anterodorsally curved in lateral view, sinuate in dorsal view; at rest, processes more or less concealed between lateral expansion of dorsal lobe and basal lobes of the periandrium. Connective well developed, corpus connective long, weakly curved in lateral view, tectiductus well developed, conical with anteroventral apodemes and wide anterior foramen.

Distribution

Vietnam: Thừa Thiên-Huế Province and Da Nang.

Species included

Lobosarima lobata gen. et sp. nov.

Lobosarima lobata gen. et sp. nov.

[urn:lsid:zoobank.org:act:C6825F64-3C24-462C-8317-6AC380BA7F80](https://zoobank.org/urn:lsid:zoobank.org:act:C6825F64-3C24-462C-8317-6AC380BA7F80)

Figs 37–40

Diagnosis

Lobosarima lobata gen. et sp. nov. is the only species in the genus *Lobosarima* gen. nov. The characters of the male terminalia are probably relevant diagnostic features to recognize the species, e.g., the oboval, apically truncate anal tube in dorsal view, the shape of the gonostyli, including the capitulum in lateral and caudal view and the size and shape (curvature) of the lateroventral processes of the aedeagus (Figs 39, 40A–H).

Differential diagnosis

The most similar species belong to the genera *Caimocus* gen. nov., *Duplexissus* Wang, Zhang & Bourgoïn, 2019, *Eusarima* Yang, 1994, *Jagannata* Distant, 1906 and *Parasarima* Yang, 1994 which can be separated by the characters given for the genus *Lobosarima* gen. nov.

Etymology

The species epithet ‘*lobatus*’ is a Latin adjective meaning ‘lobed’, and it refers to the basal lobe on the periandrium.

Type material

Holotype

VIETNAM • 1 ♂; Thừa Thiên-Huế Province, Phong Dien District; 16°30'27" N, 107°16'05" E; 350–400 m a.s.l.; 23 May 2023; J. Constant and L. Semeraro leg.; VNMN.

Paratypes

VIETNAM – **Da Nang Province** • 1 ♂; Ba Na-Nui Chua Nature Reserve; 16°00' N, 108°01' E; 16–19 Jul. 2017; J. Constant and J. Bresseel leg.; GTI Project; I.G.: 33.498; RBINS. – **Thừa Thiên-Huế Province** • 1 ♂; same data as for holotype; VNMN • 1 ♂; Bach Ma National Park; 16°11'44" N, 107°50'44" E; 1200–1300 m a.s.l.; 22 May 2023; J. Constant and L. Semeraro leg.; roadside; I.G.: 34.640; RBINS.

Description

MEASUREMENTS AND RATIOS. LT: ♂ (n = 3): 5.8 mm (5.5–6.1); LT/BB = 2.21; LTg/BTg = 2.39; LW/BW = 1.23; BV/LV = 1.93; LF/BF = 0.87.

HEAD (Fig. 37A–E). Vertex brown, paler in posterior portion, with weak, pale yellowish median carina; $1.9 \times$ as broad as long in midline; weakly concave with anterior margin forming widely obtuse angle and posterior one rather deeply concave; all margins moderately carinate. Frons variegated brown, somewhat paler in large ventral portion; distinctly darker dorsally, between peridiscal carina and dorsal margin; weakly convex, narrowly visible from above, about $1.1\text{--}1.2 \times$ as wide as long in midline, smooth with distinct complete median carina extending down to basal portion of clypeus, and peridiscal carina distinct in dorsal portion of frons; few yellowish tubercles between peridiscal carina and lateral margin; dorsal margin weakly concave. Genae yellow, washed with brown before eye and antenna; anteroventral angle of genae not projecting anteriorly. Clypeus triangular, convex, smooth; anteclypeus yellow-brown basally, darker towards apex; postclypeus black. Labium yellow-brown with last segment longer than broad, shorter than penultimate. Antennae dark brown with scape short, ring-shaped, and barrel-shaped pedicel turning yellowish dorsally.

THORAX (Fig. 37A, C–E). Pronotum dark brown with anterior portion paler (sometimes narrowly darker on anterior angle), with paler median carina and yellowish tubercles in lateral fields and along anterior margin; subtriangular, projecting anteriorly in rounded angle, smooth with anterior margin distinctly carinate and pair of impressed points on each side of median line; lateral fields very narrow behind eyes; paranotal lobes yellowish brown with distinct darker band along lateral margin containing yellowish tubercles, and with posteroventral angle rounded. Mesonotum brown with carinae, scutellum and 2–3 tubercles in angles, yellowish; subtriangular with posterolateral margins slightly incurved, smooth, weakly convex with distinct median and sublateral carinae; shallow depression before scutellum.

TEGMINA (Figs 37A–D, 38A–B). Dark brown with paler poorly defined median band and apical portion; main veins more or less concolourous, elevated, and cross-veins weakly raised and generally paler than background; distinctly convex, elongate, about $2.4 \times$ as long as wide; costal margin broadly rounded laterad around basal $\frac{2}{5}$; apical margin rounded; distinct lateral hump including vein ScP+RA slightly after basal $\frac{1}{5}$, hiding costal margin in dorsal aspect; costal margin hidden by vein RP in distal $\frac{2}{5}$, in dorsal view; no distinct epipleuron; clavus closed, reaching about $\frac{4}{5}$ of tegmen length. Venation as in genus description.

HIND WINGS. Blackish brown, turning slightly darker in distal portion and with paler areas along proximal portion of vein MP, around moderately deep indentation between ScP-R-MP-Cu and Pcu-A1 lobes and along margin of A2 lobe; veins generally darker than background; well developed, with three distinct lobes (Sarimini type) more or less equal in width. Venation as in genus description.

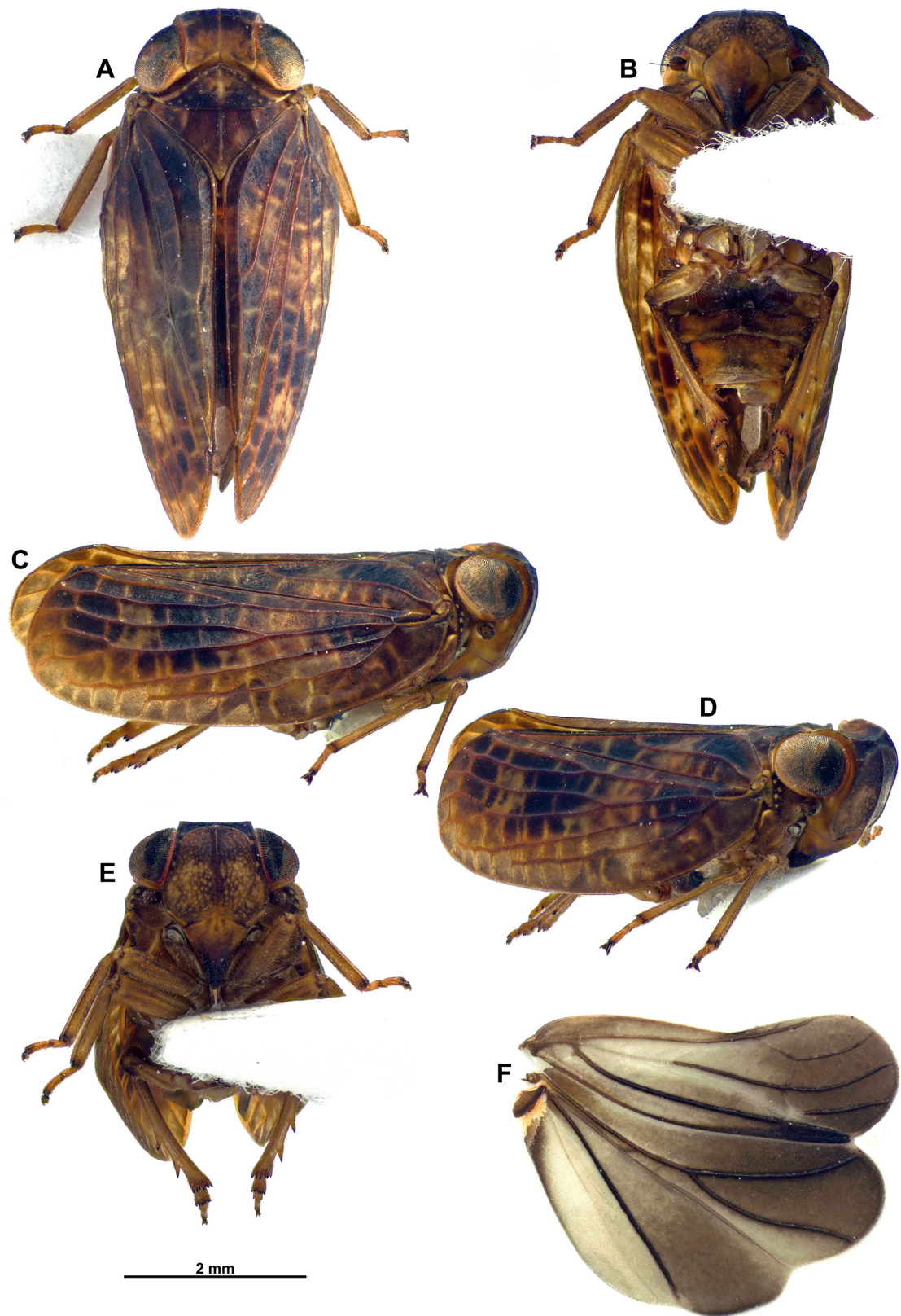


Fig. 37. *Lobosarima lobata* gen. et sp. nov., dissected holotype, ♂ (VNMN). A. Habitus, dorsal view. B. Habitus, ventral view. C. Habitus, lateral view. D. Habitus, anterolateral view. E. Habitus, perpendicular view of frons. F. Right hind wing.

LEGS (Figs 37A–E, 38C–D). Yellowish brown, paler than tegmina; apex of pro- and mesotibiae, distal portion of metafemora and basal portion of metatibiae darker; all spines of posterior legs black apically. Anterior and median legs slightly flattened dorsoventrally with tibiae more slender than corresponding femora; posteroventral margin of pro- and mesofemora with row of minute teeth; pro- and mesotarsi rather elongate. Metatibiae with two lateral spines in distal half and six apical spines. Metatarsi rather short with first segment about as long as combined length of remaining segments. First metatarsomere with two latero-apical and six intermediate spines arranged in arc. Metatibiotarsal formula: (2) 6/8/2.

ABDOMEN (Fig. 37B). Pale brown with median area irregularly darker.

MALE TERMINALIA (Figs 39–40). Pygofer (*Py* – Fig. 39A–D) short, about 2.4 × as high as long at midheight in lateral view, with posterior margin broadly rounded in lateral view (weakly sinuate in ventral portion); in caudal view oval (sides subparallel), 1.4 × as high as wide; deeply notched dorsally. Gonostyli (*G* –

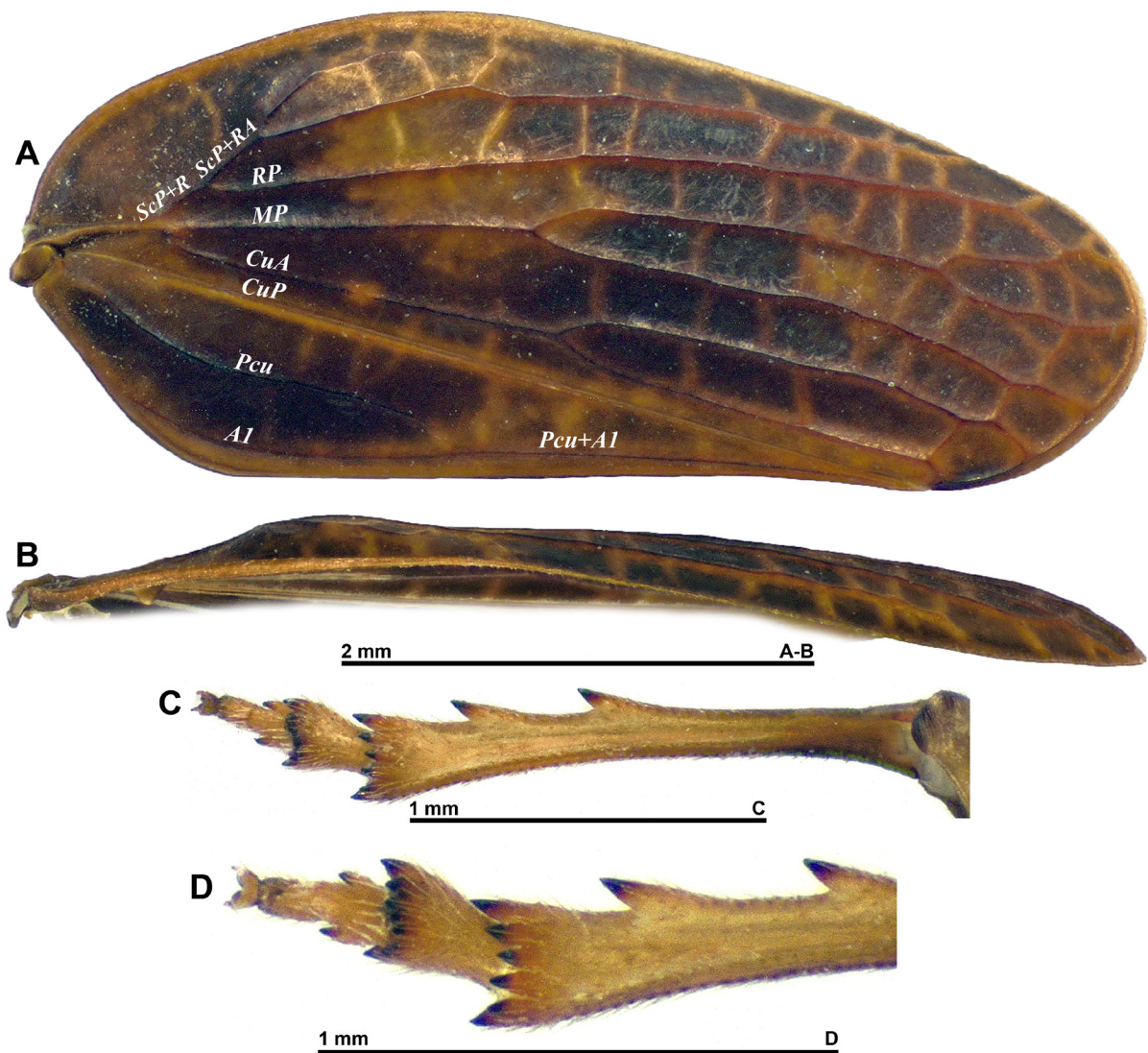


Fig. 38. *Lobosarima lobata* sp. nov., holotype, ♂ (VNMN). **A.** Right tegmen, perpendicular view. **B.** Right tegmen, ventral view. **C.** Right tibia and tarsus, ventral view. **D.** Distal portion of right tibia and tarsus, ventral view. Abbreviations: see Material and methods.

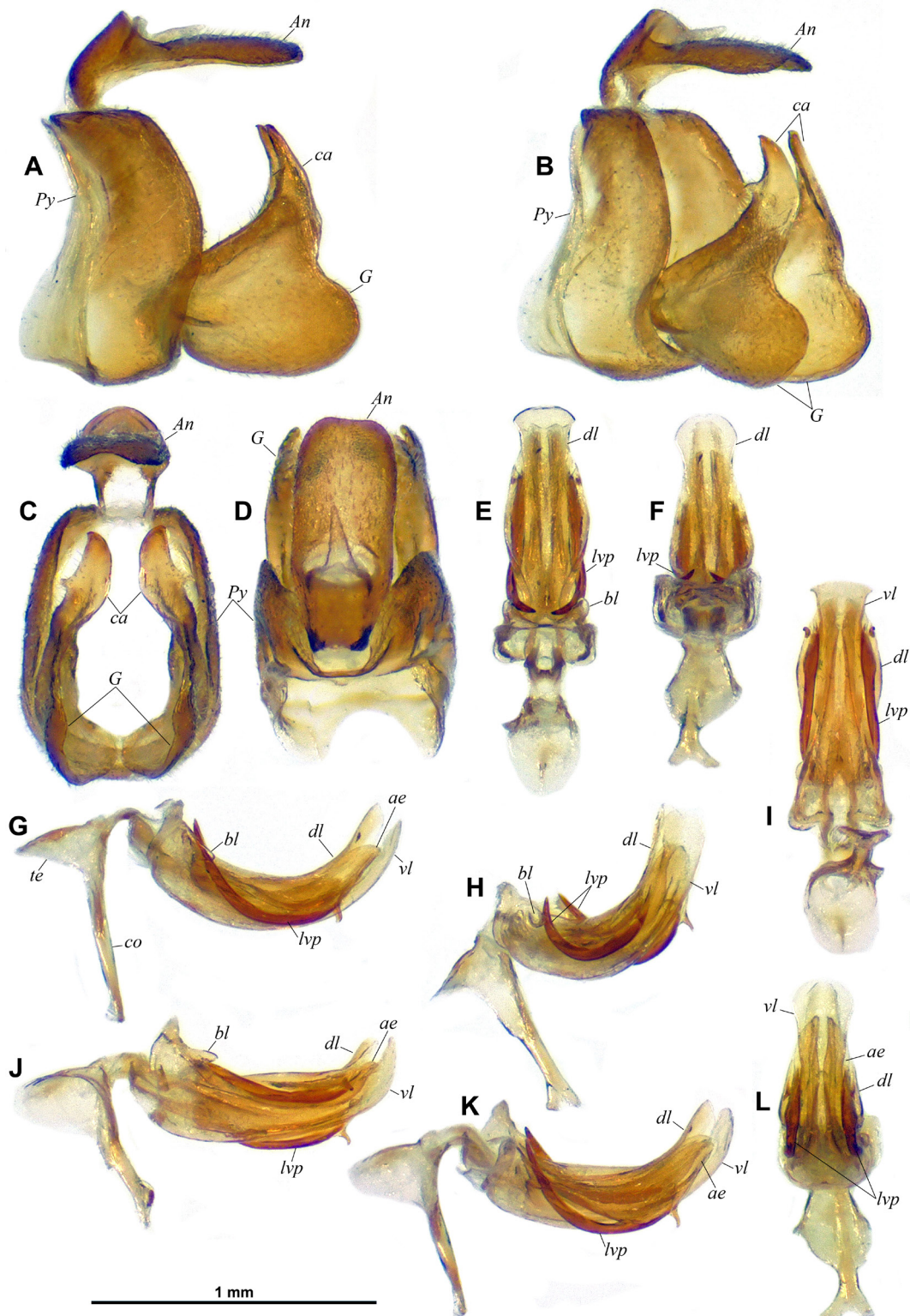


Fig. 39. *Lobosarima lobata* sp. nov., holotype, ♂ (VNMN), terminalia. A–D. Pygofer, anal tube and gonostyli. A. Left lateral view. B. Posterolateral view. C. Caudal view. D. Dorsal view. E–L. Aedeagus. E. Dorsal view. F. Anterodorsal view. G. Left lateral view. H. Posterolateral view. I. Ventral view. J. Left lateroventral view. K. Left laterodorsal view. L. Posteroventral view. Abbreviations: see Material and methods.

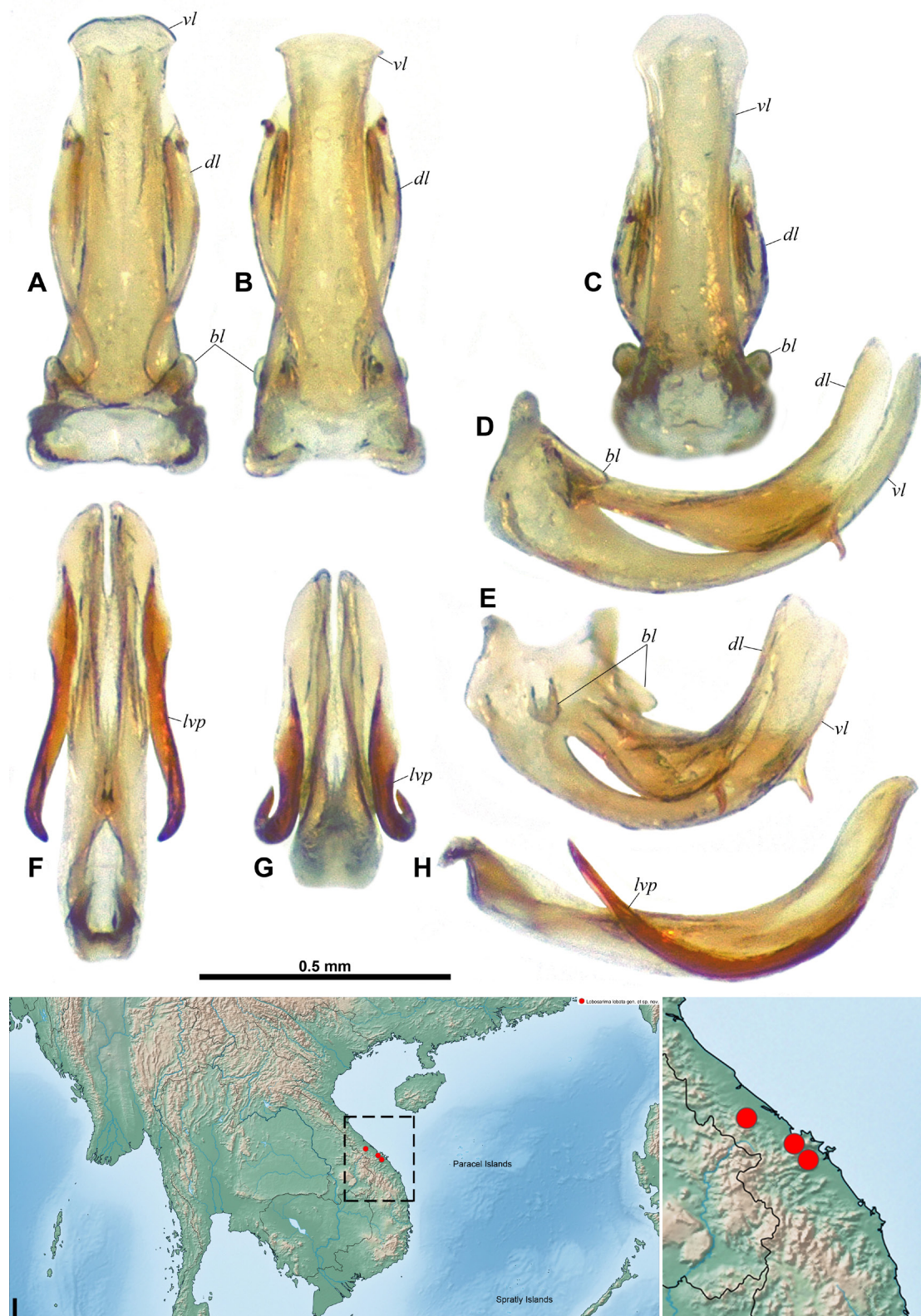


Fig. 40. *Lobosarima lobata* sp. nov. A–H. Holotype, ♂ (VNMN), aedeagus. A–E. Perianthrium. A. Dorsal view. B. Ventral view. C. Posteroventral view. D. Left lateral view. E. Posterolateral view. F–H. Aedeagus s. str. F. Dorsal view. G. Posteroventral view. H. Left lateral view. I. Distribution map. Abbreviations: see Material and methods.

Fig. 39A–D) rather massive, moderately convex, with posterior portion roundly projecting caudad into a posterior lobe in lateral view forming a rounded, nearly right angle at base of capitulum; anterodorsal margin oblique, then upcurved at base of capitulum, ventral margin nearly straight; capitulum (*ca* – Fig. 39A–C) elongate, strongly projecting, regularly curved, anterodorsad and with poorly distinct neck, digitiform in lateral view, falcate with inner margin rounded in caudal view, and with rather small lateral tooth distinctly downcurved. Anal tube (*An* – Fig. 39A–D) moderately elongate and rather wide, dorsoventrally flattened, oboval/subrectangular, apically truncate, slightly concave, in dorsal view, about $2.2 \times$ as long as wide and with anal opening in basal $\frac{1}{3}$; in lateral view abruptly narrowing at anal opening and weakly downcurved. Aedeagus (Figs 39E–L, 40) symmetrical, elongate, more or less evenly curved posterodorsad in lateral view, with pair of distinct basal lobes (*bl* – Figs 39E, G–K, 40A–E) dorsally. Ventral lobe of periandrium (*vl* – Figs 39E–L, 40A–E) laminate, spatulate, evenly constricted in middle, apically roundly truncate, and wider basally than dorsal lobe. Dorsal lobe of periandrium (*dl* – Figs 39E–L, 40A–E) with sides sinuate in dorsal view, apical margin rounded and with lateral margins downcurved in large middle portion; strong ventral tooth around $\frac{3}{5}$ of length, apically curved cephalad; large gap between dorsal and ventral lobes in proximal portion, in lateral view. Aedeagus (sensu stricto, *ae* – Figs 39G, J–L, 40F–H) elongate, deeply bifid, each shaft roundly tapering apically in dorsal view; pair of elongate lateroventral processes (*lvp* – Figs 39E–L, 40F–H) arising antepically, anterodorsally curved in lateral view and reaching basal $\frac{1}{5}$ of aedeagus, sinuate in dorsal view; at rest, processes more or less concealed between lateral expansion of dorsal lobe and basal lobes of the periandrium. Connective (*co* – Fig. 39G) well developed, corpus connective long, weakly curved in lateral view, tectiductus (*te* – Fig. 39G) well developed, conical with anteroventral apodemes and wide anterior foramen.

Biology

Lobosarima lobata gen. et sp. nov. was collected in the months of May and July at altitudes between 350 and 1300 m a.s.l., in moist evergreen tropical forest. The specimens were sitting on small branches and leaves, on lower vegetation, bushes and trees. In Bach Ma National Park, it was found at the following collecting site/habitats (Constant & Pham 2025a: fig. 2a): “roadside” (Constant & Pham 2025a: figs 2a(4), 4a).

Distribution

Vietnam: Thừa Thiên-Huế Province, Bach Ma National Park and Phong Dien District, and Da Nang Province, Ba Na-Nui Chua Nature Reserve (Fig. 40I).

Genus *Longieusarima* Wang, Bourgoïn & Zhang, 2017

Longieusarima Wang, Bourgoïn & Zhang, 2017: 362.

Type species

Longieusarima lunulia Wang, Bourgoïn & Zhang, 2017, by original designation.

Diagnosis

The genus *Longieusarima* can be differentiated from the other genera of Sarimini by the following combination of characters: (1) the vertex about as long as wide in dorsal view; (2) the median and lateral carinae of frons limited to dorsal half; (3) the tegmina elongate, at least $2.5 \times$ as long as wide, with distinct lateral hump at basal $\frac{1}{3}$ hiding costal margin in dorsal aspect; (4) the vein ScP of the tegmen rather short, curved and not extending beyond midlength of tegmen; (5) the first fork of MP more basal than first fork of CuA; (6) the aedeagus with a single pair of elongate ventral processes; (7) the dorsal lobe of the periandrium with a pair of apicolateral processes directed cephalad.

Species included

Longieusarima bachmana sp. nov.

Longieusarima lunulia Wang, Bourgoïn & Zhang, 2017

Longieusarima bachmana sp. nov.

[urn:lsid:zoobank.org:act:6DDE316F-1DD1-47FA-90B3-7B619374394D](https://zoobank.org/urn:lsid:zoobank.org:act:6DDE316F-1DD1-47FA-90B3-7B619374394D)

Figs 41–44

Diagnosis

Longieusarima bachmana sp. nov. can be recognized by (1) a rather large size (♂: 7.0–7.6 mm, ♀: 7.5–8.1 mm) and wide vertex ($1.4 \times$ as wide as long in midline); (2) the posterior margin of the pygofer in lateral view developed in a large lobe in dorsal half (*Py* – Fig. 42A); (3) the moderately long lateroventral processes of the aedeagus (*lvp* – Fig. 43F–H).

Differential diagnosis

The new species is close to *Longieusarima lunulia* Wang, Bourgoïn & Zhang, 2017 (see illustrations in Wang *et al.* 2017: figs 27–47 and in Constant & Pham 2024a: figs 31–32) but the latter is smaller (♂: 6.3–7.0 mm, ♀: 7.0–7.3 mm compared to ♂: 7.0–7.6 mm, ♀: 7.5–8.1 in *L. bachmana* sp. nov.), shows a large posterior lobe of the posterior margin of the pygofer in the ventral portion of the pygofer (large posterior lobe developed in the upper portion of the pygofer in *L. bachmana*) and longer lateroventral processes of the aedeagus, reaching near base of the aedeagus *sensu stricto* (reaching basal $\frac{1}{4}$ of aedeagus in *L. bachmana*).

Etymology

The species epithet refers to Bach Ma National Park, where the species was discovered.

Type material

Holotype

VIETNAM • ♂; Thừa Thiên-Huế Province, Bach Ma National Park; 16°11'18" N, 107°50'56" E; 1300–1400 m a.s.l.; 11–21 May 2023; J. Constant and L. Semeraro leg.; summit; VNMN.

Paratypes

VIETNAM – **Thiên-Huế Province** • 3 ♂♂, 1 ♀; same data as for holotype; VNMN • 2 ♂♂, 3 ♀♀; same data as for holotype; I.G.: 34.640; RBINS • 1 ♂; Bach Ma National Park; 16°13'38" N, 107°51'20" E; 500–600 m a.s.l.; 10–20 May 2023; J. Constant and L. Semeraro leg.; pheasant trail; VNMN • 1 ♂, 1 ♀; same data as for preceding; I.G.: 34.640; RBINS • 1 ♂; Bach Ma National Park; 16°11'44" N, 107°50'44" E; 1200–1300 m a.s.l.; 22 May 2023; J. Constant and L. Semeraro leg.; roadside; I.G.: 34.640; RBINS • 1 ♂; Bach Ma National Park, stairs going up to Hai Vong Dai; 16°11'53.77" N, 107°51'26.92" E; 1272 m a.s.l.; 16 Sept. 2024; T.T.H. Nguyen leg.; by net; VNMN • 1 ♀; Bach Ma National Park, campsite; 691 m a.s.l.; 26 May 2024; T.T.H. Nguyen leg.; light trap; VNMN.

Description

MEASUREMENTS AND RATIOS. LT: ♂ (n = 9): 7.2 mm (7.0–7.6), ♀ (n = 5): 7.8 (7.5–8.1); LT/BB = 2.29; LTg/BTg = 2.57; LW/BW = 1.36; BV/LV = 1.40; LF/BF = 0.87.

HEAD (Fig. 41A–E). Vertex $1.4 \times$ as broad as long in midline, yellow-brown often with paler obsolete fine median line, and narrowly darker along anterior margin; anterior margin rounded, posterior one distinctly concave and lateral weakly diverging towards the anterior; all margins weakly carinate; disc more or

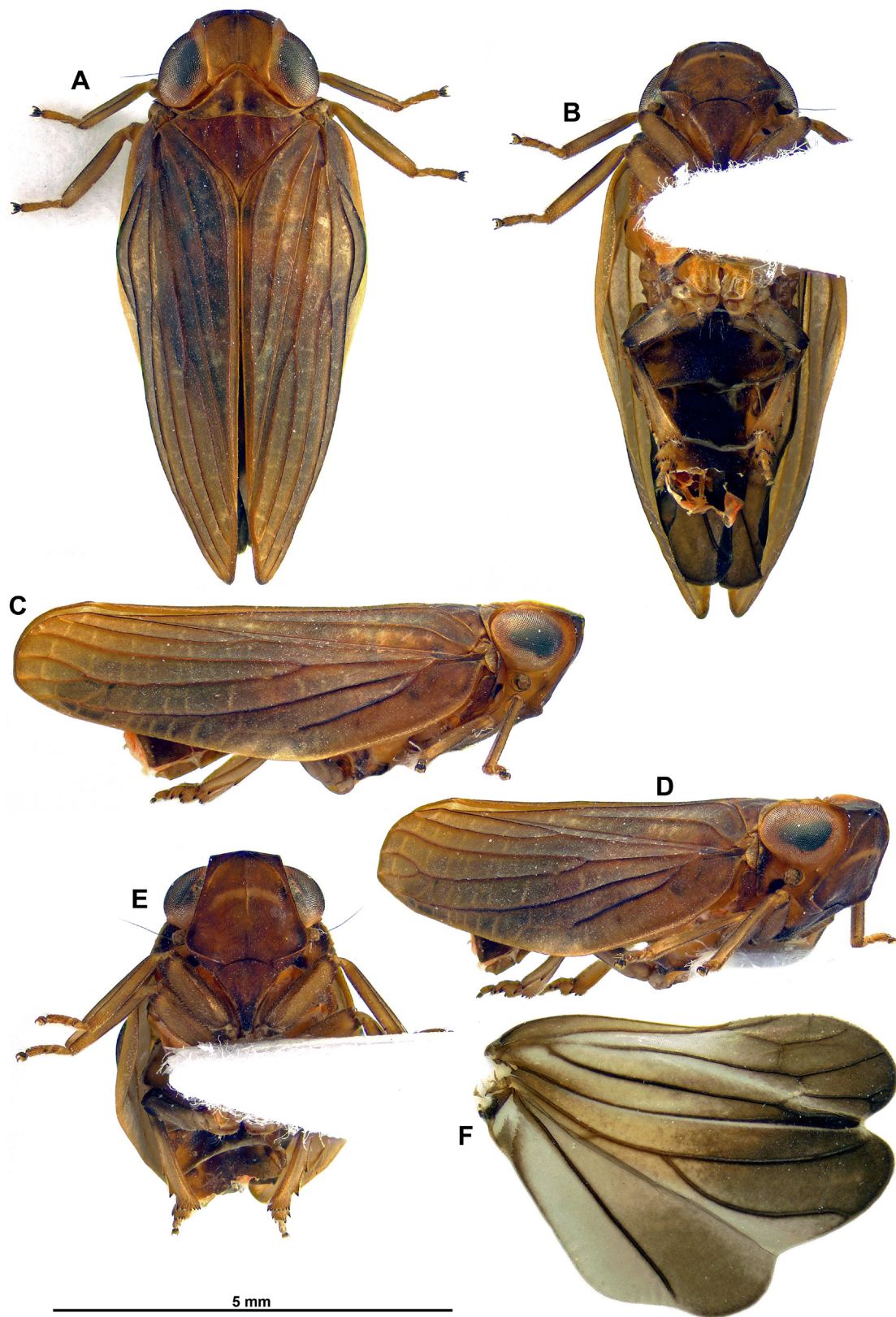


Fig. 41. *Longieusarima bachmana* sp. nov., dissected paratype, ♂ (RBINS). A. Habitus, dorsal view. B. Habitus, ventral view. C. Habitus, lateral view. D. Habitus, anterolateral view. E. Habitus, perpendicular view of frons. F. Right hind wing.

less flat. Genae yellowish, washed with brown at anterodorsal and anteroventral angles; anteroventral angle projecting anteriorly. Frons $1.15 \times$ as wide as long in midline, brown, darker dorsally between dorsal margin and peridiscal carina, and along lateroventral angles; distinct yellowish curved transverse narrow line in middle of disc; widest under level of antennae and weakly convex; upper margin weakly convex; median carina well marked in dorsal portion then getting weaker ventrad and disappearing at about ventral $\frac{1}{3}$; laterodorsal carinae from middle of dorsal margin obliquely to about middle of eye but not reaching lateral margin; margins moderately carinate, more strongly in ventral angle; frontoclypeal suture rounded. Clypeus brown, darker apically, subtriangular, without carina. Labium brown with last segment longer than broad, and shorter than penultimate. Antennae with scape short, ring-shaped, brown; pedicel bulbous, brown, darker basally and posteriorly.

THORAX (Fig. 41A, C–D). Brown. Pronotum often somewhat darker in posterior portion; in midline about half the midline length of mesonotum; paler median line with impressed point on each side, around midlength; anterior margin distinctly carinate, angularly projecting cephalad, posterior margin weakly incurved in middle; lateral fields very narrow; paranotal lobes yellow-brown with distinct black marking in ventral inner angle and along external margin. Mesonotum subtriangular with median blunt carina, peridiscal carinae slightly sharper; shallowly depressed at base of scutellum. Tegulae brown.

TEGMINA (Fig. 41A–E). Brown with pale yellowish transverse veinlets and irregular spots, and veins ScP+RA and RP blackish brown; strong lateral hump in basal $\frac{1}{3}$ at level of ScP+R vein, shortly hiding costal margin in dorsal view; vein RP hiding costal margin in dorsal view, in distal portion of tegmina; longitudinal veins raised; epipleuron (= hypocostal plate) well developed; about $1.9 \times$ longer than wide when taken together in dorsal view; clavus very elongate, closed. Venation: ScP+R dividing close to base; ScP+RA curved, rather short, disappearing around proximal $\frac{2}{5}$ of tegmen length; RP very long, weakly curved, nearly reaching to outer margin of tegmen; MP vein first fork around $\frac{2}{5}$ of tegmen length; MP_1 forked at about apical $\frac{1}{6}$; CuA vein first fork at about midlength of tegmen; veins Pcu and A1 fused around $\frac{3}{5}$ of clavus length, Pcu+A1 reaching apex of clavus.

HIND WINGS (Fig. 41F). Brown, darker towards apical and posterior margins; rather elongate with veins generally darker than background; well developed, with 3 distinct lobes (Sarimini type) more or less equal in width; indentation between ScP-R-MP-Cu and Pcu-A1 lobes moderately deep. Venation: ScP+R and CuA furcate, MP simple, weakly sinuate; second branch of CuA fused with CuP distally; Pcu and A1 fused on basal half, Pcu and A2 simple; transverse vein between second branch of ScP+R and MP, and between MP and first branch of CuA; A2 not forked.

LEGS (Fig. 41A–E). Slender and moderately long, yellowish brown with the following dark brown: apex of metafemora and base of metatibiae, and apex of spines of metatibiae and metatarsi. Metatibiae with 2 lateral spines on distal half and seven apical spines; first metatarsus with row of 6 minute teeth along posteroventral margin, limited with a larger tooth on each side. Metatibiotarsal formula: (2) 7/8/2.

MALE TERMINALIA (Figs 42–43). Pygofer (*Py* – Fig. 42A–D) massive, $1.8 \times$ higher than long at halfheight in lateral view; in lateral view, anterior margin more or less straight, posterior margin with dorsal $\frac{1}{10}$ portion strongly sinuate and tapering to a dorsal digitiform process directed caudad, and remaining part strongly projecting caudad in large round lobe more developed in dorsal portion; in caudal view, $1.3 \times$ higher than wide. Gonostyli (*G* – Fig. 42A–D) distinctly convex, nearly subtriangular with posterior angle rounded in lateral view, with anterodorsal margin oblique, ventral margin broadly rounded and posterodorsal margin slightly sinuate (no distinct posterior lobe); capitulum (*ca* – Fig. 42A–D) with wide, undefined neck, anteroposteriorly flattened, rather strongly curved anterodorsad in lateral view, with apical margin obliquely, somewhat roundly truncate in caudal view, with anteapical lateral obliquely flattened hook curved lateroventrad (in caudal view). Anal tube (*An* – Fig. 42A–D) elongate and rather

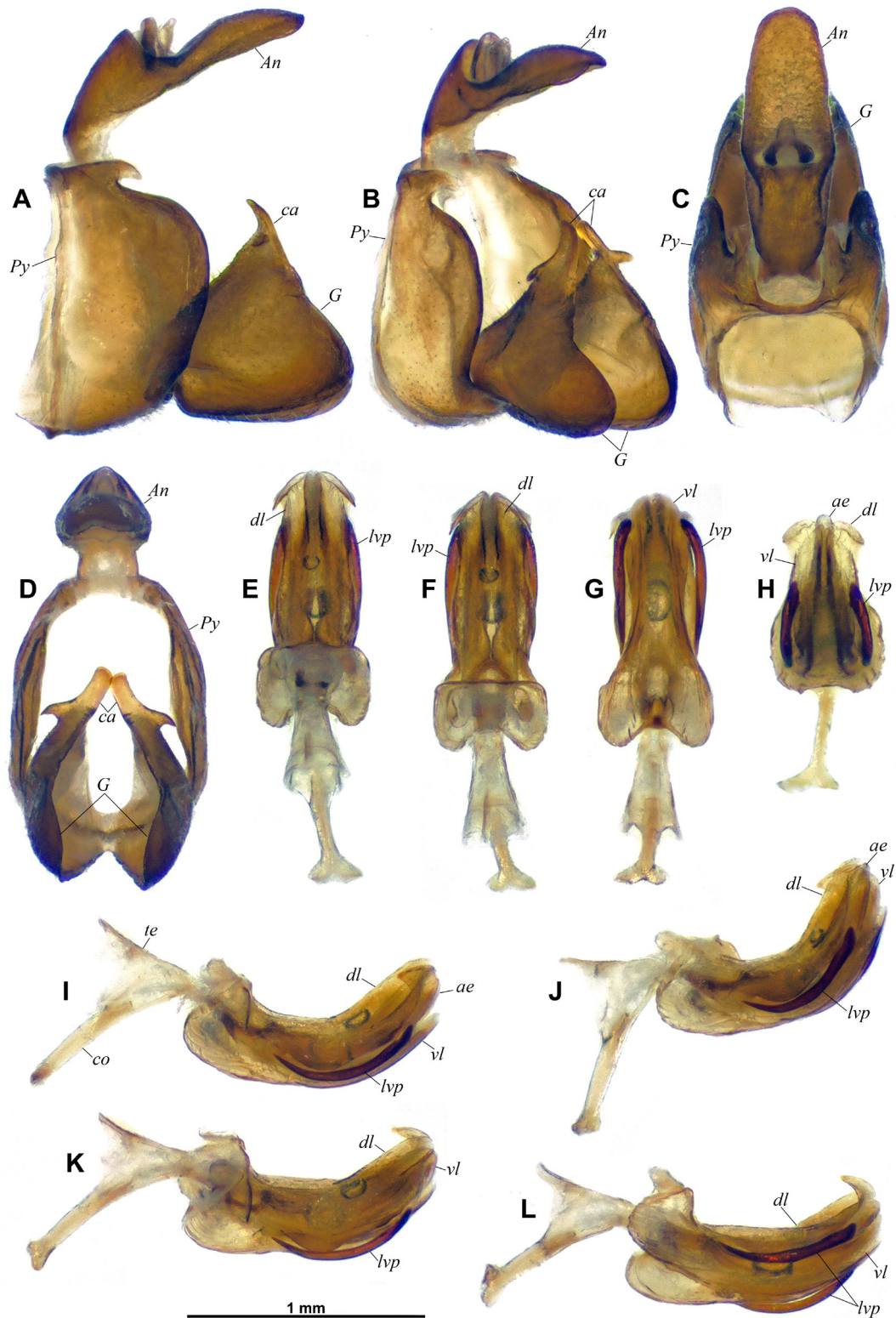


Fig. 42. *Longieusarima bachmana* sp. nov., holotype, ♂ (VNMN), terminalia. A–D. Pygofer, anal tube and gonostyli. A. Left lateral view. B. Posterolateral view. C. Dorsal view. D. Caudal view. E–L. Aedeagus. E. Dorsal view. F. Anterodorsal view. G. Ventral view. H. Posteroventral view. I. Left lateral view. J. Posterolateral view. K. Left laterodorsal view. L. Left lateroventral view. Abbreviations: see Material and methods.

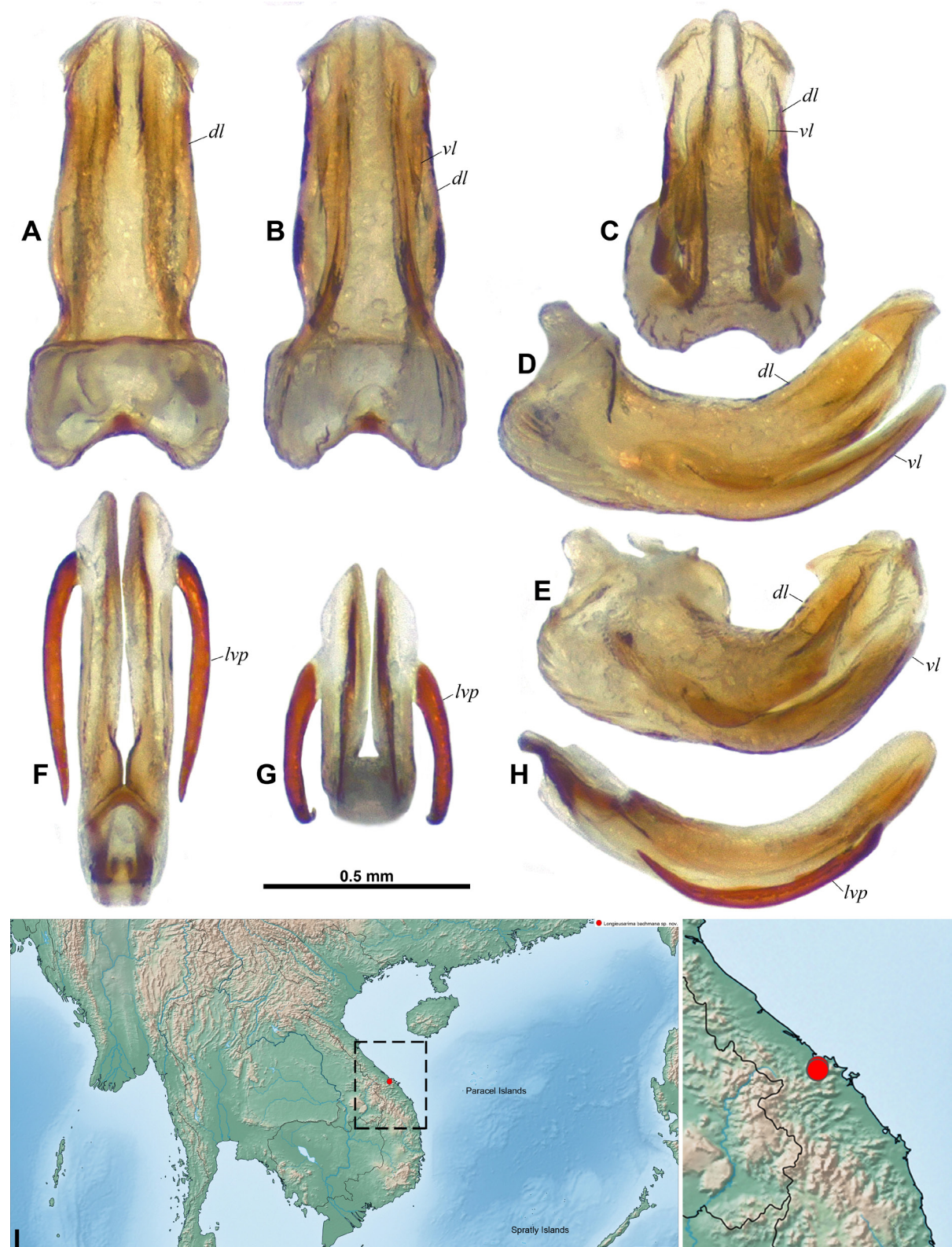


Fig. 43. *Longieusarima bachmana* sp. nov. A–H. Holotype, ♂ (VNMN), aedeagus. A–E. Perianthium. A. Dorsal view. B. Ventral view. C. Posteroventral view. D. Left lateral view. E. Posterolateral view. F–H. Aedeagus s. str. F. Dorsal view. G. Posteroventral view. H. Left lateral view. I. Distribution map. Abbreviations: see Material and methods.

narrow, suboval with maximum width at anal opening, distinctly convex longitudinally, apically rounded, ventral margin more or less straight in lateral view; about $2.8 \times$ as long in midline, as wide in dorsal view and with anal opening slightly beyond basal $\frac{2}{5}$. Aedeagus (Figs 42E–L, 43) symmetrical, moderately elongate, more or less evenly curved posterodorsad in lateral view, with ventral margin basally expanded in pair of massive compressed lobes. Ventral lobe of periandrium (*vl* – Figs 42G–L, 43B–E) shorter than dorsal lobe, laminate, spatulate, moderately constricted in basal $\frac{1}{3}$, apically roundly truncate with distinct middle notch. Dorsal lobe of periandrium (*dl* – Figs 42E–F, H–L, 43A–E) constricted basally, then sinuate with sides subparallel (slightly tapering) in dorsal view; median portion distinctly elevated in distal half, rounded apically in middle and with triangular apicolateral angles recurved cephalad. Aedeagus (sensu stricto, *ae* – Figs 42H–J, 43F–H) elongate, deeply bifid, each shaft obliquely truncate apically in dorsal view; pair of elongate lateroventral processes (*lvp* – Figs 42E–L, 43F–H) arising



Fig. 44. *Longieusarima bachmana* sp. nov. Live specimens in Bach Ma National Park (photographed in cage). A–D. Pheasant trail, 20 May 2023.

anteapically (around $\frac{5}{6}$ of aedeagus length), anterodorsally curved in lateral view and reaching basal $\frac{1}{4}$ of aedeagus; strongly curved basally then broadly, evenly curved to pointed apex in dorsal view. Connective (*co* – Fig. 42I) well developed, corpus connective long, weakly curved in lateral view, tectiductus (*te* – Fig. 42I) well developed, conical with anteroventral apodemes and wide anterior foramen.

Biology

Longieusarima bachmana sp. nov. was collected in the months of May and September at altitudes between 500 and 1400 m a.s.l., in moist evergreen tropical forest. The specimens were sitting on small branches and leaves, on lower vegetation, bushes and trees. In Bach Ma National Park, it was found at the following collecting site/habitats (Constant & Pham 2025a: fig. 2a): “pheasant trail” (Constant & Pham 2025a: figs 2a(2), 3a), “roadside” (Constant & Pham 2025a: figs 2a(4), 4a), and “summit” (Constant & Pham 2025a: figs 2a(5), 4b).

Distribution

Vietnam: Thừa Thiên-Huế Province, Bach Ma National Park (Fig. 43I).

Genus *Microsarimodes* Chang & Chen, 2019

Microsarimodes Chang & Chen, 2019 in Chang *et al.* 2019: 137.

Type species

Microsarimodes tumidus Chang & Chen, 2019, by original designation.

Diagnosis

The genus *Microsarimodes* can be differentiated from the other genera of Sarimini by the following combination of characters, according to Chang *et al.* (2019) and Wang *et al.* (2020): (1) vertex quadrangular, distinctly wider than long in midline, with lateral margins parallel or sinuate; (2) frons relatively flat, median carina stout and peridiscal (lateral) carina weak, not reaching over middle; (3) tegmina relatively narrow with apical margin round, with ScP long, reaching over middle, RP forked before midlength and MP dividing before midlength of tegmen; (4) hind wings with Pcu non branched, without transverse vein between CuP and Pcu; (5) gonostyli with irregularly tumefied protuberance near base of capitulum; (6) aedeagus with one process; (7) gonoplacs irregularly triangular.

Species included

Microsarimodes backeljau sp. nov.

Microsarimodes flavomaculatus Wang & Bourgoïn, 2020

Microsarimodes maculosus (Che, Zhang & Wang, 2020)

Microsarimodes tumidus Chang & Chen, 2019

Microsarimodes backeljau sp. nov.

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Figs 45–48

Diagnosis

Microsarimodes backeljau sp. nov. can be recognized by (1) a rather large size (♂: 6.8 mm, ♀ 7.9–8.3 mm) and wide vertex ($1.66 \times$ as wide as long in midline); (2) the pale greyish yellow tegmina with irregular but more or less symmetrical, dark brown to black markings roughly forming two transverse bands (Figs 45A–D, 48); (3) the anal tube of the male distinctly sinuate in lateral view, tapering to

narrow rounded apex in dorsal view (*An* – Fig. 46A, G); (4) the long lateroventral processes of the aedeagus, distinctly and evenly curved cephalad in lateral view and strongly sinuate in ventral view (*lvp* – Fig. 47G–I).

Differential diagnosis

The new species is close to *Microsarimodes tumidus* Chang & Chen, 2019 (see illustrations in Chang *et al.* 2019: figs 7–8, 18–35) but the latter is smaller (♂: 6.5 mm, ♀: 7.0–7.4 mm compared to ♂: 6.8 mm, ♀: 7.9–8.3 in *M. backeljau* sp. nov.) with a slightly wider vertex ($1.8 \times$ as wide as long in midline; $1.66 \times$ in *M. backeljau*), shows a shorter and evenly downcurved anal tube in lateral view (distinctly longer and sinuate in *M. backeljau*), as well as weakly curved lateroventral processes of the aedeagus, directed cephalad and not sinuate (distinctly and evenly curved cephalad in lateral view and strongly sinuate in ventral view in *M. backeljau*).

Etymology

The species epithet is a patronym dedicated to Dr Thierry Backeljau (RBINS) in acknowledgement of his support to the work of the authors over the years.

Type material

Holotype

VIETNAM • ♂; Thừa Thiên-Huế Province, Bach Ma National Park; 16°12' N, 107°52' E; [500–600 m a.s.l.]; 10–16 Apr. 2017; J. Constant and J. Bresseel leg.; [pheasant trail]; I.G.: 33.447; RBINS.

Paratypes

VIETNAM – **Thiên-Huế Province** • 1 ♀; same data as for holotype; RBINS • 2 ♀♀; Bach Ma National Park; 16°11'44" N, 107°50'44" E; 1200–1300 m a.s.l.; 22 May 2023; J. Constant and L. Semeraro leg.; roadside; I.G.: 34.640; RBINS • 1 ♀; Bach Ma National Park; 16°11'18" N, 107°50'56" E; 1300–1400 m a.s.l.; 11–21 May 2023; J. Constant and L. Semeraro leg.; summit; I.G.: 34.640; RBINS • 4 ♀♀; same data as for preceding; VNMN • 1 ♀; Bach Ma National Park; 16°11'18" N, 107°50'56" E; 1300–1400 m a.s.l.; 20 Oct. 2024; J. Constant, L. Semeraro and T.T.H. Nguyen leg.; summit; VNMN.

Description

MEASUREMENTS AND RATIOS. LT: ♂ (n = 1): 6.8 mm, ♀ (n = 9): 8.1 (7.9–8.3); LT/BB = 2.12; LTg/BTg = 2.50; LW/BW = 1.32; BV/LV = 1.66; LF/BF = 0.92.

HEAD (Figs 45A–E, 48). Vertex pale greyish yellow, sometimes darker anteriorly, with pale median line containing in basal portion, narrow groove; $1.7 \times$ as broad as long in midline; weakly concave with margins carinate; anterior margin angularly convex anteriorly, posterior one subparallel, sides subparallel. Frons pale greyish yellow, upper portion darker with dark brown patch in middle; complete median pale yellowish line following weak carina, carina distinct in dorsal half only (weakly elevated); narrow black line densely covered in yellowish tubercles between obsolete peridiscal carina and upper and weakly carinate lateral margins; about $1.1 \times$ as wide as long in midline; narrowly visible from above; dorsal margin slightly concave, upper half with distinct middle hump, lower half slightly concave, disc slightly coriaceous; widest at lateroventral angles. Genae yellow with the following dark brown: narrow line along anterior margin, markings at anterodorsal portion of eye, between eye and midheight of frons and at level of antenna; lower portion sometimes washed with brownish; anteroventral angle of genae distinctly projecting anteriorly. Clypeus triangular, convex, smooth; pale yellowish, darker on sides. Labium yellowish, darker apically, with last segment longer than broad, shorter than penultimate. Antennae brown with scape short, ring-shaped, and bulbous pedicel.

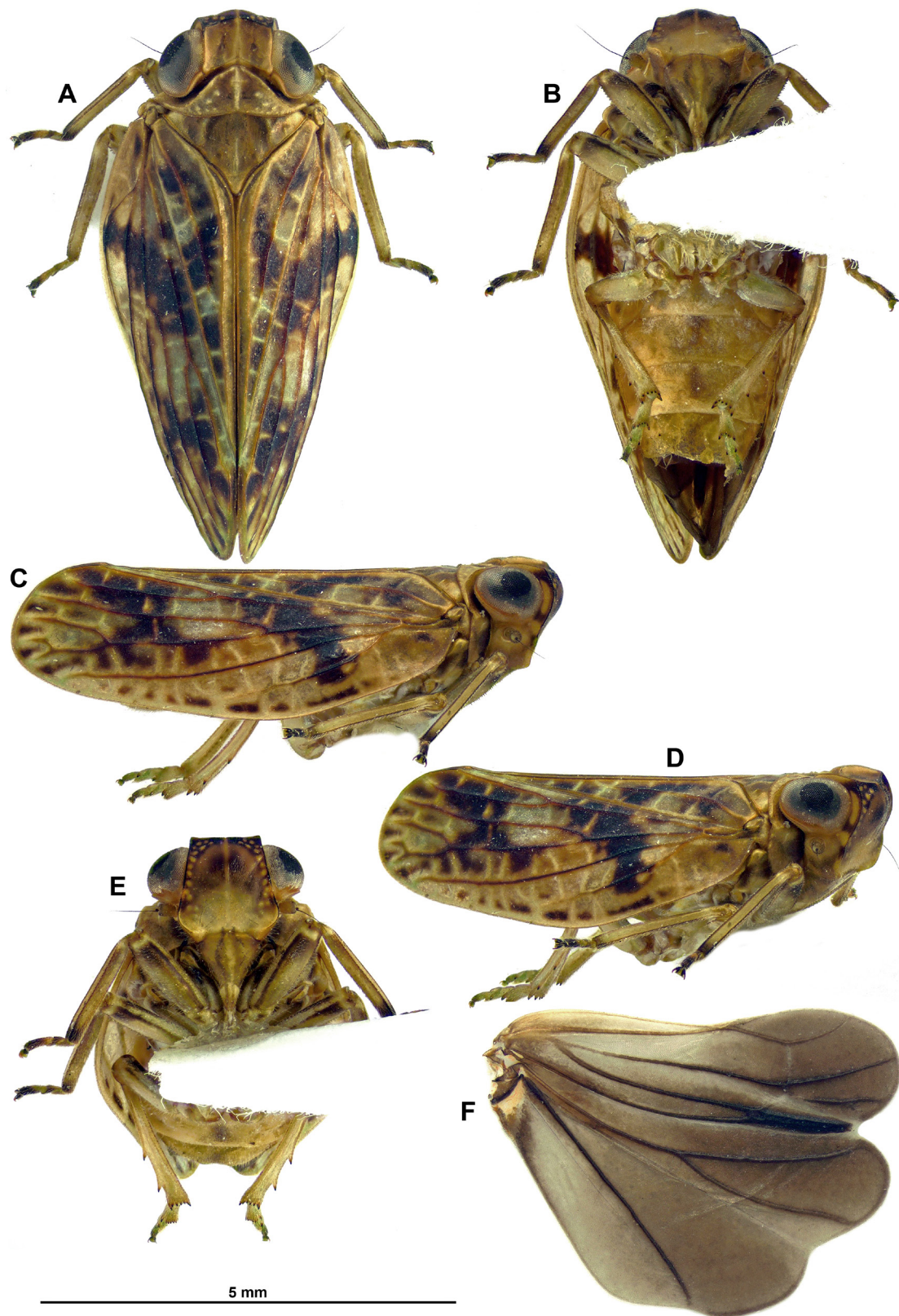


Fig. 45. *Microsarimodes backeljau* sp. nov., dissected paratype, ♂ (RBINS). **A.** Habitus, dorsal view. **B.** Habitus, ventral view. **C.** Habitus, lateral view. **D.** Habitus, anterolateral view. **E.** Habitus, perpendicular view of frons. **F.** Right hind wing.

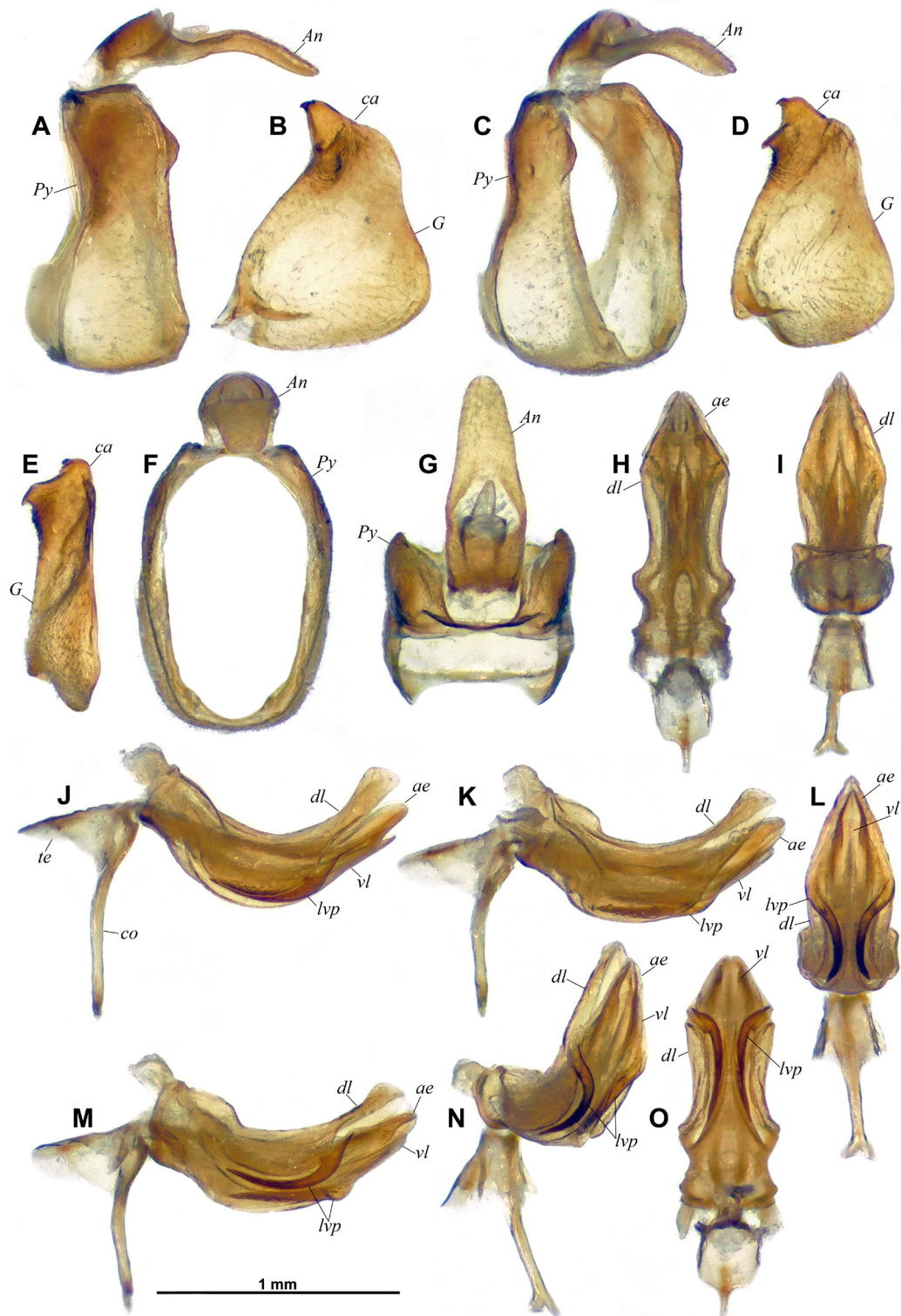


Fig. 46. *Microsarimodes backeljau* sp. nov., holotype, ♂ (VNMN), terminalia. **A.** Pygofer and anal tube, left lateral view. **B.** Gonostylus, left lateral view. **C.** Pygofer and anal tube, posterolateral view. **D.** Gonostylus, posterolateral view. **E.** Gonostylus, caudal view. **F.** Pygofer and anal tube, caudal view. **G.** Pygofer and anal tube, dorsal view. **H–O.** Aedeagus. **H.** Dorsal view. **I.** Anterodorsal view. **J.** Left lateral view. **K.** Left laterodorsal view. **L.** Posteroventral view. **M.** Posterolateral view. **N.** Left lateroventral view. **O.** Ventral view. Abbreviations: see Material and methods.

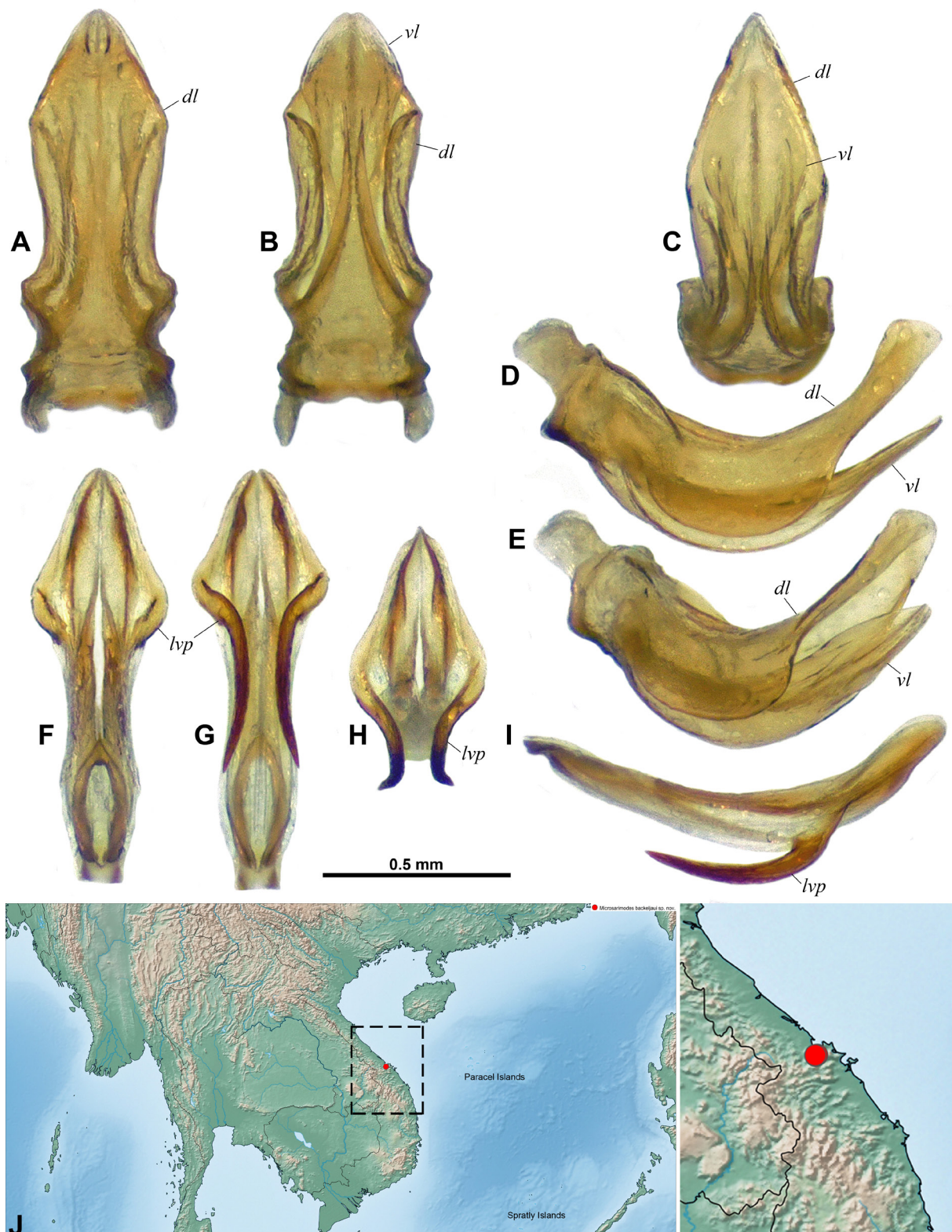


Fig. 47. *Microsarimodes backeljauai* sp. nov. **A–H.** Holotype, ♂ (VNMN), aedeagus. **A–E.** Periandrium. **A.** Dorsal view. **B.** Ventral view. **C.** Posteroventral view. **D.** Left lateral view. **E.** Posterolateral view. **F–I.** Aedeagus s. str. **F.** Dorsal view. **G.** Ventral view. **H.** Posteroventral view. **I.** Left lateral view. **J.** Distribution map. Abbreviations: see Material and methods.

THORAX (Figs 45A, C–E, 48). Pronotum pale greyish yellow, $0.6 \times$ length of mesonotum in midline with weak, yellowish median carina; anterior margin distinctly carinate, angularly protruding cephalad in middle; very narrow on sides, behind eyes; posterior margin weakly bisinuate and carinate; disc weakly concave with yellowish tubercles; paranotal lobes yellowish, sometimes washed with brown along lateral and ventral margins; few yellowish tubercles along lateral margin. Mesonotum greyish yellow, rather short with obsolete yellowish median carina, and weak peridiscal carinae often included in darker marking; apex of scutellum yellowish; shallow excavation before scutellum. Tegulae pale yellow brown.

TEGMINA (Figs 45A–E, 48). Pale greyish yellow variegated with dark brown to black, with irregular, more or less symmetrical, dark markings roughly forming two transverse bands; main veins more or less concolourous with background, elevated (A1 and Pcu+A1 more strongly elevated), and cross-veins weakly raised and generally paler than background; distinctly convex, elongate, about $2.5 \times$ as long as wide; costal margin broadly rounded laterad around basal $\frac{1}{3}$; apical margin rounded; distinct lateral hump including vein ScP+RA around basal $\frac{1}{4}$, hiding costal margin in dorsal aspect; costal margin hidden by vein RP in distal $\frac{2}{5}$, in dorsal view; narrow epipleuron; clavus closed, reaching about $\frac{3}{4}$ of tegmen length. Venation: ScP+R short; ScP+RA moderately long, reaching to around halflength of tegmen; RP unforked, long and weakly curved; first fork of MP around $\frac{2}{5}$ of tegmen length, first fork of CuA slightly after midlength of tegmen, MP1 with two or three terminales; Pcu and A1 fused around $\frac{3}{5}$ of clavus, Pcu+A1 reaching apex of clavus; cross-veins numerous and distinct.

HIND WINGS (Fig. 45F). Well developed, with 3 distinct lobes (Sarimini type) more or less equal in width (Pcu-A1 lobe slightly narrower); blackish brown with paler area in basal half between costal margin and CuA; veins darker than background. Venation: ScP+R and CuA furcate, MP simple, weakly sinuate; second branch of CuA fused with CuP distally; Pcu and A1 fused on basal half, Pcu and A2 simple; transverse vein between second branch of ScP+R and MP, and between MP and first branch of CuA; A2 not forked.

LEGS (Figs 45A–E, 48). Slender and somewhat elongate, pale yellowish with the following brown: antepical ring (more or less distinct) and ventral longitudinal line and on pro- and mesofemora, apex of pro- and mesotibiae and apical segments of pro- and mesotarsi. Metatibiae with 2 lateral spines on distal half and seven or eight apical spines; first metatarsus with row of 5–6 minute teeth along posteroventral margin, limited with a larger tooth on each side. Metatibiotarsal formula: (2) 7–8/7–8/2.

ABDOMEN (Fig. 45B). Pale yellowish.

MALE TERMINALIA (Figs 46–47). Pygofer (*Py* – Fig. 46A, C, F–G) short, about $3.2 \times$ as high as long at midheight in lateral view, with posterior margin more or less straight, slightly oblique with distinct, short posterior lobe in dorsal portion in lateral view; anterior margin sinuate; in caudal view oval (sides broadly rounded), $1.5 \times$ as high as wide; deeply notched dorsally. Gonostyli (*G* – Fig. 46B, D–E) massive, moderately convex; in lateral view, posterior portion roundly projecting caudad into short posterior lobe, and second lobe at base of capitulum, resulting in posterodorsal margin distinctly bisinuate; anterodorsal margin oblique, slightly rounded, then upcurved at base of capitulum, ventral margin broadly rounded; capitulum (*ca* – Fig. 46B, D–E) massive, subtriangular without distinct neck and apically hooked in lateral view, laterally with oblique downcurved lamina, distinct area with concentric wrinkles under lamina reaching anterodorsal margin of gonostylus. Anal tube (*An* – Fig. 46A, C, F–G) moderately elongate and rather narrow, about $2.8 \times$ as long as wide in dorsal aspect; dorsoventrally flattened with lateral margin downcurved; more or less parallel-sided to anal opening (in basal $\frac{1}{4}$), then evenly tapering to narrow rounded apex; in lateral view distinctly sinuate, abruptly narrowing at anal opening and further downcurved. Aedeagus (Figs 46H–O, 47) symmetrical, elongate, somewhat arrow-shaped in dorsal view, more or less evenly curved posterodorsad in lateral view, with pair of distinct basidorsal carinae. Ventral

lobe of periandrium (*vl* – Figs 46J–O, 47B–E) laminate, spatulate in distal portion, evenly constricted in middle, with acutely rounded apex and lateroventral groove (partly concealing lateroventral process of aedeagus at rest). Dorsal lobe of periandrium (*dl* – Figs 46H–O, 47A–E) longer and wider than ventral lobe, somewhat saddle-shaped with sides produced in large, evenly rounded, downcurved lobe partly covering ventral lobe of periandrium and partly concealing lateroventral process of aedeagus at rest, with posterior portion showing strong carina (highest point subapically) roundly truncate apically in lateral view. Aedeagus (sensu stricto, *ae* – Figs 46H, J–N, 47F–H) elongate, deeply bifid; in dorsal view, each shaft with lateral margin sinuate in proximal $\frac{2}{3}$, to widest point at base of lateroventral processes, then evenly tapering towards apex; pair of elongate lateroventral processes (*lvp* – Figs 46J–O, 47F–I), strongly curved ventrad basally; distinctly and evenly curved cephalad in lateral view, strongly sinuate in ventral view. Connective (*co* – Fig. 46J) well developed, corpus connective long, weakly curved in lateral



Fig. 48. *Microsarimodes backeljai* sp. nov. Live specimen in Bach Ma National Park (photographed in cage). A–D. Pheasant trail, 20 May 2023.

view, tectiductus (*te* – Fig. 46J) well developed, conical, produced cephalad dorsally; with anteroventral apodemes and wide anterior foramen.

Biology

Microsarimodes backeljau sp. nov. was collected in the months of April, May and October at altitudes between 500 and 1400 m a.s.l., in moist evergreen tropical forest. The specimens were sitting on small branches and leaves, on bushes and trees. In Bach Ma National Park, it was found at the following collecting site/habitats (Constant & Pham 2025a: fig. 2a): “pheasant trail” (Constant & Pham 2025a: figs 2a(2), 3a), “roadside” (Constant & Pham 2025a: figs 2a(4), 4a), “summit” (Constant & Pham 2025a: figs 2a(5), 4b).

Distribution

Vietnam: Thừa Thiên-Huế Province, Bach Ma National Park (Fig. 47J).

Genus *Retirima* gen. nov.

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Type species

Retirima angulata gen. et sp. nov., by present designation.

Diagnosis

The genus *Retirima* gen. nov. can be differentiated from all other genera of Sarimini by the following combination of characters: (1) the vertex about $1.7 \times$ as wide as long in dorsal view; (2) the frons with complete median carina, extending down to basal portion of clypeus where it broadens into a short median hump, and peridiscal carinae nearly complete but not reaching ventral margin; (3) the tegmina elongate, about $2.2 \times$ as long as wide, with weak lateral hump around basal $\frac{1}{4}$, not hiding costal margin in dorsal aspect, with dense network of distinctly paler cross-veins, and with distinct but narrow epipleuron; (4) the vein ScP of the tegmen long, weakly curved and reaching margin of tegmen around distal $\frac{1}{5}$ of tegmen length; (5) the first fork of MP and the first fork of CuA at about the same level, slightly beyond $\frac{2}{5}$ of the length of tegmen; (6) the anal tube elongate and rather wide, dorsoventrally flattened, oboval/subrectangular, apically truncate in dorsal view; (7) the rather massive gonostyli with anterodorsal margin generally oblique, with capitulum elongate, strongly projecting anterodorsad and with poorly distinct neck, digitiform in lateral view, and broadly falcate in caudal view; (8) the perianthrium with a pair of strong laterodorsal processes arising in proximal portion of dorsal lobe, and apex of dorsal lobe distinctly acuminate; (9) the aedeagus with a pair of elongate, curved, lateroventral processes without posterior hook, arising at about $\frac{2}{3}$ of aedeagus length.

Differential diagnosis

The most similar genera are *Caimocus* gen. nov., *Duplexissus* Wang, Zhang & Bourgoïn, 2019, *Eusarima* Yang, 1994, *Jagannata* Distant, 1906, *Lobosarima* gen. nov. and *Parasarima* Yang, 1994. However, *Retirima* gen. nov. can be separated from all of these genera by the tegmina with dense network of pale cross-veins, the perianthrium with a pair of strong laterodorsal processes arising in proximal portion of the dorsal lobe, and the apex of the dorsal lobe distinctly acuminate.

Additionally, *Retirima* gen. nov. can be separated (1) from *Caimocus* gen. nov. (see Figs 13–22) by the subrectangular anal tube in dorsal aspect (anal tube widening towards rounded apex in *Caimocus*), the capitulum of the gonostyli anteroposteriorly compressed and falcate (digitiform and tapering towards the apex in *Caimocus*), and the lateroventral processes of the aedeagus without posterior hook (posterior hook

present in *Caimocus*); (2) from *Duplexissus* (see illustrations in Wang *et al.* 2019: figs 12–22) by weakly developed hump of the tegmina (strongly developed in *Duplexissus*), the generally oblique anterodorsal margin of the gonostyli (distinctly rounded in *Duplexissus*) and the dorsal lobe of the periandrium without apical elongate process directed cephalad (process present on dorsal lobe of periandrium of *Duplexissus*); (3) from *Eusarima* (see illustrations in Chan & Yang 1994: fig. 45) by the generally oblique anterodorsal margin of the gonostyli (distinctly rounded in *Eusarima*), the subrectangular anal tube in dorsal aspect (elongate and tapering towards apex in *Eusarima*) and the lack of dorsal spinose processes in the apical portion of the dorsal lobe of the periandrium (present in *Eusarima*); (4) from *Jagannata* (see illustrations in Distant 1906: figs 171) by the transverse vertex, much wider than long in midline, and with anterior margin more or less truncate (vertex slightly longer than wide, and angularly produced anteriorly in *Jagannata*); (5) from *Lobosarima* gen. nov. (see Figs 37–40) by the lack of a pair of lobes on the basidorsal portion of the periandrium (lobes present in *Lobosarima*), and the lack of a ventral tooth on the lateral margin of the dorsal lobe of the periandrium (tooth present in *Lobosarima*); (6) from *Parasarima* (see illustrations in Chan & Yang 1994: fig. 39) by the complete carina of the frons, reaching slightly beyond frontoclypeal suture (carina visible only in dorsal half of the frons in *Parasarima*), and by the posterior portion of the gonostyli forming a distinct rounded lobe (gonostyli without posterior lobe in *Parasarima*).

Etymology

The genus name is the combination of ‘*reticulatus*’ (Latin), meaning ‘reticulate’, and ‘*Sarima*’, the name of the type genus of the tribe Sarimini. It refers to the reticulate aspect of the tegmina, with numerous cross veins. Gender feminine.

Description

Medium sized (around 6.0 mm), very convex, moderately elongate, rather robust-bodied.

COLOUR. Mostly brown with cross-veins of tegmina forming distinctly paler network.

HEAD. Vertex distinctly broader than long in midline (about $1.7 \times$), weakly concave with weak median carina; anterior margin forming a widely obtuse angle, posterior one rather deeply concave; all margins carinate. Frons moderately convex, narrowly visible from above, nearly $1.1 \times$ as wide as long in midline, somewhat rugulose with distinct complete median carina extending down to basal portion of clypeus where it broadens into short median hump, and peridiscal carinae nearly complete but not reaching ventral margin; obsolete tubercles between peridiscal carina and lateral margin; maximum breadth slightly under level of antennae; dorsal margin nearly straight (angles weakly elevated). Anteroventral angle of genae slightly projecting anteriorly. Ocelli present, under eye. Clypeus triangular, convex, smooth, not keeled or carinate. Labium with last segment longer than broad, shorter than penultimate. Antennae with scape short, ring-shaped, and bulbous pedicel.

THORAX. Pronotum subtriangular, projecting anteriorly in blunt right angle, about $0.63 \times$ as long in midline, as mesonotum; smooth with anterior margin carinate and pair of impressed points on each side of paler obsolete median carina; lateral fields with tubercles, very narrow behind eyes; paranotal lobes with tubercles along external margin, and with posteroventral angle rounded. Mesonotum subtriangular with posterolateral margins slightly incurved and weakly carinate, smooth, weakly convex with distinct median and sublateral carinae; shallow depression before scutellum.

TEGMINA. Distinctly convex, elongate, about $2.2 \times$ as long as wide, with longitudinal veins elevated; costal margin evenly rounded; apical margin rounded; distinct but weak lateral hump including vein ScP+RA around basal $\frac{1}{4}$, not hiding costal margin in dorsal aspect; costal margin hidden by vein RP in distal 0.3, in dorsal view; distinct but narrow epipleuron; clavus closed, reaching about $\frac{4}{5}$ of tegmen

length. Venation: ScP+R rather short; ScP+RA long, reaching external margin of tegmen around distal $\frac{1}{5}$ of tegmen length; RP unforked, long and weakly curved; first fork of MP slightly after $\frac{2}{3}$ of tegmen length, MP1 with two or three terminales; first fork of CuA slightly more distal to MP fork; Pcu and A1 fused slightly beyond halflength of clavus, Pcu+A1 reaching apex of clavus; cross-veins numerous.

HIND WINGS. Well developed, with three distinct lobes (Sarimini type) more or less equal in width; mostly blackish brown. Venation: ScP+R and CuA furcate; MP simple, sinuate; second branch of CuA fused distally with CuP; Pcu and A1 fused on basal half, Pcu unforked and A2 simple; one transverse vein between second branch of ScP+R and MP, and between MP and first branch of CuA.

LEGS. Moderately elongate, slender, with pro- and mesofemora and pro- and mesotibiae slightly flattened dorsoventrally, tibiae more slender than corresponding femora; posteroventral margin of pro- and mesofemora with row of minute teeth; pro- and mesotarsi rather elongate. Metatibiae with two lateral spines in distal half and six apical spines. Metatarsi rather short with first segment about as long as combined length of remaining segments. First metatarsomere with two latero-apical and seven intermediate spines arranged in arc. Metatibiotarsal formula: (2) 6/9/2.

MALE TERMINALIA. Pygofer short, about $2.3 \times$ as high as long at midheight in lateral view, with posterior margin forming distinct, evenly rounded lobe in lateral view; in caudal view suboval, about $1.3 \times$ as high as wide. Gonostyli rather massive, distinctly convex, with anterodorsal margin generally oblique, with capitulum elongate, strongly projecting anterodorsad and with poorly distinct neck, digitiform and curved in lateral view, and broadly falcate in caudal view, with distinct lateral tooth. Anal tube elongate and rather wide, dorsoventrally flattened, oboval/subrectangular, apically truncate in dorsal view, with anal opening around basal $\frac{1}{3}$; in lateral view, more or less straight. Aedeagus symmetrical, distinctly curved posterodorsad in lateral view. Ventral lobe of periandrium rather long, laminate and spatulate. Dorsal lobe of periandrium with apex distinctly acuminate and with a pair of strong laterodorsal processes arising in proximal portion. Aedeagus (sensu stricto) slightly surpassing dorsal and ventral lobes of periandrium, bifid on most length, with a pair of elongate, curved, lateroventral processes without posterior hook, arising at about $\frac{2}{3}$ of aedeagus length. Connective well developed, corpus connective long, straight in lateral view, tectiductus well developed, conical with anteroventral apodemes and rather wide anterior foramen.

Distribution

Vietnam: Thừa Thiên-Huế Province.

Species included

Retirima angulata gen. et sp. nov.

Retirima angulata gen. et sp. nov.

[urn:lsid:zoobank.org:act:3FCF3430-6202-4256-A68C-F841B6E8D7D0](https://doi.org/10.3896/urn:lsid:zoobank.org:act:3FCF3430-6202-4256-A68C-F841B6E8D7D0)

Figs 49–52

Diagnosis

Retirima angulata gen. et sp. nov. is the only species in the genus *Retirima* gen. nov. The characters of the male terminalia are probably relevant diagnostic features to recognize the species, e.g., the subrectangular anal tube in dorsal view, the shape of the gonostyli, including the capitulum in lateral and caudal view and, the shape of the dorsal and ventral lobes of the periandrium, the size and shape (curvature) of the lateroventral processes of the aedeagus (Figs 51, 52A–J).

Differential diagnosis

The most similar species belong to the genera *Caimocus* gen. nov., *Duplexissus* Wang, Zhang & Bourgoïn, 2019, *Eusarima* Yang, 1994, *Jagannata* Distant, 1906, *Lobosarima* gen. nov. and *Parasarima* Yang, 1994, which can be separated by the characters given for the genus *Retirima* gen. nov.

Etymology

The species epithet '*angulatus*' is a Latin adjective meaning 'angular', and it refers to the shape of the lateroventral processes of the aedeagus.

Type material

Holotype

VIETNAM • 1 ♂; Thừa Thiên-Huế Province, Bach Ma National Park, [16°11'45" N, 107°50'51" E]; 1158 m a.s.l.; 27 May 2023; T.T.H. Nguyen leg.; Rhodo[dendron] trail; VNMN.

Paratypes

VIETNAM – **Thiên-Huế Province** • 1 ♂; same data as for holotype; VNMN • 1 ♂; Bach Ma National Park; 16°11'18" N, 107°50'56" E; 1300–1400 m a.s.l.; 11–21 May 2023; J. Constant and L. Semeraro leg.; summit; I.G.: 34.640; RBINS • 1 ♀; Bach Ma National Park; 16°12' N, 107°52' E; 15–16 Jul. 2011; J. Constant and J. Bresseel leg.; summit, day [time] collecting; I.G.: 31.933; RBINS.

Description

MEASUREMENTS AND RATIOS. LT: ♂ (n = 1): 6.0 mm; LT/BB = 1.85; LTg/BTg = 2.23; LW/BW = 1.23; BV/LV = 1.69; LF/BF = 0.93.

HEAD (Fig. 49A–E). Vertex brown, paler in posterior angles, median line, and along margins; $1.7 \times$ as wide as long in midline, weakly concave with weak median carina; anterior margin forming widely obtuse angle, posterior one rather deeply concave; all margins carinate. Frons yellowish brown with dense yellow pitting, slightly paler in ventral portion, moderately convex, narrowly visible from above, nearly $1.1 \times$ as wide as long in midline, somewhat rugulose with distinct complete median carina extending down to basal portion of clypeus where it broadens into short median hump; peridiscal carina nearly complete but not reaching frontoclypeal suture; yellowish obsolete tubercles between peridiscal carina and lateral margin; maximum breadth slightly under level of antennae; dorsal margin nearly straight with angles weakly elevated. Genae yellow, washed with brown around anteroventral angle; anteroventral angle slightly projecting anteriorly. Ocelli present, under eye. Clypeus yellowish brown (slightly paler than frons), darker towards apex; triangular, convex, smooth (without pitting), not keeled or carinate. Labium with last segment longer than broad, shorter than penultimate. Antennae with scape yellowish brown, short, ring-shaped, and pedicel bulbous, black with postero-apical yellowish marking.

THORAX (Fig. 49A, C–E). Pronotum dark brown with more or less distinct transverse yellowish band in middle; subtriangular, projecting anteriorly in blunt right angle, about $0.63 \times$ as long in midline, as mesonotum; smooth with anterior margin carinate and pair of impressed points on each side of paler obsolete median carina; lateral fields with yellowish tubercles, very narrow behind eyes; paranotal lobes yellowish brown with darker marking behind eye, and yellowish tubercles along external margin; posteroventral angle rounded. Mesonotum brown, somewhat darker in lateral angles, and with paler scutellum; subtriangular with posterolateral margins slightly incurved and weakly carinate, smooth, weakly convex with distinct median and sublateral carinae; shallow depression before scutellum.

TEGMINA (Figs 49A–D, 50A–B). Rather dark brown with main veins slightly paler and elevated; costal margin on most length and dense network of cross-veins pale yellowish; distinct but narrow epipleuron;

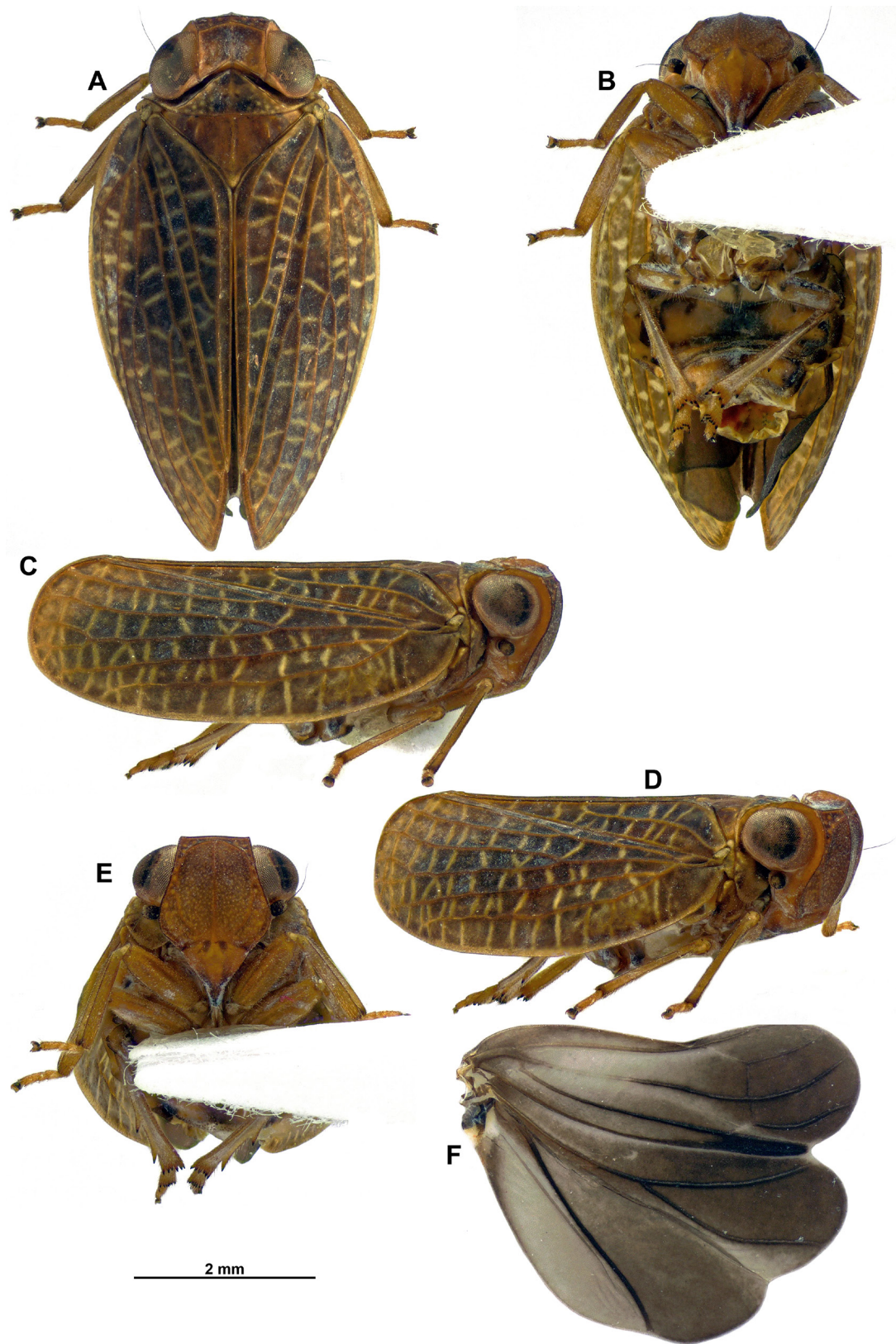


Fig. 49. *Retirima angulata* gen. et sp. nov., dissected paratype, ♂ (RBINS). A. Habitus, dorsal view. B. Habitus, ventral view. C. Habitus, lateral view. D. Habitus, anterolateral view. E. Habitus, perpendicular view of frons. F. Right hind wing.

distinctly convex, elongate, about $2.2 \times$ as long as wide; costal margin evenly rounded; apical margin rounded; distinct but weak lateral hump including vein ScP+RA around basal $\frac{1}{4}$, not hiding costal margin in dorsal aspect; costal margin hidden by vein RP in distal 0.3, in dorsal view; clavus closed, reaching about $\frac{4}{5}$ of tegmen length. Venation as in genus description.

HIND WINGS (Fig. 49F). Blackish brown with paler area basally between ScP+R and CuA and along margin of A2 lobe; well developed, with three distinct lobes (Sarimini type) more or less equal in width. Venation as in genus description.

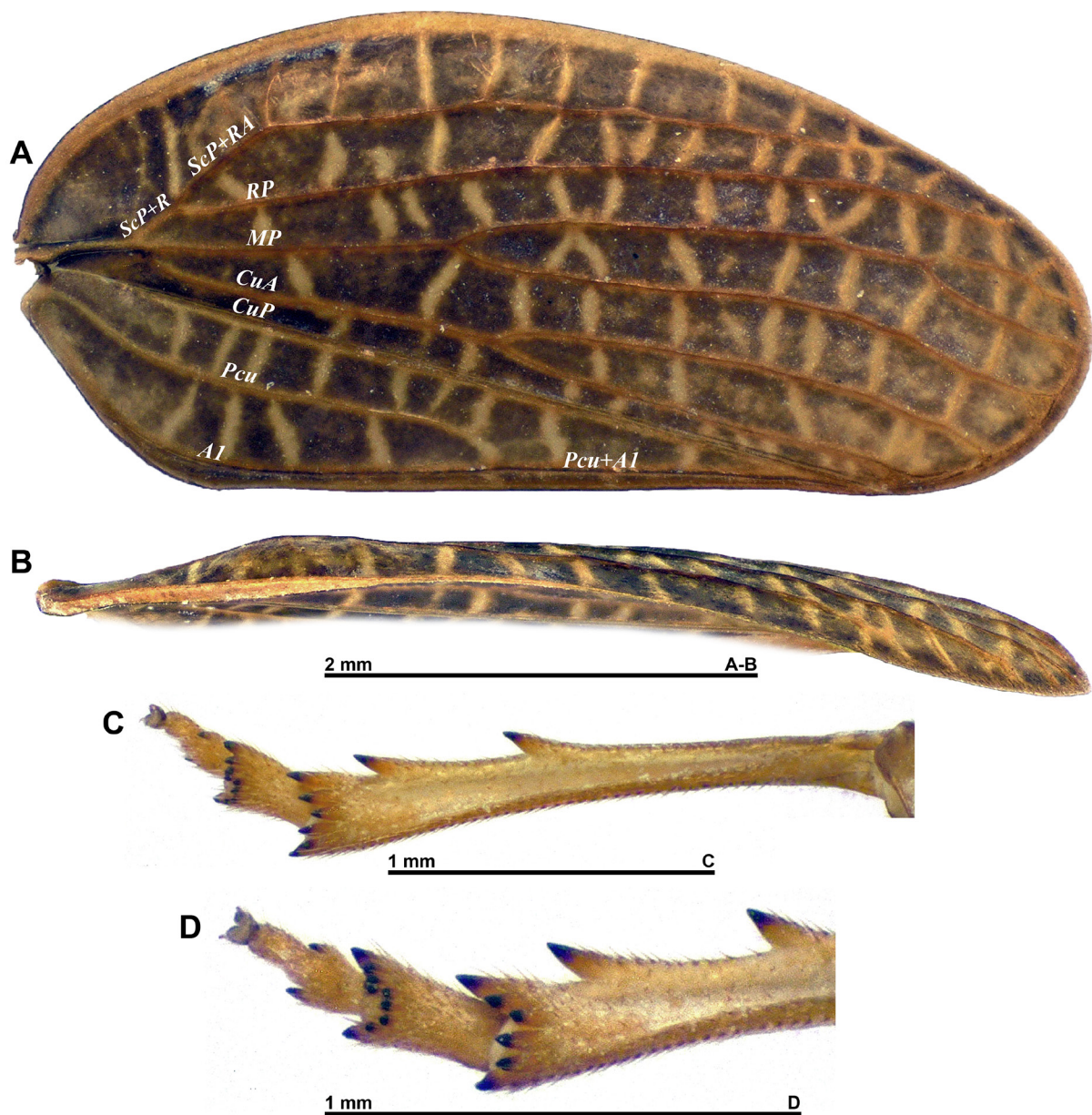


Fig. 50. *Retirima angulata* gen. et sp. nov., paratype, ♂ (RBINS). **A.** Right tegmen, perpendicular view. **B.** Right tegmen, ventral view. **C.** Right tibia and tarsus, ventral view. **D.** Distal portion of right tibia and tarsus, ventral view. Abbreviations: see Material and methods.

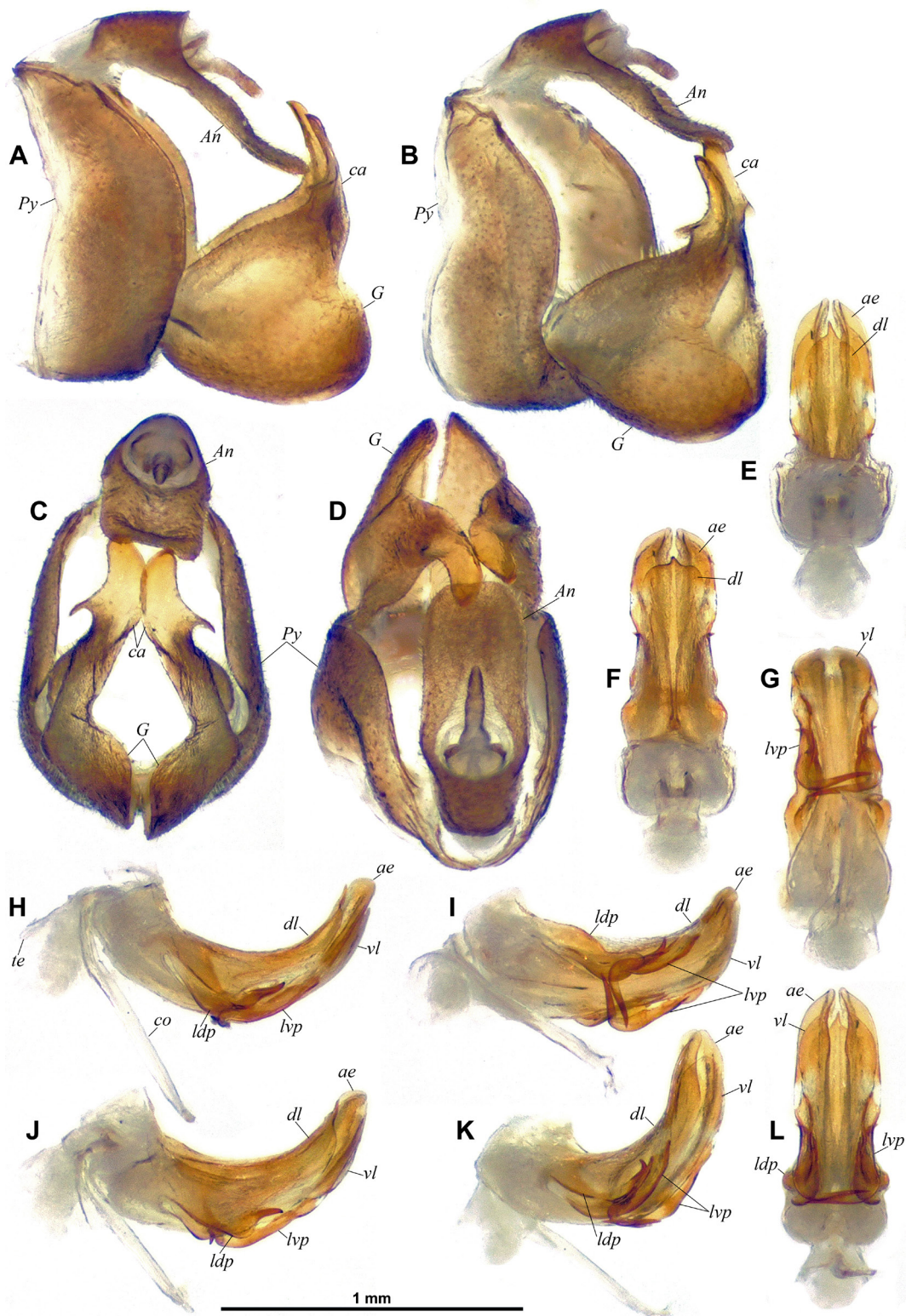


Fig. 51. *Retirima angulata* gen. et sp. nov., holotype, ♂ (VNMN), terminalia. **A–D.** Pygofer, anal tube and gonostyli. **A.** Left lateral view. **B.** Posterolateral view. **C.** Caudal view. **D.** Dorsal view. **E–L.** Aedeagus. **E.** Anterodorsal view. **F.** Dorsal view. **G.** Posteroventral view. **H.** Left lateral view. **I.** Left laterodorsal view. **J.** Left lateroventral view. **K.** Posterolateral view. **L.** Ventral view. Abbreviations: see Material and methods.

LEGS (Figs 49A–E, 50C–D). Yellowish brown with narrow apical marking on pro- and mesotibiae, ventral line on metafemora and all onychiums, dark brown; all spines of hind legs black apically; moderately elongate, slender, with pro- and mesofemora and pro- and mesotibiae slightly flattened dorsoventrally, tibiae more slender than corresponding femora; posteroventral margin of pro- and mesofemora with row

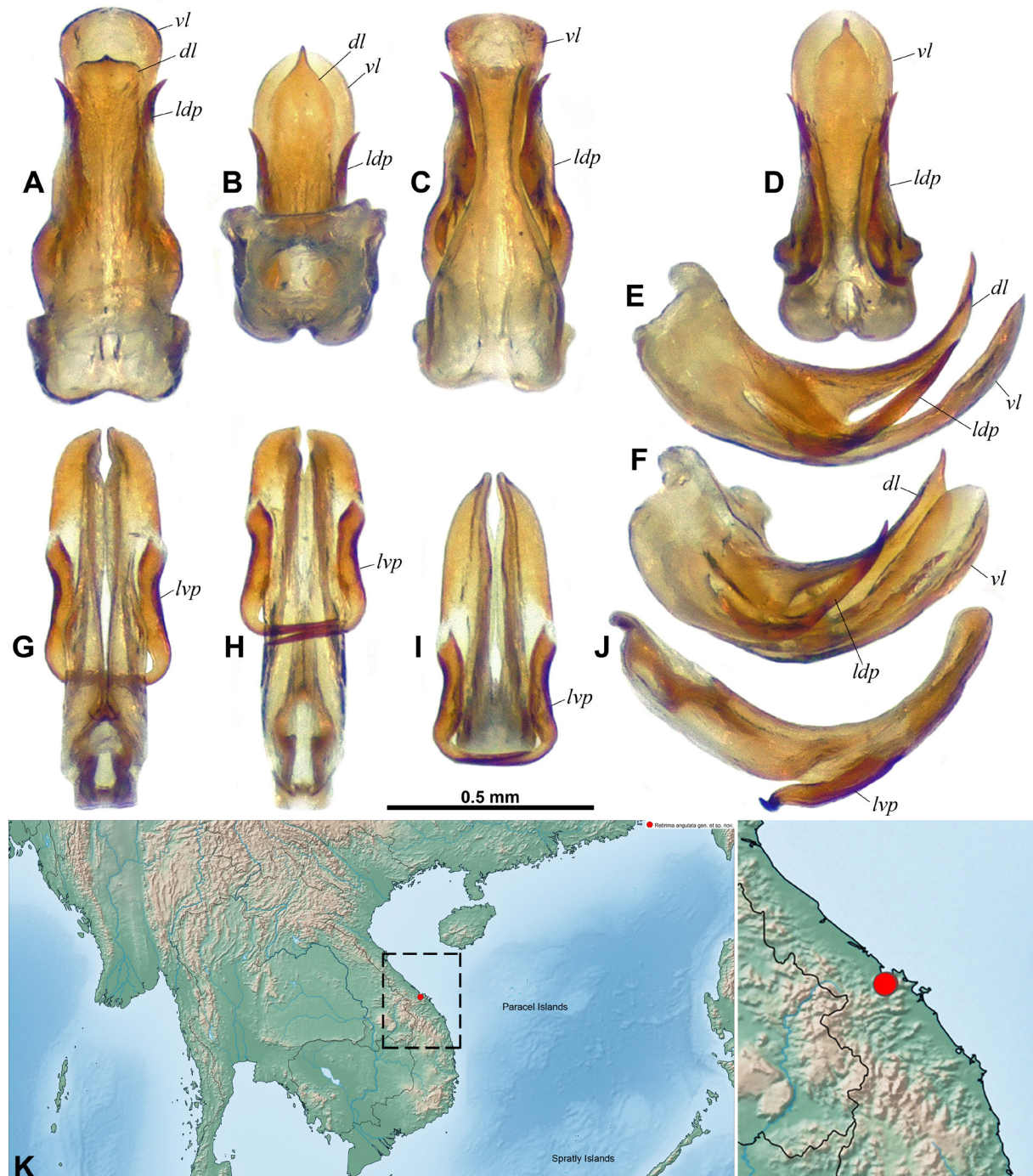


Fig. 52. *Retirima angulata* gen. et sp. nov. A–J. Holotype, ♂ (VNMN), aedeagus. A–F. Periandrium. A. Dorsal view. B. Anterodorsal view. C. Ventral view. D. Posteroventral view. E. Left lateral view. F. Posterolateral view. G–J. Aedeagus s. str. G. Dorsal view. H. Ventral view. I. Posteroventral view. J. Left lateral view. K. Distribution map. Abbreviations: see Material and methods.

of minute teeth (slightly darker); pro- and mesotarsi rather elongate. Metatibiae with two lateral spines in distal half and six apical spines. Metatarsi rather short with first segment about as long as combined length of remaining segments. First metatarsomere with two latero-apical and seven intermediate spines arranged in arc. Metatibiotarsal formula: (2) 6/9/2.

MALE TERMINALIA (Figs 51–52). Pygofer (*Py* – Fig. 51A–D) short, about $2.3 \times$ as high as long at midheight in lateral view, with posterior margin forming distinct, evenly rounded lobe, and anterior margin incurved in lateral view; in caudal view suboval, about $1.3 \times$ as high as wide, widest in ventral portion. Gonostyli (*G* – Fig. 51A–D) rather massive, distinctly convex, with anterodorsal margin weakly rounded, generally oblique, with capitulum elongate, strongly projecting anterodorsad and with poorly distinct neck, digitiform, narrow and curved in lateral view, and broadly falcate with rounded apex in caudal view, with distinct lateral tooth curved lateroventrad. Anal tube (*An* – Fig. 51A–D) elongate and rather wide, about $2.3 \times$ as long in midline, as wide; dorsoventrally flattened, oboval with sides subparallel, basally widening to anal opening around basal $\frac{1}{3}$ and apically truncate (margin slightly incurved) in dorsal view; in lateral view, more or less straight, weakly sinuate. Aedeagus (*ae* – Fig. 51E–L) symmetrical, distinctly, evenly curved posterodorsad in lateral view. Ventral lobe of periandrium (*vl* – Figs 51GL, 52A–F) rather long, wide in basal portion then tapering to about midlength, further widening, laminate and spatulate in distal portion with apical margin rounded. Dorsal lobe of periandrium (*dl* – Figs 51E–F, H–K, 52A–B, E–F) with apex distinctly acuminate and with a pair of strong, elongate, apically pointed laterodorsal processes of periandrium (*ldp* – Figs 51H–L, 52A–F) arising in proximal portion and directed posterodorsad. Aedeagus (sensu stricto *ae* – Figs 51E–F, H–L, 52G–J) slightly surpassing dorsal and ventral lobes of periandrium, bifid on most length, with lateral margin roundly tapering towards somewhat mucronate apex; dorsally, inner margin slightly elevated in distal portion; pair of elongate, apically pointed lateroventral processes (*lvp* – Figs 51G–L, 52G–J) without posterior hook, arising at about $\frac{2}{3}$ of aedeagus length and directed cephaloventrad, sinuate to abrupt right angle, resulting in distal half of processes transverse and more or less touching each other. Connective (*co* – Fig. 51H) well developed, corpus connective long, straight in lateral view, tectiductus (*te* – Fig. 51H) well developed, conical with anteroventral apodemes and rather wide anterior foramen.

Biology

Retirima angulata gen. et sp. nov. was collected in the months of May and July at altitudes between 1150 and 1400 m a.s.l., in moist evergreen tropical forest. The specimens were sitting on small branches and leaves, on lower vegetation, bushes and trees. In Bach Ma National Park, it was found at the following collecting site/habitat (Constant & Pham 2025a: fig. 2a): “summit” (Constant & Pham 2025a: figs 2a(5), 4b).

Distribution

Vietnam: Thừa Thiên-Huế Province, Bach Ma National Park (Fig. 52K).

Discussion

The present study adds seven genera (including five genera new to science) and fourteen new species of the Issidae tribe Sarimini, to the fauna of Vietnam, which so far counted eight species in seven genera in this tribe (Constant & Pham 2024a, 2025b). As a result, a total of 22 species of Sarimini, in fourteen genera are now recorded from this country. Compared to the other tribes of Issidae, Sarimini was found to be the most diverse in our study area in Thua Thien-Hue Province, as compared with both other recorded tribes Hemisphaeriini and Parahiraciini counting each eight species in five genera. Moreover, two species only known from female specimens were not treated in this study, as it appears obvious that the male terminalia bear the key characters for species, and even genus recognition. One of these species

seems to belong in the genus *Tetrica* Stål, 1866 and the second one probably belongs to an undescribed genus.

Often, the species of Sarimini may look very similar externally but, actually, belong to separate genera (e.g., *Caimocus* gen. nov., *Duplexissus* Wang, Zhang & Bourgoïn, 2019, *Eusarima* Yang, 1994, *Jagannata* Distant, 1906, *Lobosarima* gen. nov., *Parasarima* Yang, 1994, *Retirima* gen. nov.). In this tribe, the wing venation, and presence/absence/size of the epipleuron, as well as the shape and carinae of the frons, will provide some relevant characters for the delimitation of the genera. The male terminalia, however, are considered the most informative. Indeed, within each genus, they show a consistent conservation of the shape pattern of several features such as the anal tube (elongate and narrow/widening towards apex/subrectangular...), the hind margin of the pygofer (nearly straight to widely rounded), the gonostyli (general shape, presence/absence of a posterior lobe, shape of the capitulum in lateral and caudal aspect ...), the perianthrium (elongate and narrow/more oval and flattened/with or without processes or lobes ...) and the aedeagus s. str. (general shape, position and shape of the lateroventral processes ...). The species are best separated by the male terminalia, and the females of some genera (*Bachmarima* gen. nov., *Caimocus* gen. nov., *Eusarima*) could not be associated with males with a reasonable level of certainty, as the species were found sharing the same microhabitats in the field. Hence, these females were not incorporated in the present work. Further research including molecular data might help resolving this issue in the future.

Conclusion

The present study adds seven genera (including five genera new to science) and fourteen new species to the fauna of Vietnam. Together with the two previous works on the Issidae fauna of Thua Thien-Hue Province, treating the tribes Hemisphaeriini and Parahiraciini (Constant & Pham 2024b, 2025a), a total of 30 species are now recorded from this province, which represent more than twice as many species as in the so far best documented province, Hoa Binh, which counts 14 species (Constant & Pham 2024a). The currently available counts, however, may not reflect the actual diversity in each province, but instead, the collecting and taxonomic study effort (Constant *et al.* 2018).

Among the 29 Issidae recorded/described from Bach Ma National Park (*Pseudochoutagus trungi* Constant & Pham, 2024, is only known from Phong Dien), ten species are currently recorded only from the top of the mountain (1300–1400 m a.s.l.): three Parahiraciini: *Cyclopissus corticalis* Constant & Pham 2024, *Flavina lami* Constant & Pham 2024, *Pusulissus bachmaensis* Constant & Pham, 2024; two Hemisphaeriini: *Ishiharanus dinhanus* Constant & Pham, 2025, *I. iguchii* (Matsumura, 1916); five Sarimini: *Caimocus robustus* gen. et sp. nov., *C. sinuatus* gen. et sp. nov., *Eusarima bachmana* sp. nov., *E. boevei* sp. nov. and *Retirima angulata* gen. et sp. nov. These represent more than one third of the species (Constant & Pham 2024b, 2025a, present study). The higher elevation area of the national park shows the highest diversity and, as it covers less surface, it is also the most fragile habitat to human-driven and environmental disruptions (e.g., climate change).

Despite the recent progress in documenting the species richness of the Issidae of Thua Thien-Hue Province, more efforts are still necessary in terms of sampling and taxonomic study: two species of Sarimini remain unnamed due to a lack of male specimens, and recently, an additional genus and species of Parahiraciini for the province were found in Bach Ma National Park. Furthermore, major gaps in our knowledge are still prevalent for key topics such as the phenology, the host plants, the actual altitudinal and geographical distributions and the nymphal development. This information is crucial if one wishes to assess the environmental management requirements (e.g., by linking the protection of the planthopper species to that of its host plant) and attribute an accurate conservation status to these species rather than relegating them to the ‘data deficient’ category (e.g., Cardoso *et al.* 2011; Moir & Brennan 2020). More surveys are required to recognize the microhabitats, host plants, and response to disturbance by these

planthoppers. An efficient protection of the natural habitats in Thừa Thiên-Huế Province is required in order to preserve the richness of their unique fauna.

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