



# Phylogenetic analysis and revision of the leafhopper genus *Acuera* DeLong & Freytag (Hemiptera: Cicadellidae: Gyponini) based on morphological data

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## Abstract

Based on a phylogenetic analysis using implied weighting for 59 taxa and 155 morphological characters, we provided a taxonomic revision for *Acuera*. The genus was recovered as polyphyletic; herein we described three new genera and 16 new species, and proposed 23 new combinations, a new status and four new synonyms for Gyponini. *Coarctana* **gen. nov.** is described to include 15 species: *C. rana* (DeLong & Freytag) **comb. nov.** (type species) transferred from *Acuera*; five species transferred from *Curtara*, *C. apena* (DeLong & Freytag) **comb. nov.**, *C. pedica* (DeLong) **comb. nov.**, *C. punctata* (Spångberg) **comb. nov.**, *C. secara* (DeLong & Triplehorn) **comb. nov.**, and *C. serpenta* (DeLong) **comb. nov.**; and nine new species, *C. asymmetrica* **sp. nov.**, *C. glabra* **sp. nov.**, *C. nigromedia* **sp. nov.**, *C. occultata* **sp. nov.**, *C. oricula* **sp. nov.**, *C. parvula* **sp. nov.**, *C. striata* **sp. nov.**, *C. taurina* **sp. nov.**, and *C. vilavelha* **sp. nov.** *Effossana* **gen. nov.** includes eight species: two species transferred from *Acuera*, *E. gloma* (DeLong & Freytag) **comb. nov.** (type species) and *E. fructa* (DeLong & Freytag) **comb. nov.**; two species transferred from *Curtara*, *E. gatuna* (DeLong & Wolda) **comb. nov.** and *E. scapa* (DeLong) **comb. nov.**; and four new species, *E. assimulata* **sp. nov.**, *E. circumnota* **sp. nov.**, *E. intrinseca* **sp. nov.**, and *E. tenuemarginata* **sp. nov.** A new monotypic genus, *Propincurtara* **gen. nov.**, is described to include *P. longilinea* **sp. nov.** The subgenus *Parcana* is raised to genus rank, comprising nine species: *P. atillana* (Fowler) **comb. nov.**, *P. concilia* (DeLong & Freytag) **comb. nov.**, *P. extara* (DeLong & Freytag) **comb. nov.**, *P. mimica* (DeLong & Freytag) **comb. nov.**, *P. sprete* (Fowler) **comb. nov.**, and *P. ultima* (DeLong & Freytag) **comb. nov.** (type species); also three species transferred from *Curtara*, *P. albororata* (Fowler) **comb. nov.**, *P. animosa* (DeLong & Freytag) **comb. nov.**, and *P. ventusa* (DeLong & Freytag) **comb. nov.** *Curtara lineatana* DeLong & Freytag is a junior synonym of *P. concilia* (DeLong & Freytag) **comb. nov.**, *Acuera inlustra* DeLong & Freytag is a junior synonym of *Hamana manifesta* DeLong, and *A. culmena* DeLong & Freytag and *A. prodiga* DeLong & Freytag are synonyms of *A. menaca* DeLong & Freytag. Four species of *Acuera* are transferred to *Curtara*: *C. facera* (DeLong & Freytag) **comb. nov.**, *C. labella* (Osborn) **comb. nov.**, *C. nama* (DeLong & Freytag) **comb. nov.**, and *C. patula* (DeLong & Freytag) **comb. nov.** Two new species, *A. extenuata* **sp. nov.** and *A. umbra* **sp. nov.** are described and placed in the subgenus *Acuera*. We provide descriptions and illustrations of the new taxa, redescription of the type species of the genera *Acuera*, *Coarctana* **gen. nov.**, *Effossana* **gen. nov.**, and *Parcana* **stat. nov.**, 40 new country and Brazilian states records, and key to males of each genus.

## Keywords

*Curtara*, *Hamana*, morphology, systematic, new status, new synonyms, new taxa, *Parcana*

## 1. Introduction

The worldwide subfamily Iassinae Walker, 1870 includes approximately 2200 species and 160 genera, which are currently classified into 12 tribes, representing one of the most diverse subfamilies of Cicadellidae (Krishnankutty et al. 2016; Gonçalves et al. 2021; Domahovski 2021a). Gyponini Stål, 1870 is restricted to the New World and is the largest tribe of Iassinae, with 1449 described species and 75 genera (Domahovski and Cavichioli 2021, 2022a, b; Gonçalves et al. 2021; Freytag 2022; Silva 2022; Laranjeira et al. 2022). A few species of Gyponini were included in phylogenetic studies based on morphological data (Dietrich 1999; Dai and Dietrich 2010, Domahovski 2017, 2021b), molecular (Dietrich et al. 2001), or combined (Gonçalves 2016; Krishnankutty et al. 2016). Gyponini represents a well-supported clade, recovered as sister group to the Caribbean genus *Lipokrisna* Freytag 2012 (Iassinae: Lipokrisnini) (Krishnankutty et al. 2016). Members of Gyponini and *Lipokrisna* have possibly diverged around 100 Ma and diversified in the Neotropical region after the separation of Africa from South America and their dispersal into the Nearctic region probably occurred after the origin of the Panamanian isthmus during the Eocene period (Engel and Takiya 2015; Krishnankutty et al. 2016; Nielson and Knight 2000).

*Acuera* DeLong & Freytag, 1972 currently comprises 24 described species, of which 15 are distributed in South America, from Argentina to Peru, eight are restricted to Central America and one occurs in Mexico and the southern United States (Table 1). The genus was erected by DeLong and Freytag (1972) with *Gypona adspersa* Stål, 1854 as type species. DeLong and Freytag (1974) described 17 new species and transferred *Prairiana nigrifrons* Osborn, 1938, *Gypona atitlana* Fowler, 1903 and *Gypona spreta* Fowler, 1903 to *Acuera*. The authors divided the genus into three subgenera, *Acuera*, *Parcana* and *Tortusana* with nine, ten and two species, respectively, and provided taxonomic keys to males of each subgenus. DeLong (1977) transferred *Ponana labella* Osborn, 1938, to *Acuera*, known from a single female specimen, that was not assigned to one of the subgenera. DeLong and Wolda (1982) described the two last species and included them to the subgenus *Parcana* and *Tortusana*. According to DeLong and Freytag (1974), the genus can be recognized by the following set of features: (1) body elongate; (2) disc convexly rounded; (3) ocelli equidistant between anterior and posterior margins, and as near or nearer to inner margin of eye than to median line; (4) transition crown-face definite, angled with frons; (5) forewings with numerous cross veinlets and with dark brown mottling; and (6) aedeagus with processes on the dorsal apodeme or on base of shaft.

The main taxonomic problems of *Acuera* are that several of the described species do not fit the genus diagnosis, which is weak and lacks strong diagnostic characters that allow an easy recognition. For instance, species of *Acuera* can be recognized by the position of the ocellus

as close or closer to the eye margin than to the middle line, but in some species of the subgenera *Acuera* and *Tortusana*, and all the species of *Parcana* the ocellus is distinctly closer to the middle line than to the eye margin, two species of *Tortusana* lacks processes on the dorsal apodeme of aedeagus or on the base of shaft, disagreeing with the proposed diagnosis, and the forewings of many species lacks cross veinlets and its coloration is very diverse. Also, some species are remarkably similar to the ones described in other genera of Gyponini and significant features not included in the diagnosis and descriptions by DeLong and Freytag (1972, 1974), are inconsistent between species, as for example, the type of striation on crown surface of head, morphology of the sternite VII, shape of connective and valve of male and also the female genitalia.

Phylogenetic relationships among species of *Acuera* and its position within the tribe Gyponini was recently studied in three unpublished studies which recovered *Acuera* as polyphyletic. Gonçalves (2016) provided a phylogenetic hypothesis for the tribe Gyponini based on 182 morphological characters combined with DNA sequence data (28S and 16S rDNA and cytochrome oxidase subunit I), including 170 terminal taxa and the majority of the type species of the genera and subgenera of the tribe. Among them, were included *A. (Acuera) adspersa* (Stål, 1854), *A. (Parcana) ultima* DeLong & Freytag, 1974 and *A. (Tortusana) angera* DeLong & Freytag, 1974, which are the type species of the three subgenera of *Acuera*, and one additional species, *A. (Parcana) rana* DeLong & Freytag, 1982. As results, *A. (Acuera) adspersa* and *A. (Tortusana) angera* were strongly supported as sister groups. The subgenus *Parcana* was recovered outside of the clade of *Acuera* as paraphyletic, with the type species of *Parcana* as sister group of a clade composed by the type species of the genera *Curtara* DeLong & Freytag, 1972, *Negosiana* Oman, 1949, *Prairiana* Ball, 1920, *Sordana* DeLong, 1976 and *Sulcana* DeLong & Freytag, 1966. The other species, *Acuera (Parcana) rana*, was supported as sister group of *Curtara (Curtarana) dedeca* DeLong & Freytag, 1976, a species similar in the external morphology but with several differences in the male genitalia. Domahovski (2017) proposed a taxonomic study and morphological phylogeny for the genus *Acuera*, based on 105 morphological characters and 54 terminal taxa, including 11 of 24 species of the genus and two new species. In the analysis with implied weighting, seven species belonging to the subgenera *Acuera* and *Tortusana* were strongly supported as a monophyletic group (bootstrap = 94) sustained by seven homoplastic characters. The species of *Parcana* were found outside this clade as a polyphyletic group. Domahovski (2021b) proposed a morphological phylogeny based on 226 characters and 208 terminal taxa for the genus *Curtara* including six of the 24 species of *Acuera* as part of the outgroup. The type species of *Acuera* was recovered as sister group of *A. (Acuera) incepta* DeLong and Freytag, 1974 with strong support (bootstrap = 100) and supported by two synapomorphic and 13 homoplastic characters. The four *Parcana* species sampled

**Table 1.** List of the specimens of *Acuera* studied. Number of females and males, type of material examined, their distribution, and collections are provided for each species. Species in bold were examined through specimens and in regular characters were examined through images. HT – holotype; PT – paratype. \*Type species of the subgenus.

Taxon	♂	♀	Types	Distribution	Collection
Subgenus <i>Acuera</i>					
<i>A. adspersa</i> (Stål 1854)*	11	2	—	Argentina?, Brazil, Peru	DZUP, DZRJ, MZSP, MPEG
<i>A. culmena</i> DeLong & Freytag, 1974	1	—	HT	Peru	USNM
<i>A. extenuata</i> sp. nov.	2	—	HT, PT	Brazil	DZUP
<i>A. incepta</i> DeLong & Freytag, 1974	175	71	—	Argentina, Brazil	DZUP, MCTP, MZSP, CZMA
<i>A. inlustra</i> DeLong & Freytag, 1974	2	—	HT, PT	USA, Mexico	OSU, USNM
<i>A. laudara</i> DeLong & Freytag, 1974	26	9	HT	Brazil	OSU, DZUP, MZSP, CZMA, MPEG
<i>A. levara</i> DeLong & Freytag, 1974	4	3	HT	Argentina, Brazil	AMNH, DZUP
<i>A. menaca</i> DeLong & Freytag, 1974	10	—	HT	Brazil, Peru	AMNH, DZUP, DZRJ, MZSP
<i>A. nigrifrons</i> (Osborn, 1938)	4	—	—	Bolivia, Peru	DZUP, DZRJ
<i>A. prodiga</i> DeLong & Freytag, 1974	1	—	HT	Peru	OSU
<i>A. umbra</i> sp. nov.	32	3	HT, PT	Brazil	DZUP, DZRJ, MZSP, MNRJ
Subgenus <i>Parcana</i>					
<i>A. atitlana</i> (Fowler, 1903)	1	—	HT	Panamá	BMNH
<i>A. concilia</i> DeLong & Freytag, 1974	2	—	HT	Mexico	OSU, DZUP
<i>A. extara</i> DeLong & Freytag, 1974	1	—	HT	Costa Rica	NCSU
<i>A. facera</i> DeLong & Freytag, 1974	1	—	HT	Mexico	USNM
<i>A. gloma</i> DeLong & Freytag, 1974	131	55	HT	Brazil	DZUP, DZRJ, MZSP, CZMA, MPEG
<i>A. mimica</i> DeLong & Freytag, 1974	1	—	HT	Mexico	CAS
<i>A. nama</i> DeLong & Freytag, 1974	1	—	HT	Peru	NCSU
<i>A. patula</i> DeLong & Freytag, 1974	10	3	—	Argentina, Brazil	DZUP
<i>A. rana</i> DeLong & Wolda, 1982	11	—	HT	Bolivia, Brazil	OSU, DZUP, DZRJ
<i>A. spreta</i> (Fowler, 1903)	—	1	HT	Guatemala	BMNH
<i>A. ultima</i> DeLong & Freytag, 1974*	4	1	HT, PT	Mexico	OSU
Subgenus <i>Tortusana</i>					
<i>A. angera</i> DeLong & Freytag, 1974*	1	—	HT	Peru	USNM
<i>A. fructa</i> DeLong & Freytag, 1974	1	1	HT, PT	Brazil	USNM
<i>A. luhea</i> DeLong & Wolda, 1982	1	—	HT	Panamá	OSU
Incertae sedis					
<i>A. labella</i> (Osborn, 1938)	—	1	HT	Bolivia	OSU

were recovered outside the clade of *Acuera* as a polyphyletic group. Based on the results of these three unpublished studies, *Acuera* was frequently recovered as sister group or nested within clades including the type species of the subgenera *Curtara* and *Mysticana*.

The present study represents a revised analysis of the unpublished study of Domahovski (2017) and is focused on three main objectives: (1) to provide a phylogenetic hypothesis based on morphological data for the genus *Acuera*; (2) to revise the classification of the genus *Acuera* based on the results of the phylogenetic analysis, studied specimens and images of holotypes and (3) to provide a revised diagnosis for *Acuera*. Additionally, we provided descriptions of the new taxa, including three new genera and 16 new species, redescription of the type species of the genera *Acuera*, *Coarctana* gen. nov., *Effossana* gen. nov., and *Parcana* stat. nov., 23 new combinations, four new synonyms, 40 new country and Brazilian states records, and key to males of each genus.

## 2. Material and methods

### 2.1. Taxon sampling

A total of 583 specimens of *Acuera* were examined, and 12 of the 24 described species were included in the phylogenetic analysis. In addition, images of 20 holotypes were examined, amounting to all 24 species studied (Table 1). The specimens are deposited in the following institutions: **AMNH** – American Museum of Natural History, USA; **BMNH** – The Natural History Museum, United Kingdom; **CAS** – California Academy of Sciences, USA; **CZMA** – Coleção Zoológica do Maranhão, Universidade Estadual do Maranhão, Brazil; **DZRJ** – Coleção Entomológica Prof. José Alfredo P. Dutra, Universidade Federal do Rio de Janeiro, Brazil; **DZUP** – Coleção de Entomologia Pe. Jesus S. Moure, Universidade Federal do Paraná, Brazil; **EPNC** – Escuela Politécnica Nacional,

Ecuador; **INHS** – Illinois Natural History Survey, USA; **INPA** – Instituto Nacional de Pesquisas da Amazônia, Brazil; **MCTP** – Museu de Ciências e Tecnologia da Pontifícia Universidade Católica do Rio Grande do Sul, Brazil; **MNRJ** – Coleção Entomológica do Museu Nacional, Universidade Federal do Rio de Janeiro, Brazil; **MPEG** – Museu Paraense Emílio Goeldi, Brazil; **MUSM** – Museo de Historia Natural, Universidad Nacional Mayor de San Marcos, Peru; **MZSP** – Museu de Zoologia da Universidade de São Paulo, Brazil; **NCSU** – North Carolina State University Insect Collection, USA; **NHRS** – Swedish Museum of Natural History, Sweden. **OSU** – Triplehorn Insect Collection, USA; **UESPI** – Coleção de Zoolodia, Universidade Estadual do Piauí, Brazil; **USNM** – Smithsonian National Museum of Natural History, USA.

The outgroup comprises 47 species of Iassinae of which 45 are species of Gyponini (29 described and 16 new species) and two species of *Pachyopsis*, representing the tribe Selenomorphini, where the trees were rooted (supplementary file 1).

## 2.2. Terminology, morphological examination, imaging, and label data

Terminology mainly follows Young (1968, 1977), except for head features (Hamilton 1981; Mejdalani 1998), wings (Dietrich 2005), and leg chaetotaxy (Rakitov, 1997). The usage of the term gonoplac follows Mejdalani (1998). Techniques used for the dissection of the genitalia follow Oman (1949), with a few modifications described by Cavichioli and Takiya (2012). Terminalia were studied on a concave slide with glycerin and stored in a small vial with glycerin pinned below the specimen. Terminalia were analyzed with a Zeiss Stemi SV 6 stereomicroscope. Digital images of the habitus were obtained with a Leica MZ12.5 stereomicroscope with attached digital EC3 cam and stacked using CombineZ5 software. Illustrations of male genitalia were drawn with Adobe Illustrator CS6 software. First and second valvulae and gonoplacs were separated and mounted on a temporary slide covered with cover slip and then photographed using a Nikon optical microscope with digital cam SCMOS 05000KPA according to the procedures described by Domahovski and Cavichioli (2019). The most parsimonious tree and color images were edited using Adobe Illustrator CS6. Verbatim label data are transcribed between quotation marks, with a backslash (\) separating the lines on the labels and a comma separating labels of a specimen. Square brackets ([ ]) were used to supplement abbreviated information. Abbreviations used in the descriptions of legs are as follows: AD = anterodorsal; AM = anteromedian; AV = anteroventral; PD = posterodorsal; PV = posteroventral; IC = intercalary.

## 2.3. Character coding

Characters were coded as binary or multistate and the data matrix was constructed in MESQUITE v2.75 (Mad-

ison and Maddison 2011) and is found in the supplementary file 1. The proposition of homologies (Patterson 1988) was based mainly on direct observations of adult males and females. Characters previously constructed by Domahovski (2017, 2021b) and Gonçalves (2016) were used or adapted to our matrix when possible. *Acuera* (*Tortusana*) *angera* and *A.* (*Parcana*) *ultima* were codified based on images of external morphology and male genitalia. Character states were scored as hyphen (–) when inapplicable or as question marks (?) when unavailable. The description of each character and its states follows Sereno (2007).

## 2.4. Phylogenetic analysis

Parsimony analysis were performed with TNT v1.5 no tax limit, under equal weights (EW), using New Technology Search, with settings as follows: Driven search with 50 initial sequences, minimum length found 3 times; random seed equal zero; Ratchet, perturbation phase 25 up-weighting and 5 down-weighting probabilities; and 100 iterations; Tree-drifting with 100 cycles; Tree fusing with 100 rounds; and other values not mentioned as default; and under implied weights (IW), that downweights characters according to their degree of homoplasy: the higher their homoplasy, the lower their weight (Goloboff 1993). Goloboff et al. (2008a) suggests that weighting against homoplasy on morphological datasets improves branch supports and produces more stable and highly resolved trees (Goloboff et al. 2008; Goloboff and Catalano 2016). To search for the most-parsimonious trees and calculate optimal K-values we followed the methodology proposed by Mirande (2009) in which K-values are calculated with a fit range of 50–90% of a perfectly hierarchical character, dividing in regular intervals the values of fit/distortion produced by the most-parsimonious trees obtained in order to allow appropriate comparisons between the hypotheses. The calculation of k-values was made using the script “Implied\_w.run” (available on-line at <http://phylo.wikidot.com/tntwiki>) and the number of intervals selected was 14. The criterion used to choose the cladograms equally spaced was their stability following the recommendation of Giribet (2003) and Mirande (2009). According to these authors, more stable cladograms are those which are less parameter-dependent, and therefore, they share a larger number of nodes with other cladograms, when obtained under different parameters, in our case, different K-values. More stable cladograms are also more similar to each other topologically and can be recognized through measures of comparisons between cladograms. We adopted three measures of comparison between each cladogram: SPR distances (Goloboff 2008), distortion coefficient (Farris 1989), and Robinson-Foulds distances (Robinson and Foulds 1981), all measured using TNT, and presented in the supplementary file 2. All characters were treated as nonadditive (Fitch 1971). Support was assessed through symmetric resampling (SR), which is not distorted by implied weights, and was calculated with 2000 replications on TNT (Goloboff et al. 2003). The unambiguous charac-

ters were mapped on the most parsimonious tree (Fig. 7) using WinClada version 1.00.08 (Nixon 2002).

### 3. Results

The data matrix (supplementary file 1) consists of 59 taxa and 155 characters: 29 from the head; 52 from the thorax; 60 from the abdomen of male; and 14 from the abdomen of female. Among these characters, 132 were coded as binary and 23 as multistate. For each character, the number of steps (L), consistency index (ci), and retention index (ri) are provided.

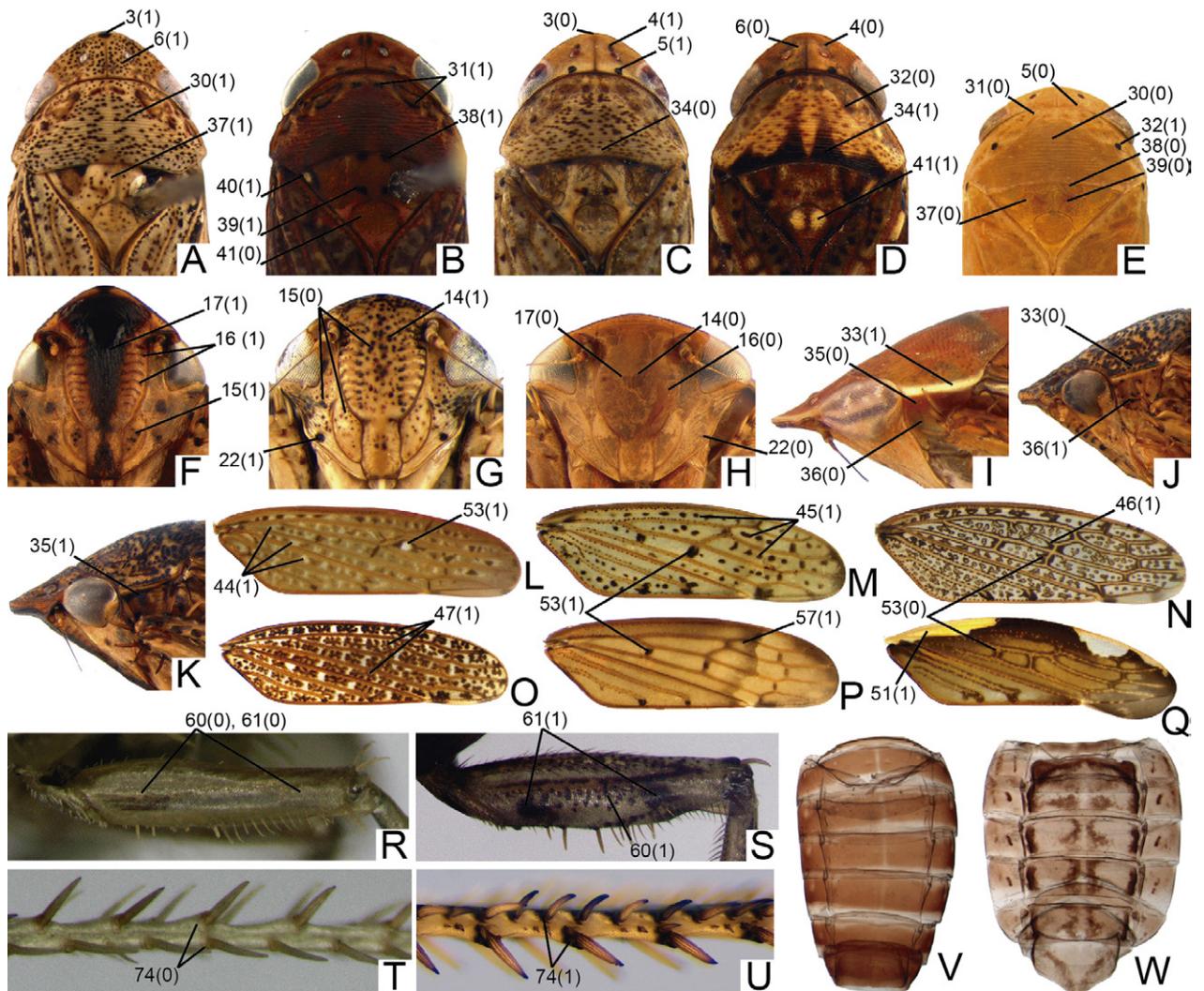
#### 3.1. Characters

##### Head

1. Transocular width relative to humeral width of pronotum: **(0)** less than 8 tenths (Fig. 2A); **(1)** between 8 and 9 tenths (Fig. 2B); **(2)** as wide or wider (Fig. 2G). (L: 4; ci: 50; ri: 81)
2. Anterior margin, in dorsal view, shape: **(0)** broadly rounded (Fig. 2B); **(1)** subacute (Fig. 2A). (L: 2; ci: 50; ri: 88)
3. Crown, apical black macula: **(0)** absent (Fig. 1C); **(1)** present (Fig. 1A). (L: 1; ci: 100; ri: 100)
4. Crown, thin and short black line adjacent to anterior margin of ocellus: **(0)** absent (Fig. 1D); **(1)** present (Fig. 1C). (L: 2; ci: 50; ri: 50)
5. Crown, pair of black macula near posterior margin: **(0)** absent (Fig. 1E); **(1)** present (Fig. 1C). (L: 9; ci: 11; ri: 70)
6. Crown, black punctures: **(0)** absent (Fig. 1D); **(1)** present (Fig. 1A). (L: 1; ci: 100; ri: 100)
7. Crown, texture between ocelli: **(0)** smooth (Fig. 2C); **(1)** transverse striae (Fig. 2D); **(2)** oblique striae (Fig. 2B); **(3)** longitudinal striae (Fig. 2E); **(4)** rugose (Fig. 2F). (L: 7; ci: 57; ri: 87)
8. Crown-face transition, shape: **(0)** thick (Fig. 2H); **(1)** thin (Fig. 2I); **(2)** foliaceous (Fig. 2J); **(3)** rounded (Fig. 2K). (L: 9; ci: 33; ri: 76)
9. Crown-face transition, texture: **(0)** smooth medially and with striae near eye margin (Fig. 2I); **(1)** with 2–3 carinae (Fig. 2J); **(2)** with 4 or more carinae (Fig. 2H). (L: 9; ci: 22; ri: 78)
10. Anterior margin of crown, projection over anterior margin of eye: **(0)** absent (Fig. 2K); **(1)** present (Fig. 2J). (L: 6; ci: 16; ri: 73)
11. Ocelli, position: **(0)** on crown (Fig. 2I); **(1)** on anterior margin (Figs 2G, L, R). (L: 1; ci: 100; ri: 100)
12. Ocelli, position relative to anterior and posterior margins of crown: **(0)** nearer to anterior margin (Fig. 2D); **(1)** equidistant (Fig. 2B); **(2)** nearer to posterior margin (Fig. 2E). (L: 4; ci: 50; ri: 75)
13. Ocelli, position relative to median line and inner margin of eye: **(0)** nearer to median line (Fig. 2F); **(1)** equidistant (Fig. 2C); **(2)** nearer to eye (Fig. 2A). (L: 6; ci: 33; ri: 85)
14. Face, black punctures: **(0)** absent (Fig. 1H); **(1)** present (Fig. 1G). (L: 1; ci: 100; ri: 100)
15. Face, black punctures, position: **(0)** all face (Fig. 1G); **(1)** on lorum only (Fig. 1F); **(2)** on gena, near ventral margin of eye (Fig. 42B). (L: 2; ci: 100; ri: 100)
16. Frons, black bands over muscular impressions: **(0)** absent (Fig. 1H); **(1)** present (Fig. 1F). (L: 2; ci: 50; ri: 94)
17. Frons, median portion: **(0)** same color of face (Fig. 1H); **(1)** black (Fig. 1F). (L: 3; ci: 33; ri: 60)
18. Frons, surface below crown-face transition, aspect: **(0)** not excavated (Fig. 2O); **(1)** excavated. (L: 2; ci: 50; ri: 80)
19. Frons, transversal carina on dorsal third: **(0)** absent (Fig. 2N); **(1)** present (Fig. 2M). (L: 1; ci: 100; ri: 100)
20. Frontogenal suture, distance relative to the inner margin of eye: **(0)** less than 1/4 width of clypeus (Fig. 2M) **(1)** half width of clypeus (Fig. 2Q); **(2)** equal or larger than the maximum width of clypeus (Fig. 2N). (L: 10; ci: 20; ri: 66)
21. Antennal ledge: **(0)** oriented obliquely downward relative to frons (Fig. 2Q); **(1)** adjacent to anterior margin of crown (Fig. 2O). (L: 4; ci: 25; ri: 50)
22. Gena, small black macula near mid-length of ventral margin: **(0)** absent (Fig. 1H); **(1)** present (Fig. 1G). (L: 2; ci: 50; ri: 90)
23. Gena, ventral margin, shape: **(0)** rounded (Fig. 2N); **(1)** straight (Fig. 2O). (L: 1; ci: 100; ri: 100)
24. Maxillary plates, length relative to the clypeus apex: **(0)** as long as (Fig. 2N); **(1)** shorter (Fig. 2O). (L: 1; ci: 100; ri: 100)
25. Clypeus and lorum: **(0)** not sexually dimorphic; **(1)** sexually dimorphic (Fig. 2 R, S). (L: 1; ci: 100; ri: 100)
26. Clypeus, proportions: **(0)** wider than long (Fig. 2P); **(1)** longer than wide (Fig. 2Q). (L: 1; ci: 100; ri: 100)
27. Clypeus, lateral margins, shape: **(0)** parallel (Fig. 2M); **(1)** weakly convergent apically (Fig. 2O); **(2)** strongly convergent apically (Fig. 2P). (L: 3; ci: 66; ri: 88)
28. Clypeus, shape of apex: **(0)** slightly emarginated (Fig. 2N); **(1)** rounded (Fig. 2O). (L: 1; ci: 100; ri: 100)
29. Clypeus, shape in lateral view: **(0)** not tumid (Fig. 2H); **(1)** tumid (Fig. 2L). (L: 1; ci: 100; ri: 100)

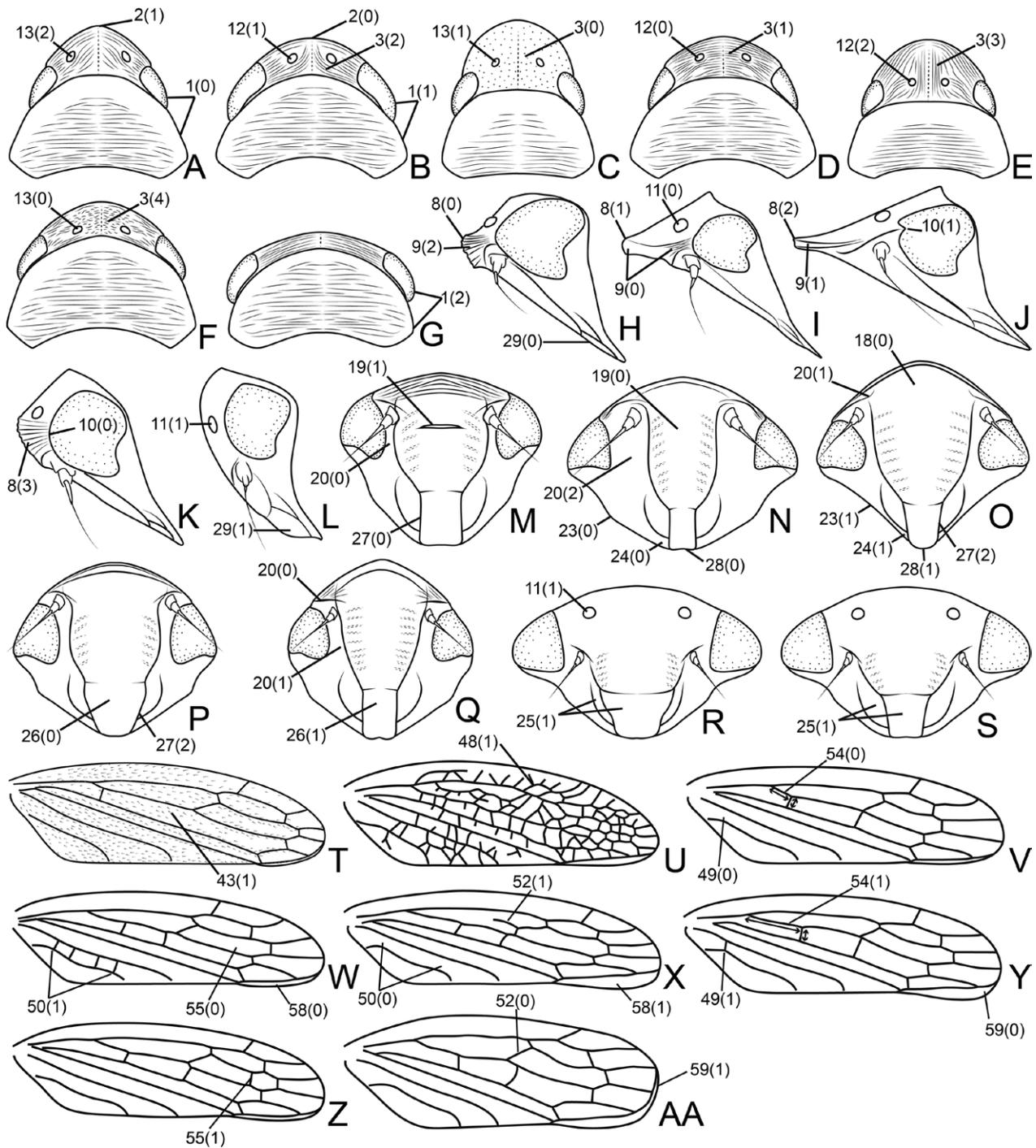
##### Thorax

30. Pronotum, black punctures: **(0)** absent (Fig. 1E); **(1)** present (Fig. 1A). (L: 4; ci: 25; ri: 88)
31. Pronotum, irregular black maculae near anterior margin: **(0)** absent (Fig. 1E); **(1)** present (Fig. 1B). (L: 8; ci: 12; ri: 73)
32. Pronotum, pair of rounded black spots behind eyes: **(0)** absent (Fig. 1D); **(1)** present (Fig. 1E). (L: 4; ci: 25; ri: 40)



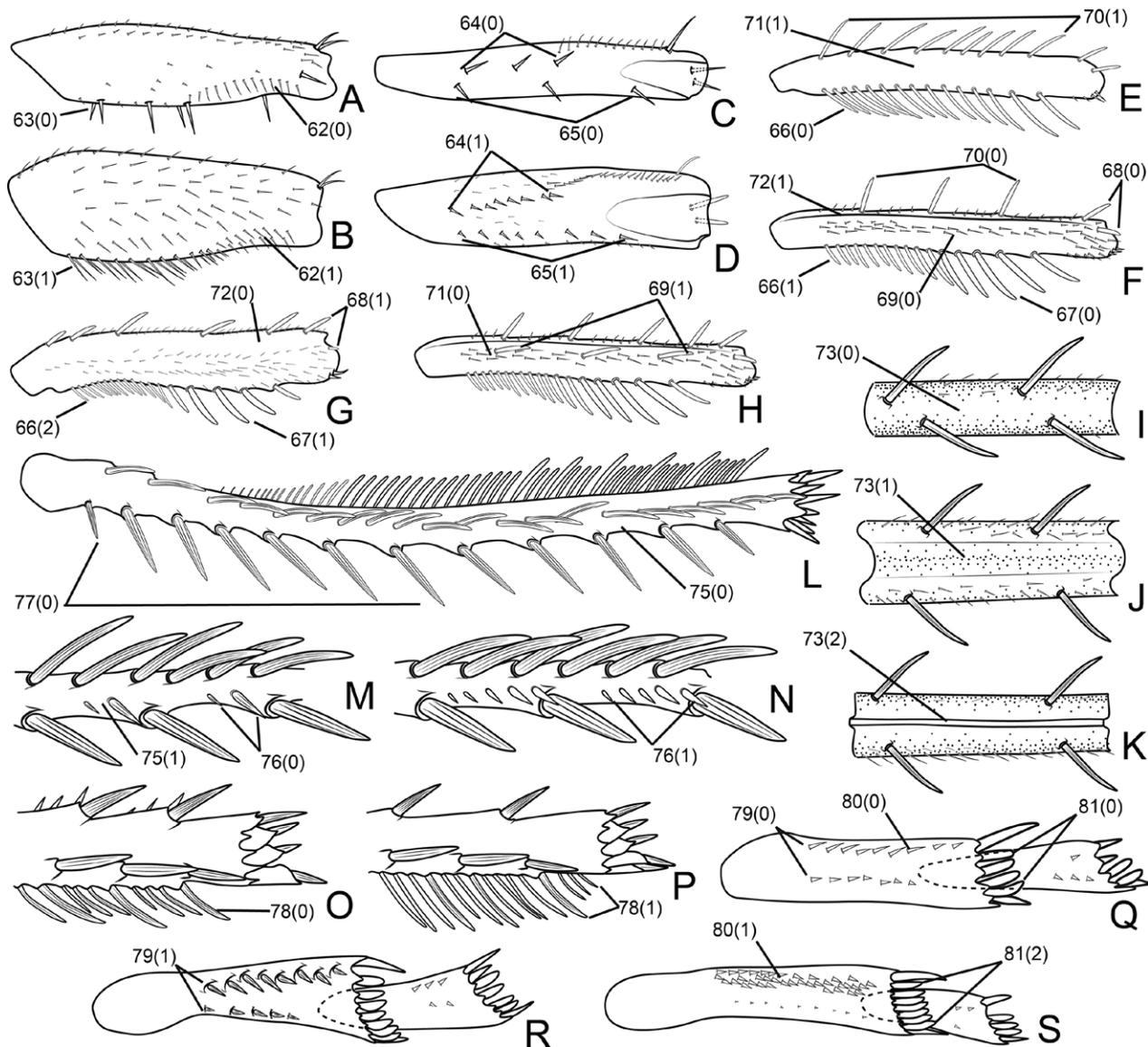
**Figure 1.** Coloration characters. A–E head and thorax, dorsal view. A *Curtarta concava*; B *Curtarta regela*; C *Parcana* sp.; D *Efficossana gloma* **com. nov.**; E *Ponanella ena*. F–H head, frontal view. F *Acuera menaca*; G *Curtarta concava*; H *Curtarta basala*. I–K head, lateral view. I *Acusana adunca*; J *Acuera levara*; K *Acuera adspersa*. L–Q forewing. L *Curtarta regela*; M *Coarctana striata* **sp. nov.**; N *Curtarta samera*; O *Acuera menaca*; P *Coarctana oricula* **sp. nov.**; Q *Costanana flavina*. R–S profemur, anterior view. R *Chloronana celsa*; S *Acuera incepta*. T–U metatibia, anterior view. T *Reticana lineata*; U *Curtarta samera*. V–W abdomen, ventral view. W *Curtarta regela*; X *Curtarta samera*.

33. Pronotum, lateral margin, thin yellow band: (0) absent (Fig. 1J); (1) present (Fig. 1I). (L: 1; ci: 100; ri: 100)
34. Pronotum, posterior margin, irregular transverse black band: (0) absent (Fig. 1C); (1) present (Fig. 1D). (L: 1; ci: 100; ri: 100)
35. Proepimeron, black punctures: (0) absent (Fig. 1I); (1) present (Fig. 1J). (L: 3; ci: 33; ri: 77)
36. Proepimeron, black band below pronotal carina: (0) absent (Fig. 1I); (1) present (Fig. 1K). (L: 6; ci: 16; ri: 79)
37. Mesonotum, black punctures: (0) absent (Fig. 1E); (1) present (Fig. 1A). (L: 1; ci: 100; ri: 100)
38. Mesonotum, pair of black maculae near anterior margin: (0) absent (Fig. 1E); (1) present (Fig. 1B). (L: 1; ci: 100; ri: 100)
39. Mesonotum, pair of black maculae on median portion: (0) absent (Fig. 1E); (1) present (Fig. 1B). (L: 11; ci: 9; ri: 60)
40. Mesonotum, yellow maculae: (0) absent (Fig. 1E); (1) present (Fig. 1B). (L: 1; ci: 100; ri: 100)
41. Scutellum, pair of yellow maculae: (0) absent (Fig. 1E); (1) present (Fig. 1D). (L: 1; ci: 100; ri: 100)
- ### Forewing
42. Predominant coloration: (0) yellow (Fig. 1E); (1) brown (Fig. 1L). (L: 1; ci: 100; ri: 100)
43. Small erect setae: (0) absent (Fig. 2W); (1) present (Fig. 2T). (L: 1; ci: 100; ri: 100)
44. Several irregular fenestrae: (0) absent (Fig. 1P); (1) present (Fig. 1L). (L: 4; ci: 25; ri: 57)
45. Mottled black maculae: (0) absent (Fig. 1P); (1) present (Fig. 1M). (L: 5; ci: 20; ri: 71)
46. Veins outlined by black coloration: (0) absent (Fig. 1P); (1) present (Fig. 1N). (L: 1; ci: 100; ri: 100)
47. Several maculae with anastomosed aspect: (0) absent (Fig. 1P); (1) present (Fig. 1O). (L: 1; ci: 100; ri: 100)



**Figure 2.** Head and forewing characters. **A–G**, head and pronotum, dorsal view. **A** *Acuera adspersa*; **B** *Curtara regela*; **C** *Carapona vulta*; **D** *Costanana flavina*; **E** *Reticana lineata*; **F** *Folicana nota*; **G** *Pachyopsis pallidus*. **H–L** head, lateral view. **H** *Curtara basala*; **I** *Acuera menaca*; **J** *Carapona vulta*; **K** *Ponanella ena*; **L** *Pachyopsis pallidus*. **M–S** head, frontal view. **M** *Ponana anepa*; **N** *Gypsona stylata*; **O** *Carapona vulta*; **P** *Coarctana occultata* sp. nov.; **Q** *Acuera adspersa*; **R** *Pachyopsis pallidus* (male); **S** *Pachyopsis pallidus* (female). **T–AA** forewing. **T** *Pachyopsis pallidus*; **U** *Reticana lineata*; **V** *Coarctana apena* comb. nov.; **W** *Effossana gloma* comb. nov.; **X** *Curtara samera*; **Y** *Curtara regela*; **Z** *Acuera menaca*; **AA** *Folicana nota*.

- 48. Veins, reticulations: (0) absent (Fig. 2 V); (1) present (Fig. 2 U)
- 49. Clavus, one cross vein between anal veins, near base: (0) absent (Fig. 2V); (1) present (Fig. 2Y). (L: 1; ci: 100; ri: 100)
- 50. Clavus, two or more cross veinlets between anal veins: (0) absent (Fig. 2X); (1) present (Fig. 2W). (L: 1; ci: 100; ri: 100)
- 51. Costal margin, anterior half with longitudinal yellow band: (0) absent (Fig. 1P); (1) present (Fig. 1Q). (L: 1; ci: 100; ri: 100)
- 52. External discal cell, apical accessory vein: (0) absent (Fig. 2AA); (1) present (Fig. 2X). (L: 2; ci: 50; ri: 83)
- 53. Cross veins *m-cu*<sub>1</sub> and *m-cu*<sub>2</sub>, coloration relative to the other veins: (0) same color (Fig. 1N, Q); (1) other color (black) (Fig. 1M, P). (L: 3; ci: 33; ri: 90)



**Figure 3.** Leg characters. A–D, profemur, A–B, anterior view, C–D, ventral view. A *Curtara samera*; B *Pachyopsis pallidus*; C *Curtara samera*; D *Folicana nota*. E–H protibia, anterior view. E *Carapona vulta*; F *Acuera adspersa*; G *Folicana nota*; H *Ef-fossana intrinseca* sp. nov. I–K, mesotibia, median portion, dorsal view. I *Chloronana celsa*; J *Folicana nota*; K *Acuera adspersa*. L–P metatibia, L anterodorsal view, M–N median portion, anterior view, O–P, apical portion, ventral view. L *Acuera menaca*; M *Acuera adspersa*; N *Curtara regela*; O *Acuera adspersa*; P *Gypona stylata*. Q–S metatarsomere I & II, ventral view. Q *Curtara regela*; R *Folicana nota*; S *Propincurtara longilinea* gen. et sp. nov.

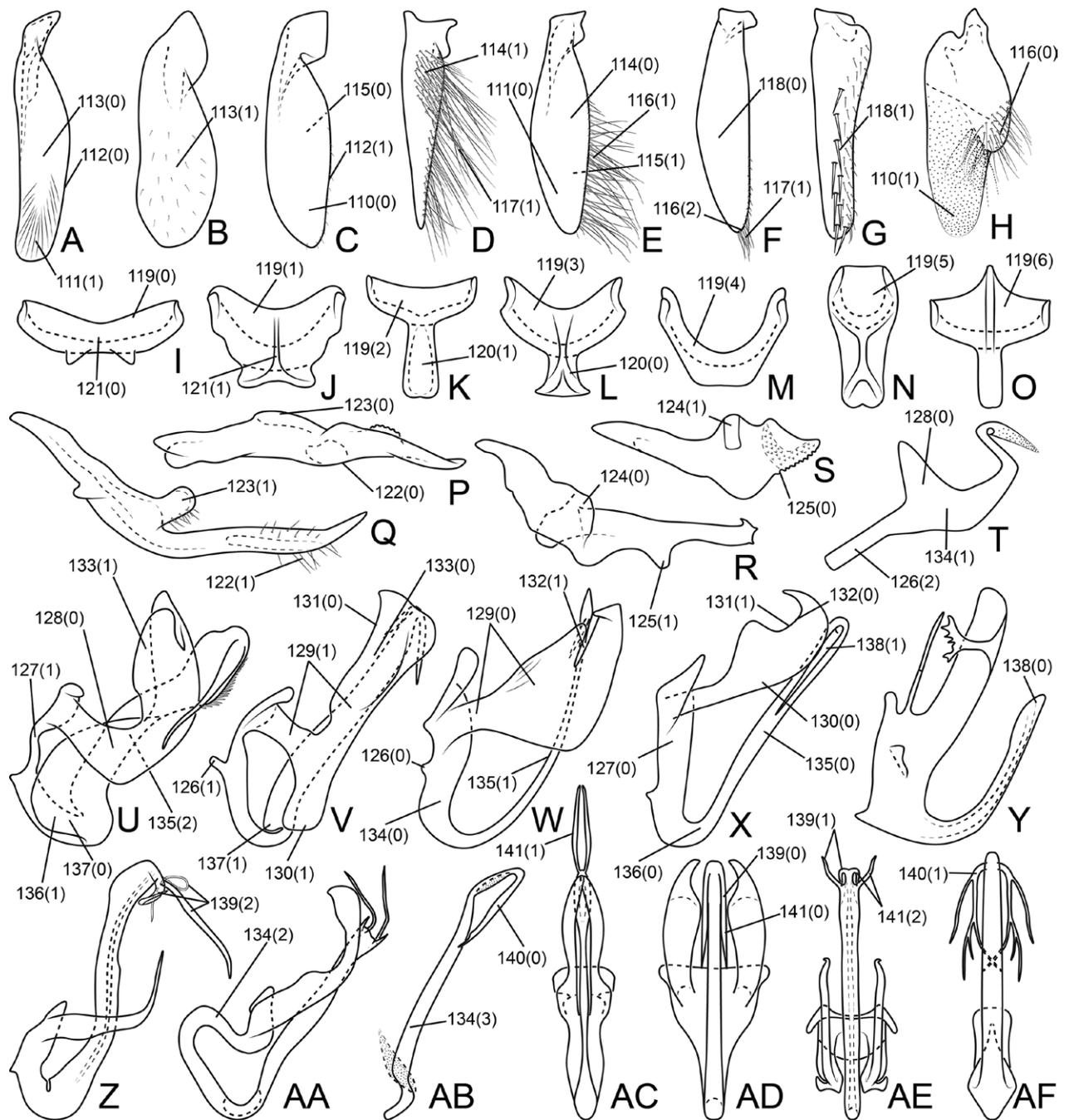
54. M vein, length of the segment after the divergence between R+M and before the cross vein *m-cu*<sub>1</sub>, relative to the length of *m-cu*: (0) short, approximately 2× (Fig. 2V); (1) long, 3× or more (Fig. 2Y). (L: 5; ci: 20; ri: 81)
55. Central anteapical cell, cross vein near half length: (0) absent (Fig. 2W); (1) present (Fig. 2Z). (L: 1; ci: 100; ri: 100)
56. Central anteapical cell, rounded hyaline macula near base: (0) absent (Fig. 1P); (1) present (Fig. 1L). (L: 2; ci: 50; ri: 50)
57. Apical third, transverse brown stripe over subapical cells: (0) absent (Fig. 1L); (1) present (Fig. 1P). (L: 1; ci: 100; ri: 100)
58. Appendix, condition: (0) reduced (Fig. 2W); (1) developed (Fig. 2X). (L: 6; ci: 16; ri: 81)

59. Appendix, extension: (0) bordering first and second apical cells (Fig. 2Y); (1) extending around apex to the third apical cell (Fig. 2AA). (L: 1; ci: 100; ri: 100)

### Legs

60. Profemur, black punctures: (0) absent (Fig. 1R); (1) present (Fig. 1S). (L: 4; ci: 25; ri: 76)
61. Profemur, pair of large black maculae, one at base and one at apical third: (0) absent (Fig. 1R); (1) present (Fig. 1S). (L: 2; ci: 50; ri: 94)
62. Profemur, IC row: (0) uniseriate (Fig. 3A); (1) biseriate (Fig. 3B). (L: 1; ci: 100; ri: 100)
63. Profemur, ventral rows, type of setae: (0) thick, robust (Fig. 3A); (1) thin, filiform (Fig. 3B). (L: 1; ci: 100; ri: 100)





**Figure 5.** Male abdomen characters. **A–H**, subgenital plate, ventral view. **A** *Effossana assimolata* sp. nov.; **B** *Gypona stylata*; **C** *Acuera incepta*; **D** *Costanana flavina*; **E** *Coarctana striata* sp. nov.; **F** *Coarctana oricula* sp. nov.; **G** *Pachyopsis pallidus*; **H** *Chloronana celsa*. **I–O** connective, dorsal view. **I** *Curtara samera*; **J** *Folicana nota*; **K** *Gypona stylata*; **L** *Acuera adpersa*; **M** *Effossana circumnota* sp. nov.; **N** *Costanana flavina*; **O** *Ponanella ena*. **P–Q** style, dorsal view. **P** *Effossana gloma* com. nov.; **Q** *Acusana adunca*. **R–S** style, lateral view. **R** *Curtara patula* com. nov.; **S** *Reticana lineata*. **T–AB** aedeagus, lateral view. **T** *Nullana albinoi*; **U** *Coarctana oricula* sp. nov.; **V** *Coarctana vilavelha* sp. nov.; **W** *Curtara patula* com. nov.; **X** *Curtara samera*; **Y** *Acuera laudara*; **Z** *Acuera menaca*; **AA** *Effossana intrinseca* sp. nov.; **AB** *Reticana lineata*. **AC–AF** aedeagus, posterior view. **AC** *Acuera levara*; **AD** *Curtara samera*; **AE** *Coarctana parvula* sp. nov.; **AF** *Ponanella ena*.

**81.** Metatarsomere I, number of apical platellae: **(0)** 3–4 (Fig. 3Q); **(1)** 5–6; **(2)** 7 or more (Fig. 3S). (L: 8; ci: 25; ri: 68)

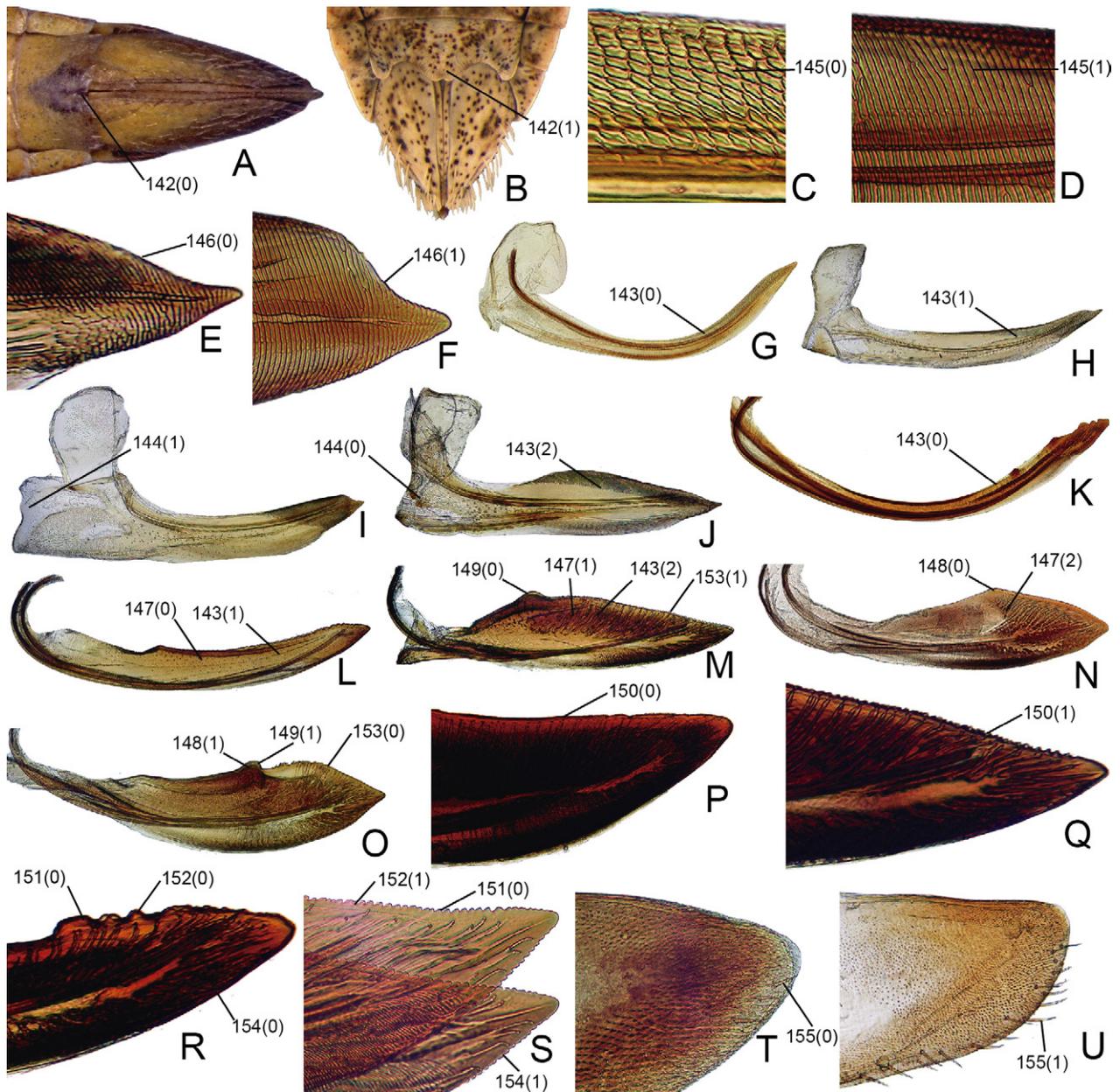
#### Male abdomen

**82.** Sternites, black maculae: **(0)** absent (Fig. 1V); **(1)** present (Fig. 1W). (L: 6; ci: 16; ri: 58)

**83.** Sternite II, pair of internal apodemes: **(0)** absent (Fig. 4A); **(1)** present (Fig. 4B). (L: 1; ci: 100; ri: 100)

**84.** Sternite VIII, extension relative to subgenital plates: **(0)** concealing only the bases (Fig. 4C); **(1)** completely concealing (Fig. 4D). (L: 1; ci: 100; ri: 100)

**85.** Sternite VIII, median longitudinal carina on apical half: **(0)** absent (Fig. 4F); **(1)** present (Fig. 4E). (L: 5; ci: 20; ri: 66)



**Figure 6.** Female characters. **A–B**, apical portion of abdomen, ventral view. **A** *Pachyopsis pallidus*; **B** *Curtara samera*. **C–D** dorsal sculpturing of first valvula. **C** *Pachyopsis pallidus*; **D** *Effossana gloma* **com. nov.**; **E–F** apex of first valvula. **E** *Curtara samera*; **F** *Effossana gloma* **com. nov.**; **G–J** first valvifer and first valvula. **G** *Pachyopsis pallidus*; **H** *Acuera incepta*; **I** *Effossana gloma* **com. nov.**; **J** *Curtara samera*. **K–O** second valvula. **K** *Pachyopsis pallidus*; **L** *Acuera incepta*; **M** *Curtara samera*; **N** *Acusana adunca*; **O** *Effossana gloma* **com. nov.**; **P–S** apex of second valvula. **P** *Folicana nota*; **Q** *Curtara samera*; **R** *Carapona vulta*; **S** *Curtara samera*. **T–U**, apex of gonoplac. **T** *Acuera adspersa*; **U** *Folicana nota*.

86. Sternite VIII, shape of posterior margin: (0) approximately straight or slightly rounded (Fig. 4E); (1) with small median lobe (Fig. 4F); (2) deeply excavated (Fig. 4G). (L: 3; ci: 66; ri: 85)
87. Valve, proportions: (0) more than 2× wider than long (Fig. 4I); (1) less than 2× wider than long (Fig. 4H). (L: 4; ci: 25; ri: 75)
88. Valve, dorsal margin, pair of rounded projections: (0) absent (Fig. 4J); (1) present (Fig. 4I). (L: 1; ci: 100; ri: 100)
89. Valve, pair oblique submedian integument thickening: (0) absent (Fig. 4H); (1) present (Fig. 4J). (L: 1; ci: 100; ri: 100)
90. Valve, excavation on posterior margin: (0) absent (Fig. 4H); (1) present (Fig. 4I). (L: 9; ci: 11; ri: 69)
91. Valve, excavation on posterior margin, depth relative to the valve length: (0) shallow, less than 1/2 (Fig. 4J); (1) deep, about 2/3 or more (Fig. 4I). (L: 3; ci: 33; ri: 50)
92. Valve, excavation on posterior margin, width relative to the valve width: (0) very narrow (Fig. 4J); (1) wide, occupying the median third (Fig. 4I). (L: 4; ci: 25; ri: 57)
93. Pygofer, basodorsal processes: (0) absent (Fig. 4P); (1) present (Fig. 4L). (L: 5; ci: 20; ri: 81)

94. Pygofer, basodorsal processes, condition: **(0)** reduced (Fig. 4K); **(1)** conspicuous (Fig. 4L). (L: 3; ci: 33; ri: 66)
95. Pygofer, basoventral processes: **(0)** absent (Fig. 4R); **(1)** present (Fig. 4N). (L: 1; ci: 100; ri: 100)
96. Pygofer, membranous apical digitiform processes: **(0)** absent (Fig. 4P); **(1)** present (Fig. 4M). (L: 1; ci: 100; ri: 100)
97. Pygofer, inner apical portion of dorsal margin, sclerotization: **(0)** as sclerotized as the remainder portion of lateral lobe (Fig. 4T); **(1)** less sclerotized, membranous (Fig. 4S). (L: 1; ci: 100; ri: 100)
98. Pygofer, apical sclerotized processes: **(0)** absent (Fig. 4P); **(1)** present (Fig. 4O). (L: 10; ci: 10; ri: 66)
99. Pygofer, small digitiform process: **(0)** absent (Fig. 4S); **(1)** present (Fig. 4T). (L: 1; ci: 100; ri: 100)
100. Pygofer, pair of small, rounded processes at apex: **(0)** absent (Fig. 4S); **(1)** present (Fig. 4V). (L: 1; ci: 100; ri: 100)
101. Pygofer, distance between the two small apical processes: **(0)** fused (Fig. 4U); **(1)** narrowly separated (Fig. 4V); **(1)** broadly separated (Fig. 4W). (L: 2; ci: 100; ri: 100)
102. Pygofer, triangular-shape process: **(0)** absent (Fig. 4S); **(1)** present (Fig. 4X). (L: 1; ci: 100; ri: 100)
103. Pygofer, apical excavation: **(0)** absent (Fig. 4R); **(1)** present (Fig. 4K). (L: 1; ci: 100; ri: 100)
104. Pygofer, macrosetae: **(0)** absent (Fig. 4O); **(1)** present (Fig. 4L). (L: 1; ci: 100; ri: 100)
105. Pygofer, macrosetae, distribution: **(0)** dispersed (Fig. 4K); **(1)** grouped (Fig. 4Q). (L: 2; ci: 50; ri: 75)
106. Anal tube, condition: **(0)** membranous (Fig. 4P); **(1)** sclerotized (Fig. 4O). (L: 2; ci: 50; ri: 83)
107. Anal tube, processes: **(0)** absent (Fig. 4P); **(1)** present (Fig. 4Y). (L: 1; ci: 100; ri: 100)
108. Anal tube, anteroventral portion forming a sclerotized ring: **(0)** absent (Fig. 4K); **(1)** present (Fig. 4Z). (L: 1; ci: 100; ri: 100)
109. Subgenital plate, apex relative to the pygofer apex: **(0)** not surpassing (Fig. 4R); **(1)** surpassing (Fig. 4Q). (L: 9; ci: 11; ri: 69)
110. Subgenital plate, sclerotization: **(0)** completely sclerotized (Fig. 5C); **(1)** apical half membranous (Fig. 5H). (L: 1; ci: 100; ri: 100)
111. Subgenital plate, striae on apical half of ventral surface: **(0)** absent (Fig. 5E); **(1)** present (Fig. 5A). (L: 2; ci: 50; ri: 87)
112. Subgenital plate, external margin, microsetae: **(0)** absent (Fig. 5A); **(1)** present (Fig. 5C). (L: 3; ci: 33; ri: 75)
113. Subgenital plate, ventral surface, scattered microsetae: **(0)** absent (Fig. 5A); **(1)** present (Fig. 5B). (L: 6; ci: 16; ri: 75)
114. Subgenital plate, ventral surface, filiform setae: **(0)** absent (Fig. 5E); **(1)** present (Fig. 5D). (L: 3; ci: 33; ri: 60)
115. Subgenital plate, dorsal surface, filiform setae: **(0)** absent (Fig. 5C); **(1)** present (Fig. 5E). (L: 11; ci: 9; ri: 54)
116. Subgenital plate, dorsal surface, distribution of filiform setae: **(0)** restrict to base (Fig. 5H); **(1)** along lateral margin (Fig. 5E); **(2)** restrict to apex (Fig. 5F). (L: 4; ci: 50; ri: 66)
117. Subgenital plate, filiform setae, length: **(0)** short (Fig. 5F); **(1)** long (Fig. 5D). (L: 4; ci: 25; ri: 57)
118. Subgenital plate, macrosetae: **(0)** absent (Fig. 5F); **(1)** present (Fig. 5G). (L: 1; ci: 100; ri: 100)
119. Connective, shape: **(0)** transverse bar (Fig. 5I); **(1)** D-shaped (Fig. 5J); **(2)** T-shaped (Fig. 5K); **(3)** Y-shaped (Fig. 5L); **(4)** U-shaped (Fig. 5M); **(5)** linear (Fig. 5N); **(6)** cross-shaped (Fig. 5O). (L: 12; ci: 50; ri: 81)
120. Connective, length of stem: **(0)** as long as wide (Fig. 5L); **(1)** longer than wide (Fig. 5K). (L: 2; ci: 50; ri: 87)
121. Connective, dorsal median keel: **(0)** absent (Fig. 5I); **(1)** present (Fig. 5J). (L: 3; ci: 33; ri: 80)
122. Style, external surface, long setae: **(0)** absent (Fig. 5P); **(1)** present (Fig. 5Q). (L: 3; ci: 33; ri: 50)
123. Style, dorsal view, outer lobe: **(0)** absent or poorly developed (Fig. 5P); **(1)** developed (Fig. 5Q). (L: 4; ci: 25; ri: 70)
124. Style, angle formed between blade and portion anterior of outer lobe: **(0)** about 45° (Fig. 5R); **(1)** about 180° (Fig. 5S). (L: 2; ci: 50; ri: 66)
125. Style, short ventral projection on mid-length of blade: **(0)** absent (Fig. 5S); **(1)** present (Fig. 5R). (L: 1; ci: 100; ri: 100)
126. Aedeagus, preatrium: **(0)** reduced (Fig. 5W); **(1)** moderately developed (Fig. 5V); **(2)** strongly developed (Fig. 5T). (L: 10; ci: 20; ri: 61)
127. Aedeagus, constriction between dorsal apodeme and atrium: **(0)** absent (Fig. 5X); **(1)** present (Fig. 5U). (L: 1; ci: 100; ri: 100)
128. Aedeagus, apodemal processes: **(0)** absent (Fig. 5T); **(1)** present (Fig. 5U). (L: 5; ci: 20; ri: 78)
129. Aedeagus, apodemal process, curvature between basal portion and median portion: **(0)** straight or slightly curved (Fig. 5W); **(1)** strongly curved (Fig. 5V). (L: 1; ci: 100; ri: 100)
130. Aedeagus, apodemal process, rounded lobe on ventral margin: **(0)** absent (Fig. 5X); **(1)** present (Fig. 5V). (L: 1; ci: 100; ri: 100)
131. Aedeagus, apodemal process, subapical excavation on dorsal margin: **(0)** absent (Fig. 5V); **(1)** present (Fig. 5X). (L: 2; ci: 50; ri: 83)
132. Aedeagus, apodemal process, shape of subapical excavation on dorsal margin: **(0)** shallow and wide (Fig. 5X); **(1)** deep and narrow (Fig. 5W). (L: 1; ci: 100; ri: 100)
133. Aedeagus, apodemal process, lateral process on external margin near mid-length: **(0)** absent (Fig. 5V); **(1)** present (Fig. 5U). (L: 2; ci: 50; ri: 50)
134. Aedeagus, shaft, direction of basal portion: **(0)** ventrad (Fig. 5W); **(1)** posterad (Fig. 5T); **(2)** anterad (Fig. 5AA); **(3)** dorsad (Fig. 5AB). (L: 6; ci: 50; ri: 83)
135. Aedeagus, shaft, shape in lateral view: **(0)** straight (Fig. 5X); **(1)** curved dorsally (Fig. 5W); **(2)** curved posterad (Fig. 5U). (L: 15; ci: 13; ri: 55)

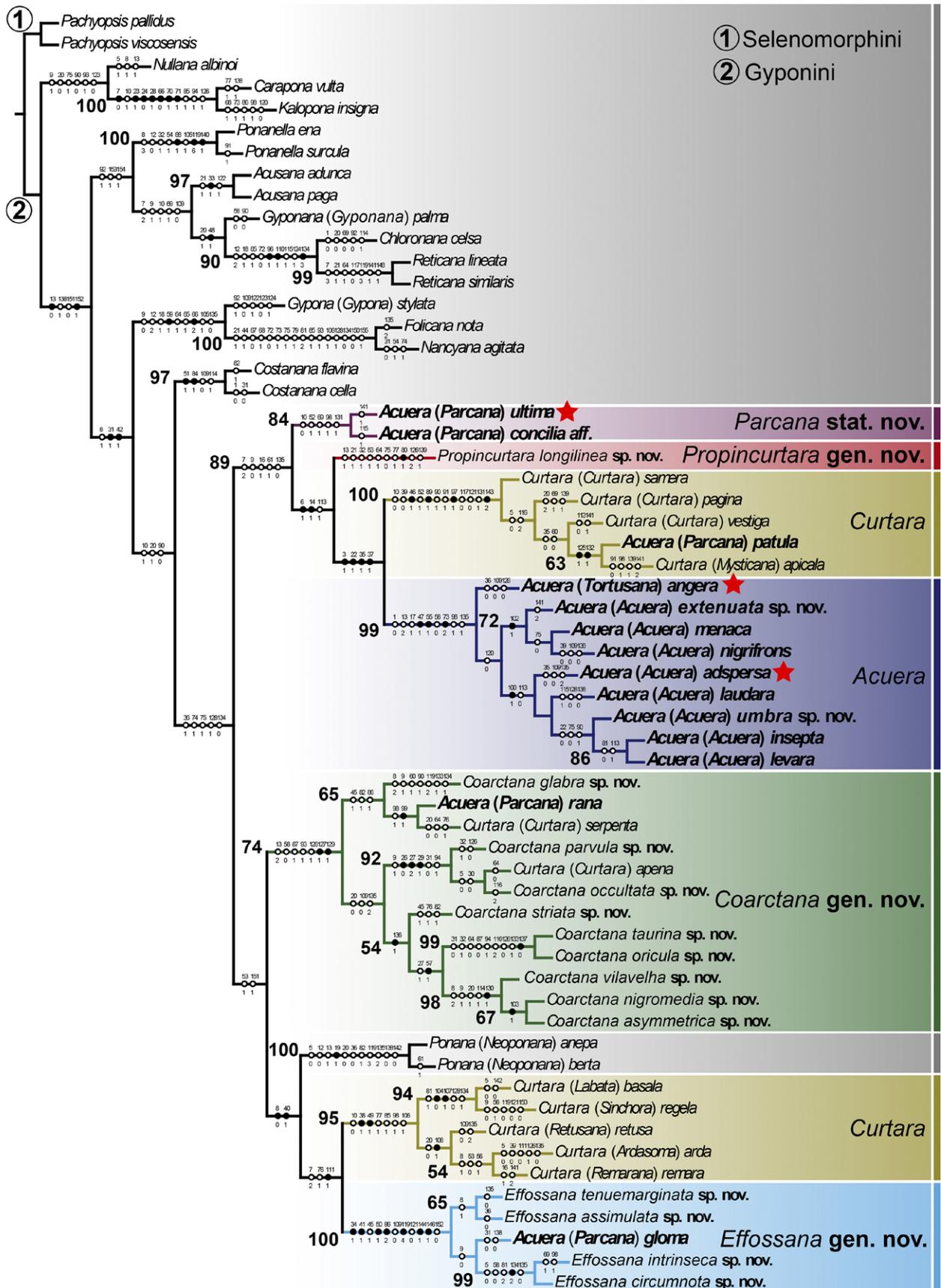
136. Aedeagus, shaft, basolateral expansion that surrounds the previous portion of the shaft: **(0)** absent (Fig. 5X); **(1)** present (Fig. 5U). (L: 1; ci: 100; ri: 100)
137. Aedeagus, shaft, size of the basolateral expansion that surrounds the previous portion of the shaft: **(0)** conspicuous (Fig. 5U); **(1)** reduced (Fig. 5V). (L: 1; ci: 100; ri: 100)
138. Aedeagus, shaft, processes of apical portion: **(0)** absent (Fig. 5Y); **(1)** present (Fig. 5X). (L: 6; ci: 16; ri: 37)
139. Aedeagus, shaft, processes of apical portion, number: **(0)** 1 pair (Fig. 5AD); **(1)** 2 pairs (Fig. 5AE); **(2)** 3 pairs (Fig. 5Z). (L: 14; ci: 14; ri: 7)
140. Aedeagus, shaft, apical process with multiple ramifications: **(0)** absent (Fig. 5AB); **(1)** present (Fig. 5AF). (L: 1; ci: 100; ri: 100)
141. Aedeagus, shaft, direction of apical processes relative to the shaft: **(0)** basally or laterobasally (Fig. 5AD); **(1)** apically or lateroapically (Fig. 5AC); **(2)** one pair basally and one apically (Fig. 5AE). (L: 15; ci: 13; ri: 31)
- Female abdomen**
142. Sternite VII, posterior margin, median lobe: **(0)** absent (Fig. 6A); **(1)** present (Fig. 6B). (L: 5; ci: 20; ri: 78)
143. Ovipositor, curvature: **(0)** strongly curved (Fig. 6G, K); **(1)** slightly curved (Fig. 6H, L); **(2)** straight (Fig. 6J, M). (L: 2; ci: 100; ri: 100)
144. First valvula, anterior portion: **(0)** not produced anterad (Fig. 6J); **(1)** distinctly produced anterad (Fig. 6I). (L: 1; ci: 100; ri: 100)
145. First valvula, dorsal sculpturing: **(0)** areolate (Fig. 6C); **(1)** strigate (Fig. 6D). (L: 1; ci: 100; ri: 100)
146. First valvula, shape of apex: **(0)** gradually tapered (Fig. 6E); **(1)** abruptly tapered (Fig. 6F). (L: 1; ci: 100; ri: 100)
147. Second valvula, shape: **(0)** width approximately constant (Fig. 6L); **(1)** wider at basal third (Fig. 6M); **(2)** wider at median third (Fig. 6N). (L: 10; ci: 20; ri: 55)
148. Second valvula, dorsal protuberance: **(0)** absent (Fig. 6N); **(1)** present (Fig. 6O). (L: 7; ci: 14; ri: 64)
149. Second valvula, dorsal protuberance, position: **(0)** at basal third (Fig. 6M); **(1)** at median third (Fig. 6O). (L: 1; ci: 100; ri: 100)
150. Second valvula, dorsal teeth: **(0)** absent (Fig. 6P); **(1)** present (Fig. 6Q). (L: 2; ci: 50; ri: 50)
151. Second valvula, dorsal teeth, shape: **(0)** regular (Fig. 6S); **(1)** irregular (Fig. 6R). (L: 3; ci: 33; ri: 85)
152. Second valvula, dorsal teeth, number: **(0)** few teeth, less than 10 (Fig. 6R); **(1)** much more than 10 (Fig. 6S). (L: 3; ci: 33; ri: 83)
153. Second valvula, dorsal teeth, position: **(0)** restrict to apical third (Fig. 6O); **(1)** apical half or more (Fig. 6M, Q). (L: 4; ci: 25; ri: 80)
154. Second valvula, apex of ventral margin, denticles: **(0)** absent (Fig. 6R); **(1)** present (Fig. 6S). (L: 3; ci: 33; ri: 84)
155. Gonoplac, ventral margin, setae: **(0)** short (Fig. 6T); **(1)** long (Fig. 6U). (L: 2; ci: 50; ri: 66)

### 3.2. Phylogeny

The distances between trees for SPR distances (SPR), distortion coefficient (CD) and Robinson-Foulds distances (RF) measured for the 14 analyzed intervals are summarized in Table 2. Cladograms indicated as more stable by each of these methods separately do not always agree perfectly, and therefore, the convergence of the results should be used to choose the most similar and stable cladograms because it expresses greater reliability of the results (Giribet 2003; Mirande 2009). The most similar

**Table 2.** Summary of tests performed. **Dist** distortion; **K** concavity constant; **EW** equal weighting tree; **CI** consistency index; **RI** retention index; **SPR** averages of SPR distance; **CD** averages of distortion coefficient; **RF** averages of Robinson-Foulds index. Bold values indicate the more stable cladograms.

	Dist.	K	Length	Trees	Fit	CI	RI	SPR	CD	RF
EW	—	—	503	24	—	0.364	0.773	—	—	—
0	50	1.704	520	1	53.638	0.358	0.767	0.8890	0.8904	0.1529
1	53.0	1.928	520	1	51.324	0.358	0.767	0.8928	0.8911	0.1491
2	56.1	2.183	520	1	48.961	0.358	0.767	0.8903	0.8910	0.1504
3	59.2	2.476	520	1	46.538	0.358	0.767	0.8903	0.8912	0.1504
4	62.3	2.817	520	1	44.047	0.358	0.767	0.8941	0.8917	0.1466
5	65.4	3.219	514	1	41.461	0.362	0.771	0.9133	0.9005	0.1103
6	<b>68.5</b>	<b>3.700</b>	<b>514</b>	<b>1</b>	<b>38.763</b>	<b>0.362</b>	<b>0.771</b>	<b>0.9171</b>	<b>0.9013</b>	<b>0.1065</b>
7	<b>71.5</b>	<b>4.284</b>	<b>514</b>	<b>1</b>	<b>35.963</b>	<b>0.362</b>	<b>0.771</b>	<b>0.9171</b>	<b>0.9013</b>	<b>0.1065</b>
8	74.6	5.010	514	1	33.045	0.362	0.771	0.9133	0.9008	0.1103
9	77.7	5.936	514	1	29.989	0.362	0.771	0.9133	0.9008	0.1103
10	80.8	7.158	512	1	26.757	0.363	0.772	0.8980	0.8972	0.1266
11	83.8	8.846	512	1	23.332	0.363	0.772	0.9133	0.8994	0.1115
12	86.9	11.329	509	1	19.652	0.365	0.774	0.8699	0.8876	0.1667
13	90	15.339	505	1	15.672	0.368	0.777	0.7857	0.8489	0.2970



**Figure 7.** Phylogenetic relationships of *Acuera* found in the implied weighting analysis for the two equally most parsimonious trees, K = 3.700 and 4.284, length = 514, consistency index = 0.362, retention index = 0.771. Symmetric resampling values (< 50) are marked next to branches; red stars represent the type species of the three subgenera of *Acuera*. Synapomorphies are marked with black circles, while homoplasies are marked with empty circles.

cladograms are those with higher averages of SPR and CD values, and lower averages of RF values. Therefore, according to the tests performed, the cladogram generated by the interval of K between 3.700 and 4.284 will be used to discuss the results (values in bold).

The analysis using implied weighting resulted in two equally parsimonious cladograms (6 and 7) with 514 steps, CI = 0.362 and RI = 0.771, presented in the Figure 7. The genus *Acuera* was recovered as polyphyletic. All sampled species of the subgenus *Acuera* and the type species of the subgenus *Tortusana* were strongly supported (SR = 99) as a monophyletic group, sustained by three synapomorphies: 47:1, forewing with several maculae with anastomosed aspect; 55:1, forewing with central anteapical cell bearing a cross vein near half length; 73:2, mesotibia with dorsal surface carinated; and six homoplasies: 1:0, transocular width less than 8 tenths of humeral width of pronotum; 13:2, ocelli nearer to eye than to median line; 17:1, frons with median portion black; 58:0, alar appendix reduced; 98:1, pygofer with apical sclerotized processes; and 135:1, aedeagus, in lateral view, with shaft, curved dorsally. The subgenus *Tortusana* was recovered as sister group of the subgenus *Acuera* but weakly supported by a single homoplastic character: 120:0, connective with stem as long as wide. The internal relationships of the species of the subgenus *Acuera* were weakly supported, with exception of the relationships between *A. extenuata* **sp. nov.** + (*A. menaca* + *A. nigrifrons*) with moderate support, SR = 72 and also *A. incepta* + *A. levara*, SR = 86.

The five species of *Parcana* included in the analysis were recovered outside of the clade of *Acuera*, corroborating the results of the three previous unpublished analyzes of Gonçalves (2016) and Domahovski (2017, 2021b). *Acuera (Parcana) patula* was strongly supported (SR = 100) inside the clade composed by the type species of the genus *Curtara* (*C. samera*) and two more species of the subgenus *Curtara* and one of *Mysticana*.

*Acuera (Parcana) ultima* and *Acuera (Parcana) concilia* aff. were recovered as sister group of *Propincurtara* **gen. nov.** + (*Curtara* + *Acuera*) with strong support (SR = 89). *Parcana* received elevated branch support (SR = 84) and was supported by the following five homoplastic characters: 10:0, anterior margin of crown forming a small projection over anterior margin of eye; 52:1, external discal cell of forewing bearing an accessory vein; 69:1, protibia with AD row bearing macrosetae; 98:1, pygofer with apical sclerotized processes, and 131:1, apodemal process of aedeagus with subapical excavation on dorsal margin.

*Acuera (Parcana) rana* was recovered forming a clade composed of nine new species, and two described species of the subgenus *Curtara*: *Curtara serpenta* DeLong, 1980 and *Curtara apena* DeLong & Freytag, 1976. This clade was moderately supported (SR = 74) and sustained by two synapomorphies: 127:1, aedeagus with constriction between dorsal apodeme and atrium; 129:1, aedeagus with apodemal process strongly curved dorsally; and five homoplasies: 13:2, ocelli nearer to eye than to median line; 58:0, alar appendix reduced; 87:1, valve less

than 2× wider than long; 93:1, pygofer without basodorsal processes and 126:1 aedeagus with preatrium moderately developed. Species of this clade present distinctive features which distinguish them from the other described genera of Gyponini and allows its easy recognition. Therefore, we proposed a new genus, *Coarctana* **gen. nov.** to include these species. The internal relationships of *Coarctana* **gen. nov.** were recovered with strong support: *C. parvula* **sp. nov.** + (*Curtara apena* + *C. occultata* **sp. nov.**), SR = 92; *C. taurina* **sp. nov.** + *C. oricula* **sp. nov.**, SR = 99; *C. vilavelha* **sp. nov.** + (*C. nigromedia* **sp. nov.** + *C. asymmetrica* **sp. nov.**), SR = 98 and two groups of species were recovered with lower support: *C. glabra* **sp. nov.** + (*Acuera rana* + *Curtara serpenta*), SR = 65 and *C. striata* **sp. nov.** + ((*C. taurina* **sp. nov.** + *C. oricula* **sp. nov.**) + (*C. vilavelha* **sp. nov.** + (*C. nigromedia* **sp. nov.** + *C. asymmetrica* **sp. nov.**))), SR = 54.

*Acuera (Parcana) gloma* DeLong & Freytag, 1974 and four new species were recovered with strong support (SR = 100) forming a clade sustained by seven synapomorphies: 34:1, pronotum, with irregular transverse black band on posterior margin; 41:1, scutellum with pair of yellow maculae; 50:1, clavus with two or more cross veinlets between anal veins; 86:2, sternite VIII with posterior margin deeply excavated; 119:4, connective U-shaped; 144:1, first valvula of ovipositor with anterior portion distinctly produced anterad; 146:1 first valvula abruptly tapered apically; and four homoplasies: 45:1, forewing with mottled black maculae; 109:0, apex of subgenital plate, not surpassing the apex of pygofer; 121:0, connective without dorsal median keel; and 152:0, second valvula of ovipositor, with few teeth. The species of this clade share several differences compared to the remaining species of *Acuera* and can be easily separated from the other genera of Gyponini, and therefore we proposed a new genus, *Effossana* **gen. nov.** to include these species. Species which comprise the clades of *Coarctana* **gen. nov.** and *Effossana* **gen. nov.** were also included in the two analyzes of Domahovski (2017, 2021b) where they were found forming monophyletic groups with strong branch support.

### 3.3. Taxonomy

#### 3.3.1. *Acuera* DeLong & Freytag

Figs 8–14

**Type species.** *Gypona adspersa* Stål, 1854: 252.

**Diagnosis.** Medium size leafhoppers (10.0–14.5 mm). Crown, pronotum and mesonotum (Figs 8A, 10A) with black punctures. Head, in dorsal view (Figs 8A, 10A), moderately produced anterad, slightly longer than half interocular width; transocular width less than 8 tenths of humeral width of pronotum; anterior margin subacute; crown surface slightly convex, with *transverse* striae between ocelli; ocellus closer to inner margin of eye than to midline. Head, in lateral view (Figs 8C, 10C), crown-face

transition thin, texture smooth medially and with striae near eye margin. Face (Figs 8B, 10B) with frons usually black on middle portion, without black punctures and with transverse black or brown bands over muscular impressions. Forewing (Figs 8D, 10D) densely covered by anastomosed black maculae; central anteapical cell with cross vein near half length; appendix reduced. Pygofer, in dorsal view (Figs 8g, 10g), apical portion of dorsal margin with processes directed inward. Subgenital plate (Fig. 8H, 10H) with or without long filiform setae. Connective (Fig. 8I) T or Y-shaped, with stem present, but short. Aedeagus (Figs 8L, 10L) with or without apodemal processes. Ovipositor (Figs 9C, 9E) slender. First and second valvulae (Figs 9C, E, 12C, E) not or only slightly broadened on median third. Second valvula (Figs 9E, 12E) dorsal protuberance when present, reduced and subacute, located before half length of blade; dorsal margin with very small teeth, with approximately regular sizes, present on apical half; ventral margin with denticles on apical portion.

**Coloration.** Head and thorax (Figs 15, 16) background yellowish-brown. Crown, pronotum and mesonotum (Figs 8A, 10A) with many black punctures. Face (Figs 8B, 10B) with frons usually black on middle portion and without black punctures, with transverse black or brown bands over muscular impressions; lorum with black punctures; gena frequently with pair of black maculae, one near mid-length of ventral margin and one near ventral corner of eye. Proepimeron (Figs 8C, 10C) with black band below pronotal carina and/or black punctures. Forewing (Figs 8D, 10D) densely covered by anastomosed black maculae. Profemur, with black punctures and pair of black maculae, one at base and one on apical third. Metatibia (Fig. 15B, H) with cucullate bases of setae blacks.

**Description.** Head, in dorsal view (Fig. 8A), moderately produced anterad, median length slightly longer than half interocular width; transocular width 7.2–7.8 tenths of pronotum humeral width; anterior margin subacute; crown surface with oblique striae between ocelli; ocellus equidistant between anterior and posterior margins of crown and closer to inner margin of eye than to midline. Head, in frontal view (Fig. 8B), face wider than high; frons 1.5× longer than wide, texture shagreen, surface just below crown-face transition not excavated; frontogenal suture distant from eye margin by half maximum width of clypeus and extending to anterior margin of crown; supra-antennal lobe carinated and oblique, advancing over frons by short distance; gena with ventrolateral margin slightly rounded; maxillary plate produced ventrally as far as clypeus apex; clypeus longer than wide; lateral margins straight, parallel or slightly divergent toward apex; apex weakly emarginated. Head, in lateral view (Fig. 8C), crown-face transition thin, not foliaceous, texture smooth medially and with striae near eye margin; anterior margin of crown slightly projected over anterior margin of eye; frons and clypeus not inflated. Pronotum, in dorsal view (Fig. 8A), with transverse striae on disc and posterior third; lateral margins as long or slightly longer than

eye length; posterior margin weakly excavated; in lateral view (Fig. 8C), moderately declivous, continuous with head declivity. Mesonotum (Fig. 8A) slightly wider than long; scutellum (Fig. 8C) not swollen. Forewing (Fig. 8D) M vein with segment after the divergence between R+M and before the cross vein *m-cu*<sub>1</sub> more than 3× longer than the length of *m-cu*<sub>1</sub>; central anteapical cell with cross vein near half length; appendix reduced, bordering first to second apical cells; apex rounded. Profemur moderately elongated, 3.5× longer than wide; AD, AM, and PD rows reduced and poorly defined, with exception of apical setae AD<sub>1</sub>, AM<sub>1</sub>, and PD<sub>1</sub>, respectively; IC row formed by slightly arched comb of fine setae, beginning at distal half of femur and extending to AM<sub>1</sub>; AV and PV rows with 3–5 setae. Protibia, in cross-section semi-circular, dorsal surface with longitudinal carina adjacent to PD row; AV row formed by long setae, slightly longer and thicker towards apex; dorsal rows with apical AD<sub>1</sub> and PD<sub>1</sub> setae developed; AD row without differentiated setae; PD row with 3 setae; PV row with 5–7 setae. Mesotibia with dorsal surface carinate. Metafemur with setal formula 2:2:1. Metatibia with AD row without intercalary setae between macrosetae, or if present, only 1–2 intercalary setae between each macrosetae; PV row with setae of apical half formed by sequence of a longer and thicker seta, interspersed with 2–4 thinner and shorter setae, ending with a long and thick seta. Metatarsomere I ventral surface with two rows of non-cucullate setae; outer row with setae reduced in size; inner row with 8–12 setae; pecten with 4–6 platellae, flanked by one inner and one outer tapered seta. Metatarsomere II pecten with 2–4 platellae, flanked by two inner and one outer tapered seta.

**Male terminalia.** Pygofer, in lateral view (Figs 8G, 10G), without basodorsal processes; in dorsal view (Figs 8g, 19g), apical portion of dorsal margin with processes directed inward. Valve (Figs 8F, 10F) without pair of oblique submedian integument thickening. Anal tube membranous, without processes. Subgenital plate (Figs 8H, 10H) with or without long filiform setae. Connective (Fig. 8I) T or Y-shaped, with stem present, but short. Aedeagus (Fig. 8L) with or without apodemal processes; shaft with or without apical or subapical processes.

**Female terminalia.** Pygofer (Figs 9A, B, 12A, B) with macrosetae distributed on posteroventral quadrant and dorsoapical third. Ovipositor slender. First valvula (Figs 9C, 12C) not or only slightly broadened on median third; dorsal sculptured area strigate, beginning on half length of blade; ventral interlocking device distinct on basoventral third; apex (Figs 9D, 12D) gradually tapered and acute. Second valvula (Figs 9E, 12E) not or weakly broadened on basal third; dorsal protuberance when present, reduced and subacute, located before half length of blade; dorsal margin with very small teeth, approximately regular sizes, present on apical third; ventral margin with denticles on apical portion; apex (Figs 9F, 12F) tapered and subacute. Second valvifer (Figs 9G, 12G) 3× longer than wide. Gonoplac (Figs 9G, 12G) posterodorsal margin straight, about 4 tenths of blade length; external

surface with dentiform cuticular projections; ventral margin broadly rounded with few short setae; apex (Figs 9H, 12H) slightly tapered and rounded.

**Distribution.** Argentina, Bolivia, Brazil, Panamá and Peru.

**Remarks.** With the proposed taxonomic changes, and the description of two new species, *Acuera* now comprise 10 species with distribution mainly on South America. *Acuera luhea* is the only species known from the Central America, collected on trees of *Luehea seemannii* Planch. & Triana (Malvaceae), representing the only know record of host plant for *Acuera* (DeLong and Wolda, 1982).

### Species of *Acuera* DeLong & Freytag

*A. (Acuera) adspersa* (Stål, 1854): 252 (*Gypona*). Argentina?; Brazil: Mato Grosso [new record], Pará [new record] and Rondônia; Peru [new record].

*A. (Acuera) extenuata* **sp. nov.** Brazil: Mato Grosso.

*A. (Acuera) incepta* DeLong & Freytag, 1974: 190. Argentina; Brazil: Bahia [new record], Ceará [new record], Minas Gerais [new record], Paraná [new record], Piauí [new record], Rio de Janeiro [new record], Rio Grande do Sul, Santa Catarina [new record] and São Paulo [new record].

*A. (Acuera) laudara* DeLong & Freytag, 1974: 186. Brazil: Distrito Federal [new record], Goiás [new record], Mato Grosso [new record], Mato Grosso do Sul [new record], Maranhão [new record], Piauí [new record] and São Paulo.

*A. (Acuera) levara* DeLong & Freytag, 1974: 191. Argentina; Brazil: Goiás [new record], Paraná [new record], São Paulo and Tocantins [new record].

*A. (Acuera) nigrifrons* (Osborn, 1938): 33 (*Prairiana*). Bolivia; Peru [new record].

*A. (Acuera) menaca* DeLong & Freytag, 1974: 189. Brazil: Rondônia [new record]; Peru.

*A. (Acuera) umbra* **sp. nov.** Brazil: Minas Gerais, Paraná and Rio de Janeiro.

*A. (Tortusana) angera* DeLong & Freytag, 1974: 193. Peru.

*A. (Tortusana) luhea* DeLong & Wolda, 1982: 309. Panamá.

### Key to subgenera and males of *Acuera*

- 1 Aedeagus (DeLong and Freytag 1974: 192, figs 51, 52) without apodemal processes — subgenus *Tortusana* .....2
- 1' Aedeagus (Fig. 8L) with apodemal processes — subgenus *Acuera* .....3
- 2 Style (DeLong and Freytag 1974: 192, fig. 53) not constricted at mid-length. Aedeagal shaft (DeLong and Freytag 1974: 192, figs 51, 52) robust, pair of apical processes crossed, curving laterad to the opposite side of shaft.....  
..... ***A. angera* DeLong & Freytag**
- 2' Style (DeLong and Wolda 1982: 310, fig. 71) constricted at mid-length. Aedeagal shaft (DeLong and Wolda 1982: 310, figs 73, 74) slender, pair of apical processes not crossing to the opposite side of shaft .....  
..... ***A. luhea* DeLong & Wolda**
- 3 Aedeagus (DeLong and Freytag 1974: 187, figs 6, 7) with pair of apodemal processes arising on dorsomedial portion; shaft without processes.....***A. laudara* DeLong & Freytag**
- 3' Aedeagus (Fig. 10L, M) with pair of apodemal processes arising each side of dorsal apodeme; shaft with apical or subapical processes .....4
- 4 Subgenital plate (Fig. 10G, H) with many long filiform setae.....5
- 4' Subgenital plate (Fig. 8G, H) without long filiform setae .....6
- 5 Aedeagus (Fig. 10L) with apodemal processes short, weakly sclerotized, not surpassing the shaft in lateral view; shaft apex with one pair of processes.....***A. extenuata* sp. nov.**
- 5' Aedeagus (Fig. 13) with apodemal processes moderately long, sclerotized, surpassing the shaft in lateral view; shaft apex with two or three pairs of processes, branched or not .....***A. menaca* DeLong & Freytag**
- 6 Aedeagus (DeLong and Freytag 1974: 187, figs 11, 12) with shaft sort, broad in lateral view and compressed laterally in posterior view; subapical processes sort, not surpassing the shaft apex.....  
..... ***A. nigrifrons* DeLong & Freytag**
- 6' Aedeagus (Fig. 11L) with shaft elongated and approximately cylindrical; subapical processes long, extending far beyond the shaft apex.....7
- 7 Aedeagal shaft, in lateral view (Fig. 8L), curved posterad, ventral margin strongly excavated; subapical processes long, about half length of shaft, directed ventrally ..... ***A. adspersa* DeLong & Freytag**
- 7' Aedeagal shaft, in lateral view (Fig. 11L), curved dorsally or approximately straight, ventral margin not excavated; subapical processes shorter than 1/3 length of shaft, directed dorsally .....8
- 8 Aedeagal shaft, in lateral view (DeLong and Freytag 1974: 187, fig. 32), approximately straight.....  
..... ***A. incepta* DeLong & Freytag**
- 8' Aedeagal shaft, in lateral view (Fig. 11L), strongly curved dorsally at mid-length .....9
- 9 Style (DeLong and Freytag 1974: 192, fig. 43) tapered toward apex. Aedeagus, in lateral view (DeLong and Freytag 1974: 192, fig. 44), enlarged apically.....***A. levara* DeLong & Freytag**
- 9' Style (Fig. 11K) enlarged subapically. Aedeagus, in lateral view (Fig. 11L), not enlarged apically.....  
..... ***A. umbra* sp. nov.**

***Acuera adspersa* (Stål)**

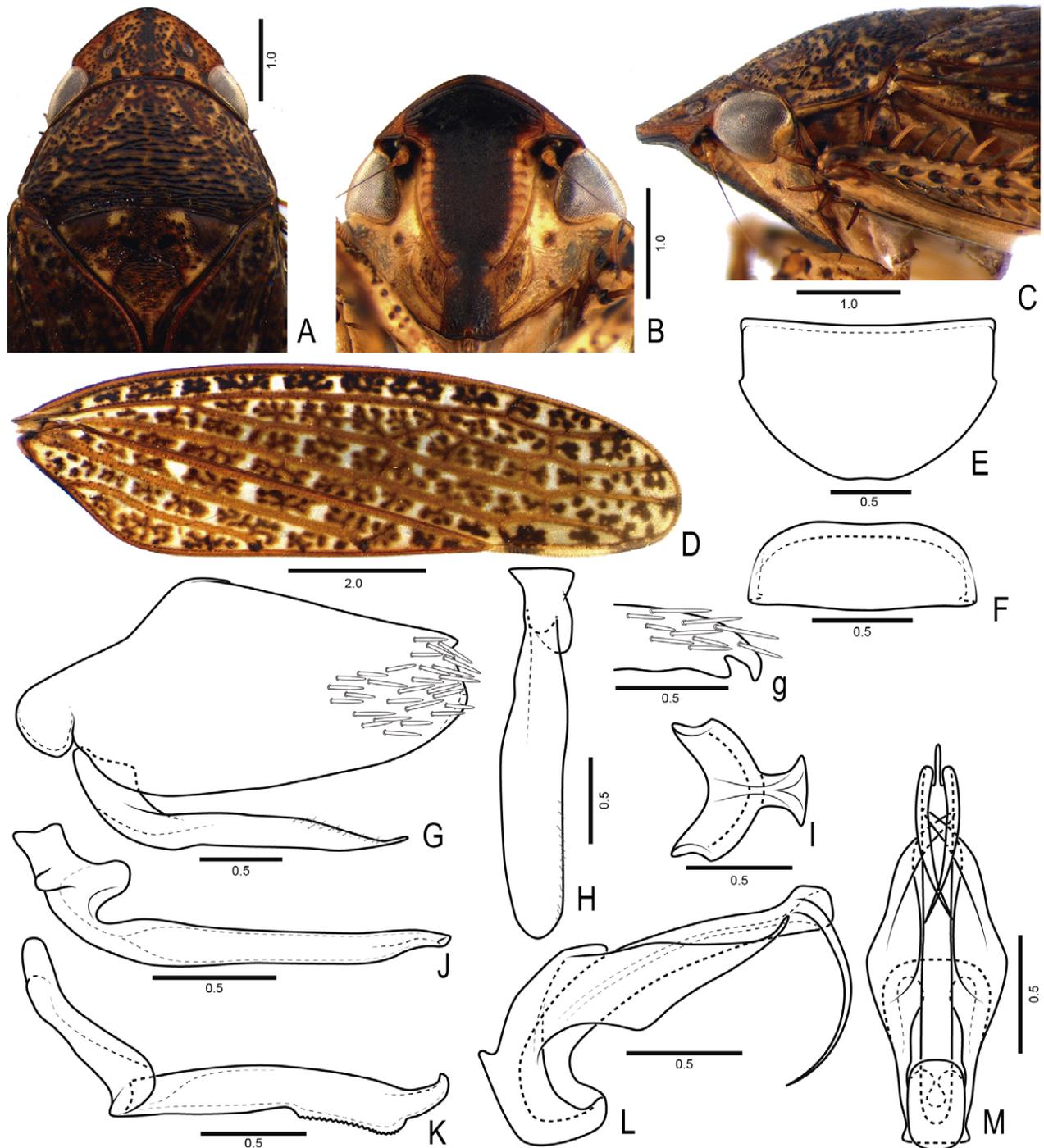
Figs 8, 9, 15A, B

*Gypona adspersa* Stål, 1854: 252

**Diagnosis.** Coloration (Fig. 15A, B) predominant brown. Frons (Fig. 8B) black except near lateral margins yellowish-brown. Pygofer, in dorsal view (Fig. 8g), apex with two short processes separated by shallow excavation.

Subgenital plate (Fig. 8H) narrow, without filiform setae. Aedeagus (Fig. 8L, M) apodemal process almost as long as shaft length, wide at base and tapered toward acute apex; shaft in lateral view, curved posterad, ventral margin strongly excavated; subapical processes long, about half length of shaft, directed ventrally.

**Measurements.** Total length: males 10.6–11.6 mm, females 12.4–12.5 mm.

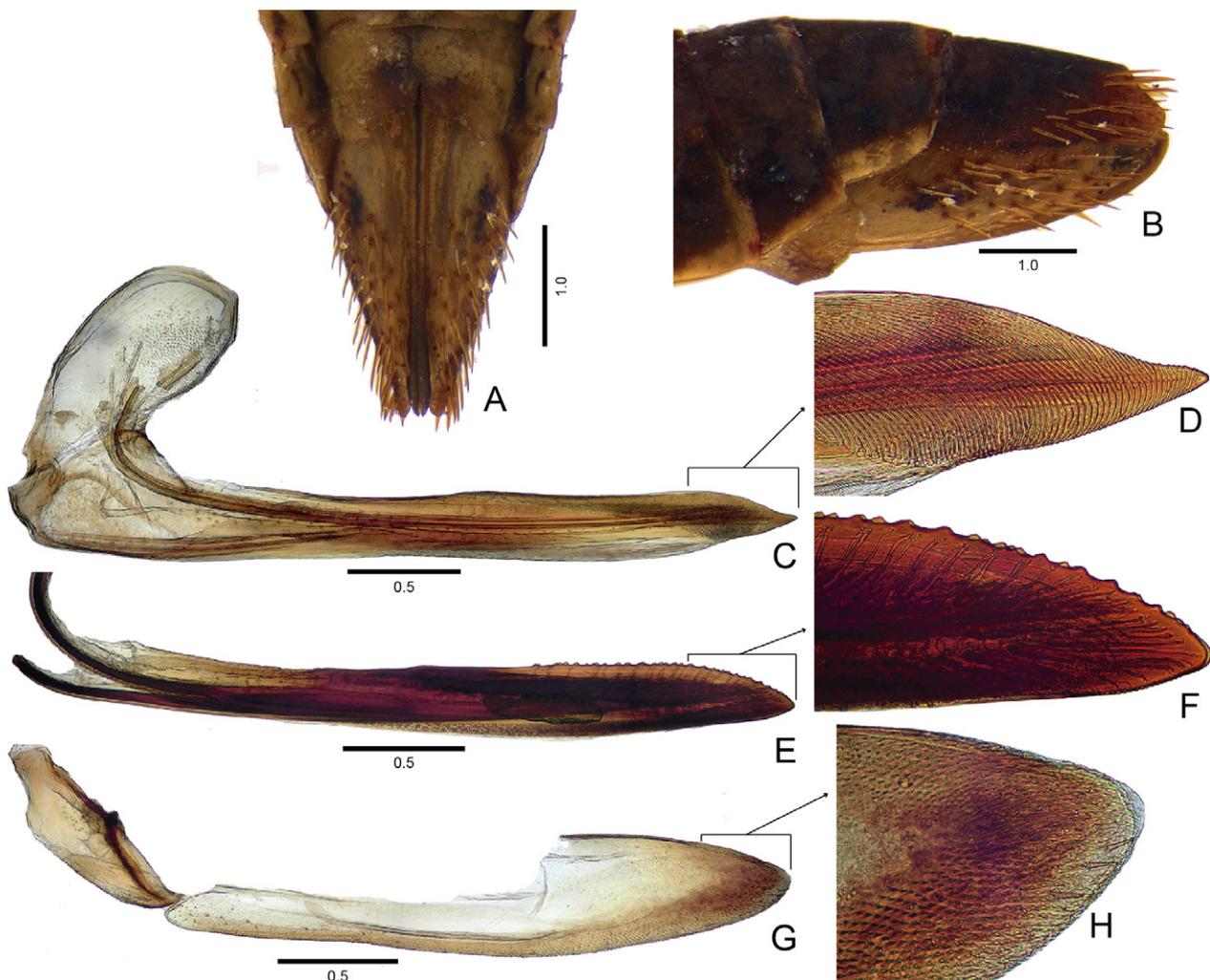


**Figure 8.** *Acuera adspersa*, male. **A** head and thorax, dorsal view. **B** head, ventral view. **C** head and thorax, lateral view. **D** forewing. **E** sternite VIII, ventral view. **F** valve, ventral view. **G** pygofer, valve and subgenital plate, lateral view; **g** apical portion of pygofer, dorsal view. **H** subgenital plate, ventral view. **I** connective, dorsal view. **J** style, dorsal view. **K** style, lateral view. **L** aedeagus, lateral view. **M** aedeagus, posterior view. Scale bars in mm.

**Description.** Metatibia AD row with 1–2 intercalary setae between each macrosetae; PD, AD and AV rows with 24–26, 12–13 and 17–18 macrosetae respectively. Metatarsomere I 3.5× longer than apical width; pecten with 5 platellae. Metatarsomere II pecten with 2–3 platellae. Other characteristics as in generic description.

**Coloration.** Head and thorax (Fig. 8A–C) yellowish-brown. Crown, pronotum and mesonotum (Fig. 8A) with many black punctures. Crown with pair of rounded black spots near posterior margin behind ocelli. Face (Fig. 8B) with frons black on middle portion, faint transverse brown bands over muscular impressions; lorum with black punctures; gena with pair of black maculae, one near mid-length of ventral margin and one near ventral corner of eye; portion around antennal bases black; clypeus black. Proepimeron (Fig. 8C) with black band below pronotal carina and small black macula on anteroventral margin. Forewing (Fig. 8D) densely covered by anastomosed black maculae. Profemur, with black punctures and pair of black maculae, one at base and one on apical third. Metatibia (Fig. 8C) with cucullate bases of setae blacks.

**Male terminalia.** Sternite VIII (Fig. 8E) 1.7× wider than long; lateral margins parallel; posterior margin rounded. Valve (Fig. 8F) 2.5× wider than long; posterior margin straight. Pygofer, in lateral view (Fig. 8G), 1.9× longer than maximum height; anteroventral margin rounded; posterodorsal and posteroventral margins straight, slightly convergent apically; apex truncate; in dorsal view (Fig. 8g), apex with two short processes separated by a shallow excavation. Subgenital plate, in lateral view (Fig. 8G), not surpassing pygofer apex; in ventral view (Fig. 8H), elongated and narrow, 7.5× longer than wide; outer margin with few sort setae; lateral margins approximately parallel; apex rounded. Connective (Fig. 8I) about as long as wide; anterior margin excavated; dorsal keel moderately developed; stem short, as long as wide. Style, in dorsal view (Fig. 8J), with outer lobe developed and rounded; in lateral view (Fig. 8K), blade long and straight, width approximately constant from base to almost apex; ventral margin with subapical serration on apical third; apex tapered and acute, slightly curved dorsally. Aedeagus (Fig. 8L, M) preatrium reduced; dorsal apodeme not developed, dorsal margin rounded, lateral margins not produced laterally; apodemal process almost



**Figure 9.** *Acuera adspersa*, female. **A** distal portion of abdomen, ventral view. **B** distal portion of abdomen, lateral view. **C** first valvifer and first valvula, lateral view. **D** apical portion of first valvula. **E** second valvula, lateral view. **F** apical portion of second valvula. **G** second valvifer and gonoplac, lateral view. **H** apical portion of gonoplac. Scale bars in mm.

as long as shaft length, wide at base and tapered toward acute apex; shaft approximately cylindrical, in lateral view, curved posterad, ventral margin strongly excavated; subapical processes long, about half length of shaft, directed ventrally; apex slightly expanded and strongly flattened laterally. Other characteristics as in generic description.

**Female terminalia.** Sternite VII (Fig. 9A, B) with posterolateral angles weakly produced posterad; posterior margin with median third excavated, bearing a V-shaped notch at middle. Pygofer (Fig. 9A, B) long, 2.3× longer than the sternite VII length; ventral margin weakly rounded; apex obliquely truncated. First valvifer (Fig. 9C) 2× longer than wide; lateral margins rounded. First valvula (Fig. 9C, D) narrow, 10× longer than wide, not broadened on median third. Second valvula (Fig. 9E, F) 11× longer than wide; dorsal protuberance absent; dorsal margin with teeth present from apical third to apex.

**Material examined. Brazil: Mato Grosso:** 1♂, “Brasil, MT, Cotriguaçu, Faz.[Fazenda] São Nicolau, 09.8559°S, 58.2486°W, 230m, light trap, 26–29.vi.2017, RR Cavichioli & AC Domahovski” (DZUP); 1♂, “Brasil, MT, Novo Mundo, Pq. Est. do Cristalino, 09.4517°S 55.8396°W, 240m, malaise, 21–25.vi.2017, Cavichioli, Melo, Domahovski & Muniz” (DZUP). — **Pará:** 1♂, “Alter do Chão Pará – Brasil 19.IX.1989 Exp.[Expedição] Perm.[Permanente] Amaz.[Amazônia]” (MZSP); 1♂, “Brasil: Pará Gorotire 51 W 8S D A Posey col 18.VIII.1978”, “MPEG 05028158” (MPEG). — **Rondônia:** 1♂, “Brasil, Rondônia, Flona Jamari, 03/05.IX.2012 (malaise) 9°15'35"S 62°54'47"W 110m R.R. Cavichioli leg.” (DZUP); 1♀, “Brasil, Rondônia, Porto Velho, Rio Madeira 09°35'29"S 65°02'57"W Malaise 18–29.VI.2011 Albuquerque & Ferreira” (DZUP); 1♂, 1♀, “Brasil, Rondônia, Porto Velho, Rio Madeira 09°35'29"S 65°02'57"W Malaise 04–18.IX.2012 MA Ullysséa & LP Prado” (MZSP); 1♂, “Brasil, Rondônia, Porto Velho, Rio Madeira 09°38'05"S 65°27'11"W Malaise 28.III–8.IV.2011 Silva & Albuquerque” (MZSP); 1♂, “Brasil, Rondônia, Porto Velho, Rio Madeira 09°38'06"S 65°27'11"W Malaise 05–17.I.2011 RRSilva & RSProst leg” (MZSP); 1♂, “Brasil, Rondônia, Porto Velho, Rio Madeira 09°26'14"S 64°49'58"W Malaise 04–18.IX.2012 MA Ullysséa & LP Prado” (MZSP); 2♂, “Brasil, RO, Itapuã do Oeste, Flona Jamari 09°11'42"S 63°03'35"W 09.X.2014 Luz J.A. Rafael, F.F. Xavier, R. M. Vieira & R. H. Aquino” (DZURJ); 1♂, “Brasil Rondônia Ouro Preto do Oeste 1a3.IX.1986”, “Brasil Rondônia F.F. Ramos”, “Armadilha Malaise”, “MPEG 05028051” (MPEG). — **Peru:** 1♂, “Peru Madre de Dios sw Pto [Puerto] Maldonato 290m BM 1989–70” (DZUP).

**Remarks.** *Acuera adspersa* was recovered as sister group of *A. laudara* + (*A. umbra* sp. nov. + (*A. incepta* + *A. levara*)) with low support (SR < 50), supported by one synapomorphy, 100:1, pygofer with pair of small, rounded processes at apex, and one homoplasy, 113:0, subgenital plate, ventral surface with microsetae absent (Fig. 7). DeLong and Freytag (1972, 1974) recorded *A. adspersa* for Argentina. Based on the large amount of material studied here, this record appears to be incorrect as this species was only collected in the Amazon biome. The species found in Argentina and southern Brazil are *A. incepta* and *A. levara* which externally are similar to *A. adspersa* and can easily be miss-identified as the former.

### *Acuera extenuata* sp. nov.

<https://zoobank.org/6FC232DF-F8E2-4FDC-BA9F-2B3A9ED4F828>

Figs 10, 15E, F

**Diagnosis.** Coloration (Fig. 15E, F) predominant yellowish-brown. Frons (Fig. 10B) black except near lateral margins yellowish-brown. Pygofer, in dorsal view (Fig. 10g), apex with a conic-shape process directed inward. Subgenital plate (Fig. 10H) with long filiform setae. Aedeagus (Fig. 10L) with apodemal processes short, weakly sclerotized, not surpassing shaft in lateral view; apex with pair of short hook-shaped processes, curved ventrally.

**Measurements.** Total length: holotype male 11.2 mm; paratype, male (n = 1) 11.1 mm.

**Description.** Metatibia AD row with 1–2 intercalary setae between each macrosetae; PD, AD and AV rows with 24–25, 12 and 16–19 macrosetae respectively. Metatarsomere I 3.5× longer than apical width; pecten with 4–5 platellae. Metatarsomere II pecten with 2–3 platellae. Other characteristics as in generic description.

**Coloration.** Head and thorax (Fig. 10A–C) yellowish-brown. Crown, pronotum and mesonotum (Fig. 10A) with many black punctures. Face (Fig. 10B) with frons black on middle portion, faint transverse brown bands over muscular impressions; lorum with black punctures; gena with pair of black maculae, one near mid-length of ventral margin and one near ventral corner of eye; portion around antennal bases black; clypeus black. Proepimeron (Fig. 10C) with black band below pronotal carina and black punctures. Forewing (Fig. 10D) densely covered by anastomosed black maculae. Profemur, with black punctures and pair of black maculae, one at base and one on apical third. Metatibia (Fig. 10C) with cucullate bases of setae black.

**Male terminalia.** Sternite VIII (Fig. 10E) 1.5× wider than long; lateral margins parallel; posterior margin rounded. Valve (Fig. 10F) 2.2× wider than long; posterior margin produced medially and emarginated. Pygofer, in lateral view (Fig. 10G), 2.2× longer than maximum height; anteroventral margin straight; posterodorsal margin straight and oblique; posteroventral margin rounded; apex rounded; in dorsal view (Fig. 10g), apex with a conic-shape process directed inward. Subgenital plate, in lateral view (Fig. 10G), long, slightly surpassing pygofer apex; in ventral view (Fig. 10H), elongated, 4.1× longer than wide; dorsal surface with filiform setae near outer margin; lateral margins approximately parallel; apex rounded. Connective (Fig. 10I) about as long as wide; anterior margin excavated; dorsal keel moderately developed; stem short, as long as wide. Style, in dorsal view (Fig. 10J), with outer lobe developed and rounded; in lateral view (Fig. 10K), blade long, slender at base and slightly broadened toward the subapical portion; ventral margin

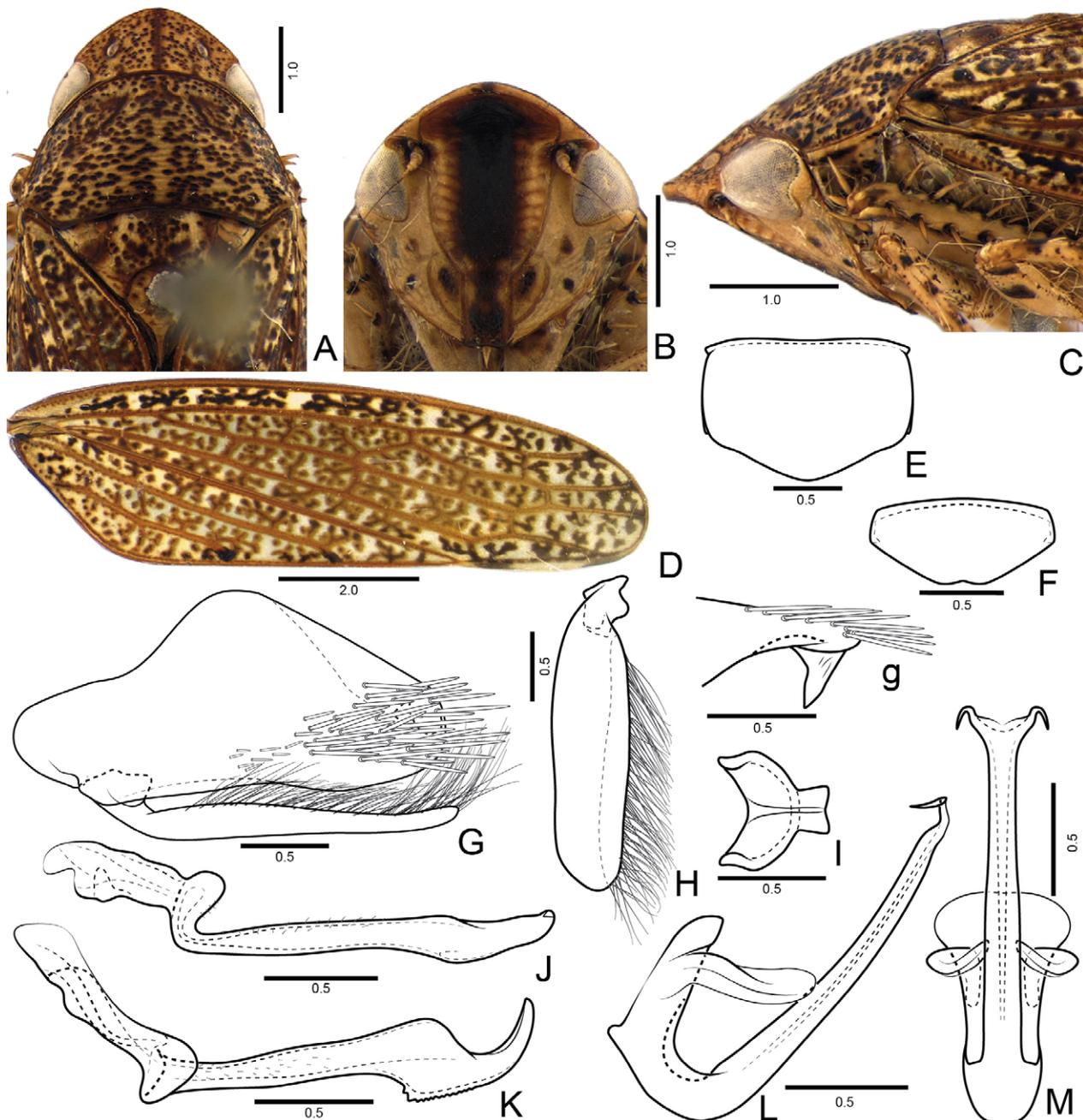
serrated on apical third; apical half strongly sigmoid; apex acute, slightly curved dorsally. Aedeagus (Fig. 10L, M) preatrium reduced; dorsal apodeme not developed, dorsal margin straight, lateral margins not produced laterally; apodemal process digitiform and weakly sclerotized, short, about 1/3 length of shaft; shaft approximately triangular in cross section, long and weakly curved dorsally, posterior surface excavated; apex with pair of short hook-shaped processes, curved ventrally. Other characteristics as in generic description.

**Female.** Unknown.

**Material examined. Holotype male:** Brazil: Mato Grosso: “Brasil, MT, Novo Mundo, Pq. [Parque] Est. [Estadual] do Cristalino, 09.4517°S 55.8396°W, 240m, malaise, 21–25.vi.2017, Cavichioli, Melo, Domahovski & Muniz” (DZUP). **Paratype:** 1♂, same data as holotype except “luminárias – alojamento AC Domahovski” (DZUP).

**Etymology.** The new species name refers to the apodemal processes of aedeagus weakly sclerotized, translucent apically.

**Remarks.** *Acuera extenuata* sp. nov. was recovered as sister group of *A. menaca* + *A. nigrifrons* with moder-



**Figure 10.** *Acuera extenuata* sp. nov., holotype male. **A** head and thorax, dorsal view. **B** head, ventral view. **C** head and thorax, lateral view. **D** forewing. **E** sternite VIII, ventral view. **F** valve, ventral view. **G** pygofer, valve and subgenital plate, lateral view; **g** apical portion of pygofer, dorsal view. **H** subgenital plate, ventral view. **I** connective, dorsal view. **J** style, dorsal view. **K** style, lateral view. **L** aedeagus, lateral view. **M** aedeagus, posterior view. Scale bars in mm.

ate branch support (SR = 72) (Fig. 7) and supported by a single synapomorphy, 102:1, pygofer having a apical triangular-shape process directed inward. The style of the new species (Fig. 10K) is more similar to species of the subgenus *Tortusana*, however the aedeagus have apodemal processes reduced and weakly sclerotized that apparently is an intermediate form between the absence of this structure in the subgenus *Tortusana* and the presence of processes longer and more sclerotized in the subgenus *Acuera*. The new species can be easily recognized by the pygofer (Fig. 10g) with a conic-shape process directed inward; the subgenital plate (Fig. 10H) with long filiform setae; the shape of the style (Fig. 10K) with apex sigmoid; and the aedeagus (Fig. 10L) with apodemal processes short and weakly sclerotized. *Acuera extenuata* sp. nov. is placed in the subgenus *Acuera*.

### *Acuera umbra* sp. nov.

<https://zoobank.org/585C94FA-0620-42EA-B687-78789EB6B8B9>

Figs 11, 12, 16E–H

**Diagnosis.** Coloration (Fig. 16E–H) predominant black. Face (Fig. 11B), almost completely black or with frons black medially. Pygofer, in dorsal view (Fig. 11g), apex with a short biconvex process directed inward. Subgenital plate (Fig. 11H) without filiform setae. Aedeagus (Fig. 11L, M) apodemal processes as long as shaft length, strongly curved dorsally; shaft in lateral view, strongly curved dorsally at mid-length; apex not expanded, subapical processes short, directed dorsally.

**Measurements.** Total length: holotype male 11.3 mm; paratypes, males (n = 32) 10.0–11.3 mm, females (n = 3) 11.9–12.5 mm.

**Description.** Metatibia without intercalary setae between macrosetae; PD, AD and AV rows with 22–25, 12 and 15–17 macrosetae respectively. Metatarsomere I elongated 3.5× longer than apical width; pecten with 4–5 platellae. Metatarsomere II pecten with 3 platellae. Other characteristics as in generic description.

**Coloration.** Head and thorax (Fig. 11A–C) black. Crown and pronotum with few yellowish areas. Pronotum (Fig. 11A) with small yellow macula on humeral angle. Mesonotum (Fig. 11A) with pair of yellow macula near anterior margin. Face (Fig. 11B) black. Gena with portion between eye and frons yellow. Proepimeron (Fig. 11C) black. Forewing (Fig. 11D) almost completely black, except by some large and sparse yellow maculae. Legs black. Specimens from Rio de Janeiro (Fig. 16G, H) less melanic, with crown, pronotum and mesonotum with black punctures occupying almost all surface. Face yellowish-brown; frons black on middle portion, transverse brown bands over muscular impressions; lorum with black; gena with pair of black maculae, one near mid-

length of ventral margin and one near ventral corner of eye; portion around antennal bases black; clypeus black. Proepimeron with black band below pronotal carina and few black punctures. Forewing almost completely black, with small scattered yellow maculae mostly near costal margin. Profemur, with black punctures and pair of black macula, one at base and one on apical third. Metatibia with cucullate bases of setae black. Specimens from Paraná are similar to those of Rio de Janeiro but with head and pronotum more yellowish and having a longitudinal black stripe over the coronal suture of crown.

**Male terminalia.** Sternite VIII (Fig. 11E) 1.2× wider than long; lateral margins convergent posterad; posterior margin emarginated. Valve (Fig. 11F) 2.5× wider than long; posterior margin excavated medially. Pygofer, in lateral view (Fig. 11G), short, 1.5× longer than maximum height; anteroventral margin straight; posterodorsal margin weakly rounded; posteroventral margin slightly excavated; apex tapered and rounded; in dorsal view (Fig. 11g), apex with short biconvex process directed inward. Subgenital plate, in lateral view (Fig. 11G), long, slightly surpassing pygofer apex; in ventral view (Fig. 11H), elongated, 4.5× longer than wide; outer margin with minute setae; lateral margins approximately parallel; apex rounded. Connective (Fig. 11I) about as long as wide; anterior margin excavated; dorsal keel reduced; stem short, wider than long. Style, in dorsal view (Fig. 11J), with outer lobe small and rounded; in lateral view (Fig. 11K), blade long and straight, slightly broadened subapically; ventral margin serrated subapically; apex tapered and subacute, slightly curved dorsally. Aedeagus (Fig. 11L, M) preatrium reduced; dorsal apodeme not developed, dorsal margin rounded, lateral margins not produced laterally; apodemal process as long as shaft, wider on median portion and strongly curved dorsally, apex narrow and spatulate; shaft flattened laterally, slender and long, strongly curved dorsally on mid-portion; apex not expanded, with pair of short filiform processes directed dorsally.

**Female terminalia.** Sternite VII (Fig. 12A, B) with posterolateral angles rounded; posterior margin roundly excavated each side of short median lobe which is V-shaped excavated medially. Pygofer (Fig. 12A, B) long, 2.3× longer than the sternite VII length; ventral margin weakly rounded; apex rounded. First valvifer (Fig. 12C) 1.5× longer than wide, subtriangular; anterior margin rounded; posterior and dorsal margins straight. First valvula (Fig. 12C, D) moderately narrow, 6× longer than wide, slightly broadened on median third. Second valvula (Fig. 12E, F) 6× longer than wide; dorsal protuberance reduced and subacute, located before half length of blade; dorsal margin with teeth subapically on apical third.

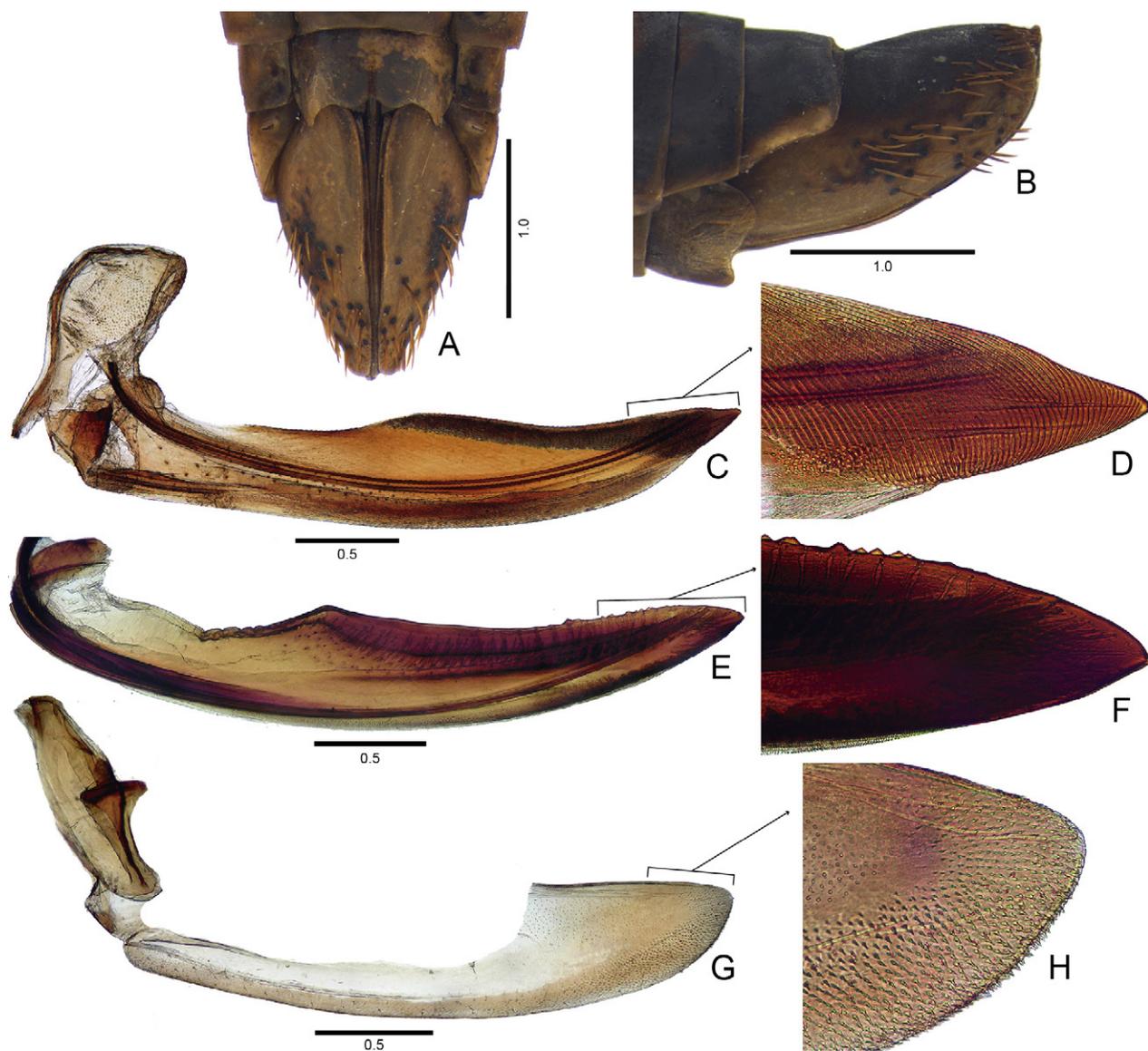
**Material examined. Holotype male: Brazil: Minas Gerais:** "S. [São] Gonçalo Rio Abaixo, MG, Brasil, (Est. [Estação] Amb^ Peti-Cemig) 12.IX.2003\ A. F. Kumagai. Col." (DZUP). **Paratypes:** 1♂, same data of holotype except 13.IX.2002 (DZUP); 1♂, same data of holotype except 29.XI.2002 (DZUP); 1♂, same data of holotype except 26.XII.2002 (MZSP); 1♂, same data of holotype except 20.XII.2002 (DZRJ); 1♂,

same data of holotype except 01.I.2003 (DZUP); 1♂, same data of holotype except, 24.I.2003 (DZUP); 1♂, same data of holotype except 14.III.2003 (DZUP); 1♂, same data of holotype except 27.VI.2003 (DZRJ); 1♂, same data of holotype except 12.XII.2003 (DZUP); 1♂, same data of holotype except 26.XII.2003 (DZUP); 1♂, same data of holotype except 02.I.2004 (MNRJ); 1♂, same data of holotype except 12.III.2004 (DZUP). — **Rio de Janeiro:** 3♂, 2♀, “Brasil, RJ, Cassimiro de Abreu, Rebio [Reserva Biológica] União Trilha interpretati-

va Malaise 07.XI–13.XII.2013” (1♂, 1♀, DZUP; 2♂, 1♀, DZRJ); 1♂, same data of preceding except 12.XII.2013–27.I.2014 (DZRJ). — **Paraná:** 1♀, “Antonina – PR [Paraná] \ Reserva Sapitanduva \ Brasil 02.XII.1986 \ Lev. Ent. [Levantamento Entomológico] Profaupar \ Lâmpada” (DZUP); 3♂, “Brasil, PR [Paraná] Antonina, \ R.P.P.N. Guaricica, \ 25.316°S 48.696°W, 01–04.II.2022, Malaise susp. [Suspensa] \ Trilha dos Pinheiros, \ Entomologia-UFPR” (DZUP); 9♂, “Brasil, PR [Paraná] Antonina, R.P.P.N. \ Guaricica, 25.316°S 48.696°W, \ 04.II–17.



**Figure 11.** *Acuera umbra* sp. nov., holotype male. **A** head and thorax, dorsal view. **B** head, ventral view. **C** head and thorax, lateral view. **D** forewing. **E** sternite VIII, ventral view. **F** valve, ventral view. **G** pygofer, valve and subgenital plate, lateral view; **g** apical portion of pygofer, dorsal view. **H** subgenital plate, ventral view. **I** connective, dorsal view. **J** style, dorsal view. **K** style, lateral view. **L** aedeagus, lateral view. **M** aedeagus, posterior view. Scale bars in mm.



**Figure 12.** *Acuera umbra* sp. nov., paratype female. **A** distal portion of abdomen, ventral view. **B** distal portion of abdomen, lateral view. **C** first valvifer and first valvula, lateral view. **D** apical portion of first valvula. **E** second valvula, lateral view. **F** apical portion of second valvula. **G** second valvifer and gonoplac, lateral view. **H** apical portion of gonoplac. Scale bars in mm.

II.2022, Malaise susp. [Suspensa] \ Trilha dos Pinheiros, G. Melo, R. R. Cavichioli & A.C. Domahovski" (DZUP); 4♂, same data of preceding except 17.II–04.III.2022 (2♂, DZRJ, 1♂ MNRJ, 1♂ MZSP).

**Etymology.** The new species name refers to the singular black coloration of this species.

**Remarks.** *Acuera umbra* sp. nov. was recovered as sister group of *A. incepta* + *A. levara*, with low branch support (Fig. 7). The new species is similar to *A. incepta* and *A. levara* by the subgenital plate (Fig. 11H) without filiform setae and the similar shape of the apical process of pygofer, style and aedeagus (Fig. 11g, K, L). However, can be easily separated from *A. incepta* and *A. levara* by the aedeagus with apodemal process and shaft, in lateral view (Fig. 11L), strongly curved dorsally at mid-length, and the apex of shaft not expanded. The aedeagus in *A. incepta* is nearly straight and in *A. levara* is distinctly expanded apically. *Acuera umbra* sp. nov. is placed in the subgenus

*Acuera*. This species shows substantial color variation between populations of different Brazilian states, but the male genitalia are uniform across populations.

### *Acuera menaca* DeLong & Freytag

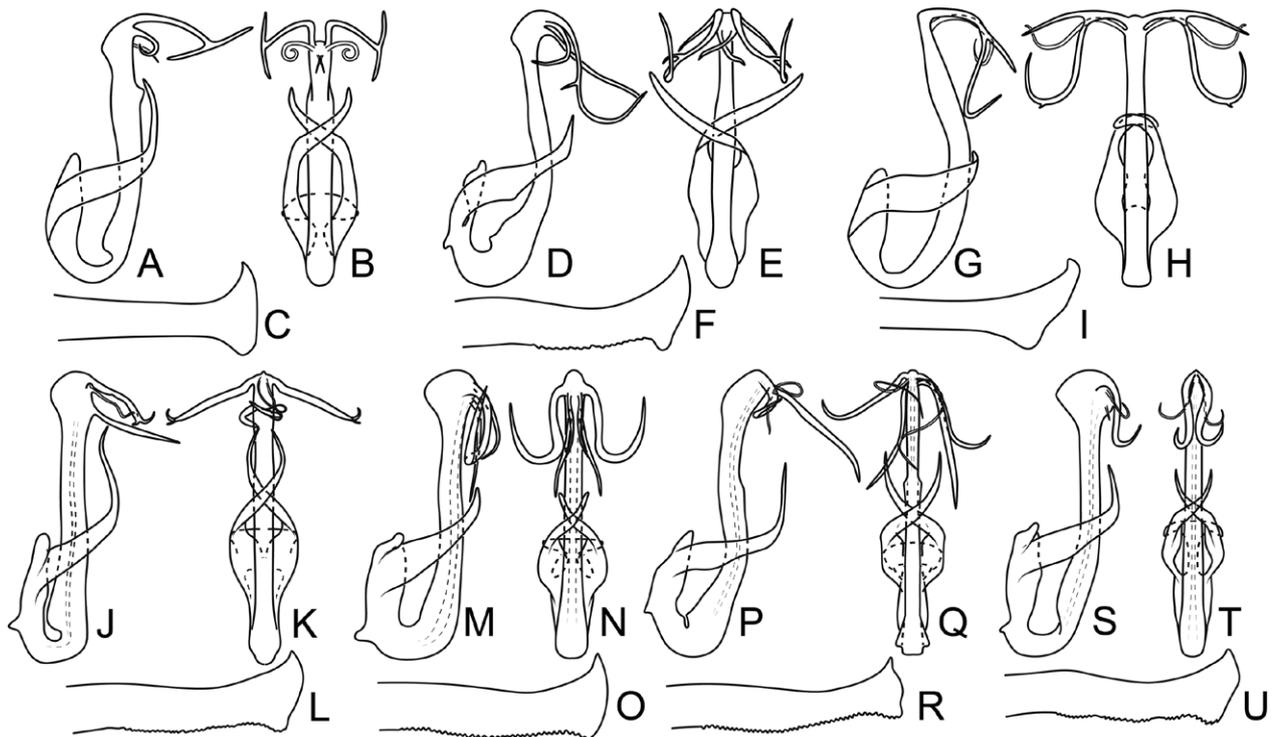
Figs 13, 15C, D, M, 16C, D

*Acuera (Acuera) prodiga* DeLong & Freytag, 1974: 189.

*Acuera (Acuera) culmena* DeLong & Freytag, 1974: 188. **New synonymy.**

*Acuera (Acuera) prodiga* DeLong & Freytag, 1974: 188. **New synonymy.**

**Comments.** DeLong and Freytag (1974) described *A. culmena* based on a single male specimen from Yarinacocha, Peru (Figs 13A–C, 15C, D), *A. menaca* based on five specimens from Peru (Figs 13D–F, 15M), being the holo-



**Figure 13.** Intraspecific variations of aedeagus and apex of style of *A. (Acuera) menaca*. **A–I** redrawn from DeLong and Freytag, 1974. **A–C** *A. (Acuera) culmena* **syn. nov.**, holotype from Yarinacocha, Peru, USNM. **D–F** *A. (Acuera) menaca* **syn. nov.**, holotype from Tingo Maria, Peru, AMNH. **G–I** *A. (Acuera) prodiga*, holotype from Iquitos, Peru, OSU. **J–L** specimen from Novo Mundo, Mato Grosso, Brazil, DZUP. **M–O** specimen from Rio Madeira, Rondônia, Brazil, MZSP. **P–R** specimen from Flona Jamari, Rondônia, Brazil, DZUP. **S–U** specimen from Cusco, Peru, DZRJ.

type from Tingo Maria and *A. prodiga* based on a single male specimen from Iquitos, Peru (Figs 13G–I, 16C, D). These species are very similar in the external morphology and coloration and, according to the DeLong and Freytag, can be differentiated by the shape and number of the apical processes of aedeagus. *Acuera culmena* (Fig. 13A, B) have three pairs of processes, being the apical more robust and branched on apical third, forming two rami equal in length. The two subapical pairs are very slender, being the more basal very short. *Acuera menaca* (Fig. 13D, E) also have three pairs of processes but is distinct from *A. culmena* in having the apical pair longer with a short spine-like process on mid-length, and the two subapical pairs longer than in *A. culmena*. The third species, *A. prodiga* (Fig. 13G, H), have two pairs of processes, being the apical more robust than the subapical pair. The apical pair is branched on basal third, forming two rami, the ventral approximately two times longer than the dorsal and bearing a minute spur on the apical third and the subapical pair longer than in *A. culmena*.

We studied eight male specimens from Brazil, states of Rondônia and Mato Grosso, and one male from Cusco, Peru, and we found four similar features variations of the genitalia. The apical processes of aedeagus can be branched (Fig. 13K) or not (Fig. 13N, Q, T) and with variable lengths and curvatures. The aedeagal shaft, in lateral view, can be approximately straight (Fig. 13A, J, M, S), slightly curved (Fig. 13D, G, P), strongly expanded apically (Fig. 13M, S), moderately expanded (Fig. 13A, D, J, P) or not expanded (Fig. 13G). The more basal

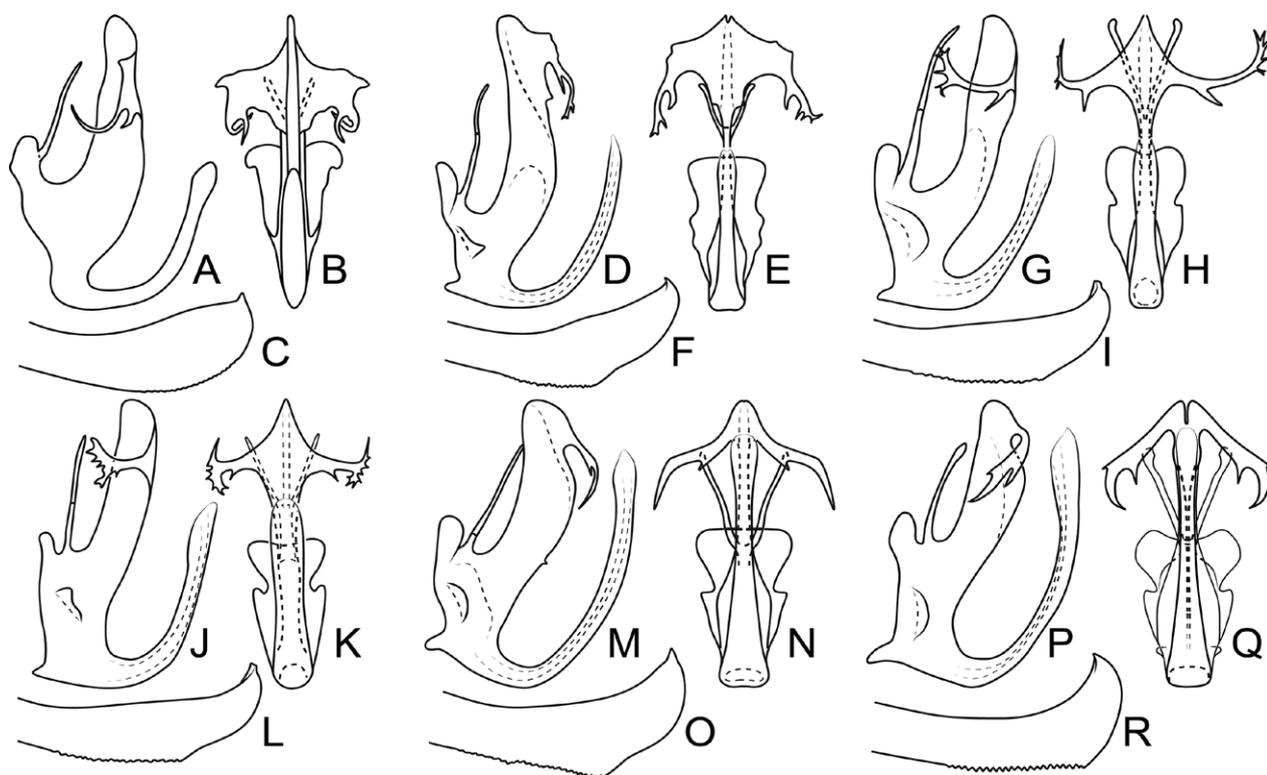
subapical pair of processes (second subapical pair) can be very long (Fig. 13N, Q) with approximately half length of shaft, moderately long (Fig. 13E, K), short (Fig. 13B), vestigial (Fig. 13S) or absent (Fig. 13G). The apodemal process of aedeagus vary in length, being short (Fig. 13G, M, S) or long (Fig. 13A, J). The apex of the style also is variable between the specimens and can be abruptly truncated (Fig. 13C, R), obliquely truncated (Fig. 13F, I) or intermediate between abruptly and obliquely truncated (Fig. 13L, O, U). As all studied specimens are similar to *A. culmena*, *A. menaca* and *A. prodiga* in the external morphology, size, coloration, shape of pygofer, subgenital plates and connective, we consider these differences as intraspecific variations, and we propose that *A. culmena* and *A. prodiga* are synonyms of *A. menaca*. Intraspecific variations in the shape of style and processes of aedeagus are not common in Gyponini but were previously reported in the genus *Gyponana* Ball, 1920 (Hamilton 1982).

### ***Acuera laudara* DeLong & Freytag**

Figs 14, 15I, J

*Acuera (Acuera) laudara* DeLong & Freytag, 1974: 186.

**Comments.** DeLong and Freytag (1974) described *A. laudara* based on a single male specimen from São Paulo State, Brazil (Figs 14A–C, 15I, J). We studied 24 males and nine females from several Brazilian states: Goiás,

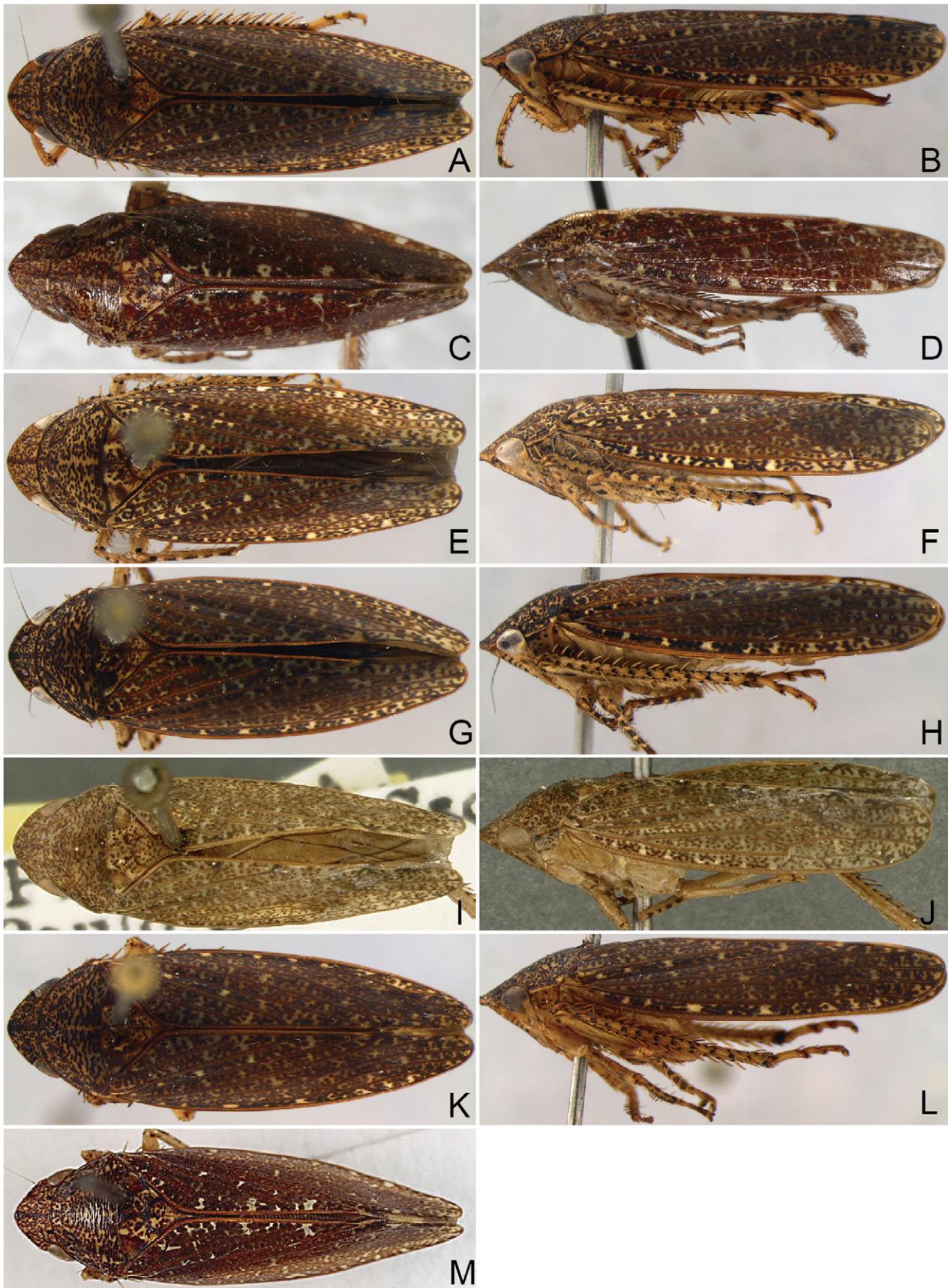


**Figure 14.** Intraspecific variations of aedeagus and apex of style of *A. (Acuera) laudara*. **A–C** holotype form Piracicaba, São Paulo, Brazil, redrawn from DeLong and Freytag, 1974, OSU. **D–F** specimen from Carolina, Maranhão, Brazil, CZMA. **G–I** specimen from Guaribas, Piauí, Brazil, CZMA. **J–L** specimen from Novo Mundo, Goiás, Brazil, DZUP. **M–O** specimen from Aquidauana, Mato Grosso do Sul, Brazil, DZUP. **P–R** specimen from Cáceres, Mato Grosso, Brazil, DZUP.

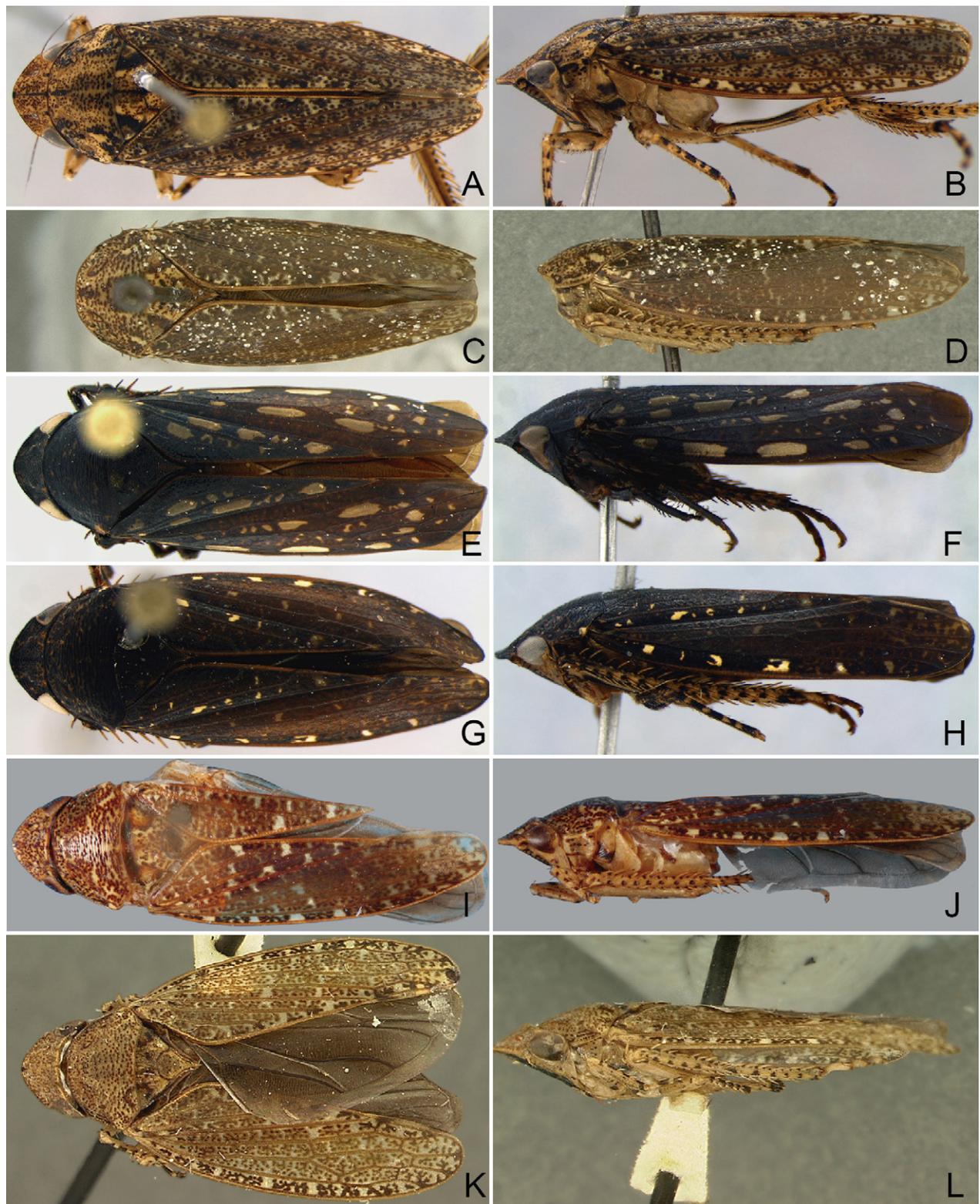
Mato Grosso, Mato Grosso do Sul, Maranhão and Piauí and the Distrito Federal. We found differences in the shape of the style apex and processes of aedeagus between specimens of each Brazilian state and also between specimens collected at the same locality. Some examples of the 12 males dissected from all localities are represented in Fig. 14D–R. The slender anterodorsal process can be branched near half length (Fig. 14D, G, J) or near base (Fig. 14M, P), shorter (Fig. 14D) or longer (Fig. 14G), slightly expanded apically (Fig. 14H, Q) or tapered (Fig. 14K, E). The large dorsal process is branched apically, forming two lateral projections that can be foliaceous and broad at base (Fig. 14B, E), moderately narrow (Fig. 14H, K) or distinctly narrow at base (Fig. 14N, Q), and having a variable number of spiniform processes on the ventral margin and apex, from only one (Fig. 14N) to eight (Fig. 14K). Also the aedeagal shaft can be shorter (Fig. 14A, D, G, J) or longer (Fig. 14M, P) and slightly expanded apically (Fig. 14P) or tapered (Fig. 14D). However, the studied specimens are not different in the external morphology, size, coloration, shape of pygofer, subgenital plates and connective, and we will consider these differences as intraspecific variations.

**Additional examined specimens of *Acuera. Acuera incepta* DeLong & Freytag, 1974. Brazil: Bahia:** [new record] 5♂, 10♀, “Encruzilhada – Bahia\ Brasil 980m XI/74\ M. Alvarenga leg.” (DZUP); **Ceará:** [new record] 1♂, “Brasil (CE), Ubajara\ Parque Nac. [Nacional] de Ubajara\ Cachoeira do Cafundô 03°50'13"S 40°54'35"W”, “Armadilha Luminosa\ 08–11.xi.2012, F. \ Limeira-de-Oliveira, J.\ S. Pinto

Júnior, cols” (CZMA). — **Minas Gerais:** [new record] 45♂, 5♀, “S. Gonçalo Rio Abaixo,\ MG, Brasil, (Est. Amb\ Peti-Cemig) [dates between VI.2002 and I.2003\ A. F. Kumagai. Col.” (DZUP); 1♀, “Brasil, Minas Gerais, 10\ Km and SE de Berisal, Faz\ Veredão, 15°40'S 41°40'W, 850m,\ 13.ii.2010, G. Melo,\ D. Parizotto & P. Grossi\ arm. luminosa (18–20h)” (DZUP); 2♀, “B. Horizonte – MG\ [28.IV–4.V.92 and 26.XII–2.XII.91]\ A. F. K.” (DZUP). — **Paraná:** [new record] 65♂, 29♀, “Jundiá do Sul – PR\ Fazenda Monte Verde\ Brasil [dates between VIII.1986 and V.1988]\ Lev. Ent. Profaupar\ Malaise” (DZUP); 6♂, 1♀, “P. Grossa (V. Velha) – PR\ Reserva IAPAR Br376\ Brasil [dates between IX.1986 and III.1987]\ Lev. Ent. Profaupar\ Malaise” (DZUP); 3♂, 2♀, “Antonina – PR\ Reserva Sapitanduva\ Brasil [dates between XI.1986 and III.1988]\ Lev. Ent. Profaupar\ Malaise” (DZUP); 2♂, “Fênix – PR\ Reserva Est. ICTF Brasil [XI.1986 and XII.1986]\ Lev. Ent. Profaupar\ Malaise” (DZUP); 2♂, 3♀, “Colombo – PR\ Embrapa Br 476 Km20\ Brasil [dates between VIII.1987 and VII.1988]\ Lev. Ent. Profaupar\ Malaise” (DZUP); 1♂, “Terra Boa – PR\ 20–31-XII-1984\ J. A. Rafael leg” (DZUP); 1♂, 3♀, “Morretes – PR Brasil (IAPAR)\ [dates between I and VI.1985]\ C.I.I.F (Luminosa)” (DZUP); 2♂, “Brasil, PR, Bandeirantes\ Parque Estadual Mata\ São Francisco\ 15a19. IX.2010 malaise\ Nihei, S. & Gilung, J. leg.” (MZSP); 7♂, 1♀, “Brasil, Paraná, S. J. dos\ Pinhais, 25°36'18"S 49°11'37"W 880m\ [dates between 23.I.2017 and 31.XI.2019] malaise\ A.C. Domahovski leg.” (DZUP). — **Piauí:** [new record] 1♂, “Brasil (Piauí), Caracol\ Parque Nac. Serra das Confu-\ sões, Riacho dos Bois, 575m\ 09°13'11.9"S 43°29'26.2"W”, “Armadilha Suspensa\ 01–10.iv.2014, J. A. Rafael, F. Limeira-de-Oliveira, T. L.\ Rocha & G. A. Reis, cols.” (CZMA); 2♂, “Brasil (Piauí), Caracol\ Parque Nac. Serra das Confu-\ sões, Riacho dos Bois, 575m\ 09°13'11.9"S 43°29'26.2"W”, “Armadilha Suspensa\ 20–31.vii.2014, J. A. Rafael, F. Limeira-de-Oliveira, T. L.\ Rocha



**Figure 15.** Species of *Acuera*, dorsal (left) and lateral (right) views. **A, B** *A. (Acuera) adspersa*, male, DZUP. **C, D** *A. (Acuera) culmena* **syn. nov.**, holotype male, USNM. **E, F** *A. (Acuera) extenuata* **sp. nov.**, holotype male, DZUP. **G, H** *A. (Acuera) incepta*, male, DZUP. **I, J** *A. (Acuera) laudara*, holotype male, OSU. **K, L** *A. (Acuera) levara*, male, DZUP. **M** *A. (Acuera) menaca*, holotype male, AMNH.



**Figure 16.** Species of *Acuera*, dorsal (left) and lateral (right) views. **A, B** *A. (Acuera) nigrifrons*, male, DZUP. **C, D** *A. (Acuera) prodiga* syn. nov., holotype male, OSU. **E–H** *A. (Acuera) umbra* sp. nov., **E, F** holotype male, DZUP. **G, H** paratype male from State of Rio de Janeiro, DZRJ. **I, J** *(Tortusana) angera*, holotype male, USNM. **K, L** *A. (Tortusana) luhea*, holotype male, OSU.

& G. A. Reis, cols.” (CZMA); 2♂, “Brasil (Piauí), Caracol\ Parque Nac. Serra das Confu-\ sões, Riacho dos Bois, 575m\ 09°13'11.9”S 43°29'26.2”W”, “Armadilha Suspensa\ 01–10.vii.2014, J. A. Rafael,\ F. Limeira-de-Oliveira, T. L.\ Rocha & G. A. Reis, cols.” (CZMA); 1♂, “Brasil (Piauí), Caracol\ Parque Nac. Serra das Confu-\ sões, Riacho dos Bois, 575m\ 09°13'11.9”S 43°29'26.2”W”, “Armadilha de Malaise\

11–20.viii.2013, J. A. Rafael,\ F. Limeira-de-Oliveira\ & T. T. A. Silva, cols” (CZMA). – **Rio de Janeiro**: [new record] 1♂, “Rep. Rio Grande RJ\ RJ – Br II-1976\ M. Alvarenga Leg” (DZUP). – **Rio Grande do Sul**: 1♂, “Triunfo – RS\ 13–14.VI.96\ E. L. Sousa” (DZUP); 2♂, 3♀, “Montenegro – RS – BR\ (Armadilha adesiva) [dates between VII.2009 and IV.2010\ Carvalho, G.S. leg” (MCTP). – **Santa Catarina**: [new

record] 10♂, 3♀, “Brasilien\ Nova Teutonia\ 27°11' B. 52°23' L\ Fritz Plaumann”, XI.78 and XI.82, (DZUP). — **São Paulo:** [new record] 1♂, “Brasil, São Paulo\ Teodoro Sampaio\ XI.1978” (DZUP); 1♂, “Brasil, São Paulo\ Barueri\ III.1958\ K. Lentes leg” (DZUP); 2♂, “Brasil, SP, Santo André\ REBIO Parabapiacaba\ 23°46'46”S 46°18'29”W\ 21.VIII and 21.IX.2011\ Malaise 3\Gudin & Dios legs.” (MZSP); 1♂, 4♀, “Brasil, São Paulo,\ Jundiá,\ Serra do Japi\ 18.III.2010\ Malaise IV” (MZSP); 10♂, 4♀, “Brasil, SP, Bertioga, P.\ Estadual Restinga de\ Bertioga, rio Itaguaré\ 23°46'52”S 45°58'31”W [dates between 5.I.2013 and 22.XI.2013] Malaise\ Biffi, Cesar & Fuhrmann” (MZSP).

**Acuera laudara DeLong & Freytag, 1974. Brazil: Distrito Federal:** [new record] 2♀, “Brasil, Brasília – DF, Faz.\ Água Limpa, 15.9594°S 47.9328°W, [31.I.2011 and 10.X.2013] Malaise, A.J.C. Aguiar” (DZUP); 1♀, “Brasil, Brasília – DF,\ Fazenda Água Limpa,\ Cerrado, malaise, 09–\ 23.XI.2017, J.R.P. Luz” (DZUP). — **Goiás:** [new record] 2♂, “Brasil, GO, Novo Mundo,\ Armadilha Malaise\ 13.9292°S 49.9716°W, \ 282m, [10.XII.2010 and 02.IV.2012]” (DZUP); 1♂, “Brasil, Goiás\ São Domingos\ Fazenda Cipasa\ 18-IX a 2-X-93”, “Dionísio Pimentel”, “Malaise”, “MPEG 05029111” (MPEG). — **Mato Grosso:** [new record] 3♂ “Cáceres, MT\ 28-I-1985\ C. Elias leg.\ Polono-roeste” (DZUP). — **Mato Grosso do Sul:** [new record] 2♂, “Brasil, MS, Aquidauana\ Res. Ecol. UEMS – vege-\ tação aberta Malaise\ 20°26'03”S 55°39'20”W\ 26.VII–11.VIII.2012\ Lamas, Nihei & eq leg\ SISBIOTA – CNPq/FAPESP” (MZSP); 2♀, “Brasil, MS, Chapadão do Sul,\ Pantanal, 18°46'30,09”S 52°31'04,98”W, 804m,\ [28.XI.2016 and 05.III.2016], T. Taira leg.” (DZUP). — **Maranhão:** [new record] 1♀, “Brasil, Maranhão, Caxias,\ Res. Ecol. Inhamum\ 04°53'30”S 43°24'53”W\ 15.IV.2018, sweep.\ A.C. Domahovski leg” (DZUP); 1♂, “Brasil, (MA), Riachão\ Fazenda Altos\ Armadilha Malaise”, “18–22.viii.2009\ F. Limeira-de-Oliveira\ & M. B. Aguiar Neto” (CZMA); 2♂, “Brasil (MA), Carolina\ PARNA Chapada das Mesas,\ Riacho Sucuruu, 240m\ 07°07'05.6”S 47°18'31.6”W”, “Armadilha de Malaise\ 10–20.viii.2014; J.A. Rafael\ F.Limeira-de-Oliveira, T.L.\ Rocha & G. A. Reis, cols.” (CZMA); 7♂, 3♀, “Brasil (MA), Mirador\ Parque Est. Mirador\ Base da Geraldina\ 06°37'25”S 45°52'08”W”, “Armadilha suspensa\ [dates between 18.ii.2012 and 08–14.iii.2013], J. T. \ Camara, L.L.M. Santos\ L. S. Santos cols” (CZMA); 1♂, “Brasil, MA\ Imperatriz\ Ribeirãozinho\ Salo VIII1989”, “Armadilha Malaise”, “Brasil MA\ F.F. Ramos”, “MPEG 05027945” (MPEG). — **Piauí:** [new record] 6♂, “Brasil (PI), Guaribas\ Parque Nacional Serra das Confusões, Andorinha, 515m\ 09°08'27.8”S 43°33'42.1”W”, “Armadilha Suspensa\ [dates between 01–10.iv.2014 and 01–10.viii.2014], F.\ Limeira-de-Oliveira, T.L.\ Rocha & G. A. Reis, cols.” (CZMA).

**Acuera levara DeLong & Freytag, 1974. Brazil: Goiás:** [new record] 1♀, “S. Isabel do Morro\ I. Bananal Goiás\ Brasil VI-1964\ M. Alvarenga leg” (DZUP). — **Paraná:** [new record] 3♂, 1♀, “Fênix – PR\ Reserva Est. ICTF Brasil [dates between VIII.1986 and V.1988] Lev. Ent. Profaupar\ Malaise” (DZUP); 1♂, “Terra Boa – PR\ 01-03-I-1985\ J. A. Rafael leg\ malaise” (DZUP). — **Tocantins:** [new record] 1♀, “Brasil, Tocantins, Palmas\ Taquaruçu, Fazenda\ Encantada 10°15'2.3”S 48°07'33.6”W Malaise\ 18–25.v.2012 Krolow,\ T.K. & Lima, H.I.L. leg.” (DZUP).

**Acuera menaca DeLong & Freytag, 1974. Brazil: Rondônia:** [new record] 1♂, “Brasil, Rondônia, Flona\ Jamari, 03/05.IX.2012\ (malaise) 9°15'35”S 62°54'47”W 110m\ R.R. Cavichioli leg.” (DZUP); 3♂, “Brasil, Rondônia, Porto\ Velho, Rio Madeira\ 09°35'29”S 65°02'57”W

Malaise 04–18.IX.2012\ MA Ullysséa & LP Prado” (DZUP); 3♂, “Brasil, Rondônia, Porto\ Velho, Rio Madeira\ 09°38'06”S 65°27'11”W\ Malaise 05–17.I.2011\ RR Silva & RSProbst leg” (MZSP). — **Bolivia:** [new record] 1♂, “Bolívia GS\ 2009” (DZRJ). — **Peru:** 1♂, “Peru: Cusco, 3rd km Quincemil\ 13°13'03”S 70°43'40”W 633m\ 23–30.VIII.2012 Malaise\ RR Cavichioli, JA Rafael, APM\ Santos & DM Takiya” (DZRJ).

**Acuera nigrifrons (Osborn, 1938). Bolivia:** 1♂, “BOLIVIA: Dpto. Santa Cruz; Reserva Natural Potrerillo del Guenda; on road out; 5–18 Oct. 2009; S17 40 37.8 W63 26 40.4; 355m elev.; J.R. Cryan & A.J. Bell” (DZRJ). — **Peru:** [new record] 1♂, “Peru: Madre de Dios, 12 rd\ km and Mazuco, Pte. Amanapu\ 13°02'51”S 70°20'46”W\ 382m 28–22.VIII.2012\ APM Santos & DM Takiya” (DZRJ); 1♂, “Peru: San Martin, Cons. Mun. Zona\ Barreal 23 km S Picota 335m,\ 7°04.88'S 76°18.89'W 6–15Mar\ 2005, ME Irwin, JD Vasquez,\ Malaise, dry forest PE 11-02” (DZRJ); 1♂, Peru: Cusco, 19 rd km W Quicemil,\ Rio Araza tributary\ 13°20'10”S 70°50'57”W 874m\ 23–31.VIII.2012 Malaise RR Cavichioli,\ JA Rafael, APM Santos & DM Takiya” (DZUP).

### 3.3.2. *Coarctana* gen. nov.

<https://zoobank.org/C82FE565-FF2B-4B90-99AE-C115857B6A29>

Figs 17–32

**Type species.** *Acuera rana* DeLong & Freytag, 1982: 309.

**Diagnosis.** Small to medium size leafhoppers (7.0–10.5 mm). Head, in dorsal view (Figs 17A, 18A), moderately produced anterad, median length slightly longer than half interocular width; crown surface with transverse striae; ocellus slightly closer to inner margin of eye than to midline. Head, in lateral view (Figs 17C, 18C), crown-face transition thin, with 3–6 transverse carinae. Pronotum (Figs 17A, 18A) with black or brown punctures. Forewing (Figs 20D, 22D) M vein with segment after the divergence between R+M and before the cross vein *m-cu*<sub>1</sub> 2× longer than the length of *m-cu*<sub>1</sub>; appendix reduced. Subgenital plate (Figs 17H, 22H) usually with long setae. Aedeagus (Figs 17L, 18L) strongly constricted between dorsal apodeme and atrium; dorsal apodeme with pair of long processes, strongly curved dorsally.

**Coloration.** Head and thorax (Figs 29, 32) reddish-brown or yellowish-brown. Head (Figs 17A, 19A) without black punctures, usually with a pair of small circular black spots, near posterior margin, behind ocelli. Face (Figs 17B, 18B) usually without maculae. Pronotum (Figs 17A, 18A) with black or brown punctures and frequently with irregular black spots near anterior margin. Forewing (Figs 17D, 23D) with black maculae on apex of anal veins, cross veins of discal and apical cells, usually with additional mottled black spots, or with a transverse brown stripe over subapical cells. Legs (Figs 31, 32) without large black maculae or punctures. Metatibia (Figs 17C, 23C) with cucullate bases of setae blacks.

**Description.** Head, in dorsal view (Figs 17A, 18A), moderately produced anterad, median length slightly longer than half interocular width; transocular width 8.0–8.5 tenths of pronotum humeral width; crown surface with transverse striae; ocellus slightly closer to anterior margin or equidistant between anterior and posterior margins of crown and slightly closer to inner margin of eye than to midline. Head, in frontal view (Figs 17B, 18B), face wider than high; frons texture shagreen, surface just below the crown-face transition not excavated; frontogenal suture surpassing antennal ledge, extending to anterior margin of crown; supra-antennal lobe oblique, advancing over the frons for short distance; gena with ventrolateral margin rounded and slightly angled medially; maxillary plate produced ventrally as far as clypeus apex. Head, in lateral view (Figs 17C, 18C), crown-face transition thin, with 3–6 transverse carinae; anterior margin of crown slightly projected over anterior margin of eye; frons not inflated. Pronotum, in dorsal view (Figs 17A, 18A), with transverse striae on disc and posterior third; lateral margins as long as eye length; posterior margin slightly excavated; in lateral view (Figs 17C, 18C), moderately declivous, continuous with head declivity. Mesonotum (Figs 17A, 18A), slightly wider than long; scutellum (Figs 17A, 18A) slightly swollen. Forewing (Figs 20D, 22D) without extra numerary veins; M vein with segment after the divergence between R+M and before the cross vein  $m-cu_1$   $2\times$  longer than the length of  $m-cu_1$ ; appendix reduced, bordering first to second apical cells; apex rounded. Profemur moderately elongated,  $3.5\times$  longer than wide; AD, AM, and PD rows reduced and poorly defined, with exception of apical setae  $AD_1$ ,  $AM_1$ , and  $PD_1$ , respectively; IC row formed by slightly arched comb of fine setae, beginning at distal half of femur and extending to  $AM_1$ ; AV row with 4–6 setae restricted to basal half; PV with 1–3 setae. Protibia, in cross-section, semi-circular, dorsal surface with longitudinal carina adjacent to PD row; AV row formed by long setae, slightly longer and thicker towards apex; dorsal rows with apical  $AD_1$  and  $PD_1$  setae developed; AD row without differentiated setae. Mesotibia with dorsal surface rounded. Metafemur with setal formula 2:2:1. Metatibia with AD row with up to 4 intercalary setae between macrosetae; PV row with setae of apical half formed by sequence of a longer and thicker seta, interspersed with 2–4 thinner and shorter setae, ending with a long and thick seta. Metatarsomere I ventral surface with rows of non-cucullate setae; outer row absent or with setae very reduced in size; inner row with 5–8; pecten with 3–4 platellae, flanked by one inner and one outer tapered seta. Metatarsomere II pecten with 2 platellae, flanked by two inner and one outer tapered seta.

**Male terminalia.** Sternite VIII not covering subgenital plates. Pygofer, in lateral view (Figs 22G, 23G), with basodorsal processes usually developed and extending ventrally. Anal tube membranous, without processes. Subgenital plate (Figs 17H, 22H) usually with long se-

tae. Aedeagus (Figs 17L, 18L) strongly constricted between dorsal apodeme and atrium, dorsal apodeme bent ventrally, with pair of long processes, strongly curved dorsally.

**Female terminalia.** Pygofer (Fig. 21B, 24B) with macrosetae distributed on posteroventral quadrant and dorsoapical third. Ovipositor slightly curved dorsally. First valvula (Figs 21C, 27C) not broadened medially; dorsal sculptured area strigate, beginning after half length of valvula; ventral interlocking device distinct on basoventral  $2/5$  of blade; apex tapered and acute. Second valvula (Figs 21E, 27E) wider near half length; dorsal protuberance rounded, located after half length of blade; dorsal margin with few very small, rounded teeth, irregular shaped, present subapically; ventral margin without denticles; apex tapered and subacute. Second valvifer (Figs 21G, 27G)  $2.8\times$  longer than wide. Gonoplac (Figs 21G, 27G) posterodorsal margin straight, about 4 tenths of blade length; external surface with dentiform cuticular projections; ventral margin broadly rounded; apex slightly tapered and rounded.

**Distribution.** Colombia, Bolivia, Brazil, Ecuador, Peru and Venezuela.

**Etymology.** The generic name *Coarctana* (feminine noun) is derived from the Latin word “coarctatio” meaning constriction. It refers to aedeagus bearing a strong constriction between the atrium and dorsal apodeme. The suffix – ana is common in names of Gyponini genera.

### Species of *Coarctana* gen. nov.

- C. apena* (DeLong & Freytag, 1976): 44 (**comb. nov.**) (*Curtara* (*Curtara*)). Brazil [new record]: Rondônia [new record]; Peru.
- C. asymmetrica* **sp. nov.** Brazil: Mato Grosso.
- C. glabra* **sp. nov.** Brazil: Acre.
- C. nigromedia* **sp. nov.** Brazil: Distrito Federal, Minas Gerais, Paraná, São Paulo and Tocantins.
- C. occultata* **sp. nov.** Peru.
- C. oricula* **sp. nov.** Brazil: Mato Grosso and Rondônia.
- C. parvula* **sp. nov.** Peru.
- C. pedica* (DeLong, 1980): 191 (**comb. nov.**) (*Curtara* (*Curtara*)). Peru.
- C. punctata* (Spångberg, 1878): 67 (**comb. nov.**) (*Gypona*). Colômbia.
- C. rana* (DeLong & Freytag, 1982): 309 (**comb. nov.**) (*Acuera* (*Paracana*)). Bolivia, Brazil [new record]: Rondônia [new record]; Peru [new record].
- C. secara* (DeLong & Triplehorn, 1979): 179 (**comb. nov.**) (*Curtara* (*Curtara*)). Peru.
- C. serpenta* (DeLong, 1980): 193 (**comb. nov.**) (*Curtara* (*Curtara*)). Venezuela.
- C. striata* **sp. nov.** Brazil: Maranhão and Tocantins.
- C. taurina* **sp. nov.** Brazil: Acre, Mato Grosso, Maranhão and Rondônia; Ecuador.
- C. vilavelha* **sp. nov.** Brazil: Minas Gerais and Paraná.

**Key to males of *Coarctana* gen. nov.**

[*Coarctana punctata* (Spångberg) **comb. nov.** only known by the female.]

- 1 Apical portion of aedeagal shaft (Fig. 22L, M) with one pair of processes or a single process on anterior surface. ....2
- 1' Apical portion of aedeagal shaft (Fig. 17L, M) with two pairs of processes.....10
- 2 Aedeagal shaft (Fig. 23L) with a conspicuous basolateral expansion that surrounds the previous portion of shaft. ....3
- 2' Aedeagal shaft (Fig. 17L) without basolateral expansion that surrounds the previous portion of shaft, or if present, inconspicuous.....4
- 3 Style (Fig. 28K) slightly expanded and rounded apically. Aedeagus (Fig. 28M) with apodemal process bearing a acute process on external surface; shaft without spiniform processes on posterior surface; apex with minute pair of processes ..... *C. taurina* sp. nov.
- 3' Style (Fig. 23K) hook-shaped apically. Aedeagus (Fig. 28M) with apodemal process bearing a rounded process on external surface; shaft with several minute spiniform processes on posterior surface; apex with long pair of processes ..... *C. oricula* sp. nov.
- 4 Head (Fig. 20A) with a wide longitudinal dark-brown band between ocelli. Aedeagus (Fig. 20L) with ventral margin of apodemal processes forming a rounded lobe produced ventrally .....5
- 4' Head (Fig. 19A) without wide longitudinal dark-brown band between ocelli. Aedeagus (Fig. 19L) without lobe on ventral margin of apodemal processes .....7
- 5 Pygofer (Fig. 29G) not excavated apically. Aedeagus (Fig. 29M) with apical portion slightly twisted laterally..... *C. vilavelha* sp. nov.
- 5' Pygofer (Fig. 20G) excavated apically. Aedeagus (Fig. 29M) with apical portion not twisted laterally.....6
- 6 Style (Fig. 29K) without apical process on ventral margin. Aedeagal shaft (Fig. 29M) with apical processes symmetrical in length ..... *C. nigromedia* sp. nov.
- 6' Style (Fig. 18K) with apical process on ventral margin. Aedeagal shaft (Fig. 18M) with apical processes asymmetrical in length, being the right process 2× longer than the left process ..... *C. asymmetrica* sp. nov.
- 7 Aedeagus (Fig. 26L, M) apodemal processes with parallel transverse striae on posterior margin; shaft with apical pair of processes, curved laterally and crossed over the posterior surface ..... *C. striata* sp. nov.
- 7' Aedeagus (Fig. 22L, M) apodemal processes without striae; shaft with apical pair of processes not crossed over the posterior surface.....8
- 8 Aedeagus (DeLong 1980: 211, figs 21, 22) with long apical processes with about half length of shaft..... *C. serpenta* (DeLong) **comb. nov.**
- 8' Aedeagus (Fig. 22L, M) with apical processes with about 1/4 length of shaft or less .....9
- 9 Aedeagus (DeLong and Triplehorn 1979: 185, figs 36, 37) apodemal process acute apically; shaft with a single subapical process on anterior surface..... *C. secara* (DeLong & Triplehorn) **comb. nov.**
- 9' Aedeagus (Fig. 22L, M) apodemal process rounded apically; shaft with pair of subapical process on posterior surface ..... *C. occultata* sp. nov.
- 10 Apodemal process of aedeagus (Fig. 25L, M) with a small process on external surface near mid-length or subapically.....11
- 10' Apodemal process of aedeagus (Fig. 19L, M) without processes on external surface .....12
- 11 Aedeagus (DeLong 1980: 209, figs 96, 97) apodemal process with a small subapical spur; shaft with apical pair of processes about 3× longer than the subapical pair, both approximately directed laterally ..... *C. pedica* (DeLong) **comb. nov.**
- 11' Aedeagus (Fig. 25L, M) apodemal process with a small process near mid-length; shaft with apical pair of processes curved ventrally, subapical pair directed dorsolaterally, approximately 2× longer than the apical pair ..... *C. parvula* sp. nov.
- 12 Subgenital plate (Fig. 19H) ovoid, without filiform setae ..... *C. glabra* sp. nov.
- 12' Subgenital plate (Fig. 17H) elongate, with filiform setae.....13
- 13 Head, pronotum and forewing (Fig. 17A) mottled with black maculae. Apodemal process of aedeagus (Fig. 17L, M) very narrow, not broadened medially, strongly curved dorsally, almost semicircular ..... *C. rana* (DeLong & Freytag) **comb. nov.**
- 13' Head, pronotum and forewing (Fig. 31A, B) without black maculae. Apodemal process of aedeagus (DeLong and Freytag 1976: 87, figs 270, 271) slightly broadened medially, weakly curved dorsally, not semicircular..... *C. apena* (DeLong & Freytag) **comb. nov.**

***Coarctana rana* (DeLong & Freytag)  
comb. nov.**

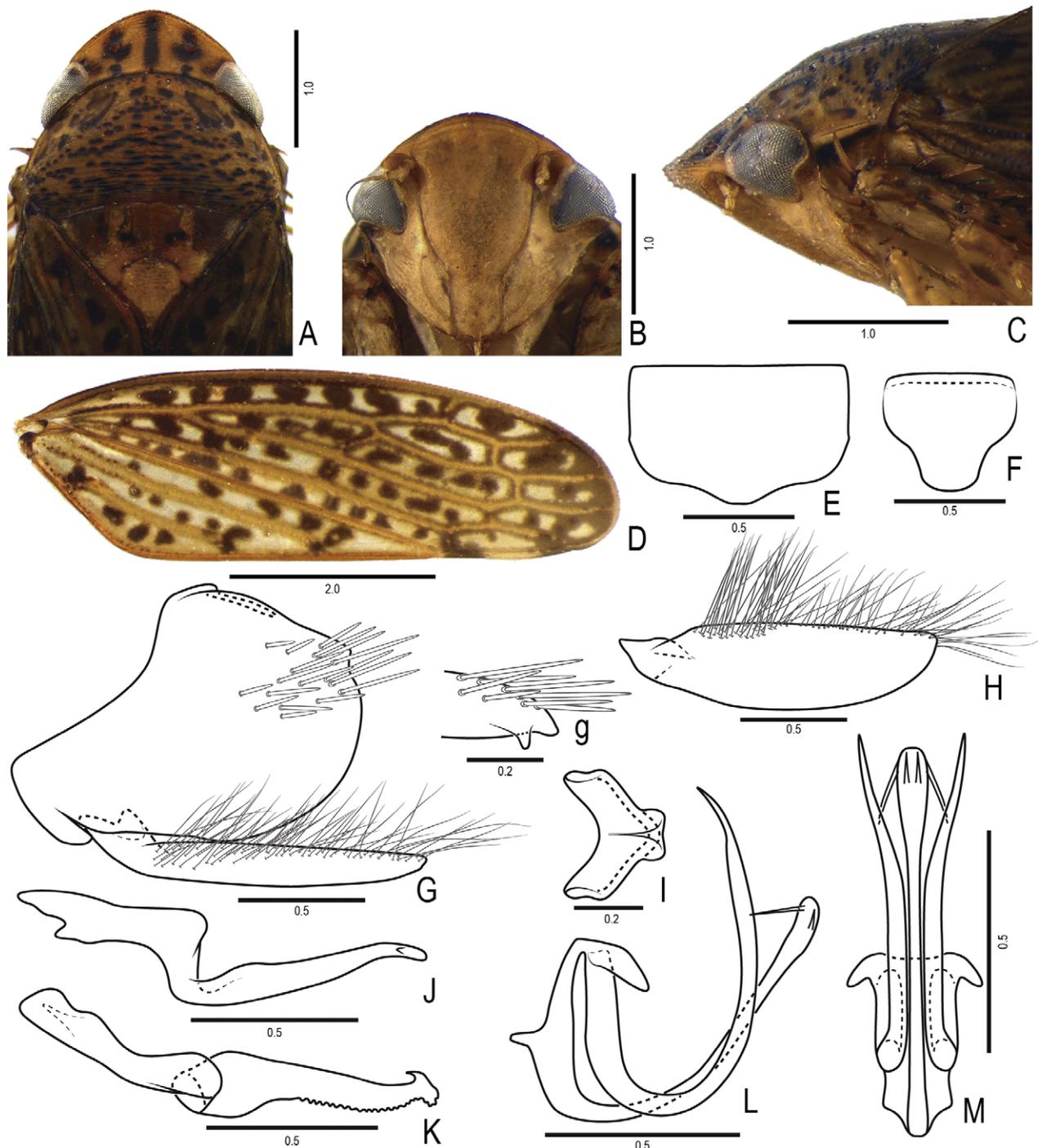
Figs 17, 32C, D

*Acuera rana* DeLong & Freytag, 1982: 309.

**Diagnosis.** Pygofer, in dorsal view (Fig. 17g), with a small subapical process directed inwards. Subgenital plate (Fig. 17H) with long filiform setae. Style (Fig. 17K)

with apex expanded forming rounded lobe ventrally and small dorsal process, curved anterad. Aedeagus (Fig. 17L, M) with apodemal process very narrow, strongly curved dorsally; shaft slender; apex slightly inflated, with two pairs of short processes: a subapical pair on posterior surface, directed dorsally and a apical pair directed ventrally, about twice as long as the subapical pair.

**Measurements.** Total length: males 7.6–8.1 mm.



**Figure 17.** *Coarctana rana* comb. nov., male. **A** head and thorax, dorsal view. **B** head, ventral view. **C** head and thorax, lateral view. **D** forewing. **E** sternite VIII, ventral view. **F** valve, ventral view. **G** pygofer, valve and subgenital plate, lateral view; **g** apical portion of pygofer, dorsal view. **H** subgenital plate, ventral view. **I** connective, dorsal view. **J** style, dorsal view. **K** style, lateral view. **L** aedeagus, lateral view. **M** aedeagus, posterior view. Scale bars in mm.

**Description.** Head, in frontal view (Fig. 17B), frons 1.1× wider than long; frontogenal suture distant from eye margin by approximately the width of scape; clypeus 1.3× wider than long; lateral margins straight and parallel; apex straight. Head, in lateral view (Fig. 17C), crown-face transition moderately thick, with 5–6 transverse carinae; clypeus not inflated. Profemur AV row with 5–6 setae; PV row with 3–4 setae. Protibia PD row with 4 setae and undifferentiated intercalary setae; PV row with 5 setae and undifferentiated intercalary setae. Metatibia PD, AD and AV rows with 22–24, 12 and 13–15 macrosetae respectively. Metatarsomere I 4.5× longer than apical width; inner row of the ventral surface with 7–8 setae. Other characteristics as in generic description.

**Coloration.** Head and thorax (Figs 17A–D, 32C, D) yellowish-brown. Head (Fig. 17A) with pair of small circular black spots, near posterior margin, behind ocelli; coronal suture black; ocellus surrounded by black maculae in more melanic specimens. Face (Fig. 17B) yellowish, without maculae. Pronotum (Fig. 17A) with black punctures and irregular black spots near anterior margin; proepimeron (Fig. 17C), with black band below pronotal carina. Mesonotum (Fig. 17A) with dark-brown lateral angles, pair of small median black spots near scutoscutellar suture. Forewing (Fig. 17D) strongly marked by dark-brown mottling; veins yellowish-brown, outlined by dark-brown. Metatibia (Fig. 17C) with cucullate bases of setae black.

**Male terminalia.** Sternite VIII (Fig. 17E) 1.5× wider than long; lateral margins parallel; posterior margin produced medially forming short, rounded lobe. Valve (Fig. 17F) narrow, 1.1× wider than long; posterior margin tapered and rounded. Pygofer, in lateral view (Fig. 17G), 1.4× longer than maximum height; basodorsal process present but reduced; anteroventral and posterodorsal margins straight; posteroventral margin broadly rounded; apex broad, slightly excavated; in dorsal view (Fig. 17g), with small subapical process directed inwards. Subgenital plate, in lateral view (Fig. 17G), surpassing pygofer apex; in ventral view (Fig. 17H), elongated, 3.8× longer than wide, maximum width medially; outer margin with long filiform setae; inner margin slightly rounded; outer margin straight; apex weakly tapered and rounded. Connective (Fig. 17I) wider than long; anterior margin excavated; dorsal keel and stem reduced. Style, in dorsal view (Fig. 17J), with outer lobe small and rounded; strongly sinuate between outer lobe and blade; in lateral view (Fig. 17K), with blade slightly wider near base and tapered toward apex; dorsal and ventral margins slightly sinuate; ventral margin with apical half serrated; apex expanded forming rounded lobe ventrally and small dorsal process, curved anterad. Aedeagus (Fig. 17L, M) preatrium weakly developed; dorsal apodeme with dorsal margin slightly excavated, lateral margins produced ventrolaterally; apodemal process very narrow, strongly curved dorsally, apex tapered and acute; shaft slender, cylindrical, curved dorsally near base; apex slightly inflated, with two pairs of short processes: a subapical pair on posterior surface,

directed dorsally and a apical pair directed ventrally, about twice as long as the subapical pair. Other characteristics as in generic description.

**Female.** Unknown.

**Material examined. Bolivia:** 3♂, “Bolivia, Cochabamba, Vila Tunari 16°54'55"S 65°22'06"W 10.VI–03.VII.2002\ malaise Helmut Heidas” (DZRJ); 1♂, same data as preceding except 07–20.IX.2002 (DZUP). —

**Brazil: Rondônia:** 1♂, “Ouro Preto d'Oeste, RO\ 31.X.1987\ C. Elias, leg” (DZUP). — **Peru:** 2♂, “Peru: San Martin, Cons.\ Mun. Zona Barreal 23Km S\ Picota 335m, 7°04.88'S, 79°18.89'W 6–15Mar2005,\ ME Irwin, JD Vasquez,\ Malaise, dry Florest PE 11-02” (DZRJ); 1♂, “Peru: Dept Amazonas,\ Distr. Águas Verdes,\ Bagua Taparoto Rd(5N)\ at Km403; 23–30.I.2009\ ME Irwin, GA Amaya,\ 1125m; 05°41'23"S 77°38'13"W” (DZRJ); 1♂, same data as preceding except 30.I–06.II.2009 (DZRJ); 1♂, same data as preceding except 15–22.V.2009 (DZUP).

**Remarks.** Our analysis recovered *C. rana comb. nov.* as sister to *C. serpenta comb. nov.* with low branch support (SR < 50) (Fig. 7). These species are similar in the overall coloration (Fig. 32C–F); in having a small digitiform processes at pygofer apex (Fig. 17g); the subgenital plates (Fig. 17H) with long filiform setae; and in the shape of the apodemal processes of aedeagus, slender and strongly curved (Fig. 17L).

### *Coarctana asymmetrica* sp. nov.

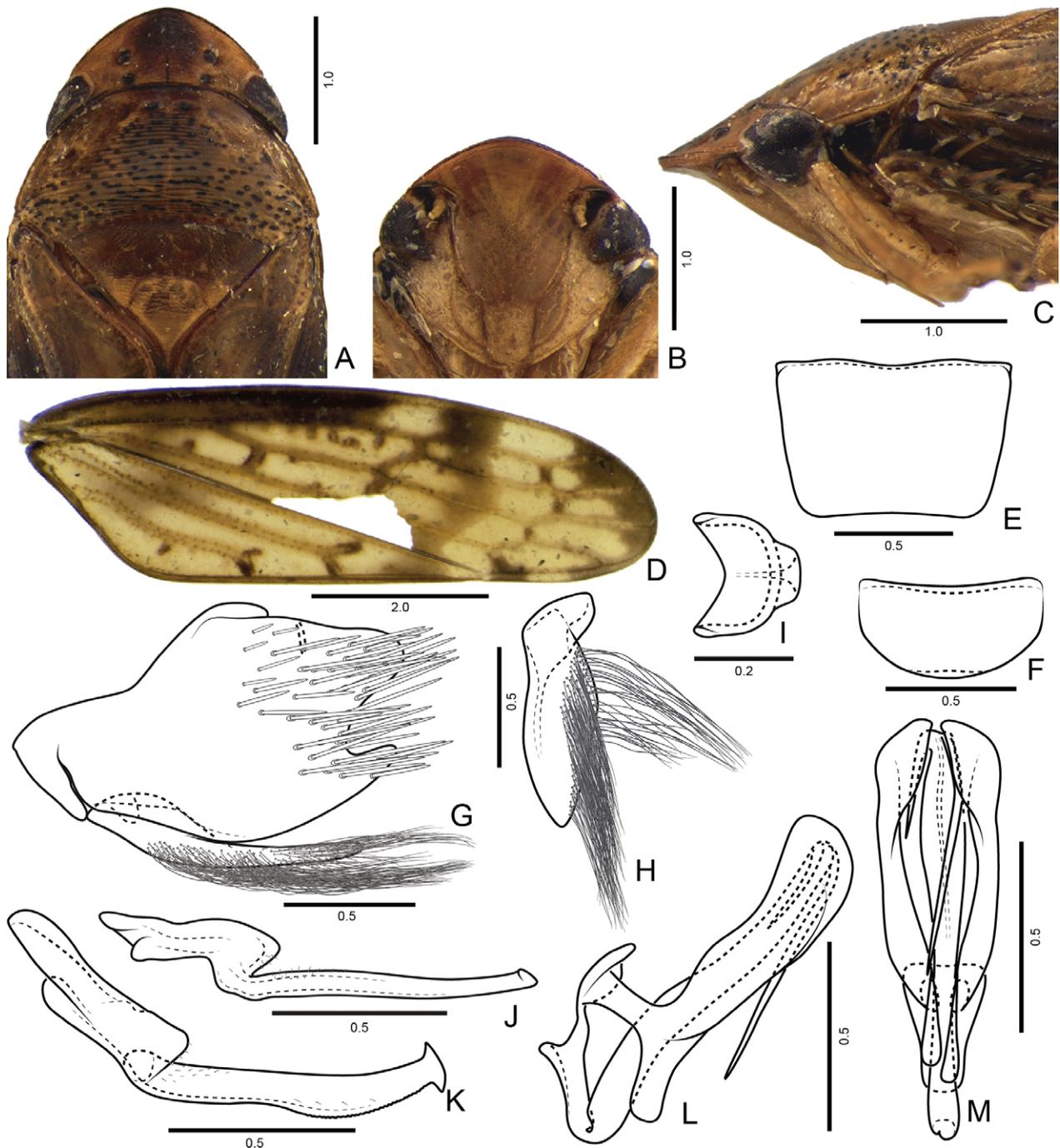
<https://zoobank.org/9B4393E3-772A-4CF6-A99E-F3A3313E8582>

Figs 18, 31C, D

**Diagnosis.** Head (Fig. 18A) with portion between ocelli and anterior margin dark-brown. Pygofer (Fig. 18G) with apex excavated. Subgenital plate (Fig. 18H) with long filiform setae. Style (Fig. 18K) apex truncated, with one process directed dorsally and one ventrally, both with equivalent sizes and acute. Aedeagus (Fig. 18L, M) with ventral margin of apodemal process forming rounded lobe produced ventrally; shaft with pair of processes directed ventrally: left process short, about 1/4 length of shaft, right process longer, about 2/3 length of shaft and directed to left side.

**Measurements.** Total length: holotype male 7.6 mm.

**Description.** Head, in frontal view (Fig. 18B), frons 1.2× wider than long; frontogenal suture distant from eye margin by approximately half maximum width of clypeus; clypeus 1.2× wider than long; lateral margins straight, slightly convergent apically; apex straight. Head, in lateral view (Fig. 18C), crown-face transition thin, with 3 transverse carinae; clypeus not inflated. Forewing (Fig. 18D) with apex of anal veins bifid. Profemur AV row with 5 setae; PV row with 1 seta near apex. Protibia PD row with 3 setae and undifferentiated intercalary setae; PV row with 5 setae and undifferentiated intercalary setae.



**Figure 18.** *Coarctana asymmetrica* sp. nov., holotype male. **A** head and thorax, dorsal view. **B** head, ventral view. **C** head and thorax, lateral view. **D** forewing. **E** sternite VIII, ventral view. **F** valve, ventral view. **G** pygofer, valve and subgenital plate, lateral view. **H** subgenital plate, ventral view. **I** connective, dorsal view. **J** style, dorsal view. **K** style, lateral view. **L** aedeagus, lateral view. **M** aedeagus, posterior view. Scale bars in mm.

Metatibia PD, AD and AV rows with 22–24, 13 and 15 macrosetae respectively. Metatarsomere I 4× longer than apical width; inner row of the ventral surface with 5 setae. Other characteristics as in generic description.

**Coloration.** Head and thorax (Figs 18A–D, 31C, D) yellowish-brown. Head (Fig. 18A) with pair of small circular black spots, near posterior margin, behind ocelli; portion between ocelli dark brown. Face (Fig. 18B) yellowish; antennal pit dark brown. Pronotum (Fig. 18A) with black punctures; small black maculae near anterior margin,

behind eye and ocellus; proepimeron (Fig. 18C) black, except ventral third yellow. Mesonotum (Fig. 18A) reddish-brown. Scutellum yellowish. Forewing (Fig. 18D) with brown veins, larger dark-brown maculae on apex of anal veins, outer discal cell, costal margin, cross veins of discal and apical cells; transverse brown stripe over sub-apical cells; apical cells smoky apically. Metatibia (Fig. 18C) with cucullate bases of setae black.

**Male terminalia.** Sternite VIII (Fig. 18E) 1.5× wider than long; lateral margins weakly convergent posterad; pos-

terior margin straight. Valve (Fig. 18F) 1.8× wider than long; posterior margin rounded. Pygofer, in lateral view (Fig. 18G), 1.6× longer than maximum height; basodorsal process thin and short, extending ventrally for 1/5 height of lateral lobe; ventral margin rounded, posterodorsal and posteroventral margins straight and weakly convergent posterad; apex broad and excavated, forming two rounded tips: the dorsal wider than the ventral. Subgenital plate, in lateral view (Fig. 18G), not reaching pygofer apex; in ventral view (Fig. 18H), elongated, 3.3× longer than wide, maximum width near median third; long filiform setae on ventral surface near outer margin and dorsal surface near base; lateral margins rounded; apex tapered, subacute. Connective (Fig. 18I) about as wide as long; anterior margin excavated; dorsal keel reduced; stem short. Style, in dorsal view (Fig. 18J), with outer lobe developed and rounded; in lateral view (Fig. 18K), blade narrow, slightly wider on apical half; dorsal margin almost straight; ventral margin with basal half straight and apical half slightly rounded and serrated; apex truncated, with one process directed dorsally and one ventrally, both with equivalent sizes. Aedeagus (Fig. 18L, M) preatrium weakly developed; dorsal apodeme with dorsal margin straight, lateral margins not produced laterally; apodemal processes narrow basally, curved in right angle dorsally in the basal third; ventral margin forming rounded lobe produced ventrally; distal portion straight, apex weakly broadened, curved over the apex of shaft; shaft approximately cylindrical, strongly curved dorsally near base, with small basolateral expansion that surrounds the previous portion of shaft; apex with pair of processes directed ventrally: left process short, about 1/4 length of shaft, right process longer, about 2/3 length of shaft and directed to left side. Other characteristics as in generic description.

**Female.** Unknown.

**Material examined.** Holotype male: Brazil: Mato Grosso: “Cáceres, MT\ 20.XI.1984\ C. Elias leg.\ Polonoroeste” (DZUP).

**Etymology.** The new species name refers to asymmetric apical processes of the aedeagus.

**Remarks.** *Coarctana asymmetrica* sp. nov. was recovered as sister group to *C. nigromedia* sp. nov. with moderate branch support (SR = 67) (Fig. 7), both of them have the pygofer apex excavated (Fig. 18G). The new species is easily differentiated by having the style (Fig. 18K) with apex truncated, bearing one small process directed dorsally and one ventrally, both similar in size; and in having the aedeagal shaft (Fig. 18L, M) with pair of asymmetric processes.

### *Coarctana glabra* sp. nov.

<https://zoobank.org/5BF609DC-F952-4CE6-BE27-11A2BA6AEC20>

Figs 19, 31E, F

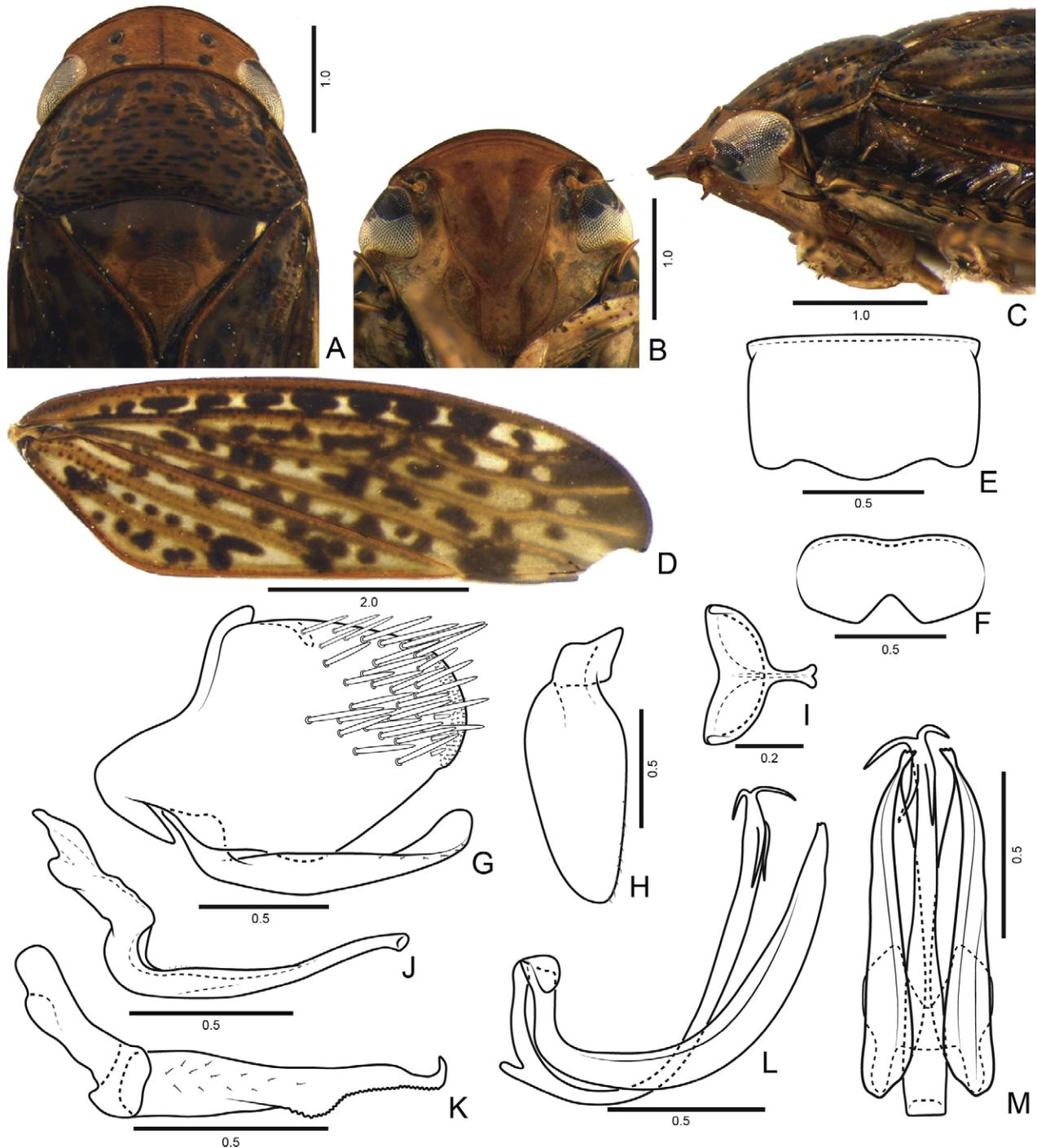
**Diagnosis.** Subgenital plate, in ventral view (Fig. 19H), ovoid, outer margin with minute setae. Connective (Fig. 19I) with stem thin, about as long as arm length. Style, in lateral view (Fig. 19K), ventral margin with median third with small, rounded lobe; apex strongly tapered, curved dorsally. Aedeagus (Fig. 19L, M) apodemal process elongated, broadly curved dorsally; apex tapered and truncated, finely serrated; shaft apex with two pairs of short processes: subapical pair directed ventrally, and apical pair curved laterally, as long as the subapical pair.

**Measurements.** Total length: holotype male 8.0 mm.

**Description.** Head, in frontal view (Fig. 19B), frons 1.1× wider than long; frontogenal suture distant from eye margin by approximately half maximum width of clypeus; clypeus 1.5× wider than long; lateral margins parallel; apex straight. Head, in lateral view (Fig. 19C), crown-face transition thin, almost foliaceous, with 3 transverse carinae; clypeus not inflated. Profemur AV row with 5–6 setae; PV row with 2 setae. Protibia PD row with 3 setae and undifferentiated intercalary setae; PV row with 2–3 setae and undifferentiated intercalary setae. Metatibia PD, AD and AV rows with 24, 13 and 14–15 macrosetae respectively. Metatarsomere I moderately elongated, 3× longer than apical width; inner row of the ventral surface with 7–8 setae. Other characteristics as in generic description.

**Coloration.** Head and thorax (Figs 19A–D, 31E, F) reddish-brown. Head (Fig. 19D) with pair of small circular black spots, near posterior margin, behind ocelli. Gena (Fig. 19B) yellowish; antennal pit dark brown. Pronotum (Fig. 19A) with black punctures and irregular black spots near anterior margin; proepimeron (Fig. 19C), with black band below pronotal carina, wider near anterior margin; lateral carina yellow. Mesonotum (Fig. 19A) with dark-brown lateral angles, pair of small median black spots near scutoscuteellar suture, pair of small yellow spots on lateral angles. Forewing (Fig. 19D) strongly marked by dark-brown mottling; veins brown, outlined by dark brown. Legs yellowish with black punctures and maculae. Metatibia (Fig. 19C) with cucullate bases of setae blacks.

**Male terminalia.** Sternite VIII (Fig. 19E) 1.5× wider than long; lateral margins parallel; posterior margin slightly excavated each side of broad median lobe. Valve (Fig. 19F) 2× wider than long; posterior margin notched medially. Pygofer, in lateral view (Fig. 19G), 1.5× longer than maximum height; basodorsal process present but reduced; anteroventral margin truncated; posterodorsal margin rounded; posteroventral margin straight; apex broadly rounded. Subgenital plate, in lateral view (Fig. 19G), almost reaching pygofer apex; apex curved dorsally; in ventral view (Fig. 19H), ovoid, 2.5× longer than wide, maximum width near basal third; outer margin with minute setae; lateral margins rounded; apex weakly tapered and rounded. Connective (Fig. 19I) wider than long; anterior margin weakly excavated; dorsal



**Figure 19.** *Coarctana glabra* sp. nov., holotype male. **A** head and thorax, dorsal view. **B** head, ventral view. **C** head and thorax, lateral view. **D** forewing. **E** sternite VIII, ventral view. **F** valve, ventral view. **G** pygofer, valve and subgenital plate, lateral view. **H** subgenital plate, ventral view. **I** connective, dorsal view. **J** style, dorsal view. **K** style, lateral view. **L** aedeagus, lateral view. **M** aedeagus, posterior view. Scale bars in mm.

keel reduced; stem thin, about as long as arm length. Style, in dorsal view (Fig. 19J), with outer lobe reduced; in lateral view (Fig. 19K), with blade wider near base and tapered toward apex; dorsal margin slightly sinuate; ventral margin with apical half serrated, median third with small, rounded lobe; apex strongly tapered, curved dorsally. Aedeagus (Fig. 19L, M) preatrium weakly developed; dorsal apodeme with dorsal margin slightly excavated, lateral margins produced ventrolaterally; apodemal process elongated, strongly curved dorsally,

slightly wider medially; apex tapered and truncated, finely serrated; shaft slightly asymmetrical, basal half weakly flattened dorsoventrally and cylindrical apically, curved dorsally near base; apex slightly twisted laterally, with two pairs of short processes: subapical pair directed ventrally and apical pair curved laterally, as long as the subapical pair. Other characteristics as in generic description.

**Female.** Unknown.

**Material examined. Holotype male: Brazil: Amapá:** “Brasil, AP, Serra do Navio, Igarapé na estrada para Rio Amapari (Pedra Preta), XI.2014 J.A. Rafael & F.F. Xavier” (INPA).

**Etymology.** The new species name refers to the subgenital plates without filiform setae.

**Remarks.** *C. glabra* sp. nov. is sister to *C. rana* comb. nov. + *C. serpenta* comb. nov. with moderate branch support (SR = 65) (Fig. 7). *Coarctana glabra* sp. nov. resembles *C. rana* comb. nov. and *C. serpenta* comb. nov. by having the forewings (Figs 31E, 32C–F) with several small black maculae and by the similar shape of the apodemal processes of aedeagus (Fig. 19L) slender and strongly curved dorsally. The new species is easily separated by the subgenital plate (Fig. 19H) ovate and lacking long filiform setae.

### *Coarctana nigromedia* sp. nov.

<https://zoobank.org/DA9856A5-FD28-4FDE-AED4-EB-CA9D85E623>

Figs 20, 21, 31G, H

**Diagnosis.** Head (Fig. 20A) with wide longitudinal dark-brown band between ocelli. Pygofer (Fig. 20G) with apex excavated. Subgenital plate (Fig. 20H) with long filiform setae. Style (Fig. 20H) apex truncate, with dorsal process short and acute. Aedeagus (Fig. 20L, M) with ventral margin of apodemal process forming rounded lobe produced ventrally; shaft with pair of apical processes directed ventrally and slightly curved laterally, with 1/4 length of shaft.

**Measurements.** Total length: holotype male 7.3 mm; paratypes, males (n = 15) 6.8–7.5 mm, females (n = 6) 7.5–7.7 mm.

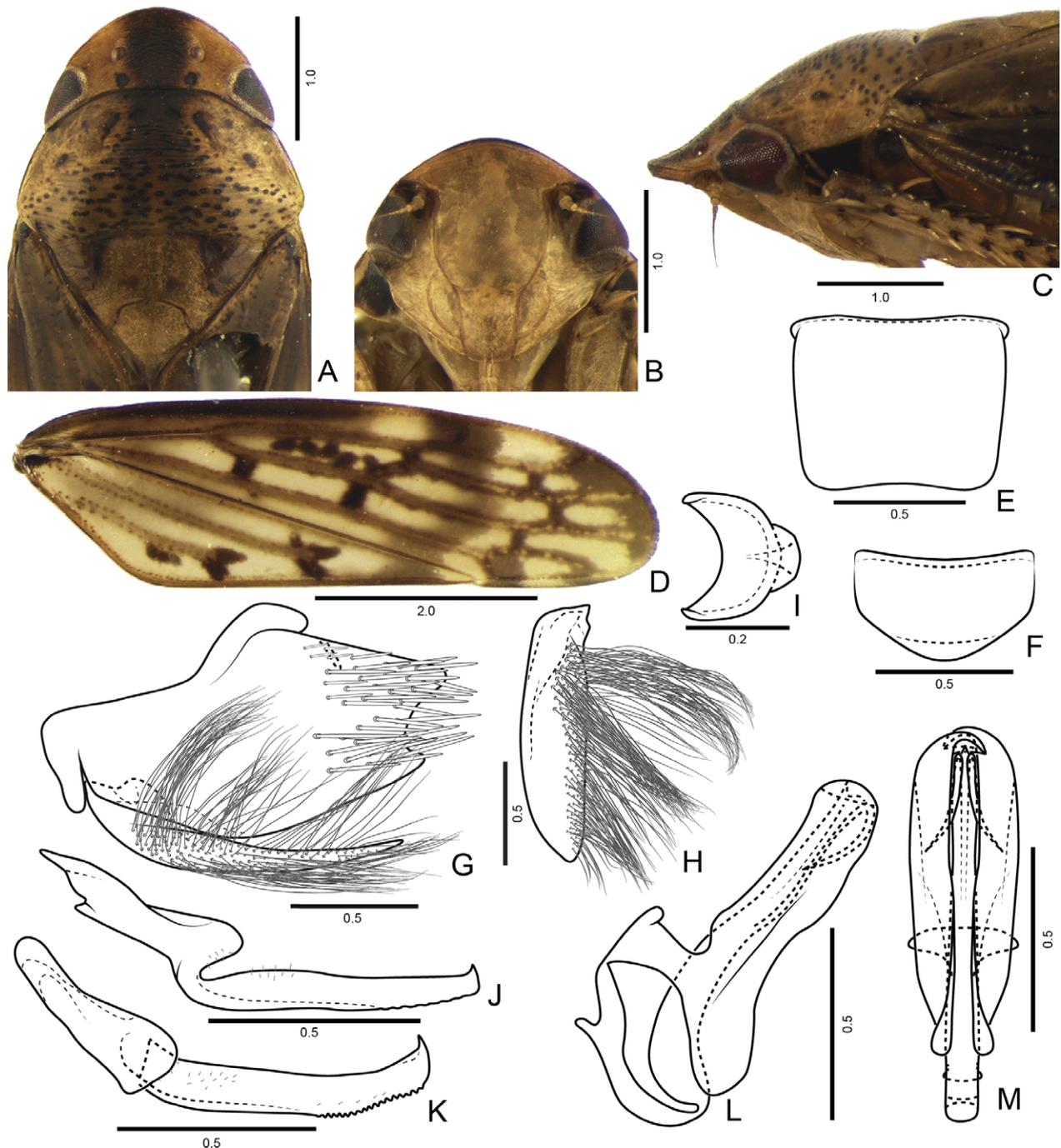
**Description.** Head, in frontal view (Fig. 20B), frons 1.2× wider than long; frontogenal suture distant from eye margin by approximately half maximum width of clypeus; clypeus 1.2× wider than long; lateral margins straight, slightly convergent apically; apex straight. Head, in lateral view (Fig. 20C), crown-face transition thin, with 3 transverse carinae; clypeus not inflated. Forewing (Fig. 20D) with apex of anal veins bifid. Profemur AV row with 5–6 setae; PV row with 1 seta near apex. Protibia PD row with 3 setae and undifferentiated intercalary setae; PV row with 5 setae and undifferentiated intercalary setae. Metatibia PD, AD and AV rows with 22–25, 12 and 13–14 macrosetae respectively. Metatarsomere I 4× longer than apical width; inner row of the ventral surface with 5 setae. Other characteristics as in generic description.

**Coloration.** Head and thorax (Figs 20A–D, 31G, H) yellowish-brown. Head (Fig. 20A) with pair of small circular black spots, near posterior margin, behind ocelli; wide longitudinal dark-brown band between ocelli. Face (Fig.

20B) yellowish; antennal pit dark brown. Pronotum (Fig. 20A) with black punctures; small black maculae near anterior margin, behind eye and ocellus; median portion with wide longitudinal dark-brown band, continuous to the band of head and evanescent toward posterior margin of pronotum; proepimeron (Fig. 20C) almost entirely black. Mesonotum (Fig. 20A) with brown lateral angles, pair of small median brown spots near scutoscuteellar suture. Forewing (Fig. 20D) with brown veins, larger dark-brown maculae on apex of anal veins, outer discal cell, costal margin, cross veins of discal and apical cells, transverse brown stripe over subapical cells. Metatibia (Fig. 20C) with cucullate bases of setae black.

**Male terminalia.** Sternite VIII (Fig. 20E) 1.3× wider than long; lateral margins weakly convergent posterad; posterior margin straight. Valve (Fig. 20F) 1.8× wider than long; posterior margin rounded. Pygofer, in lateral view (Fig. 20G), 1.7× longer than maximum height; basodorsal process thin and short, extending ventrally for 1/5 height of lateral lobe; anteroventral margin rounded, posterodorsal and posteroventral margins straight and weakly convergent posterad; apex broad and excavated, forming two rounded tips. Subgenital plate, in lateral view (Fig. 20G), not reaching pygofer apex; in ventral view (Fig. 20H), elongated, 4× longer than wide, maximum width near median third; long filiform setae on ventral surface near outer margin and dorsal surface near base; inner margin slightly rounded; outer margin straight; apex tapered, subacute. Connective (Fig. 20I) about as wide as long; anterior margin excavated; dorsal keel reduced; stem short. Style, in dorsal view (Fig. 20J), with outer lobe developed and rounded; in lateral view (Fig. 20K), blade with approximately same width along entire length; apical third slightly curved dorsally, with ventral margin serrated; apex truncate, with dorsal process short and acute. Aedeagus (Fig. 20L, M) preatrium weakly developed; dorsal apodeme with dorsal margin straight, lateral margins slightly produced laterally; apodemal processes narrow basally, curved in right angle dorsally in the basal third; ventral margin forming rounded lobe produced ventrally; distal portion straight, apex rounded and curved over the apex of shaft; shaft symmetrical and approximately cylindrical, strongly curved dorsally near base, with small basolateral expansion that surrounds the previous portion of shaft; apex with pair of processes directed ventrally and slightly curved laterally, with 1/4 length of shaft. Other characteristics as in generic description.

**Female terminalia.** Sternite VII (Fig. 21A) 1.8× wider than long; posterolateral angles rounded; posterior margin deeply excavated each side of median lobe which occupies the median third and is V-shape notched medially. Internal sternite VIII membranous. Pygofer (Fig. 21A, B) 1.8× longer than maximum height; ventral margin slightly rounded; dorsal margin straight; apex rounded. First valvifer (Fig. 21C) triangular, 1.5× longer than wide; anterior and dorsal margins straight; posterior margin slightly rounded. First valvula (Fig. 21C) 6.5× longer than wide;

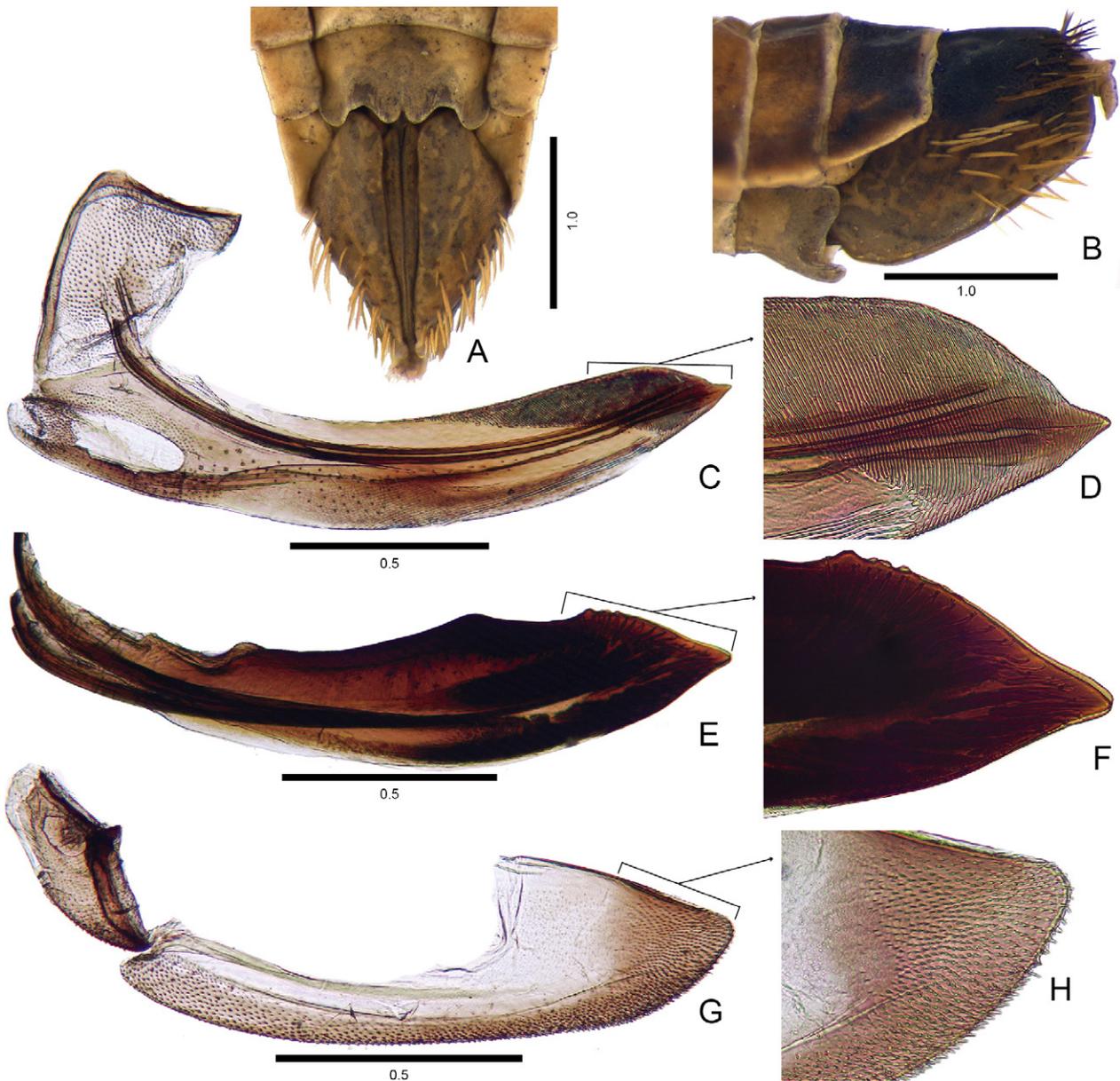


**Figure 20.** *Coarctana nigromedia* sp. nov., holotype male. **A** head and thorax, dorsal view. **B** head, ventral view. **C** head and thorax, lateral view. **D** forewing. **E** sternite VIII, ventral view. **F** valve, ventral view. **G** pygofer, valve and subgenital plate, lateral view. **H** subgenital plate, ventral view. **I** connective, dorsal view. **J** style, dorsal view. **K** style, lateral view. **L** aedeagus, lateral view. **M** aedeagus, posterior view. Scale bars in mm.

apex (Fig. 21D) tapered and acute. Second valvula (Fig. 21E) 4.5× longer than wide; wider after mid-length; dorsal protuberance developed and rounded; dorsal margin (Fig. 21F) with few minute teeth; apex abruptly tapered, subacute. Second valvifer (Fig. 21G) 2.5× longer than wide. Gonoplac (Fig. 21G) 3.3× longer than wide; apex (Fig. 21H) rounded. Other characteristics as in generic description.

**Material examined. Holotype male:** Brazil: Paraná: “Jundiá do Sul – PR \ Fazenda Monte Verde \ Brasil 13.X.1986 \ Lev. Ent. Profaupar \ Mal-

aise” (DZUP). **Paratypes:** 1♀, same data as holotype except 20.X.1986 (DZUP); 1♂, same data as holotype except 02.III.1987 (DZUP); 1♂, same data as holotype except 19.X.1987 (DZUP); 1♂, same data as holotype except 11.IV.1988 (DZUP); 1♂, 2♀, “Brasil, PR, Londrina, M. Atlântica, 23°11'22.9"S, 51°10'18.7"W, 545m, \ 29.IX.2016, D. R. Sosa \ Gomez leg.” (DZUP); 1♂, same data as preceding except 17.IX.2015 (MZSP); 1♂, same data as preceding except 30.IX.2016 (MZSP); 1♀, same data as preceding except 22.II.2017. — **Distrito Federal:** 6♂, 2♀, “Brasil, Brasília – DF, \ Fazenda Água Limpa, \ M. Galeria, malaise, 09 \ 23.XI.2017, J.R.P. Luz” (1♀ DZRJ, 2♂ MNRJ, 4♂, 1♀ DZUP); 1♂, same data as preceding except 27.IV.2017 (DZRJ).



**Figure 21.** *Coarctana nigromedia* sp. nov., paratype female. **A** distal portion of abdomen, ventral view. **B** distal portion of abdomen, lateral view. **C** first valvifer and first valvula, lateral view. **D** apical portion of first valvula. **E** second valvula, lateral view. **F** apical portion of second valvula. **G** second valvifer and gonoplac, lateral view. **H** apical portion of gonoplac. Scale bars in mm.

— **Minas Gerais:** 1♂, “Brasil, MG, Uberaba, \ Cerrado, 19°39'45.07”S 47°7'39.16”W, 784m, \ 30.I.2017, B.M. \ Moreira leg.” (DZUP); 1♂, “São Paulo \ Pres. Epitácio \ Pte. Albano \ X-54 \ J. Lane col.” (MZSP).  
 — **Tocantins:** 1♂, “Brasil, Tocantins, Palmas \ Taquaruçu, Fazenda \ Encantada 10°15'2.3”S 48°07'33.6”W Malaise \ 22–29.vi.2012 Krolow, \ T.K. & Lima, H.I.L. leg.” (DZUP).

**Etymology.** The new species name refers to the wide dark-brown band between the ocelli.

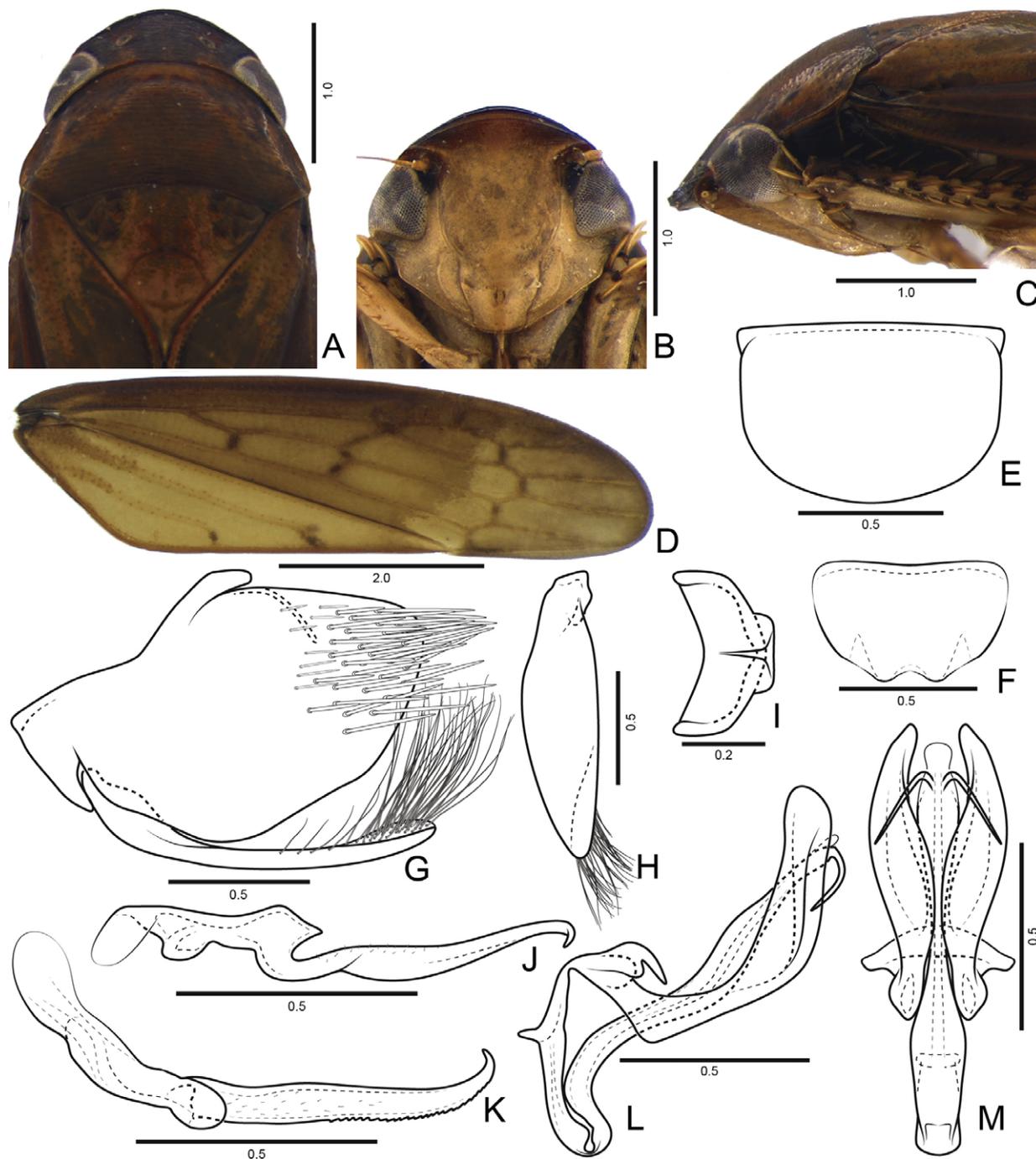
**Remarks.** *Coarctana nigromedia* sp. nov. can be distinguished from *C. asymmetrica* sp. nov. by the style shape (Fig. 20K) with apex lacking process on ventral margin and the aedeagal shaft (Fig. 20L, M) with pair of apical processes symmetric in length.

### *Coarctana occultata* sp. nov.

<https://zoobank.org/B2881074-880F-467C-BDE5-B526AB-9F72C5>

Figs 22, 31I, J

**Diagnosis.** Pygofer (Fig. 22G) with apex broad and rounded. Subgenital plate (Fig. 22H) with few filiform setae near outer margin and a longer apical group on dorsal surface. Style (Fig. 22K) apex tapered, curved dorsally and acute. Aedeagus (Fig. 22L, M) apodemal process slender at base and enlarged subapically; shaft apex with pair of subapical processes short, about 1/5 length of shaft, curved ventrally.



**Figure 22.** *Coarctana occultata* sp. nov., holotype male. **A** head and thorax, dorsal view. **B** head, ventral view. **C** head and thorax, lateral view. **D** forewing. **E** sternite VIII, ventral view. **F** valve, ventral view. **G** pygofer, valve and subgenital plate, lateral view. **H** subgenital plate, ventral view. **I** connective, dorsal view. **J** style, dorsal view. **K** style, lateral view. **L** aedeagus, lateral view. **M** aedeagus, posterior view. Scale bars in mm.

**Measurements.** Total length: holotype male 7.8 mm; paratype, male (n = 1) 8.1 mm.

**Description.** Head, in frontal view (Fig. 22B), frons 1.2× wider than long; frontogenal suture distant from eye margin by approximately the width of scape; clypeus very wide, 1.1× wider than long; lateral margins straight and parallel near base and distally strongly convergent toward apex; apex straight. Head, in lateral view (Fig. 22C), crown-face transition thin, with 4 transverse carinae; clypeus slightly inflated. Profemur AV row with 4–5 setae;

PV row with 1–2 setae. Protibia PD row with 4 setae and undifferentiated intercalary setae; PV row with 5 setae and undifferentiated intercalary setae. Metatibia PD, AD and AV rows with 23–24, 12 and 15–16 macrosetae respectively. Metatarsomere I 4× longer than apical width; inner row of the ventral surface with 7–9 setae. Other characteristics as in generic description.

**Coloration.** Head and thorax (Figs 22A–D, 31I, J) reddish-brown. Face (Fig. 22B) yellowish; frons reddish-brown below crown face transition; antennal pit

black. Proepimeron (Fig. 22C) black. Forewing (Fig. 22D) with small black maculae on apex of anal veins, cross veins of discal and apical cells; costal and 5th apical cells dark brown. Metatibia (Fig. 22C) with cucullate bases of setae blacks.

**Male terminalia.** Sternite VIII (Fig. 22E) 1.5× wider than long; lateral margins parallel; posterior margin rounded. Valve (Fig. 22F) 1.6× wider than long; posterior margin slightly excavated. Pygofer, in lateral view (Fig. 22G), 2× longer than maximum height; basodorsal process thin and long, extending ventrally by 1/3 height of lateral lobe; anteroventral margin rounded; postero-dorsal margin straight; posteroventral margin rounded; apex broad, rounded. Subgenital plate, in lateral view (Fig. 22G), almost reaching pygofer apex; in ventral view (Fig. 22H), elongated, 3.8× longer than wide, maximum width near half length; dorsal surface with few filiform setae near outer margin and a longer apical group on dorsal surface; lateral margins slightly rounded; apex tapered, rounded. Connective (Fig. 22I) wider than long; anterior margin moderately excavated; dorsal keel and stem reduced. Style, in dorsal view (Fig. 22J), with outer lobe truncated; in lateral view (Fig. 22K), blade slender, slightly tapered toward apex; dorsal and ventral margins almost straight; ventral margin with apical half serrated; apex curved dorsally, acute. Aedeagus (Fig. 22L, M) preatrium weakly developed; dorsal apodeme bent posterad, dorsal margin rounded, lateral margins produced laterally; apodemal process slender at base and enlarged subapically, strongly curved dorsally near base; apex rounded; shaft approximately cylindrical, very long and thin, strongly curved dorsally near base, apical half slightly sinuate; apex with pair of subapical processes thin and short, curved ventrally. Other characteristics as in generic description.

**Female.** Unknown.

**Material examined. Holotype male:** Peru: “Peru, Cuzco, Estrada 30 C\ 26km W Quincemil, 23.viii.2012, (light) 13°21'18"S 70°53'22"W, 985m R.R. Cavichioli leg.” (MUSM). **Paratype:** “Peru, Dept. Amazonas, Distr. Águas Verdes, Bagua/ Tarapoto Rd\ (5N) at Km 403, Malaise, 1–8.V.2009\ ME Irwin, G Antón Maya\ 1125m 05°41'23"S, 77°38'13"W” (DZRJ).

**Etymology.** The new species name comes from the Latin word “occultatum” and means hidden. This name was chosen because the studied specimens were miss identified as *Curtara apena*.

**Remarks.** Our analysis recovered *C. occultata* sp. nov. as sister to *C. apena* comb. nov. with low branch support (SR < 50) (Fig. 7). These species have a similar coloration (Fig. 31A, B, I, J), and the subgenital plates (Fig. 22H) with long filiform setae forming an apical group, and a similar aedeagus shape (Fig. 22L). However, the new species is differentiated by having a shorter pygofer and the aedeagus with a single pair of subapical processes.

### *Coarctana oricula* sp. nov.

<https://zoobank.org/CAA60896-97D4-483F-9B7E-D0D22274587D>

Figs 23, 24, 31K, L

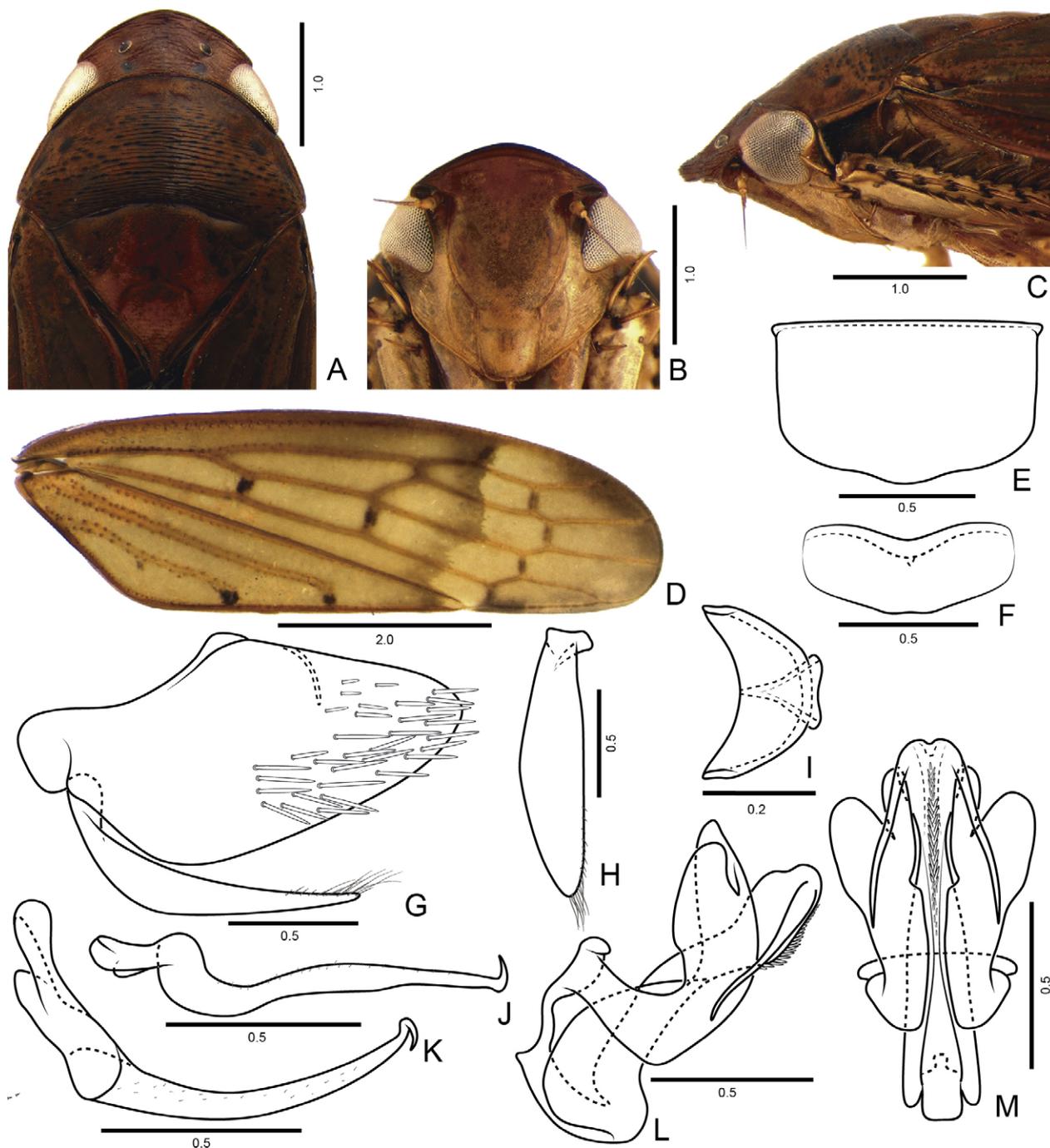
**Diagnosis.** Pygofer (Fig. 23G) with apex slightly tapered and rounded. Subgenital plate (Fig. 23H) with small group of filiform setae on apex. Style, in lateral view (Fig. 23K), blade with ventral margin not serrated; apex hook-shaped. Aedeagus (Fig. 23L, M) apodemal processes narrow basally, curved in right angle dorsally; external surface, in posterior view, bearing a broad process, rounded apically; shaft apical third broadened, posterior surface with several minute spiniform processes; apex bearing pair of long processes directed ventrally, with half length of shaft.

**Measurements.** Total length: holotype male 7.9 mm; paratypes, males (n = 47) 7.5–7.9 mm, females (n = 3) 8.0–8.3 mm.

**Description.** Head, in frontal view (Fig. 23B), frons 1.2× wider than long; frontogenal suture distant from eye margin by approximately the width of scape; clypeus 1.2× longer than wide; lateral margins parallel; apex straight. Head, in lateral view (Fig. 23C), crown-face transition thin, with 4 transverse carinae; clypeus not inflated. Profemur AV row with 4–5 setae; PV row with 1–2 setae. Protibia PD row with 3 setae and undifferentiated intercalary setae; PV row with 5 setae and undifferentiated intercalary setae. Metatibia PD, AD and AV rows with 22–23, 12 and 14–15 macrosetae respectively. Metatarsomere I 4× longer than apical width; inner row of the ventral surface with 5 setae. Other characteristics as in generic description.

**Coloration.** Head and thorax (Figs 23A–D, 31K, L) reddish-brown. Head (Fig. 23A) with pair of small circular black spots, near posterior margin, behind ocelli. Face (Fig. 23B) without maculae; gena, lorum and clypeus yellowish. Pronotum (Fig. 23A) with black punctures; pair of circular black spots, near anterior margin, behind eye; proepimeron (Fig. 23C), almost entirely black; lateral carina yellowish. Forewing (Fig. 23D) with black maculae on apex of anal veins, cross veins of discal and apical cells; transverse brown stripe over subapical cells. Metatibia (Fig. 23C) with cucullate bases of setae blacks.

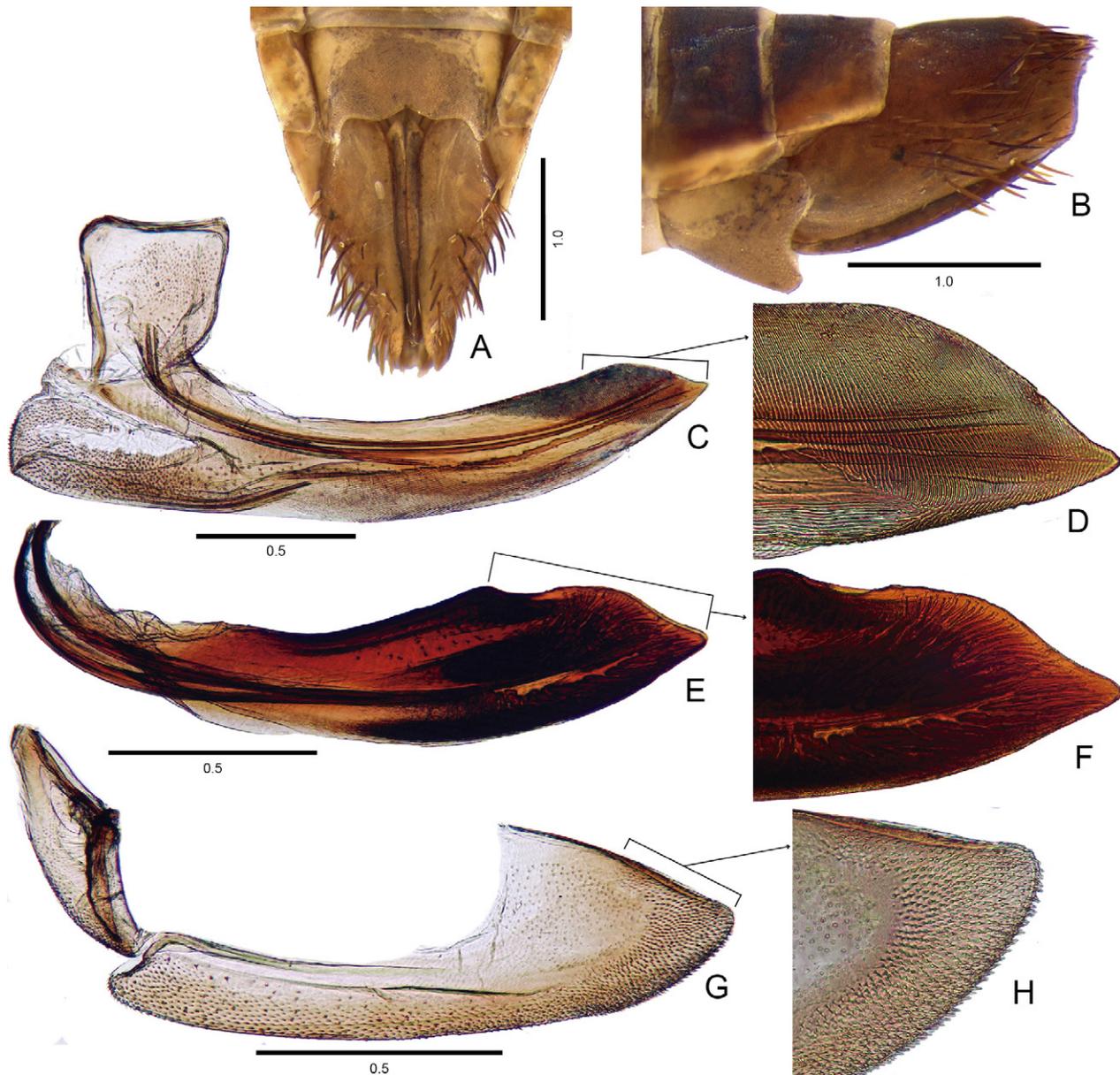
**Male terminalia.** Sternite VIII (Fig. 23E) 1.6× wider than long; lateral margins parallel; posterior margin rounded, slightly more produced medially than near lateral angles. Valve (Fig. 23F) 2.5× wider than long; dorsal margin slightly excavated; posterior margin rounded. Pygofer, in lateral view (Fig. 23G), 2× longer than maximum height; basodorsal process thin, extending ventrally for 1/3 height of lateral lobe; anteroventral margin rounded, postero-dorsal and posteroventral margins straight; apex slightly tapered, subacute. Subgenital plate, in lat-



**Figure 23.** *Coarctana oricula* sp. nov., holotype male. **A** head and thorax, dorsal view. **B** head, ventral view. **C** head and thorax, lateral view. **D** forewing. **E** sternite VIII, ventral view. **F** valve, ventral view. **G** pygofer, valve and subgenital plate, lateral view. **H** subgenital plate, ventral view. **I** connective, dorsal view. **J** style, dorsal view. **K** style, lateral view. **L** aedeagus, lateral view. **M** aedeagus, posterior view. Scale bars in mm.

eral view (Fig. 23G), short, not reaching pygofer apex; in ventral view (Fig. 23H), elongated, 4× longer than wide, maximum width near median third; outer margin with minute setae, apex with small group of filiform setae; inner margin rounded; outer margin straight; apex rounded, weakly tapered. Connective (Fig. 23I) wider than long; anterior margin excavated; dorsal keel and stem reduced; stem wide. Style, in dorsal view (Fig. 23J), with outer lobe reduced and rounded; in lateral view (Fig. 23K), blade thin and curved dorsally, slightly wider near base and tapered toward apex; ventral margin not serrated;

apex acute, hook-shaped, curved ventrally. Aedeagus (Fig. 23L, M) preatrium reduced; dorsal apodeme with dorsal margin straight, lateral margins slightly produced laterally; apodemal processes narrow basally, curved in right angle dorsally in the basal third; external surface, in posterior view, bearing broad process, rounded apically; shaft symmetrical, strongly curved dorsally near base, with a basolateral expansion that surrounds the previous portion of the shaft; apical third broadened, posterior surface with several minute spiniform processes; apex bearing pair of long processes directed ventrally, with



**Figure 24.** *Coarctana oricula* sp. nov., paratype female. **A** distal portion of abdomen, ventral view. **B** distal portion of abdomen, lateral view. **C** first valvifer and first valvula, lateral view. **D** apical portion of first valvula. **E** second valvula, lateral view. **F** apical portion of second valvula. **G** second valvifer and gonoplac, lateral view. **H** apical portion of gonoplac. Scale bars in mm.

half length of shaft. Other characteristics as in generic description.

**Female terminalia.** Sternite VII (Fig. 24A) 1.7× wider than long; posterolateral angles slightly surpassing posterior margin; posterior margin weakly excavated each side of median lobe which occupies the median third and is V-shape notched medially. Internal sternite VIII membranous. Pygofer (Fig. 24A, B) 1.9× longer than maximum height; ventral margin slightly rounded; dorsal margin straight, with apical portion excavated; apex obliquely truncate. First valvifer (Fig. 24C) subquadrate, 1.1× longer than wide; anterior and dorsal margins straight; posterior margin rounded. First valvula (Fig. 24C) 7× longer than wide; apex (Fig. 24D) tapered and acute. Second valvula (Fig. 24E) 4.5× longer than wide; wider after mid-length; dorsal protuberance developed and rounded;

dorsal margin (Fig. 24F) teeth reduced, only an undulation present subapically; apex abruptly tapered, subacute. Second valvifer (Fig. 24G) 2.7× longer than wide. Gonoplac (Fig. 24G) 3.1× longer than wide; apex (Fig. 24H) rounded. Other characteristics as in generic description.

**Material examined.** **Holotype male:** Brazil: Mato Grosso: “Brasil, MT, Cláudia, Fazenda Continental, 11.5841°S 55.3003°W, 365m, sweep, 17–19.vi.2017, A.C. Domahovski” (DZUP). **Paratypes:** 1♂, “Brasil, MT, Nova Ubiratã, E.S.E.C. Rio Ronuro, 13.1122°S 54.4436°W, 330m, malaise, 11–16.vi.2017, Cavichioli, Melo, Domahovski & Muniz” (DZUP); 1♂, 1♀, “Brasil, MT, Novo Mundo, Pq. [Parque] Est. [Estadual] do Cristalino, 09.4517°S 55.8396°W, 240m, malaise, 21–25.vi.2017, Cavichioli, Melo, Domahovski & Muniz” (DZUP); 1♀, “Brasil, MT, Novo Mundo, Pq. Est. do Cristalino, 09.4517°S 55.8396°W, 240m, luminárias – alojamento AC Domahovski” (DZUP). — **Rondônia:** 6♂, “Brasil, Rondônia, Porto Velho,

Rio Madeira\ 09°35'29"S 65°02'57"W\ Malaise 28.III–8.IV.2011\ Silva & Albuquerque" (3♂ DZRJ, 3♂ MNRJ); 7♂, "Brasil, Rondônia, Porto\ Velho, Rio Madeira\ 09°38'06"S 65°27'11"W\ Malaise 05–17.I.2011\ RRSilva & RSProbst leg" (MZSP); 2♂, "Brasil, Rondônia, Porto\ Velho, Rio Madeira\ 09°35'54"S 65°02'53"W\ Malaise 18–29.VI.2011\ Albuquerque & Ferreira" (DZUP); 1♂, same data as preceding except 09°35'29"S 65°02'57"W (DZUP); 1♀, same data as preceding except 09°26'08"S 64°48'9"W (DZUP); 16♂, "Brasil, Rondônia, Porto\ Velho, Rio Madeira\ 09°35'29"S 65°02'57"W\ Malaise 04–17.I.2012\ W. Datilo & G. R. Mazão" (6♂ DZUP, 10♂ MZSP); 8♂, "Brasil, Rondônia, Porto\ Velho, Rio Madeira\ 09°26'14"S 64°49'58"W\ Malaise 04–18.IX.2012\ MA Ulysséa & LP Prado" (MZSP); 3♂, same data as preceding except 09°38'06"S 65°27'11"W (MZSP); 1♂, same data as preceding except 09°35'29"S 65°02'57"W (MZSP).

**Etymology.** The new species name refers to the aedeagus with apodemal processes bearing projections at the mid-length of external surface resembling ears.

**Remarks.** *Coarctana oricula* sp. nov. (Fig. 7) was strongly supported as sister to *C. taurina* sp. nov. (SR = 99). This relationship was supported by one synapomorphy, 137:0, aedeagal shaft with a conspicuous basolateral expansion that surrounds the previous portion of the shaft, and eight homoplastic characters, as for example, 87:0, valve more than 2× wider than long and 133:1, apodemal processes of aedeagus, having a lateral process on external margin near mid-length. *Coarctana oricula* sp. nov. can be easily differentiated by the style (Fig. 23K) with a hook-shaped apex, the apodemal processes of aedeagus (Fig. 23L, M) with the process on external surface rounded, the aedeagal shaft with several minute spiniform processes on posterior surface, and the presence of a pair of long apical processes directed ventrally.

### *Coarctana parvula* sp. nov.

<https://zoobank.org/28F7FF73-3770-449C-90E5-AF6D321B0348>

Figs 25, 31M, N

**Diagnosis.** Pygofer (Fig. 25G) strongly tapered apically, subacute. Subgenital plate (Fig. 25H) with filiform setae near outer margin. Aedeagus (Fig. 25L, M) apodemal process slender and tapered, external surface bearing a small process near mid-length; shaft with pair of subapical processes short, directed dorsally and pair of apical processes curved ventrally, with half length of the subapical processes.

**Measurements.** Total length: holotype male 8.8 mm; paratypes, males (n = 5) 8.5–8.8 mm.

**Description.** Head, in frontal view (Fig. 25B), frons 1.1× wider than long; frontogenal suture distant from eye margin by approximately the width of scape; clypeus very wide, 1.1× wider than long; lateral margins straight and parallel near base and apically strongly convergent; apex

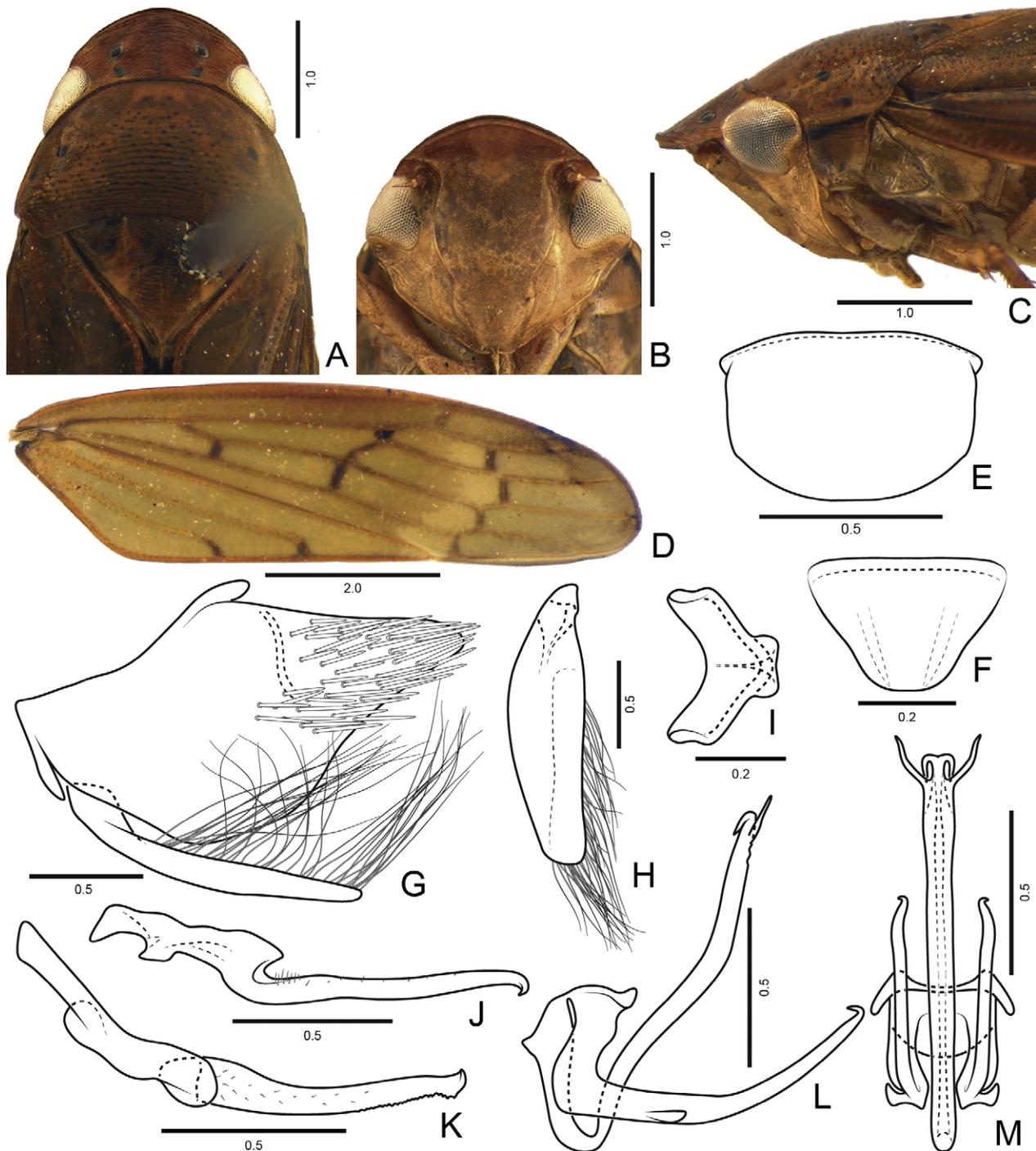
straight. Head, in lateral view (Fig. 25C), crown-face transition thin, with 3 transverse carinae; clypeus slightly inflated. Profemur AV row with 5–6 setae; PV row with 2 setae. Protibia PD row with 5 setae and undifferentiated intercalary setae; PV row with 5 setae and undifferentiated intercalary setae. Metatibia PD, AD and AV rows with 24–26, 13 and 13–15 macrosetae respectively. Metatarsomere I elongated 4× longer than apical width; inner row of the ventral surface with 7–8 setae. Other characteristics as in generic description.

**Coloration.** Head and thorax (Figs 25A, B, 31M, N) reddish-brown. Head (Fig. 25A) with pair of small circular black spots, near posterior margin, behind ocellus. Face (Fig. 25B) yellowish without maculae. Pronotum (Fig. 25A) with black punctures; pair of circular black spots, near anterior margin, behind eye; proepimeron (Fig. 25C), with narrow black band below pronotal carina. Forewing (Fig. 25D) with black maculae on apex of anal veins, cross veins of discal and apical cells. Metatibia (Fig. 25C) with cucullate bases of setae black.

**Male terminalia.** Sternite VIII (Fig. 25E) 1.5× wider than long; lateral margins parallel; posterior margin slightly rounded. Valve (Fig. 25F) 1.5× wider than long; posterior margin tapered and rounded. Pygofer, in lateral view (Fig. 25G), 2× longer than maximum height; basodorsal process thin and long, extending ventrally to almost half height of lateral lobe; anteroventral margin rounded; posterodorsal margin straight; posteroventral margin excavated; apex strongly tapered, subacute. Subgenital plate, in lateral view (Fig. 25G), short, not reaching pygofer apex; in ventral view (Fig. 25H), elongated, 3.7× longer than wide, maximum width near half length; dorsal surface with filiform setae near outer margin; lateral margins slightly rounded; apex rounded. Connective (Fig. 25I) wider than long; anterior margin moderately excavated; dorsal keel and stem reduced. Style, in dorsal view (Fig. 25J), with outer lobe small and truncated; in lateral view (Fig. 25K), with blade slightly wider near base and tapered toward apex; dorsal and ventral margins slightly sinuate; ventral margin with apical third serrated; apex truncated, forming a small dorsal process. Aedeagus (Fig. 25L, M) preatrium not developed; dorsal apodeme with dorsal margin slightly excavated, lateral margins produced ventrolaterally; apodemal process slender and tapered toward apex, curved in right angle near base, external surface bearing small process near mid-length; apex acute, curved anterad; shaft cylindrical, very long and thin, strongly curved dorsally near base and slightly curved anterad at apical third; apex with pair of subapical processes short, directed dorsally and pair of apical processes curved ventrally, with half length of the subapical processes. Other characteristics as in generic description.

**Female.** Unknown.

**Material examined.** Holotype male: Peru: "Peru, Cuzco, Estrada 30 C\ 26km W Quincemil, 23.viii.2012, (light)\ 13°21'18"S 70°53'22"W,\ 985m R.R. Cavichioli leg." (MUSM). Paratypes: 4♂, same data as ho-



**Figure 25.** *Coarctana parvula* sp. nov., holotype male. **A** head and thorax, dorsal view. **B** head, ventral view. **C** head and thorax, lateral view. **D** forewing. **E** sternite VIII, ventral view. **F** valve, ventral view. **G** pygofer, valve and subgenital plate, lateral view. **H** subgenital plate, ventral view. **I** connective, dorsal view. **J** style, dorsal view. **K** style, lateral view. **L** aedeagus, lateral view. **M** aedeagus, posterior view. Scale bars in mm.

holotype (DZUP); 1♂, “Peru: Dept. Amazonas, \Distr. Águas Verdes, \Bagua \Taporoto Rd (5N) \at Km403; Malaise\ 30.I–6.II.2009; ME Irwin, GA \Amaya, 1125m; \05°41'23"S 77°38'13"W” (DZRJ).

**Etymology.** The new species name refers to the aedeagus with apodemal processes bearing very small projections at the mid-length of external.

**Remarks.** *Coarctana parvula* sp. nov. (Fig. 7) was strongly supported (SR = 92) as sister group to *C. ape-*

*na* comb. nov. + *C. occultata* sp. nov. This clade was supported by three synapomorphies: 26:0, clypeus wider than long; 27:2, clypeus with lateral margins strongly convergent apically; 29:1, clypeus tumid in lateral view; and three homoplastic characters: 9:1, crown-face transition with three carinae; 31:1 absence of black irregular maculae near anterior margin of pronotum; and 94:1, pygofer with basodorsal processes strongly developed. *Coarctana oricula* sp. nov. can be differentiated from *C. apena* comb. nov. and *C. occultata* sp. nov. by the apo-

demal processes of aedeagus (Fig. 25L, M) with a small process near mid-length of external surface, and the shaft with a pair of subapical processes short, directed dorsally and a pair of apical processes curved ventrally.

### ***Coarctana striata* sp. nov.**

<https://zoobank.org/B32E1D93-4E16-4DC8-BBDE-6835F171450C>

Figs 26, 27, 32G, H

**Diagnosis.** Pygofer (Fig. 26G) with apex truncate. Style, in lateral view (Fig. 26K), blade curved dorsally, ventral margin not serrated and with lateral carina. Aedeagus (Fig. 26L, M) apodemal processes narrow basally, curved in right angle dorsally; ventral margin forming triangular lobe produced ventrally; posterior margin with transverse and parallel striae; shaft apex with pair of short processes, curved laterally and crossed over the posterior surface.

**Measurements.** Total length: holotype male 8.5 mm; paratypes, females (n = 3) 9.6–10.4 mm.

**Description.** Head, in frontal view (Fig. 26B), frons 1.2× wider than long; frontogenal suture distant from eye margin by less than half maximum width of clypeus; clypeus 1.4× wider than long; lateral margins parallel; apex straight. Head, in lateral view (Fig. 26C), crown-face transition thin with 4–5 transverse carinae; clypeus not inflated. Profemur AV row with 5–6 setae; PV row with 1 seta near apex. Protibia PD row with 4 setae and undifferentiated intercalary setae; PV row with 4 setae and undifferentiated intercalary setae. Metatibia PD, AD and AV rows with 23, 12 and 14–16 macrosetae respectively. Metatarsomere I 4× longer than apical width; inner row of the ventral surface with 7–8 setae. Other characteristics as in generic description.

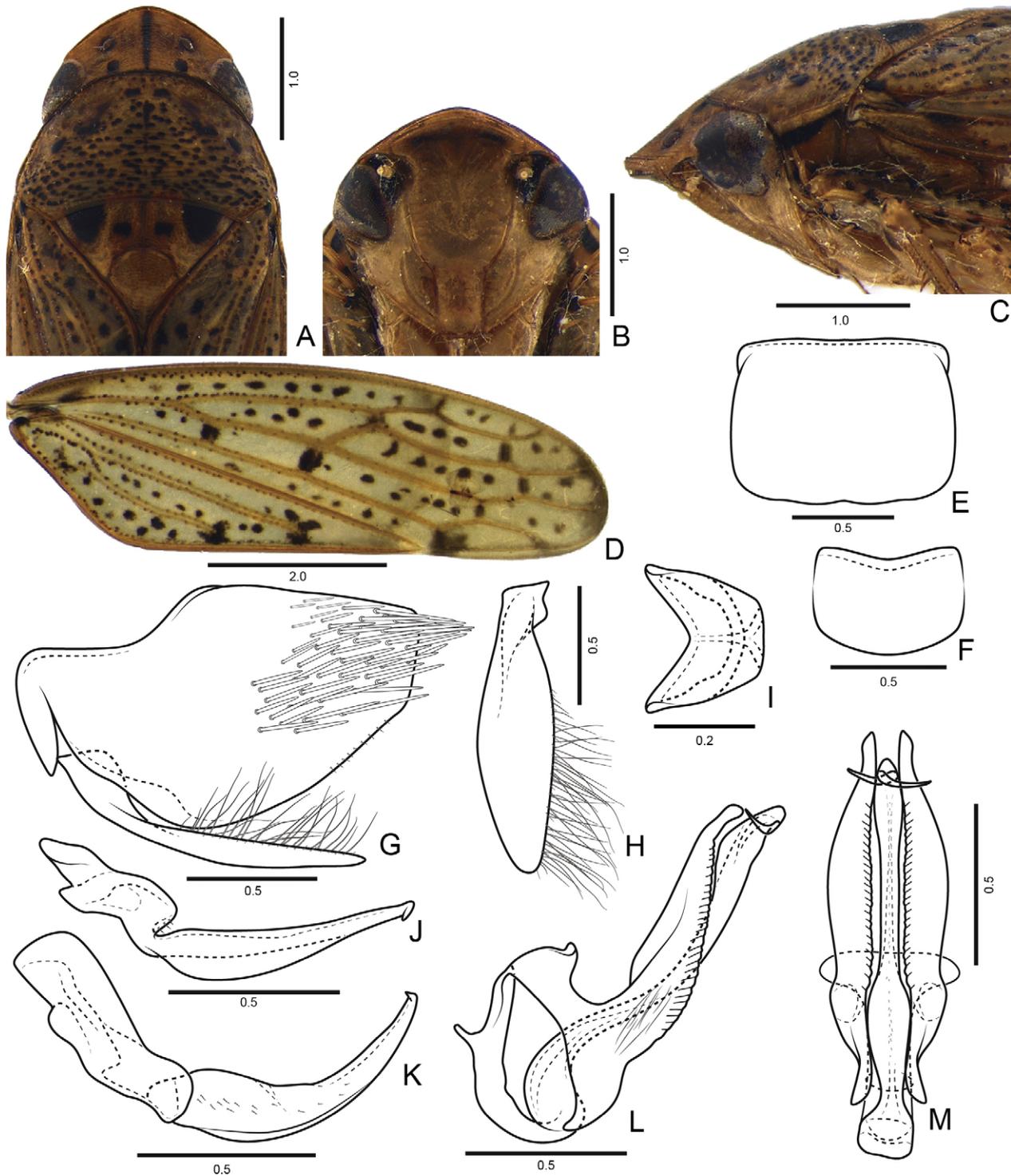
**Coloration.** Head and thorax (Figs 26A, B, 32G, H) brown. Head (Fig. 26A) with pair of small circular black spots, near posterior margin, behind ocellus; coronal suture black. Face (Fig. 26B) yellowish; frons reddish-brown dorsally with pair of transverse black maculae below crown-face transition; black macula adjacent to antennal base. Pronotum (Fig. 26A) with black punctures, irregular black maculae near anterior margin; proepimeron (Fig. 26C) with black band below pronotal carina; lateral carina yellow. Mesonotum (Fig. 26A) with pair of large black maculae near lateral angles and pair of small median black spots near scutoscutellar suture. Forewing (Fig. 26D) with scattered dark-brown mottling, larger black maculae on apex of anal veins, cross veins of inner discal cell and base of first apical cell; veins brown, margined by black punctures on basal half of wing. Metatibia (Fig. 26C) with cucullate bases of setae black.

**Male terminalia.** Sternite VIII (Fig. 26E) 1.4× wider than long; lateral margins parallel; posterior margin

slightly sinuous. Valve (Fig. 26F) 1.6× wider than long; posterior margin rounded. Pygofer, in lateral view (Fig. 26G), 1.7× longer than maximum height; basodorsal process present but reduced; anteroventral margin broadly rounded; posterodorsal and posteroventral margins straight; apex truncate. Subgenital plate, in lateral view (Fig. 26G), short, not reaching pygofer apex; in ventral view (Fig. 26H), elongated, 3.8× longer than wide, maximum width near half length; dorsal surface with filiform setae near outer margin; lateral margins slightly rounded; apex weakly tapered and rounded. Connective (Fig. 26I) almost as wide as long; anterior margin excavated; dorsal keel and stem reduced; stem wide. Style, in dorsal view (Fig. 26J), with outer lobe truncated; in lateral view (Fig. 26K), blade curved dorsally, wider near base and tapered toward apex; ventral margin not serrated, with a longitudinal carina; apex tapered, forming a small dorsal process. Aedeagus (Fig. 26L, M) preatrium weakly developed; dorsal apodeme with dorsal margin straight, lateral margins slightly produced laterally; apodemal processes narrow basally, curved in right angle dorsally at basal third; ventral margin forming triangular lobe produced ventrally; posterior margin with transverse and parallel striae; apex tapered, subacute; shaft approximately cylindrical, symmetrical, strongly curved dorsally near base, with a basolateral expansion that surrounds the previous portion of the shaft, basal third slightly curved posterad; apical third straight; apex with pair of short processes, curved laterally and crossed over the posterior surface. Other characteristics as in generic description.

**Female terminalia.** Sternite VII (Fig. 27A) 1.5× wider than long; posterolateral angles produced as far as posterior margin; posterior margin excavated each side of emarginated median lobe which occupies the median third. Internal sternite VIII membranous. Pygofer (Fig. 27A, B) 1.9× longer than maximum height; ventral margin slightly rounded; dorsal margin straight; apex obliquely truncate. First valvifer (Fig. 27C) triangular, 1.4× longer than wide; lateral and dorsal margins straight. First valvula (Fig. 27C) 5.2× longer than wide; apex (Fig. 27D) abruptly tapered and acute. Second valvula (Fig. 27E) 3.8× longer than wide; strongly expanded near mid-length; dorsal protuberance weakly developed; dorsal margin (Fig. 27F) with few minute rounded teeth; apex gradually tapered and triangular. Second valvifer (Fig. 27G) 2.5× longer than wide. Gonoplac (Fig. 27G) 3.7× longer than wide; apex (Fig. 27H) rounded. Other characteristics as in generic description.

**Material examined. Holotype male: Brazil: Tocantins:** “Brasil, Tocantins, Palmas\ Taquaruçu, Fazenda\ Encantada 10°14'57”S 48°07'35.4”W Malaise\ 10–17.viii.2012 Krolow,\ T.K. & Lima, H.I.L. leg.” (DZUP). **Paratypes:** 1♀, same data as holotype except 15–22.vi.2012 (DZUP). — **Maranhão:** 1♀, “Brasil (MA), Bom Jardim\ REBIO-Res. Biol Gurupi\ Armadilha Malaise”, “01–06.xi.2010, F.Limeira-de-Oliveira, D.W.A. Mar\ ques & E.A. S. Barbosa” (CZMA); 1♀, “Brasil (MA), Bom Jardim\ REBIO-Res. Biol Gurupi\ Armadilha Malaise”, “02–11.ix.2010, D.W.A.\ Marques, E.A. S. Barbosa\ J.A. Silva & M.M. Abreu” (CZMA).

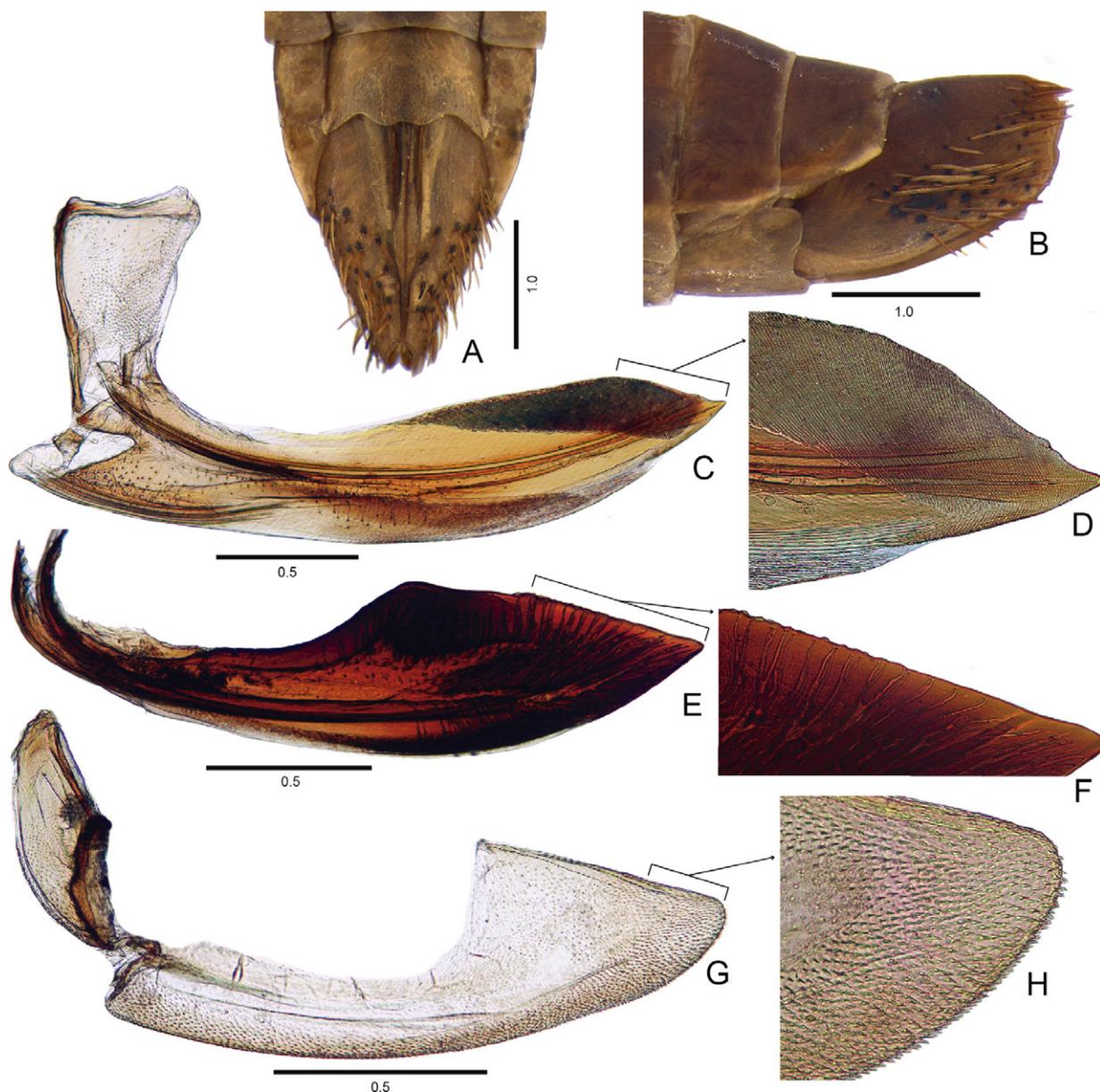


**Figure 26.** *Coarctana striata* sp. nov., holotype male. **A** head and thorax, dorsal view. **B** head, ventral view. **C** head and thorax, lateral view. **D** forewing. **E** sternite VIII, ventral view. **F** valve, ventral view. **G** pygofer, valve and subgenital plate, lateral view. **H** subgenital plate, ventral view. **I** connective, dorsal view. **J** style, dorsal view. **K** style, lateral view. **L** aedeagus, lateral view. **M** aedeagus, posterior view. Scale bars in mm.

**Etymology.** The new species name refers to the aedeagus with apodemal processes bearing many transverse striae.

**Remarks.** *Coarctana striata* sp. nov. (Fig. 7) was recovered with low support (SR = 54) as sister to the clade *C. taurina* sp. nov. + *C. oricula* sp. nov. and the clade of *C. vilavelha* sp. nov. + (*C. nigromedia* sp. nov. + *C. asymmetrica* sp. nov.). *Coarctana striata* sp. nov. is eas-

ily separated from its congeners by the aedeagus (Fig. 26L, M) with apodemal transversely striated on posterior margin and the shaft with pair of short apical processes, curved laterally and crossed over the posterior surface of shaft.



**Figure 27.** *Coarctana striata* sp. nov., paratype female. **A** distal portion of abdomen, ventral view. **B** distal portion of abdomen, lateral view. **C** first valvifer and first valvula, lateral view. **D** apical portion of first valvula. **E** second valvula, lateral view. **F** apical portion of second valvula. **G** second valvifer and gonoplac, lateral view. **H** apical portion of gonoplac. Scale bars in mm.

### *Coarctana taurina* sp. nov.

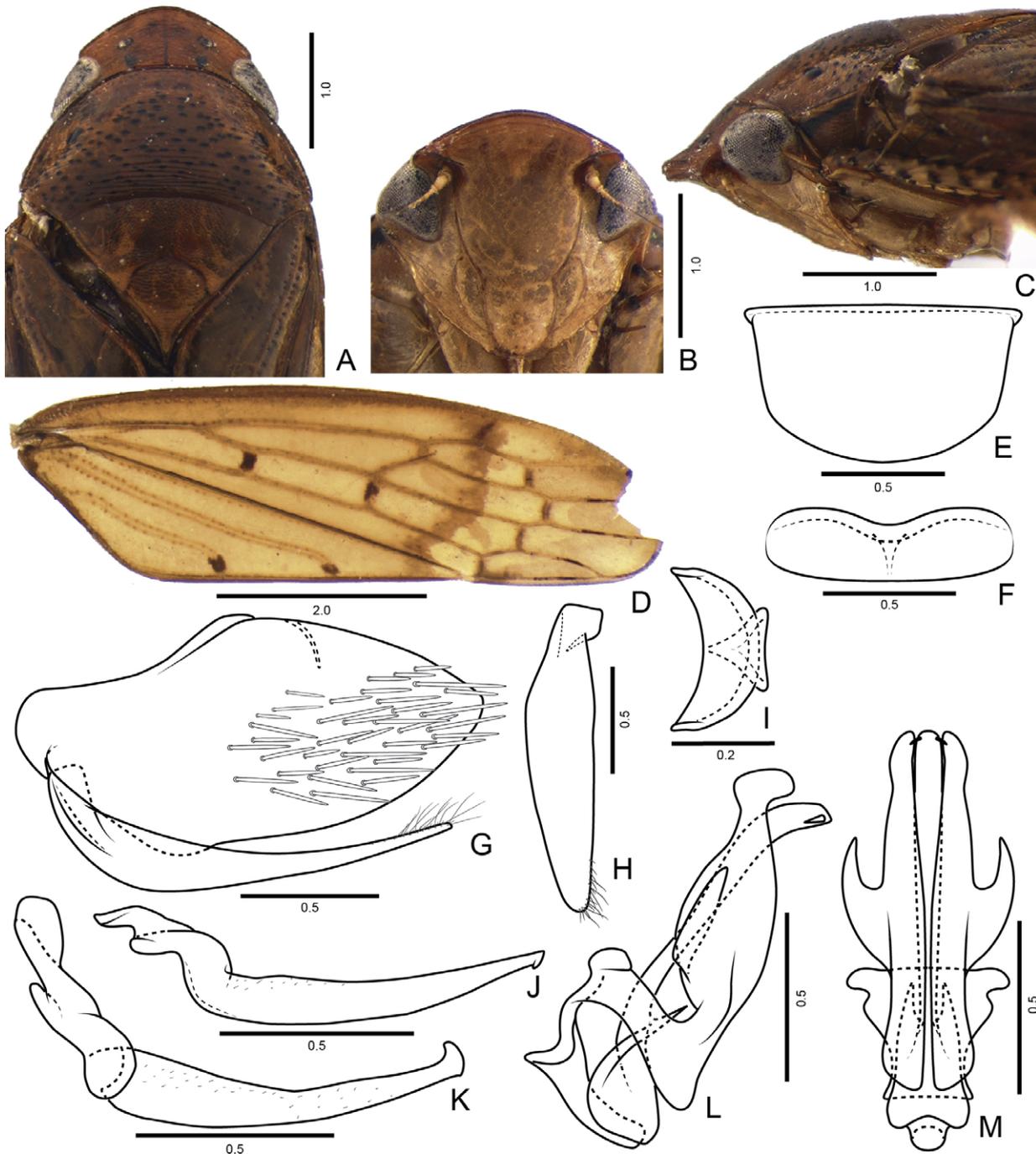
<https://zoobank.org/85E80E52-59E3-47E8-BF42-7DFAD573998B>

Figs 28, 32I, J

**Diagnosis.** Pygofer (Fig. 28G) with apex slightly tapered, subacute. Subgenital plate (Fig. 28H) with small group of filiform setae on apex. Style, in lateral view (Fig. 28K), blade with ventral margin not serrated; apex enlarged, forming a rounded dorsal process. Aedeagus (Fig. 28L, M) apodemal processes narrow basally, curved in right angle dorsally; distal portion, in lateral view, expanded medially, external surface, in posterior view, bearing acute process curved dorsally; shaft apex with pair of minute processes, directed ventrally.

**Measurements.** Total length: holotype male 7.8 mm; paratypes, males (n = 5) 7.7–8.0 mm.

**Description.** Head, in frontal view (Fig. 28B), frons 1.2× wider than long; frontogenal suture distant from eye margin by approximately the width of scape; clypeus 1.2× wider than long; lateral margins slightly convergent apically; apex straight. Head, in lateral view (Fig. 28C), crown-face transition thin, with 4 transverse carinae; clypeus not inflated. Profemur AV row with 4–5 setae; PV row with 1–2 setae. Protibia PD row with 3 setae and undifferentiated intercalary setae; PV row with 5 setae and undifferentiated intercalary setae. Metatibia PD, AD and AV rows with 21–23, 12 and 14–16 macrosetae respectively. Metatarsomere I 4× longer than apical width; inner row of the ventral surface with 5 setae. Other characteristics as in generic description.



**Figure 28.** *Coarctana taurina* sp. nov., holotype male. **A** head and thorax, dorsal view. **B** head, ventral view. **C** head and thorax, lateral view. **D** forewing. **E** sternite VIII, ventral view. **F** valve, ventral view. **G** pygofer, valve and subgenital plate, lateral view. **H** subgenital plate, ventral view. **I** connective, dorsal view. **J** style, dorsal view. **K** style, lateral view. **L** aedeagus, lateral view. **M** aedeagus, posterior view. Scale bars in mm.

**Coloration.** Head and thorax (Fig. 32I, J) reddish-brown. Head (Fig. 28A) with pair of small circular black maculae near posterior margin behind ocelli. Face (Fig. 28B) yellowish without maculae. Pronotum (Fig. 28A) with black punctures and pair of circular black spots near anterior margin behind eye; proepimeron (Fig. 28C), with narrow black band below pronotal carina; lateral carina yellow. Forewing (Fig. 28D) with black maculae on apex of anal veins, cross veins of inner discal and apical cells; transverse brown stripe over subapical cells. Metatibia (Fig. 28C) with cucullate bases of setae black.

**Male terminalia.** Sternite VIII (Fig. 28E) 1.6× wider than long; lateral margins weakly convergent posterad; posterior margin rounded. Valve (Fig. 28F) 3.5× wider than long; dorsal margin slightly excavated; posterior margin straight. Pygofer, in lateral view (Fig. 28G), 2× longer than maximum height; basodorsal process thin and short, extending ventrally for 1/4 height of lateral lobe; anteroventral, posterodorsal and posteroventral margins rounded; apex slightly tapered, subacute. Subgenital plate, in lateral view (Fig. 28G), short, not reaching pygofer apex; in ventral view (Fig. 28H), elongated, 4.5×

longer than wide, maximum width near basal third; outer margin with minute setae, apex with small group of filiform setae; inner margin slightly rounded; external margin straight; apex rounded. Connective (Fig. 28I) 2× wider than long; anterior margin excavated; dorsal keel and stem reduced; stem wide. Style, in dorsal view (Fig. 28J), with outer lobe reduced and rounded; in lateral view (Fig. 28K), blade weakly curved dorsally, wider near base and tapered toward apex; ventral margin not serrated; apex enlarged, forming rounded dorsal process. Aedeagus (Fig. 28L, M) preatrium weakly developed; dorsal apodeme with dorsal margin straight, lateral margins slightly produced laterally; apodemal processes narrow basally, curved in right angle dorsally at basal third; distal portion, in lateral view, expanded medially, external surface, in posterior view, bearing acute process curved dorsally; apex rounded, with subapical constriction; shaft symmetrical, strongly curved dorsally near base, with basolateral expansion that surrounds the previous portion of shaft, middle portion cylindrical; apex weakly curved ventrally, with pair of minute processes, directed ventrally. Other characteristics as in generic description.

**Female.** Unknown.

**Material examined. Holotype male: Brazil: Rondônia:** “Vilhena, RO\ 17/X/1986\ C. Elias, leg.\ Polonoroeste” (DZUP). **Paratypes:** 1♂, same data as holotype (DZUP); 1♂, same data as holotype except 15/X/1986 (DZUP). — **Acre:** 1♂, “Brasil, Acre, Mancio\ Lima, Parque Nacional\ Serra do Divisor,\ Rio Azul 13.iii.2006\ light trap\ AR Calor leg” (MZSP). — **Mato Grosso:** 1♂, “Utiariti\ Rio Papagaio, MT\ 1–12.X.1966\ Lenko & Pereira” (MZSP). — **Maranhão:** 1♂, “Brasil (MA), Carolina\ PARNA Chapada das Mesas,\ Riacho Cancela, 225m\ 7°06'42.2S 47°17'56.8"W”, “Armadilha de Malaise\ 01–15.vii.2013; J.A. Rafael\ F. Limeira-de-Oliveira & T.T.A. Silva, cols.” (CZMA). — **Ecuador:** “Ecuador Orellana Transect Ent. 1 km S. Onkone Gare Camp Reserva Etnica Waorani Onkone Gare Camp 220m 03/jul/95 00 39' 10" S 076 26' 00" W T.L.Erwin et al Fogging terre firme forest” (EPNC – on indefinite loan to the United States National Museum, Washington, USA)

**Etymology.** The new species name refers to the aedeagus with apodemal processes bearing projections at the mid-length of external surface resembling bull horns.

**Remarks.** *Coarctana taurina* **sp. nov.** can be easily distinguished from *C. oricula* **sp. nov.** by the style (Fig. 28K) with an apex enlarged, forming a rounded dorsal process, the apodemal processes of aedeagus (Fig. 28L, M) with an acute process curved dorsally on external surface, and the shaft with pair of minute apical processes, directed ventrally.

### *Coarctana vilavelha* **sp. nov.**

<https://zoobank.org/495AAEB7-188F-4F50-90BB-1523CAC6C308>

Figs 29, 30, 32K, L

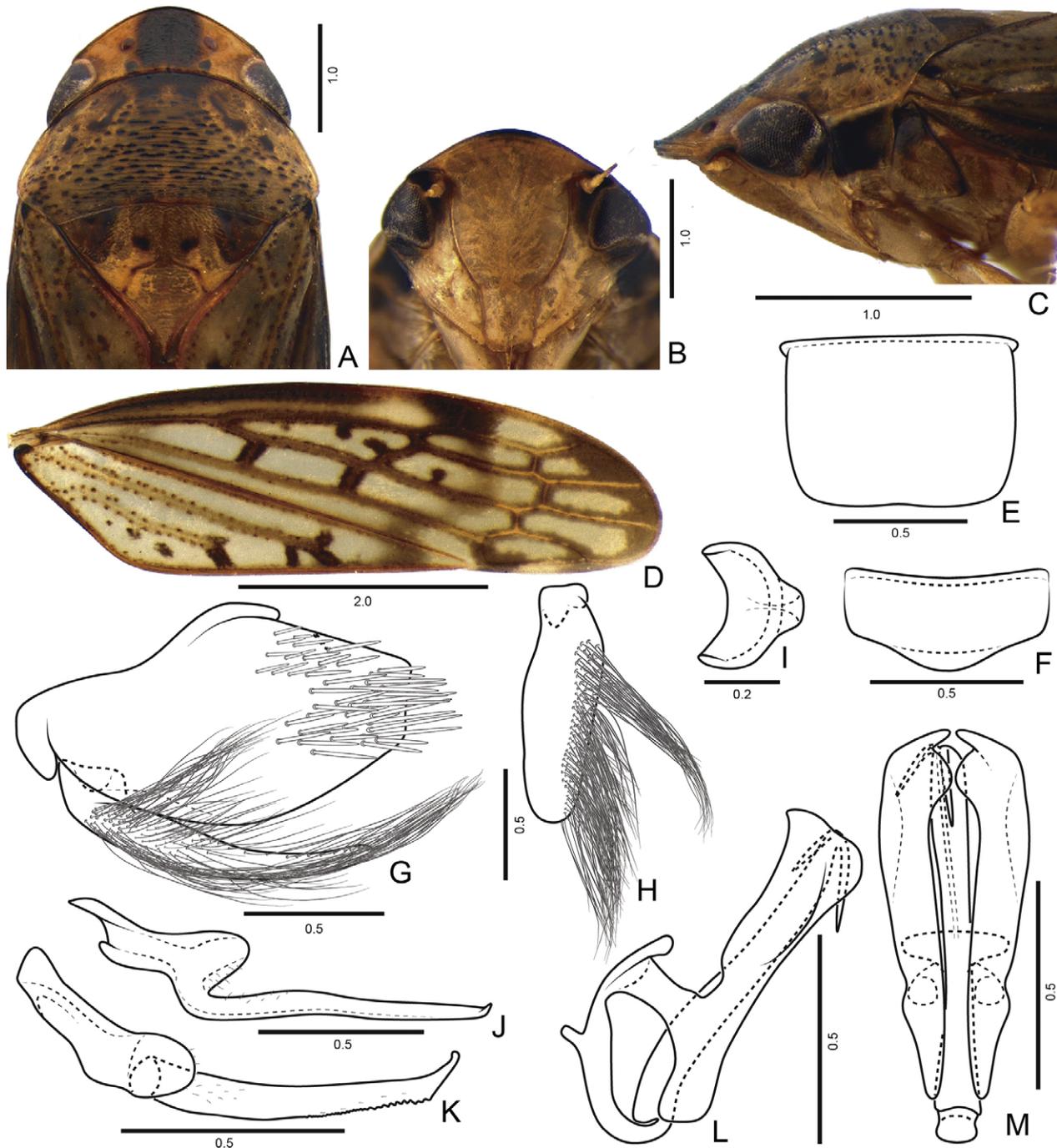
**Diagnosis.** Head (Fig. 29A) with wide longitudinal dark-brown band between ocelli. Pygofer (Fig. 29G) with apex truncated. Subgenital plate (Fig. 29H) with long filiform setae. Style (Fig. 29K) apex obliquely truncate, with dorsal process subacute. Aedeagus (Fig. 29L, M) with ventral margin of apodemal processes forming rounded lobe produced ventrally; shaft slightly twisted laterally, bearing pair of processes directed ventrally, with 1/5 length of shaft.

**Measurements.** Total length: holotype male 7.2 mm; paratypes, males (n = 12) 7.0–7.2 mm, females (n = 11) 7.7–7.8 mm.

**Description.** Head, in frontal view (Fig. 29A), frons 1.2× wider than long; frontogenal suture distant from eye margin by approximately half maximum width of clypeus; clypeus 1.2× wider than long; lateral margins straight, slightly convergent apically; apex straight. Head, in lateral view (Fig. 29C), crown-face transition thin, with 3 transverse carinae; clypeus not inflated. Forewing (Fig. 29D) with apex of anal veins bifid. Profemur AV row with 5–6 setae; PV row with 1 seta near apex. Protibia PD row with 3 setae and undifferentiated intercalary setae; PV row with 5 setae and undifferentiated intercalary setae. Metatibia PD, AD and AV rows with 23–25, 12 and 14–15 macrosetae respectively. Metatarsomere I 4× longer than apical width; inner row of the ventral surface with 5 setae. Other characteristics as in generic description.

**Coloration.** Head and thorax (Figs 29A, B, 32K, L) yellowish-brown. Head (Fig. 29A) with pair of small circular black maculae near posterior margin behind ocelli and wide longitudinal dark-brown band between ocelli. Face (Fig. 29B) yellowish; antennal pit dark brown. Pronotum (Fig. 29A) with black punctures; small black maculae near anterior margin, behind eye; proepimeron (Fig. 29C) almost entirely black. Mesonotum (Fig. 29A) with brown lateral angles and pair of small median brown spots near scutoscutellar suture. Forewing (Fig. 29D) with brown veins; larger dark-brown maculae on apex of anal veins, outer discal cell, costal margin, cross veins of discal and apical cells; transverse brown stripe over subapical cells; apical cells smoky apically. Metatibia (Fig. 29C) with cucullate bases of setae black.

**Male terminalia.** Sternite VIII (Fig. 29E) 1.3× wider than long; lateral margins parallel; posterior margin straight. Valve (Fig. 29F) 2× wider than long; posterior margin rounded. Pygofer, in lateral view (Fig. 29G), 1.7× longer than maximum height; basodorsal process thin and short, extending ventrally for 1/5 height of lateral lobe; ventral margin rounded; posterodorsal and posteroventral margins straight and convergent posterad; apex truncated. Subgenital plate, in lateral view (Fig. 29G), not reaching pygofer apex; in ventral view (Fig. 29H), elongated, 3.5× longer than wide, maximum width near median third; ventral surface near outer margin and dorsal surface near base with long filiform setae; lateral margins slightly rounded; apex rounded. Connective (Fig. 29I) about as

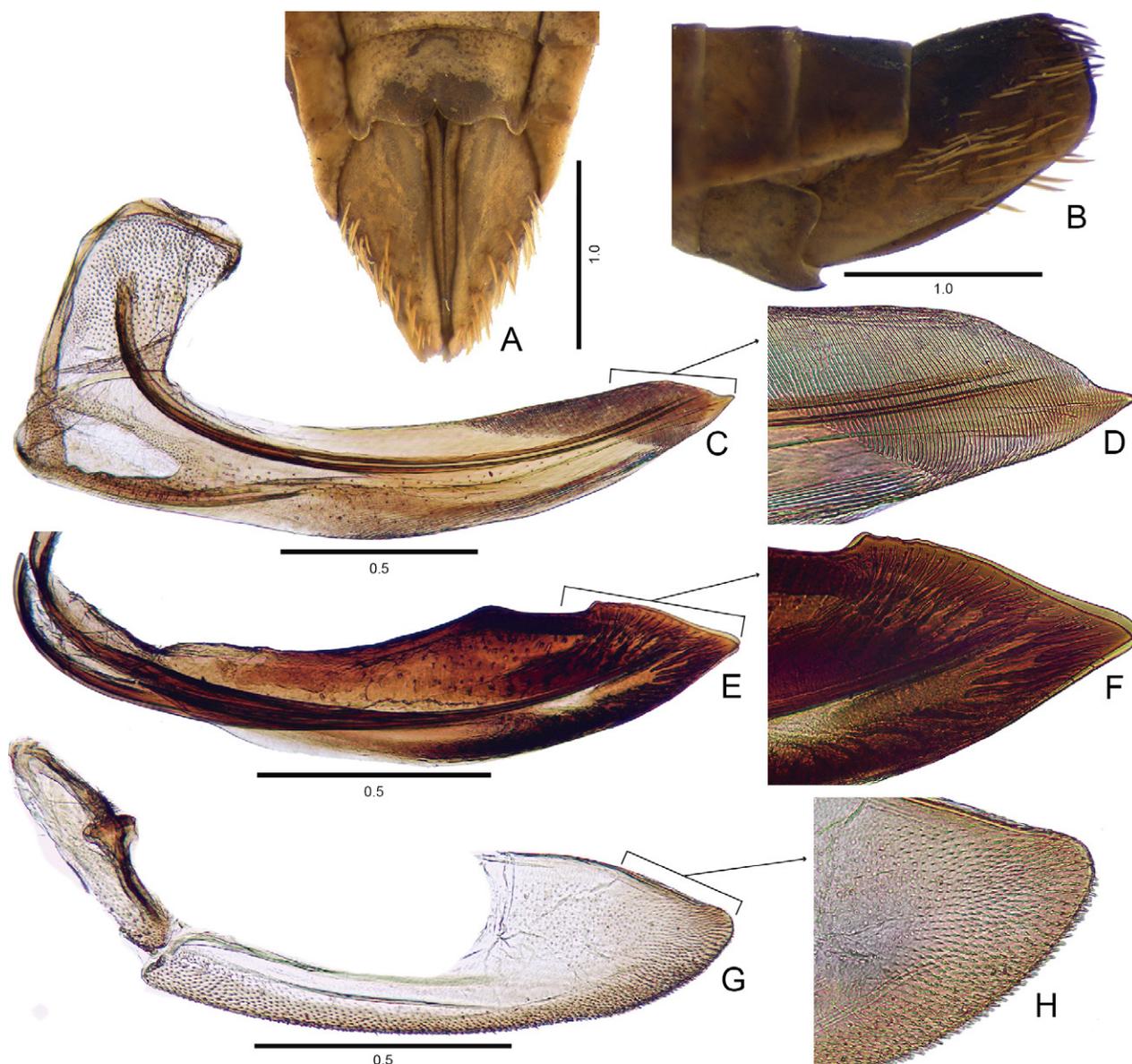


**Figure 29.** *Coarctana vilavelha* sp. nov., holotype male. **A** head and thorax, dorsal view. **B** head, ventral view. **C** head and thorax, lateral view. **D** forewing. **E** sternite VIII, ventral view. **F** valve, ventral view. **G** pygofer, valve and subgenital plate, lateral view. **H** subgenital plate, ventral view. **I** connective, dorsal view. **J** style, dorsal view. **K** style, lateral view. **L** aedeagus, lateral view. **M** aedeagus, posterior view. Scale bars in mm.

wide as long; anterior margin excavated; dorsal keel reduced; stem short. Style, in dorsal view (Fig. 29J), with outer lobe developed and rounded; in lateral view (Fig. 29K), blade narrow with approximately same width along entire length; ventral margin with apical third serrated; apex obliquely truncate, with dorsal process subacute. Aedeagus (Fig. 29L, M) preatrium weakly developed; dorsal apodeme with dorsal margin straight, lateral margins slightly produced laterally; apodemal processes narrow basally, curved in right angle dorsally at basal third; ventral margin forming rounded lobe produced ventrally;

distal portion straight, apex broadened, slightly excavated and curved over the apex of shaft; shaft approximately cylindrical, strongly curved dorsally near base, with small basolateral expansion that surrounds the previous portion of the shaft; apex slightly twisted laterally, bearing pair of processes directed ventrally, with 1/5 length of shaft. Other characteristics as in generic description.

**Female terminalia.** Sternite VII (Fig. 30A) 1.9× wider than long; posterolateral angles produced posterad as far as posterior margin; posterior margin excavated each side

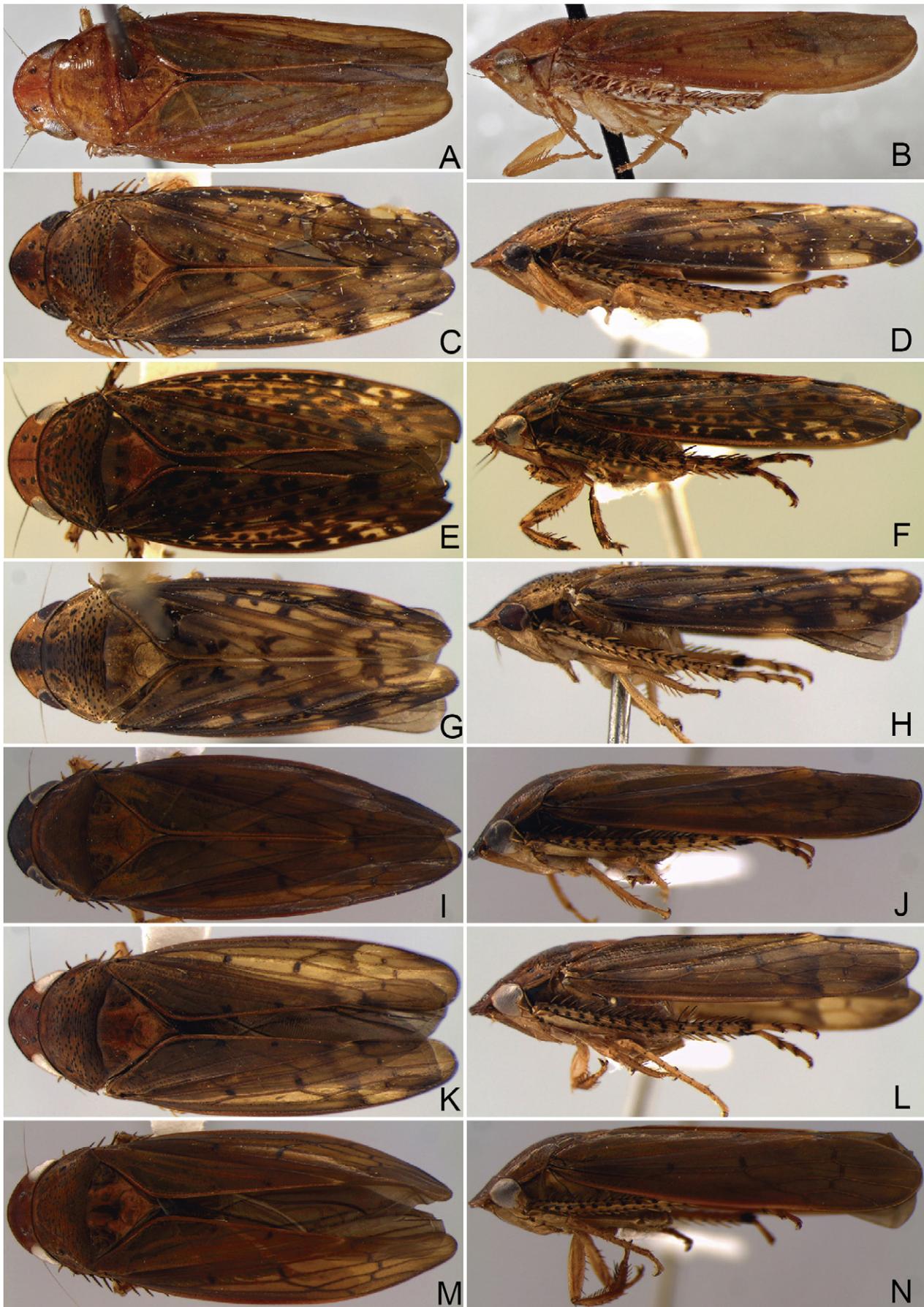


**Figure 30.** *Coarctana vilavelha* sp. nov., paratype female. **A** distal portion of abdomen, ventral view. **B** distal portion of abdomen, lateral view. **C** first valvifer and first valvula, lateral view. **D** apical portion of first valvula. **E** second valvula, lateral view. **F** apical portion of second valvula. **G** second valvifer and gonoplac, lateral view. **H** apical portion of gonoplac. Scale bars in mm.

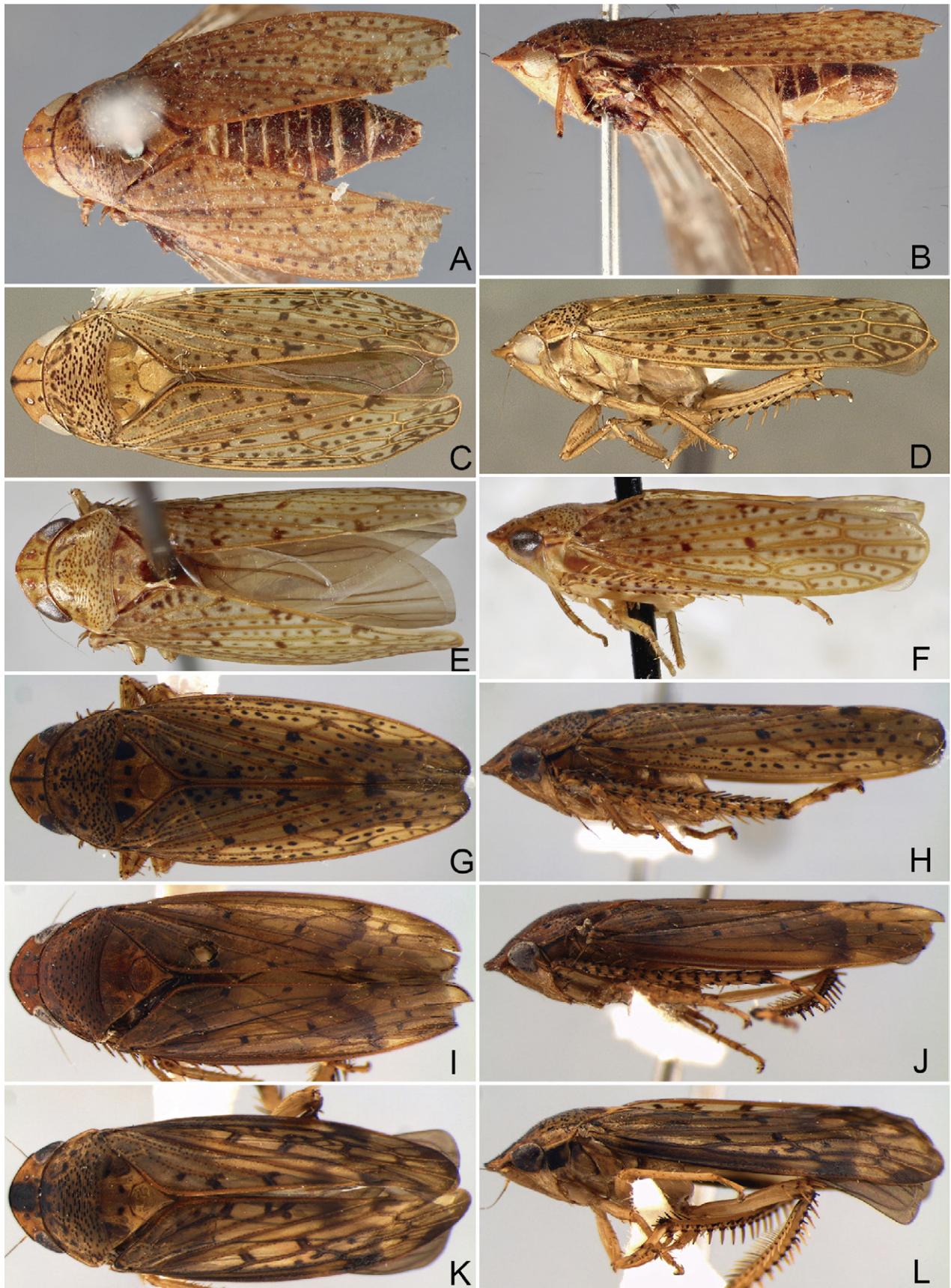
of median lobe which occupies the median third and is V-shape notched medially. Internal sternite VIII membranous. Pygofer (Fig. 30A, B) 1.8× longer than maximum height; ventral margin slightly rounded; dorsal margin straight; apex rounded. First valvifer (Fig. 30C) triangular, 1.5× longer than wide; anterior and dorsal margins straight; posterior margin slightly rounded. First valvula (Fig. 30C) 6.2× longer than wide; apex (Fig. 30D) tapered and acute. Second valvula (Fig. 30E) 4.7× longer than wide; wider after mid-length; dorsal protuberance developed and rounded; dorsal margin (Fig. 30F) with few minute rounded teeth; apex abruptly tapered, subacute. Second valvifer (Fig. 30G) 2.5× longer than wide. Gonoplac (Fig. 30G) 3.3× longer than wide; apex (Fig. 30H) rounded. Other characteristics as in generic description.

**Material examined. Holotype male:** Brazil: Paraná: "P. Grossa (V. Velha)- PR\ Reserva IAPAR Br376\ Brasil 01.IX.1986\ Lev. Ent. Pro-

faupar\ Malaise" (DZUP). Paratypes: 1♀, same data as holotype except 15.IX.1986 (DZUP); 1♀, same data as holotype except 20.X.1986 (DZUP); 1♂, same data as holotype except 15.XII.1986 (DZUP); 1♀, same data as holotype except 12.I.1987 (DZUP); 1♀, same data as holotype except 30.III.1987 (MNRJ); 1♀, same data as holotype except 28.IX.1987 (DZUP); 1♂, same data as holotype except 05.X.1987 (MNRJ); 1♀, same data as holotype except 25.I.1988 (DZUP); 1♀, same data as holotype except 14.III.1988 (DZUP); 1♀, same data as holotype except 21.III.1988 (DZUP); 1♂, "Brasil, Paraná, Parque\ Estadual de Vila Velha\ 25°13'5.9"S 50°2'31.2"W Malaise2 06.XII.1999\ Proville" (DZUP); 1♂, same data as preceding except 15.IV.2002 (DZUP); 1♂, "Brasil, Paraná, Parque\ Estadual de Vila Velha\ 25°13'13.3"S 50°2'314.1"W Malaise3 28.II.2000\ Proville" (DZUP); 1♂, same data as preceding except 17.IV.2000 (DZUP); 1♀, same data as preceding except 22.IV.2002 (DZUP); 1♂, "Brasil, Paraná, Parque\ Estadual de Vila Velha\ 25°13'2.9"S 50°2'14.1"W Malaise4 20.XII.1999\ Proville" (DZUP); 1♂, same data as preceding except 24.I.2000 (DZUP); 1♂, same data as preceding except 07.I.2002 (DZUP); 1♀, same data



**Figure 31.** Species of *Coarctana* gen. nov., dorsal (left) and lateral (right) views. **A, B** *C. apena* comb. nov., holotype male, AMNH. **C, D** *C. asymmetrica* sp. nov., holotype male, DZUP. **E, F** *C. glabra* sp. nov., holotype male, DZRJ. **G, H** *C. nigromedia* sp. nov., holotype male, DZUP. **I, J** *C. occultata* sp. nov., holotype male, DZUP. **K, L** *C. oricula* sp. nov., holotype male, DZUP. **M, N** *C. parvula* sp. nov., holotype male, DZUP.



**Figure 32.** Species of *Coarctana* gen. nov., dorsal (left) and lateral (right) views. **A, B** *C. punctata* comb. nov., holotype female, NHRS GULI000069783. **C, D** *C. rana* comb. nov., holotype male, OSU. **E, F** *C. serpenta* comb. nov., holotype male, AMNH. **G, H** *C. striata* sp. nov., holotype male, DZUP. **I, J** *C. taurina* sp. nov., holotype male, DZUP. **K, L** *C. vilavelha* sp. nov., holotype male, DZUP.

as preceding except 12.XI.2001 (DZUP); 1♀, same data as preceding except 05.VIII.2002 (DZUP); 1♀, “Guarapuava – Paraná\ Est. Águas Santa Clara\ Brasil 14.IX.1987\ Lev. Ent. Profaupar\ Malaise” (DZUP). — **Minas Gerais:** 1♂, “Brasil, MG, Botelhos,\ Córrego da Onça\ 21°40'90"S 46°22'05"W\ Malaise mata\ 21.II–30.III.2007\ João Bass leg\ SISBIOTA – DIPTERA” (MZSP); 1♂, “Brasil, MG, Cabo Verde,\ Fazenda da Cata 598m\ 21°27'11"S 46°20'52"W\ 10–23.IX.2006 Malaise2\ mata Amorin, Ribeiro,\ Falaschi & Oliveira\ BIOTA-FAPESP” (MZSP).

**Etymology.** The new species name refers to the locality where many specimens were collected.

**Remarks.** *Coarctana vilavelha* sp. nov. was strongly supported (SR = 98) as sister to *C. nigromedia* sp. nov. + *C. asymmetrica* sp. nov. by one synapomorphy 130:1, aedeagus with apodemal process with ventral margin forming a rounded lobe, and four homoplastic characters, as for example, 20:1, frontogenal suture distant from inner margin of eye by approximately half width of clypeus, and 114:1, subgenital plate with long filiform setae on ventral surface. The new species can be separated from *C. nigromedia* sp. nov. and *C. asymmetrica* sp. nov. by having the pygofer (Fig. 29G) not excavated apically; the apex of style (Fig. 29K) with a dorsal process subacute; and the aedeagal shaft (Fig. 29L, M) slightly twisted laterally, bearing a pair of apical processes symmetrical in length.

### Additional examined specimens of *Coarctana* gen. nov.

*Coarctana apena* (DeLong & Freytag, 1976) comb. nov. **Brazil** [new record]: **Rondônia** [new record]: 1♂, “Ouro Preto\ d' Oeste, RO\ 18-7-1987\ C. Elias, leg”, “Projeto Po-\ Ionoroeste” (DZUP); **Peru:** 1♂, “Peru, Cuzco, Estrada 30 C\ 26km W Quincemil, 23.viii.2012, (light) 13°21'18"S 70°53'22"W, 985m R.R.\ Cavichioli leg.” (DZUP).

*Coarctana serpenta* (DeLong, 1980) comb. nov. **Venezuela:** 1♂, “Venezuela 24\ light” (INHS).

### 3.3.3. *Effossana* gen. nov.

<https://zoobank.org/5319306E-F929-4925-BD5A-8E4FE43ED4B7>

Figs 33–43

**Type species.** *Acuera (Parcana) gloma* DeLong & Freytag, 1974: 74.

**Diagnosis.** Medium size leafhoppers (8.5–11.3 mm). Head, in dorsal view (Figs 33A, 35A), moderately produced anterad, median length approximately equal to half interocular width; crown surface with oblique striae between ocelli; ocellus closer to midline than to inner margin of eye; in lateral view (Figs 33C, 35C), crown-face transition defined. Pronotum (Figs 33A, 37A) with poste-

rior margin commonly bearing irregular black transverse band. Forewing (Figs 33D, 35D) clavus with 2–4 cross veinlets between the anal veins. Male sternite VIII (Figs 33E, 35E) posterior margin deeply excavated medially. Subgenital plate (Figs 33H, 35H) with thin longitudinal striations near apex; glabrous, microsetae absent. Connective (Figs 33I, 35I) U-shaped, stem and dorsal keel absent. Style, in dorsal view (Figs 33J, 35J), with external lobe very small or absent. Aedeagus (Figs 33L, 35L) with apodemal processes. First valvula (Figs 34C, 36C) basal third broad, produced anterad; apex (Figs 34D, 36D) abruptly tapered. Second valvula (Figs 34E, 36E) dorsal protuberance developed, located after half the length of blade; teeth (Figs 34F, 36F) small and acute, present subapically.

**Coloration.** Head and thorax (Figs 42, 43) yellowish brown. Crown (Figs 33A, 35A) without dark punctures. Face (Figs 33B, 35B) without black punctures; frons without dark bands over muscular impressions. Pronotum (Figs 33A, 37A) with brown or black punctures; posterior margin with black transverse band, which is sinuous anterad. Mesonotum (Figs 33A, 35A) with small yellow spots. Scutellum (Figs 33A, 35A) with pair of large yellow spots. Forewing (Figs 33D, 35D) strongly marked by dark-brown mottling. Legs (Figs 42, 43) without large black maculae or punctures. Metatibia (Figs 33C, 35C) with cucullate bases of setae blacks.

**Description.** Head, in dorsal view (Figs 33A, 35A), moderately produced anterad, median length approximately equal to half interocular width; transocular width 8 tenths pronotum humeral width; anterior margin rounded; crown surface with oblique striae between ocelli; ocellus equidistant between anterior and posterior margins of crown and closer to midline than to inner margin of eye. Head, in frontal view (Figs 33B, 35B), face wider than high; frons texture shagreen, surface just below the crown-face transition not excavated; frontogenal suture distant from eye margin by approximately half maximum width of clypeus and surpassing antennal ledge, extending to anterior margin of crown; supra-antennal lobe oblique, advancing over the frons for a short distance; gena with ventrolateral margin rounded and slightly angled medially; maxillary plate produced ventrally as far as clypeus apex. Head, in lateral view (Figs 33C, 35C), crown-face transition defined, thin, with few transverse striae or moderately thick, smooth medially and with few striae near of eye; anterior margin of crown weakly projected over anterior margin of eye; frons and clypeus not inflated. Pronotum, in dorsal view (Figs 33A, 37A), with transverse striae on disc and posterior third; lateral margins as long as eye length; posterior margin slightly excavated; in lateral view (Figs 33C, 35C), moderately declivous, continuous with head declivity. Mesonotum (Figs 33A, 35A) slightly wider than long; scutellum (Figs 33A, 35A) slightly swollen. Forewing (Figs 33D, 35D) with 2–4 cross veinlets between the anal veins; M vein with segment after the divergence between R+M and before the cross vein *m-cu*<sub>1</sub>, 3–4× longer than the length of *m-cu*<sub>1</sub>; appendix not or moderately devel-

oped, bordering first to second apical cells; apex rounded. Profemur with AD, AM, and PD rows reduced and poorly defined, with exception of apical setae AD<sub>1</sub>, AM<sub>1</sub>, and PD<sub>1</sub>, respectively; IC row formed by slightly arched comb of fine setae, beginning at distal half of femur, and extending to AM<sub>1</sub>. Protibia, in cross-section, semi-circular, dorsal surface with longitudinal carina adjacent to PD row; AV row formed by long setae, slightly longer and thicker towards apex; dorsal rows with apical AD<sub>1</sub> and PD<sub>1</sub> setae developed; PD row with 4–5 setae and undifferentiated intercalary setae; PV row with 6–8 setae. Mesotibia with dorsal surface rounded. Metafemur with setal formula 2:2:1. Metatibia with AD row with up to 4 intercalary setae between macrosetae; PV row with setae of apical half formed by sequence of a longer and thicker seta, interspersed with 2–4 thinner and shorter setae, ending with a long and thick seta. Metatarsomere I ventral surface with two rows of non-cucullate setae; inner row with 5–10 setae; pecten with 4–7 platellae, flanked by one inner and one outer tapered seta. Metatarsomere II pecten with 2–3 platellae, flanked by two inner and one outer tapered seta.

**Male terminalia.** Sternite VIII (Figs 33E, 35E) with posterior margin deeply excavated medially. Valve (Figs 35G–F, 37G–F) usually strongly convex; integument thickening present on anterior and posterior margins; posterior margin with narrow and shallow excavation. Pygofer, in lateral view (Figs 33G, 35G), without basodorsal processes; many macrosetae distributed on apical half. Anal tube membranous, without processes. Subgenital plate, in lateral view (Figs 33G, 35G), short, not reaching apex of pygofer; in ventral view (Figs 33H, 35H), surface with thin longitudinal striations near apex; glabrous, microsetae absent. Connective (Figs 33I, 35I) U-shaped, stem and dorsal keel absent. Style, in dorsal view (Figs 33J, 35J), with external lobe reduced or absent. Aedeagus (Figs 33L, 35L) pre-atrium reduced; apodemal processes long (Fig. 35L) or reduced (*E. fructa* **comb. nov.**); shaft with (Figs 35L, 37L) or without (Fig. 33K) apical processes (*E. gloma* **comb. nov.**).

**Female terminalia.** Pygofer (Figs 34B, 36B) with macrosetae distributed on posteroventral quadrant and dorsoapical third. First valvifer (Figs 34C, 36C) as long or

wider than long. First valvula (Figs 34C, 36C) slightly curved dorsally; basal portion produced anterad, basal third broad, about twice as wide as median portion of blade; dorsal sculptured area strigate, beginning after half length of valvula; ventral interlocking device distinct on basiventral 2/5 of blade; apex (Figs 34D, 36D) abruptly narrowed forming acute projection. Second valvula (Figs 34E, 36E) slightly curved dorsally, wider subapically; dorsal protuberance conspicuous, located after half length of blade; teeth (Figs 34F, 36F) small and acute, present subapically, after the dorsal protuberance; ventral margin without denticles; apex abruptly narrowed, acute. Second valvifer (Figs 34G, 36G) 2.8× longer than wide. Gonoplac (Figs 34G, 36G) posterodorsal margin short, 1/3 of blade length; external surface with dentiform cuticular projections; ventral margin broadly rounded; apex (Figs 34H, 36H) rounded.

**Distribution.** Brazil, British Guiana, and Panama.

**Etymology.** The generic name *Effossana* (feminine noun) is derived from the Latin word “effossus” meaning excavated. It refers to the posterior margin of the male sternite VII deeply excavated. The suffix – ana is common in names of Gyponini genera.

### Species of *Effossana* gen. nov.

*E. assimulata* **sp. nov.** Brazil: Rondônia.

*E. circumnota* **sp. nov.** Brazil: Distrito Federal, Goiás, Minas Gerais and Tocantins.

*E. fructa* (DeLong & Freytag, 1974): 191 (**comb. nov.**) (*Acuera* (*Tortusana*)). Brazil: Mato Grosso.

*E. gatuna* (DeLong & Wolda, 1984): 304 (**comb. nov.**) (*Curtara*). Panama.

*E. gloma* (DeLong & Freytag, 1974): 74 (**comb. nov.**) (*Acuera* (*Parcana*)). Brazil: Bahia [new record], Distrito Federal [new record], Espírito Santo [new record], Goiás [new record], Maranhão [new record], Minas Gerais, Paraná [new record], Pernambuco [new record], Piauí [new record], Rio de Janeiro and São Paulo.

*E. intrinseca* **sp. nov.** Brazil: Mato Grosso.

*E. scapa* (DeLong, 1977): 23 (**comb. nov.**) (*Curtara*). British Guiana.

*E. tenuemarginata* **sp. nov.** Brazil: Amazonas and Rondônia.

### Key to males of *Effossana* gen. nov.

- 1 Aedeagus (Fig. 37L) with basal portion of shaft strongly curved forming a ring .....2
- 1' Aedeagus (Fig. 35L) with shaft not forming ring basally.....3
- 2 Pygofer, in dorsal view (Fig. 39g), dorsal margin with conspicuous subapical process, directed inward. Style, in lateral view (Fig. 39K), ventral margin without process .....*E. intrinseca* **sp. nov.**
- 2' Pygofer, without subapical processes. Style, in lateral view (Fig. 37K), ventral margin with subapical process truncated apically and serrated on anterior margin.....*E. circumnota* **sp. nov.**
- 3 Aedeagus (DeLong and Freytag 1974: 192, figs 46, 47) with apodemal processes very reduced and shaft short.....*E. fructa* **comb. nov.**
- 3' Aedeagus (Fig. 33L) with apodemal processes and shaft elongated .....4
- 4 Aedeagus (Fig. 33L, M) with apodemal process truncated apically, with lacerated aspect, forming several small projections; shaft with pair of lateral processes near base; apical portion of shaft without processes .....*E. gloma* **comb. nov.**

- 4' Aedeagus (Fig. 35L, M) with apodemal process tapered to acute apex; shaft without processes near base; apical portion of shaft with processes.....5
- 5 Aedeagus (DeLong 1977: 24, fig. 1) with three unbranched apical processes ..... *E. scapa* **comb. nov.**
- 5' Aedeagus (Fig. 35L) with a pair of branched apical processes .....6
- 6 Style, in lateral view (DeLong and Wolda 1984: 306, fig. 33), excavated apically, not forming process directed dorsally..... *E. gatuna* **comb. nov.**
- 6' Style, in lateral view (Fig. 35K), dorsal margin forming conspicuous process directed dorsally .....7
- 7 Style, in lateral view (Fig. 41K), with blade short, dorsal process flattened laterally. Aedeagus (Fig. 41L) apodemal process almost straight; shaft with pair of apical processes bearing a small spiniform process near mid-length of anterior margin..... *E. tenuemarginata* **sp. nov.**
- 7' Style, in lateral view (Fig. 35K), with blade longer; dorsal process very thin, acute, not flattened. Aedeagus (Fig. 35L) apodemal process curved dorsally; shaft with pair of apical processes bearing a small spiniform process near base of posterior margin..... *E. assimulata* **sp. nov.**

### *Effossana gloma* (DeLong & Freytag) **comb. nov.**

Figs 33, 34, 43A, B

*Acuera* (*Parcana*) *gloma* DeLong & Freytag, 1974: 194.

**Diagnosis.** Head, in lateral view (Fig. 33C), crown-face transition moderately thick. Pygofer (Fig. 33G) without processes. Style, in lateral view (Fig. 33K), with blade tapered toward apex; ventral margin with three small, rounded lobes: anterior lobe not serrated, median and posterior lobes serrated. Aedeagus (Fig. 33K) apodemal processes long, surpassing the shaft apex; apex truncated, with lacerated aspect, bearing several small projections; shaft with pair of long lateral processes near base; apical portion of shaft without processes.

**Measurements.** Total length: males (n = 128) 8.4–9.5 mm; females (n = 55) 9.7–10.8 mm.

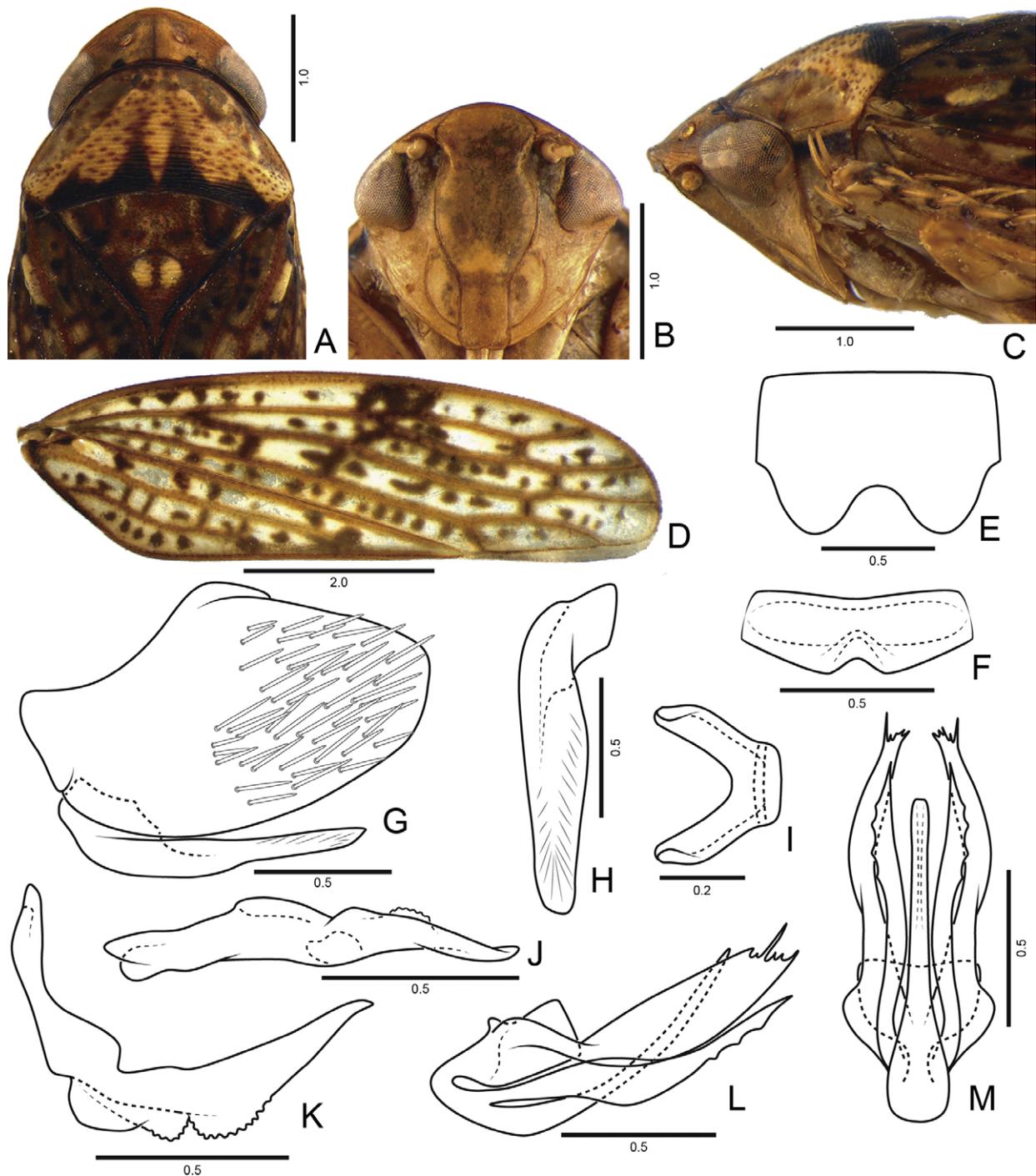
**Coloration.** Head and thorax (Fig. 43A, B) yellowish brown. Crown (Fig. 33A) with coronal suture black. Face (Fig. 33B) without maculae. Pronotum (Fig. 33A) with brown punctures, posterior margin with black transverse band, which is sinuous anterad; proepimeron (Fig. 33C), with black band below lateral carina. Mesonotum (Fig. 33A) with yellow markings, pair of black ring-shaped maculae near lateral angles and pair of rounded black spots, near scutoscuteellar suture (varying in intensity between specimens). Scutellum (Fig. 33A) with pair of large yellow spots. Forewing (Fig. 33D) with dark-brown mottling; membrane translucent light-yellow; veins brown. Metatibia with cucullate bases of setae black.

**Description.** Head, in dorsal view (Fig. 33A), transocular width 8.1 tenths of humeral width of pronotum. Head, in frontal view (Fig. 33B), frons 1.5× longer than wide; clypeus 1.3× longer than wide; lateral margins parallel. Head, in lateral view (Fig. 33C), crown-face transition moderately thick, smooth medially and with few striae near of eye. Forewing (Fig. 33D) with appendix reduced, narrower than the width of the first apical cell. Protibia with AD row without differentiated setae. Metatibia PD,

AD and AV rows with 23–25, 12–13 and 16–19 macrosetae respectively. Metatarsomere I moderately elongated, about 3× longer than apical width; inner row of the ventral surface with 7–8 setae; pecten with 4 platellae. Metatarsomere II pecten with 2 platellae. Other characteristics as in generic description.

**Male terminalia.** Sternite VIII (Fig. 33E) not covering subgenital plates; 1.5× wider than long; posterior margin with deep rounded excavation. Valve (Fig. 33F) 3× wider than long, weakly convex; posterior margin with shallow excavation; in lateral view, not convex. Pygofer, in lateral view (Fig. 33G), 1.6× longer than maximum height; anteroventral margin rounded; posterodorsal and posteroventral margins straight and slightly convergent posterad; apex rounded. Subgenital plate, in ventral view (Fig. 33H), elongated, 5× longer than wide, maximum width near half length; inner margin straight; outer margin slightly rounded; apex rounded. Connective (Fig. 33I) with arms moderately robust. Style, in lateral view (Fig. 33K), with blade tapered toward apex; ventral margin with three small, rounded lobes: anterior lobe not serrated, median and posterior lobes serrated; apex acute. Aedeagus (Fig. 33L, M) dorsal apodeme weakly developed, dorsal margin straight, lateral margins not projected laterally; apodemal process long, surpassing shaft apex; apex truncated, with lacerated aspect, bearing several small projections; shaft basal portion strongly curved, with pair of long lateral processes, acute and undulated apically; apical portion of shaft slightly curved dorsally, without processes. Other characteristics as in generic description.

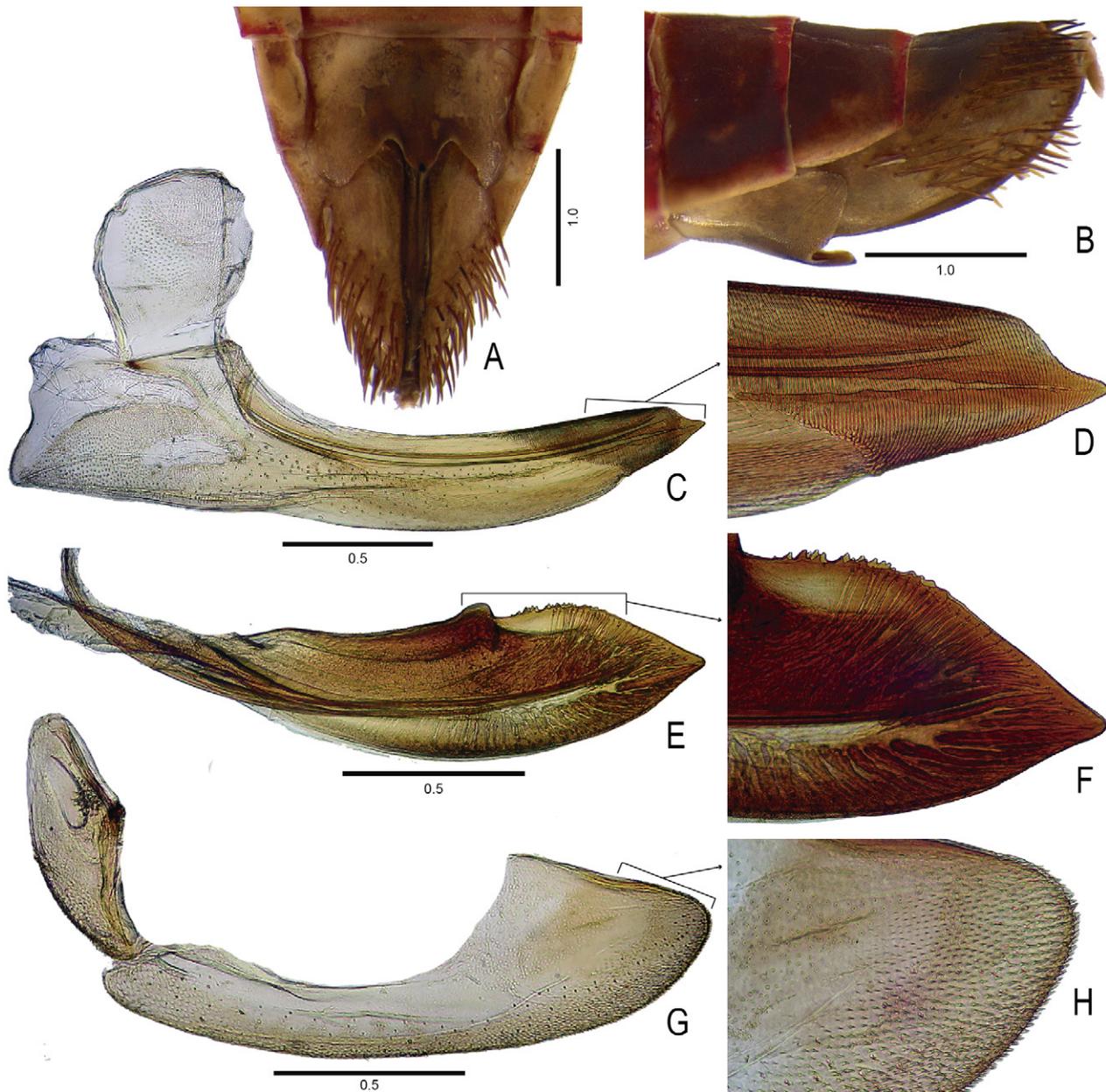
**Female terminalia.** Sternite VII (Fig. 34A) 1.8× wider than long; posterolateral angles produced as far as posterior margin; posterior margin deeply excavated each side of rounded median lobe which occupies less than median third. Internal sternite VIII membranous. Pygofer (Fig. 34A, B) 1.9× longer than maximum height; apex rounded. First valvifer (Fig. 34C) ovate, 1.1× longer than wide; lateral and dorsal margins rounded. First valvula (Fig. 34C) 4× longer than wide. Second valvula (Fig. 34E) 4× longer than wide; dorsal protuberance rounded. Gonoplac (Fig. 34G) 3.5× longer than wide. Other characteristics as in generic description.



**Figure 33.** *Effossana gloma* comb. nov., male. **A** head and thorax, dorsal view. **B** head, ventral view. **C** head and thorax, lateral view. **D** forewing. **E** sternite VIII, ventral view. **F** valve, ventral view. **G** pygofer, valve and subgenital plate, lateral view; **g** apical portion of pygofer, dorsal view. **H** subgenital plate, ventral view. **I** connective, dorsal view. **J** style, dorsal view. **K** style, lateral view. **L** aedeagus, lateral view. **M** aedeagus, posterior view. Scale bars in mm.

**Material examined. Holotype male:** Brazil: São Paulo: “Barueri\ S. Paulo, Brasil\ IX-17-196-\ K. Lenko col.” (MZSP). **Additional material examined:** Bahia: 6♂, 14♀, “Encruzilhada – Bahia\ Brasil 980m [dates between XI/74 and XII/80\ M. Alvarenga leg.” (DZUP); 1♀, “Brasil, Bahia, 10 km a\ NE de Encruzilhada\ 15.483°S 40.824°W, 830m,\ 15.xii.2012, G. Melo & \ P. Grossi arm Luminosa” (DZUP). — **Distrito Federal:** 2♂, “Brasil, Brasília – DF,\ Fazenda Água Limpa,\ Cerrado, malaise, 09-\ 23.XI.2017, J.R.P. Luz” (DZUP); 3♂, “Brasil, Brasília – DF, Faz.\ Água Limpa, Mata da Pri-\ matologia, 05.III.2017” (DZUP); 1♂, “Brasil, Brasília – DF,\ Fazenda Água Limpa,\ M. Gale-

ria,malaise,11-\ 25.V.2017, J.R.P. Luz” (DZUP). — **Espírito Santo:** 1♂, 1♀, “Brasil, ES, Santa\ Maria de Jetiba – Faz.\ Paulo Seick (Malaise)\ 20°2'31.1"S 40°41'51.3"W\ 29.XI-06.XII.2002\ M. Tazares & C. Azevedo” (DZUP). — **Goiás:** [new record] 3♂, “Brasil, Goiás\ São Domingos\ Fazenda Cipasa\ 18-IX a 2-X-93”, “Dionísio Pimentel”, “Malaise”, “MPEG 05029107, 05029108 and 05029129” (MPEG). — **Maranhão:** 1♂, “Brasil MA\ Imperatriz\ Ribeirãozinho\ 2a5.VIII.1989”, “Armadilha\ Malaise”, “Brasil MA\ F.F. Ramos” (DZRJ). — **Minas Gerais:** 41♂, 16♀, “S. Gonçalo Rio Abaixo,\ MG, Brasil, (Est. Amb\ Peti-Cemig) [dates between V.2002 a XII.2003\ A. F. Kumagai. Col.”



**Figure 34.** *Effossana gloma* **comb. nov.**, female. **A** distal portion of abdomen, ventral view. **B** distal portion of abdomen, lateral view. **C** first valvifer and first valvula, lateral view. **D** apical portion of first valvula. **E** second valvula, lateral view. **F** apical portion of second valvula. **G** second valvifer and gonoplac, lateral view. **H** apical portion of gonoplac. Scale bars in mm.

(DZUP); 2♂, “B. Horizonte – MG\ 14–20.I.92\ A.F.K.” (DZUP); 1♂, “Brasil, Minas Gerais Águas Vermelhas xii.1983\ M. Alvarenga leg.” (DZUP); 4♂, “Brasil, Minas Gerais, Berizal – Faz. Veredão\ 13.II.2010 light\ Grossi, Parizotto & Melo legs” (DZUP); 2♂, “Brasil, Minas Gerais, 10\ Km a SE de Berisal, Faz\ Veredão, 15°40’S 41°40’W, 850m,\ 13.II.2010, G. Melo, \ D. Parizotto & P. Grossi\ arm.luminosa (18–20h)” (DZUP); 1♂, “Brasil, MG, Botelhos, \ Córrego da Onça\ 21°40’90”S 46°22’05”W\ Malaise mata\ 20.XI–28.XII.2006\ Amorin & eq leg\ SISBIOTA – DIPTERA” (MZSP). — **Paraná:** 6♂, 2♀, “Fênix – PR\ Reserva Est. ICTF Brasil [dates between XI.1986 and VII.1988]\ Lev. Ent. Profaupar\ Malaise” (DZUP); 32♂, 7♀, “Jundiá do Sul – PR\ Fazenda Monte Verde\ Brasil [dates between IX.1986 and IV.1988]\ Lev. Ent. Profaupar\ Malaise” (DZUP); 4♂, 1♀, “Guarapuava – Paraná\ Est. Águas Santa Clara\ Brasil [dates between VIII.1986 and V.1987]\ Lev. Ent. Profaupar\ Malaise” (DZUP); 1♂ “Morretes – PR Brasil\ (IAPAR)\ 31.III.1985\ C.I.I.F (Luminosa)” (DZUP); 1♀, “Morretes –

PR Brasil\ (IAPAR)\ 25.III–01.IV.1985\ C.I.I.F (Malaise)” (DZUP); 2♂, “Terra Boa – PR\ 01–03-I-1985\ J. A. Rafael leg\ malaise” (DZUP); 2♂, “Terra Boa – PR\ VII. 1983\ J. A. Rafael leg” (DZUP); 2♀, “Antonina – PR\ Reserva Sapitanduva\ Brasil [17.XI.1986 and 25.I.1988]\ Lev. Ent. Profaupar\ Malaise” (DZUP); 1♀, “Brasil, Paraná, Antonina,\ Res. Nat. Guaricica, 50m,\ 25.316°S 48.696°W,\ 05–09.XI.2018 sweep\ Entomologia UFPR” (DZUP); 1♀, “Brasil, PR, Piraquara,\ Mananciais da Serra, \ 25.4967°S, 48.9839°W, \ 1010m, malaise\ 16.II–11. III.2019,G. Melo\ & A. Martins leg.” (DZUP); 4♀, “Brasil, PR, S.J. dos Pinhais\ Rep. Guaricana, Malaise susp.\ 25.7305°S 48.9535°W, 495m\ [dates between 20.II.2018 and 09.V.2018], Muniz, Melo,\ Cavichioli & Domahovski” (DZUP). — **Pernambuco:** 1♂, “Caruaru, PE\ 900m V.1972\ J. Lima leg” (DZUP). — **Piauí:** 1♂, “Brasil (PI), Guaribas\ Parque Nacional Serra das\ Confusões, Andorinha, 515m\ 09°08’27.8”S 43°33’42.1”W”, “Armadilha Suspensa\ 01–10.IV.2014, J.A. Rafael,\ F. Limeira-de-Oliveira, T.L.\ Rocha & G.A. Reis, cols.” (CZMA); 1♂,

“Brasil (Piauí), Caracol\ Parque Nacional Serra das\ Confusões, Andorinha, 515m\ 09°08'27.8"S 43°33'42.1"W”, “Armadilha de Malaise\ 01–07.viii.2013, J.A. Rafael,\ F. Limeira-de-Oliveira\ & T. T. A. Silva, cols.” (CZMA). — **Rio de Janeiro:** 1♂, “Brasil Rio de Janeiro\ D.F. Corcovado\ XI.1958\ Seabre e Alvarenga” (DZUP); 1♀, “Corcovado – GB\ Brasil-X-1961\ Seabre e Alvarenga” (DZUP); 1♀, “Corcovado – GB Brasil\ 18-IX-61 J. S. Moure\ Alvarenga e Seabre” (DZUP); 1♀, “Represa R. Grande\ GB – Brasil 03/1972\ F.M. Oliveira leg” (DZUP). — **São Paulo:** 3♂, “Guanabara – SP\ Brasil III.1972\ M. Alvarenga” (DZUP); 2♂, “Brasil, SP, Rio Claro\ Floresta Est. Edmundo\ Navarro de Andrade (FEENA)\ 11.IX.2005 Malaise\ J.T. Dias e eq col” (MZSP); 1♂, “Brasil, SP, Florinea\ Borda do Rio Paranapanema\ 22°54'45"S 50°47'11"W 350m\ Mata – luz 30.iv.2007\ D. S. Amorin col” (MZSP); 2♂, “Brasil, São Paulo,\ Jundiá,\ Serra do Japi\ 18.III.2010\ Malaise IV” (MZSP); 1♂, 1♀, “Brasil, São Paulo,\ São Carlos,\ Fazenda Canchin\ 22.II.2010\ Malaise 1” (MZSP); 2♂, “Brasil, SP, Bertioga, P.\ Estadual Restinga de\ Bertioga, rio Itaguapé\ 23°45'06"S 46°03'09"W\ 16.II–7.IV.2013 Malaise\ Biffi, Cesar & Fuhrmann” (MZSP).

**Remarks.** *Effossana gloma* **comb. nov.** was recovered with low branch support (SR < 50) as sister to *E. intrinseca* **sp. nov.** + *E. circumnota* **sp. nov.**, supported by a single homoplastic character, 9:0, crown-face transition smooth medially and with striae near eye margin. *Effossana gloma* **comb. nov.** can be easily separated from the other species of the genus by the aedeagal shaft (Fig. 33L, M) with processes near base and the apex without processes.

### *Effossana assimulata* **sp. nov.**

<https://zoobank.org/7377C7AC-B2FE-43B0-AA77-0B171EDABAE1>

Figs 35, 36, 42A, B

**Diagnosis.** Head, in lateral view (Fig. 35C), crown-face transition thin. Pygofer (Fig. 35G) without processes. Subgenital plate, in ventral view (Fig. 35H), narrow and long, inner and outer margins straight, slightly divergent toward apex. Style, in lateral view (Fig. 35K), apex forming conspicuous process very thin and acute, directed posterodorsad. Aedeagus (Fig. 35L, M) apodemal process sigmoid, elongated and narrow, almost as long as shaft; shaft very long, cylindrical, basal portion curved, posterior portion almost straight; apex truncated, with pair of processes directed dorsally bearing small spiniform process near base.

**Measurements.** Total length: holotype male 9.9 mm; paratype, female (n = 1) 10.5 mm.

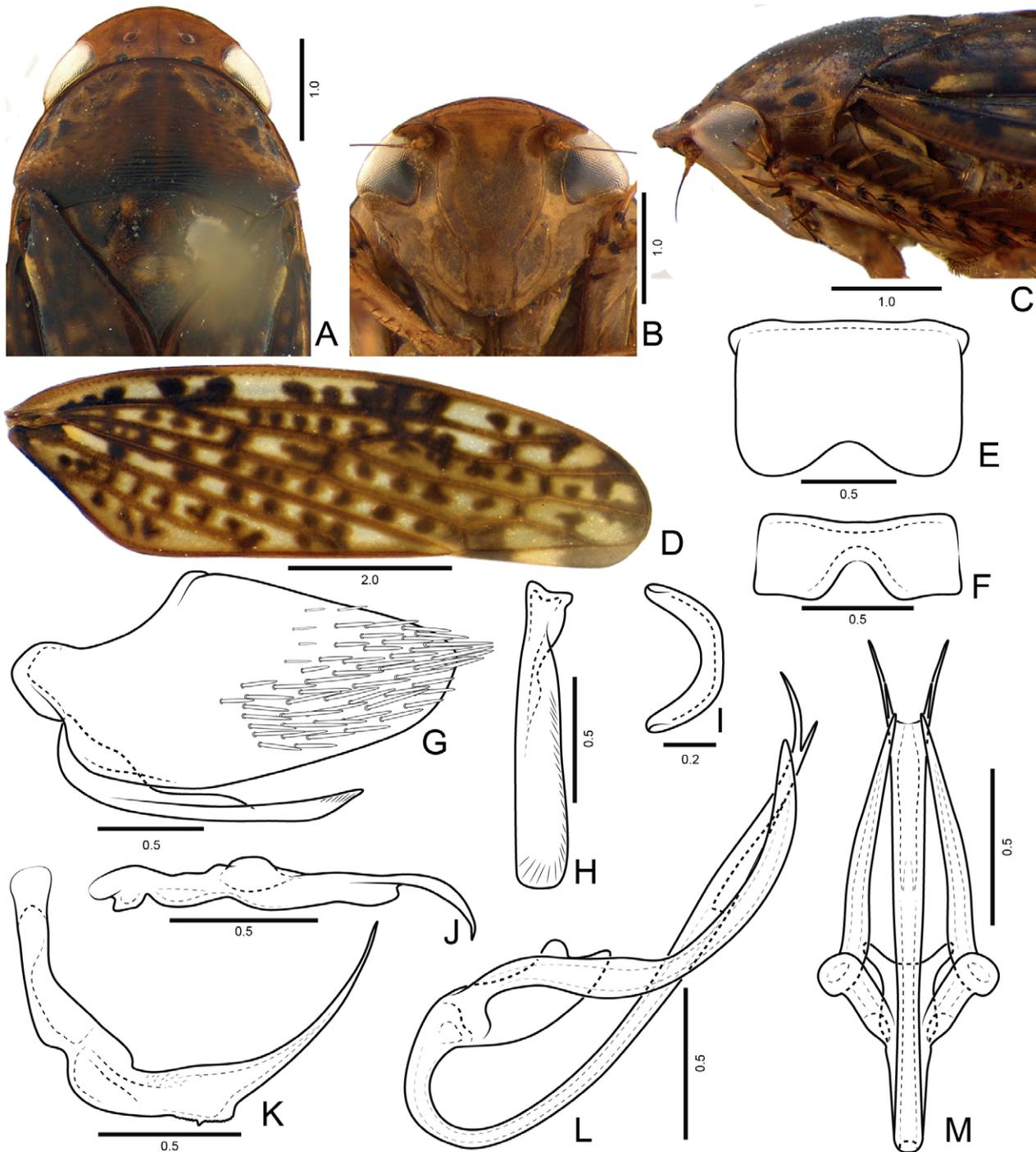
**Coloration.** Head and thorax (Figs 35A, B, 42A, B) yellowish brown. Crown (Fig. 35A) with pair of rounded black spots near posterior margin, behind ocelli. Face (Fig. 35B) without maculae. Pronotum (Fig. 35A) with brown punctures; larger black maculae near anterior margin, behind eye; portion near anterior and lateral margins yellowish; posterior margin with black transverse band.

Mesonotum (Fig. 35A) with three pairs of yellow spots: two pairs near anterior margin and one near scutoscute-lar suture; black maculae near lateral angles and median portion. Scutellum (Fig. 35A) with pair of large yellow spots; apex black. Forewing (Fig. 35D) strongly marked by dark-brown mottling and yellow maculae; membrane translucent brown; veins dark-brown. Metatibia (Fig. 35C) with cucullate bases of setae blacks.

**Description.** Head, in dorsal view (Fig. 35A), transocular width 8.3 tenths of humeral width of pronotum. Head, in frontal view (Fig. 35B), frons 1.3× longer than wide; clypeus 1.3× longer than wide; lateral margins parallel. Head, in lateral view (Fig. 35C), crown-face transition thin, with 5 transverse striae. Forewing (Fig. 35D) with appendix developed, as wide as first apical cell maximum width. Protibia AD row without differentiated setae. Metatibia PD, AD and AV rows with 23–24, 12 and 16–17 macrosetae respectively. Metatarsomere I 4× longer than apical width; inner row of the ventral surface with 8–10 setae; pecten with 4 platellae. Metatarsomere II pecten with 2 platellae. Other characteristics as in generic description.

**Male terminalia.** Sternite VIII (Fig. 35E) 1.5× wider than long, lateral margins parallel; posterior margin with deep rounded excavation. Valve (Fig. 35F) 2.5× wider than long; posterior margin with median third excavated; in lateral view, strongly convex. Pygofer, in lateral view (Fig. 35G), 2× longer than maximum height; anteroventral margin rounded; posterodorsal and posteroventral margins straight and slightly convergent posterad; apex slightly tapered and rounded. Subgenital plate, in ventral view (Fig. 35H), narrow and long, 6× longer than wide, maximum width near apical portion; inner and outer margins straight, slightly divergent toward apex; apex rounded. Connective (Fig. 35I) slender. Style, in lateral view (Fig. 35K), blade moderately wide near basal half; ventral margin slightly produced ventrally and serrated, bearing small dentiform tooth; apex forming conspicuous process, very thin and acute, directed posterodorsad. Aedeagus (Fig. 35L, M) dorsal apodeme developed, dorsal margin slightly excavated, lateral margins projected dorsolaterally; apodemal process sigmoid and narrow, almost as long as shaft; apex subacute; shaft very long, cylindrical, basal portion curved, posterior portion almost straight; apex truncated, with pair of processes directed dorsally, posterior margin bearing small spiniform process near base. Other characteristics as in generic description.

**Female terminalia.** Sternite VII (Fig. 36A) 1.5× wider than long; posterolateral angles more produced than the posterior margin; posterior margin excavated, bearing an inconspicuous median lobe. Pygofer (Fig. 36A, B) 1.9× longer than maximum height; apex rounded. First valvifer (Fig. 36C) as long as wide; lateral margins straight. First valvula (Fig. 36C) 5.4× longer than wide, basal portion strongly produced anterad; base slightly curved ventrally. Second valvula (Fig. 36E) 3.7× longer than wide; dorsal protuberance subacute. Gonoplac (Fig. 36G) 3.4×



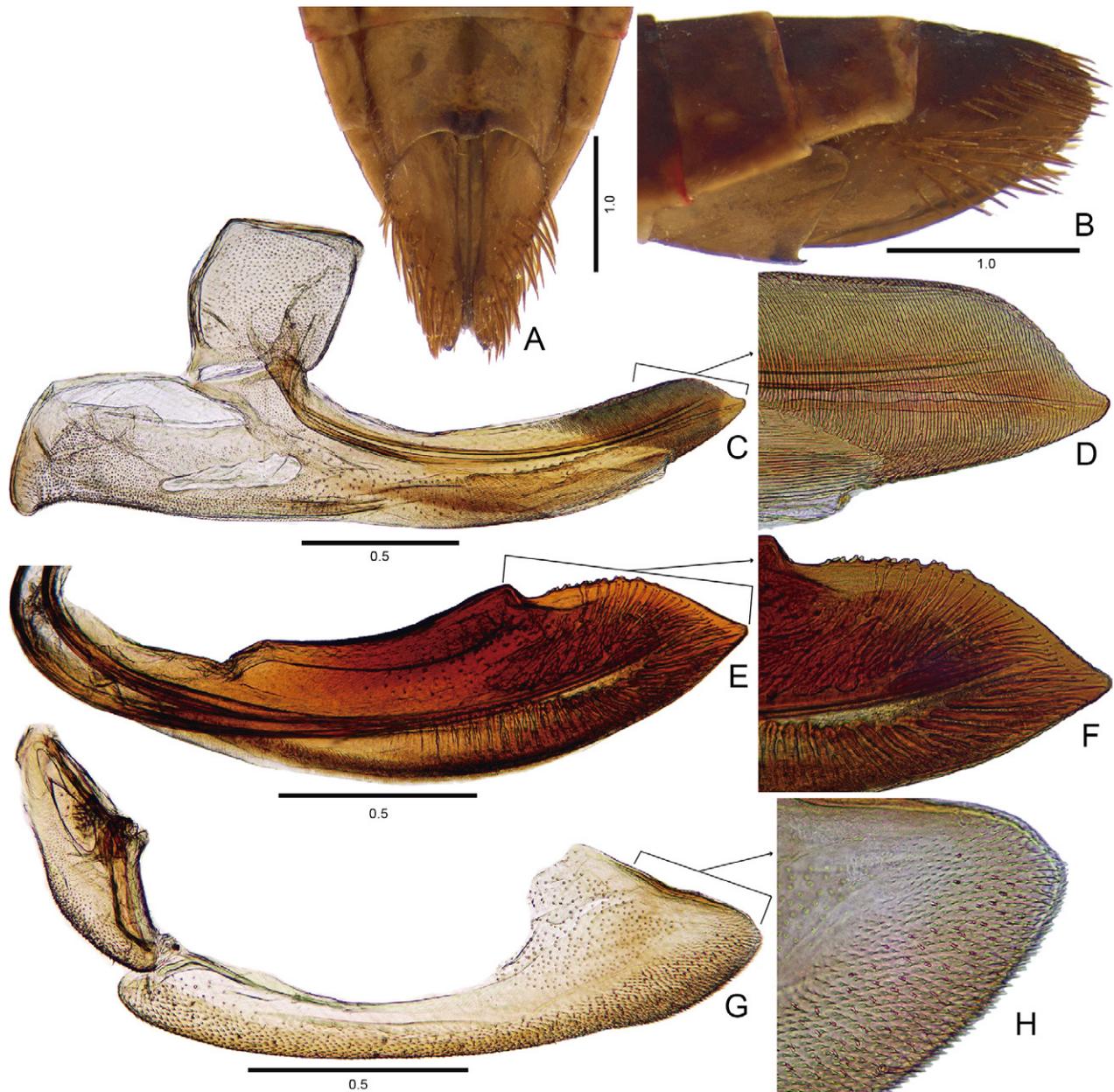
**Figure 35.** *Effossana assimolata* sp. nov., holotype male. **A** head and thorax, dorsal view. **B** head, ventral view. **C** head and thorax, lateral view. **D** forewing. **E** sternite VIII, ventral view. **F** valve, ventral view. **G** pygofer, valve and subgenital plate, lateral view. **H** subgenital plate, ventral view. **I** connective, dorsal view. **J** style, dorsal view. **K** style, lateral view. **L** aedeagus, lateral view. **M** aedeagus, posterior view. Scale bars in mm.

longer than wide. Other characteristics as in the diagnosis of the genus.

**Etymology.** The new species name refers to the similarity to *E. tenuemarginata* sp. nov.

**Material examined.** Holotype male: Brazil: Rondônia: “Vilhena, RO\ 27/XII/1986\ C. Elias, leg.\ Polonoroeste” (DZUP). Paratype: 1♀, same data as holotype except 19/XI/1986 (DZUP).

**Remarks.** *Effossana assimolata* sp. nov. was found as sister of *E. tenuemarginata* sp. nov. with moderate branch support (SR = 65), supported by a single homoplastic character, 8:1, crown-face transition in lateral view thin. The new species is similar to *E. tenuemarginata* sp. nov., and two other species not included in the phylogenetic analysis (*E. gatuna* comb. nov. and *E. scapa* comb. nov.) by the shape of the aedeagus with shaft slender and very long, but not forming a conspicuous curvature at base like a ring. *Effossana assimolata* sp. nov. is easily recognized



**Figure 36.** *Effossana assimulata* sp. nov., paratype female. **A** distal portion of abdomen, ventral view. **B** distal portion of abdomen, lateral view. **C** first valvifer and first valvula, lateral view. **D** apical portion of first valvula. **E** second valvula, lateral view. **F** apical portion of second valvula. **G** second valvifer and gonoplac, lateral view. **H** apical portion of gonoplac. Scale bars in mm.

by the style (Fig. 35K) with apex forming a slender process, thin and acute, directed posterodorsad; the aedeagus (Fig. 35L, M) with apodemal process sigmoid; and the shaft with pair of apical processes with a small spiniform process near base.

#### ***Effossana circumnota* sp. nov.**

<https://zoobank.org/F67F1709-2F57-497D-BFD2-D1C5730F75EF>

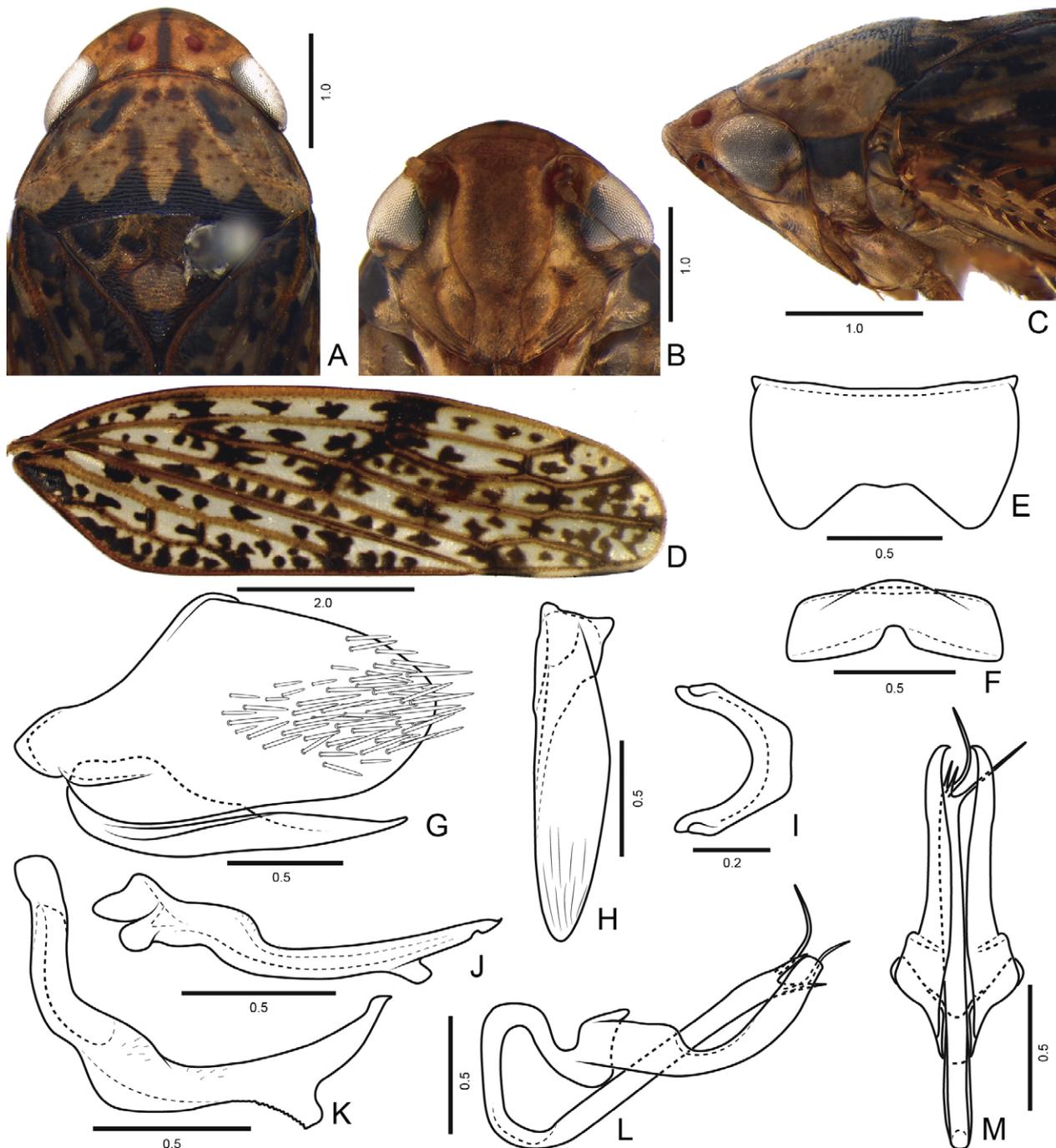
Figs 37, 38, 42C, D

**Diagnosis.** Head, in lateral view (Fig. 37C), crown-face transition thick. Pygofer (Fig. 37G) without processes.

Style, in lateral view (Fig. 37K), ventral margin with sub-apical process truncated apically and serrated on anterior margin. Aedeagus (Fig. 37L) with shaft very long, basal portion strongly curved forming wide ring.

**Measurements.** Total length: holotype male 9.2 mm; paratypes, males (n = 28) 8.7–10.3 mm, females (n = 12) 9.6–10.4 mm.

**Coloration.** Head and thorax (Figs 37A–B, 42C, D) yellowish brown. Crown (Fig. 37A) with coronal suture black. Face (Fig. 37B) gena yellow, brown maculae near subgenal suture, ventral and inner margins of eye. Pronotum (Fig. 37A) with brown punctures, pair of elongated and oblique black maculae behind ocelli, near anterior margin; posterior margin with black transverse band; proepimeron

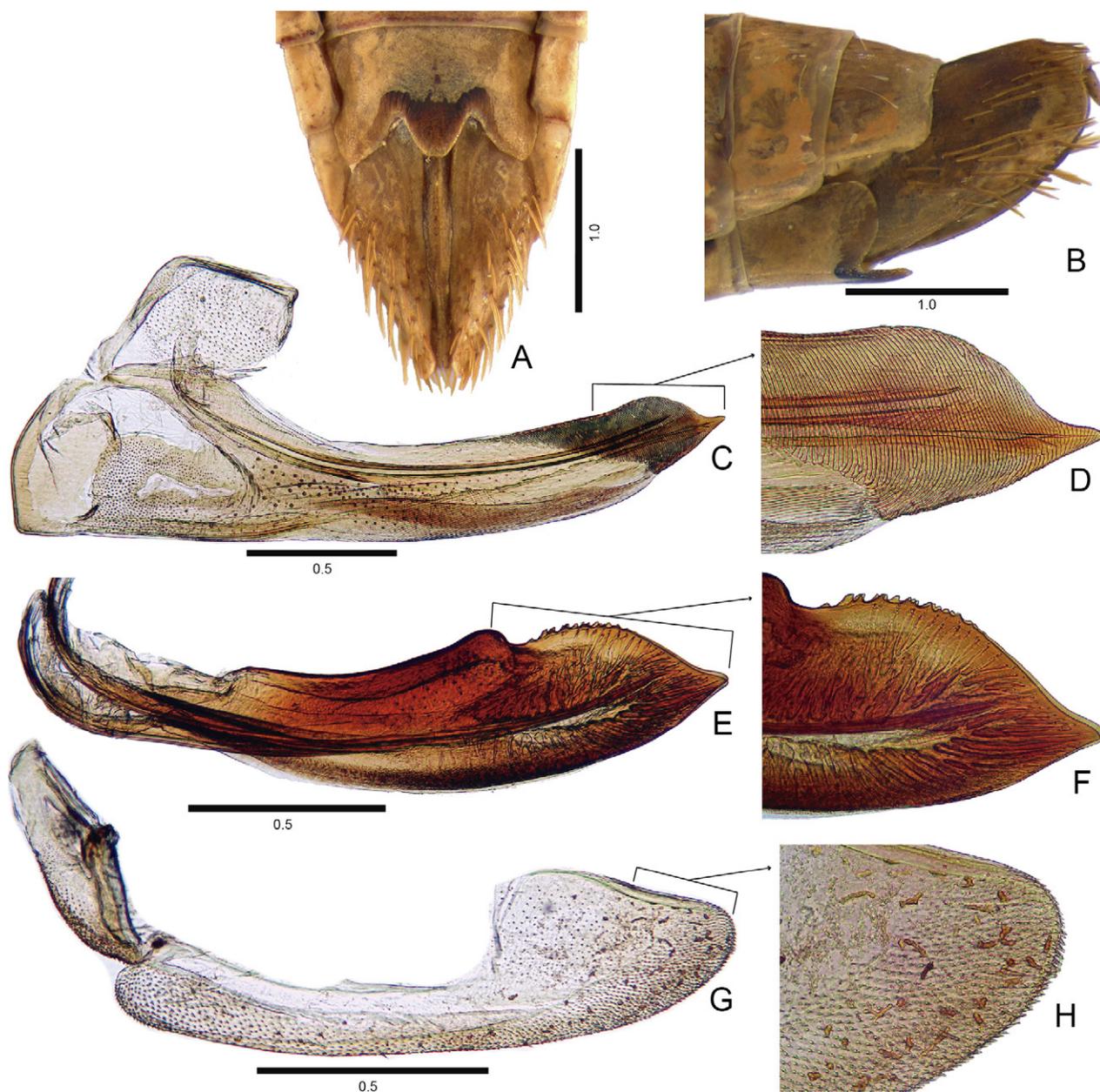


**Figure 37.** *Effossana circumnota* sp. nov., holotype male. **A** head and thorax, dorsal view. **B** head, ventral view. **C** head and thorax, lateral view. **D** forewing. **E** sternite VIII, ventral view. **F** valve, ventral view. **G** pygofer, valve and subgenital plate, lateral view. **H** subgenital plate, ventral view. **I** connective, dorsal view. **J** style, dorsal view. **K** style, lateral view. **L** aedeagus, lateral view. **M** aedeagus, posterior view. Scale bars in mm.

(Fig. 37C), with dorsal half black. Mesonotum (Fig. 37A) with yellow markings, pair of black ring-shaped maculae near lateral angles and pair of rounded black spots, near scutoscuteular suture. Scutellum (Fig. 37A) black with large yellow macula. Forewing (Fig. 37D) strongly marked by dark-brown mottling; membrane translucent light yellow; veins brown outlined by dark brown. Metatibia (Fig. 37C) with cucullate bases of setae black.

**Description.** Head, in dorsal view (Fig. 37A) transocular width 8.2 tenths of humeral width of pronotum. Head,

in frontal view (Fig. 37B), frons 1.5× longer than wide; clypeus 1.2× longer than wide; lateral margins slightly divergent toward apex. Head, in lateral view (Fig. 37C), crown-face transition thick, smooth medially and with few striae near of eye. Forewing (Fig. 37D) with appendix reduced, narrower than the width of the first apical cell. Protibia AD row without differentiated setae. Metatibia PD, AD and AV rows with 23–26, 12–13 and 16–17 macrosetae respectively. Metatarsomere I moderately elongated, about 3× longer than apical width; inner row of ventral surface with 5–6 setae; pecten with 6–7 platel-



**Figure 38.** *Effossana circumnota* sp. nov., paratype female. **A** distal portion of abdomen, ventral view. **B** distal portion of abdomen, lateral view. **C** first valvifer and first valvula, lateral view. **D** apical portion of first valvula. **E** second valvula, lateral view. **F** apical portion of second valvula. **G** second valvifer and gonoplac, lateral view. **H** apical portion of gonoplac. Scale bars in mm.

lae. Metatarsomere II pecten with 3 platellae. Other characteristics as in generic description.

**Male terminalia.** Sternite VIII (Fig. 37E) 1.7× wider than long, lateral margins weakly rounded; posterior margin with median third deeply excavated and truncate. Valve (Fig. 37F) 3.2× wider than long; posterior margin narrowly excavated; in lateral view, strongly convex. Pygofer, in lateral view (Fig. 37G), 1.8× longer than maximum height; anteroventral margin rounded; posterodorsal and posteroventral margins slightly rounded; apex broadly rounded. Subgenital plate, in ventral view (Fig. 37H), elongated, 4.4× longer than wide, maximum width near half length; inner margin straight; outer margin slightly rounded; apex tapered and rounded. Connective (Fig. 37I) with thin arms. Style, in lateral view (Fig. 37K),

with blade narrow tapered toward apex; ventral margin with subapical process truncated apically and serrated on anterior margin; apex slightly curved dorsally, abruptly tapered, and acute. Aedeagus (Fig. 37L, M) dorsal apodeme reduced, dorsal margin excavated, lateral margins not projected laterally; apodemal process elongated and curved dorsally, dorsal margin excavated medially, apex rounded; shaft cylindrical and very long, basal portion strongly curved forming wide ring, portion after the ring straight; apex twisted laterally, with two pairs of processes directed dorsally: one apical very short and one subapical 3× longer than the apical. Other characteristics as in generic description.

**Female terminalia.** Sternite VII (Fig. 38A) 1.7× wider than long; posterolateral angles produced as far as poste-

rior margin; posterior margin deeply V-shaped excavated each side of triangular median lobe. Internal sternite VIII membranous. Pygofer (Fig. 38A, B) 1.9× longer than maximum height; apex rounded. First valvifer (Fig. 38C) sub-rectangular 1.2× wider than long; anterior and dorsal margins straight; posterior margin rounded. First valvula (Fig. 38C) 4.1× longer than wide. Second valvula (Fig. 38E) 4× longer than wide; dorsal protuberance rounded. Gonoplac (Fig. 38G) 3.6× longer than wide. Other characteristics as in the diagnosis of the genus.

**Etymology.** The new species name refers to the ringed basal portion of the aedeagal shaft.

**Material examined. Holotype male: Brazil: Goiás:** “Brasil, GO, Novo Mundo, Armadilha Malaise 13.9292°S 49.9716°W, 282m, 05.III.2011” (DZUP). **Paratypes:** 1♂, same data as holotype (DZUP); 1♂, 2♀, same data as holotype except 26.XI.2010 (DZUP); 1♀ same data as holotype except 03.XII.2010 (DZRJ); 1♀, same data as holotype except 10.XII.2010 (DZUP); 1♂, same data as holotype except 03.I.2011 (DZRJ); 2♀, same data as holotype except 10.III.2012 (DZUP); 4♂, 1♀, same data as holotype except 06.X.2012 (3♂ DZUP, 1♂, 1♀ MNRJ); 18♂, “Brasil, Goiás\ São Domingos\ Fazenda Cipasa\ 18-IX a 2-X-93”, “Dionísio Pimentel”, “Malaise”, “MPEG 05029105, 05029106, 05029109, 05029113–05029117, 05029119–05029121, 05029123–05029128 and 05029132” (MPEG). — **Distrito Federal:** 1♂, “Brasil, Brasília – DF, Faz.\ Água Limpa, 15.9594°S 47.9328°W, 31.V.2012\ Malaise, A.J.C. Aguiar” (DZUP); 1♀, “Brasil, Brasília – DF, Fazenda Água Limpa, Cerrado, malaise, 09–23.XI.2017, J.R.P. Luz” (DZUP); 1♀, same as preceding except 22.XII.2017 (DZUP). — **Piauí:** 1♂, 2♀, “Brasil: Piauí, Corrente, PARNA \ das Nascentes do Rio Parnaíba \ -10.43412 S, -45.16392 W Tri- \ lha 1, 18.viii–24.ix.2021 Malaise \ R.N.Guedes & H.C.Onody cols” (1♂, 1♀ DZUP, 1♀ UES-PI). — **Tocantins:** 1♂, “Brasil, Tocantins, Palmas\ Taquaruçu, Fazenda Encantada 10°15'2.3"S 48°07'33.6"W Malaise\ 03–10.viii.2012 Krolow, T.K. & Lima, H.I.L. leg.” (DZUP). — **Minas Gerais:** 1♀, “Brasil, Minas\ Gerais, Águas\ Vermelhas xii.1983\ M. Alvarenga leg.” (DZUP).

**Remarks.** *Effossana circumnota* sp. nov. was recovered as sister to *E. intrinseca* sp. nov. with high branch support (SR = 99), sustained by one synapomorphy, 134:2, aedeagal shaft with basal portion directed anterad, and four homoplasies, as for example: 58:0, forewing with appendix reduced; and 135:0, aedeagal shaft with apical portion straight in lateral view. *Effossana circumnota* sp. nov. can easily be separated from *E. intrinseca* sp. nov. by the pygofer (Fig. 37G) without processes and the style (Fig. 37K) with ventral margin of blade forming a truncated subapical process.

### *Effossana intrinseca* sp. nov.

<https://zoobank.org/932FADA1-5DB6-46DA-8CC4-A68231D872C1>

Figs 39, 40, 43C, D

**Diagnosis.** Head, in lateral view (Fig. 39C), crown-face transition moderately thick Pygofer, in dorsal view (Fig.

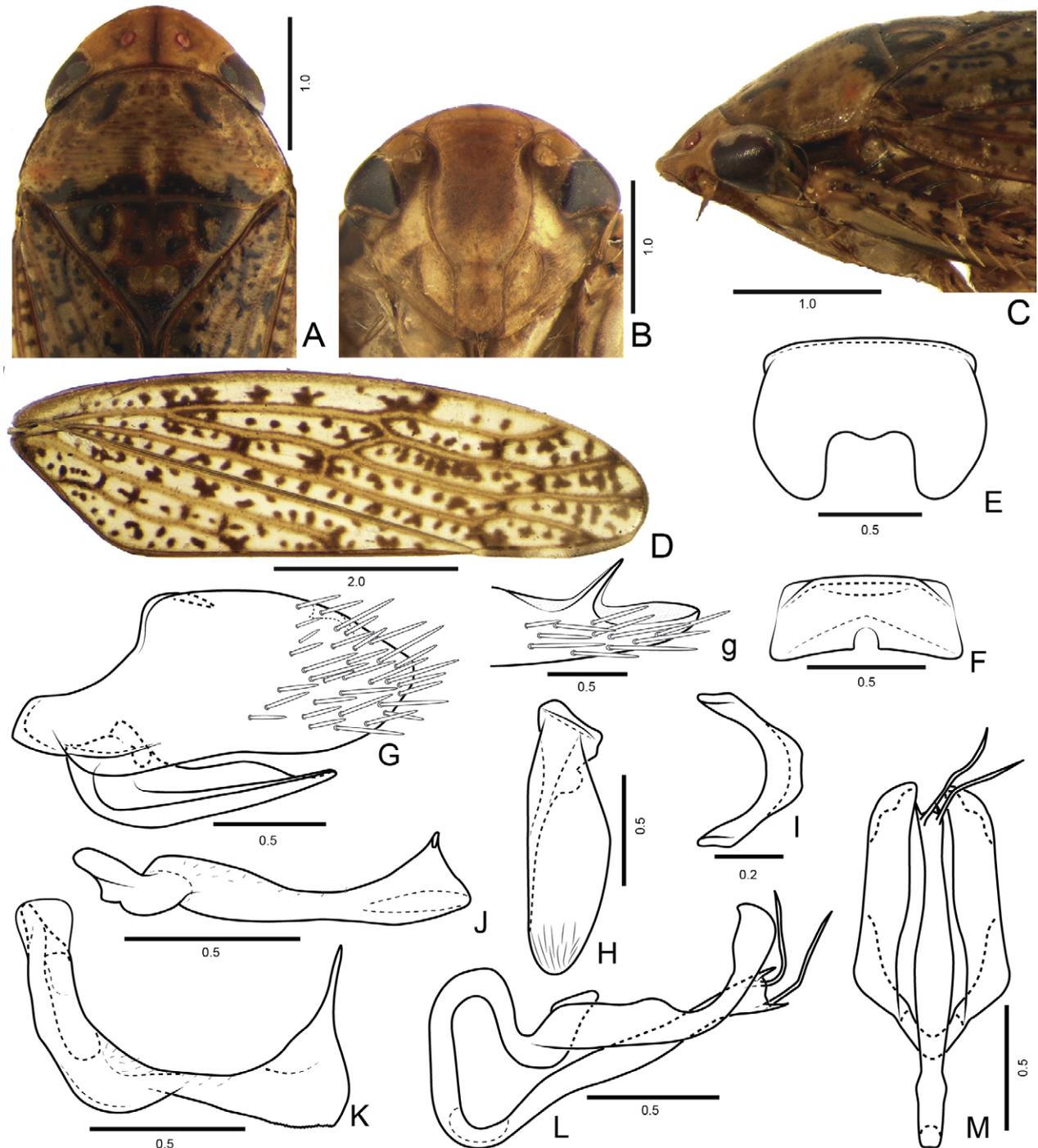
39g), with acute subapical process, directed inward. Style, in lateral view (Fig. 39K), with blade very narrow near base and strongly widened towards apex; apex truncated with thin and acute process directed dorsally. Aedeagus (Fig. 39L) with shaft very long, basal portion strongly curved forming wide ring.

**Measurements.** Total length: holotype male 8.6 mm; paratypes, males (n = 4) 8.6–9.2 mm, females (n = 2) 9.3–9.4 mm.

**Coloration.** Head and thorax yellowish brown. Crown (Fig. 39A) with coronal suture black. Face (Fig. 39B) gena yellow, brown markings near subgenal suture, ventral and inner margins of eye. Pronotum (Fig. 39A) with brown punctures, pair of elongated and oblique black maculae behind ocelli, near anterior margin; posterior margin with black transverse band; proepimeron (Fig. 39C), with black band below lateral carina. Mesonotum (Fig. 39A) with yellow markings, pair of black ring-shaped maculae near lateral angles and pair of rounded black spots, near scutoscutellar suture. Scutellum (Fig. 39A) black with pair of large yellow spots. Forewing (Fig. 39D) with dark-brown mottling; membrane translucent light yellow; veins brown outlined by dark brown. Metatibia (Fig. 39C) with cucullate bases of setae blacks.

**Description.** Head, in dorsal view (Fig. 39A), transocular width 8.1 tenths of humeral width of pronotum. Head, in frontal view (Fig. 39B), frons 1.4× longer than wide; clypeus 1.4× longer than wide; lateral margins parallel. Head, in lateral view (Fig. 39C), crown-face transition moderately thick, smooth medially and with few striae near of eye. Forewing (Fig. 39D) with appendix reduced, narrower than width of first apical cell. Protibia with AD row with 2–4 differentiated setae. Metatibia PD, AD and AV rows with 23–24, 12–13 and 16–18 macrosetae respectively. Metatarsomere I moderately elongated, about 3× longer than apical width; inner row of ventral surface with 5–6 setae; pecten with 6–7 platellae. Metatarsomere II pecten with 3 platellae. Other characteristics as in generic description.

**Male terminalia.** Sternite VIII (Fig. 39E) 1.4× wider than long, lateral margins rounded; posterior margin with median third deeply excavated, bearing short median projection. Valve (Fig. 39F) 2.5× wider than long; posterior margin narrowly excavated; in lateral view, strongly convex. Pygofer, in lateral view (Fig. 39G), 2.2× longer than maximum height; anteroventral margin sinuous; posterodorsal and posteroventral margins slightly rounded; apex narrowed and rounded; in dorsal view (Fig. 39g), with acute subapical process, directed inward. Subgenital plate, in ventral view (Fig. 39H), elongated, 3.4× longer than wide, maximum width near half length; inner margin straight; outer margin broadly rounded; apex rounded. Connective (Fig. 39I) with thin arms. Style, in lateral view (Fig. 39K), with blade very narrow near base and strongly widened towards apex; dorsal margin exca-

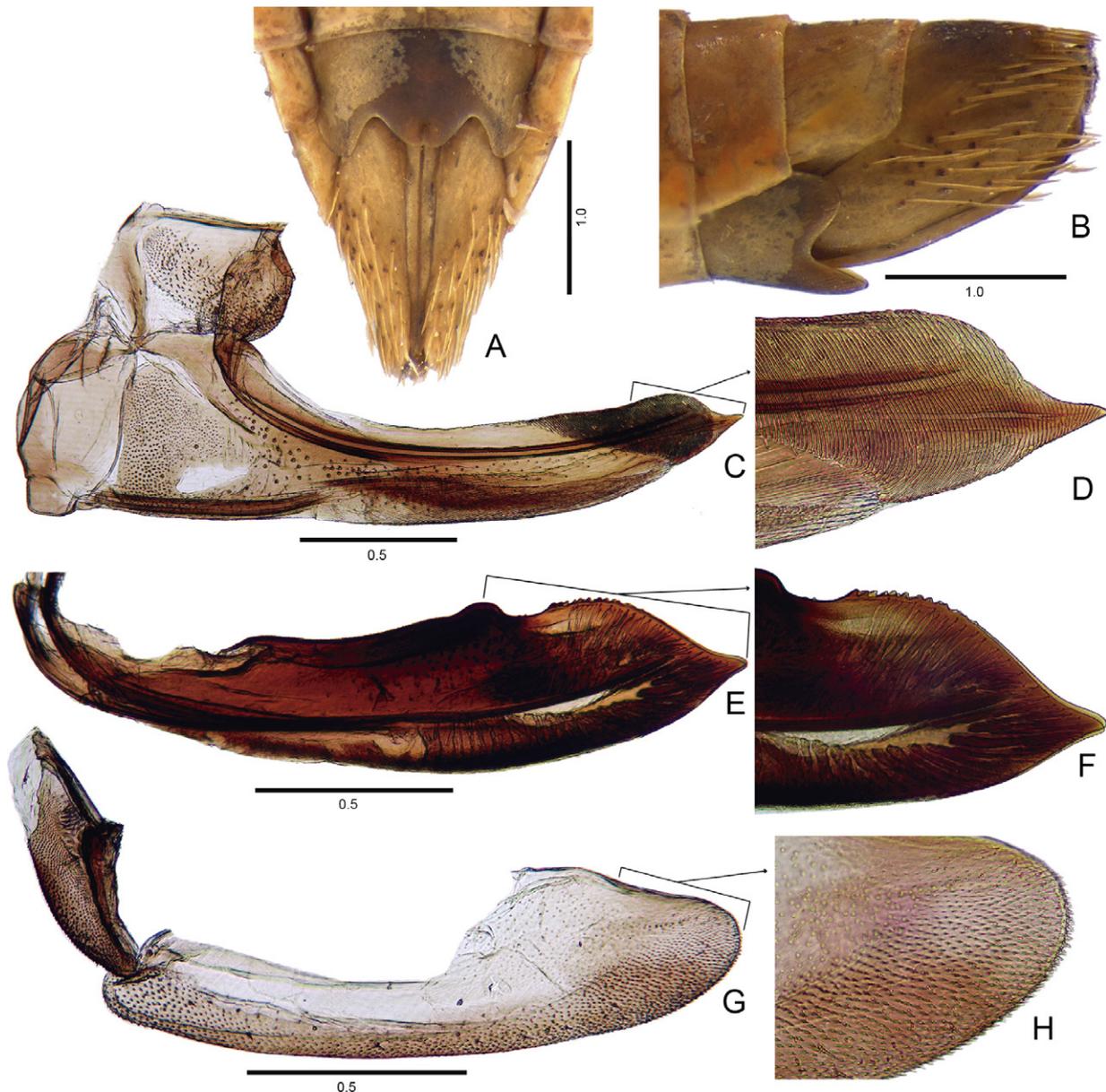


**Figure 39.** *Effossana intrinseca* sp. nov., holotype male. **A** head and thorax, dorsal view. **B** head, ventral view. **C** head and thorax, lateral view. **D** forewing. **E** sternite VIII, ventral view. **F** valve, ventral view. **G** pygofer, valve and subgenital plate, lateral view; **g** apical portion of pygofer, dorsal view. **H** subgenital plate, ventral view. **I** connective, dorsal view. **J** style, dorsal view. **K** style, lateral view. **L** aedeagus, lateral view. **M** aedeagus, posterior view. Scale bars in mm.

vated; ventral margin straight, with apical third serrated; apex truncated and very wide, with thin and acute process directed dorsally. Aedeagus (Fig. 39L, M) dorsal apodeme reduced, dorsal margin excavated, lateral margins not projected laterally; apodemal process elongated and curved dorsally, dorsal margin slightly excavated medially, apex slightly broadened and rounded; shaft cylindrical and very long, basal portion strongly curved forming wide ring, portion after the ring straight; apex slightly twisted laterally, with two pair of processes directed dor-

sally: apical pair very short, near lateral margins and sub-apical pair 4× longer than the apical pair, arising from the posterior surface. Other characteristics as in generic description.

**Female terminalia.** Sternite VII (Fig. 40A) 2× wider than long; posterolateral angles produced as far as posterior margin; posterior margin deeply excavated each side of rounded median lobe which occupies more than median third. Internal sternite VIII membranous. Pygofer



**Figure 40.** *Effossana intrinseca* sp. nov., paratype female. **A** distal portion of abdomen, ventral view. **B** distal portion of abdomen, lateral view. **C** first valvifer and first valvula, lateral view. **D** apical portion of first valvula. **E** second valvula, lateral view. **F** apical portion of second valvula. **G** second valvifer and gonoplac, lateral view. **H** apical portion of gonoplac. Scale bars in mm.

(Fig. 40A, B) 1.9× longer than maximum height; apex rounded. First valvifer (Fig. 40C) sub-rectangular 1.6× wider than long; dorsal margin straight; posterior margin rounded. First valvula (Fig. 40C) 4× longer than wide. Second valvula (Fig. 40E) 4× longer than wide; dorsal protuberance rounded. Gonoplac (Fig. 40G) 3.7× longer than wide. Other characteristics as in the diagnosis of the genus.

**Material examined.** **Holotype male:** Brazil: Mato Grosso: “Cáceres, MT\ 27/III/1985\ C. Ellias leg.\ Polonoeste”, “Dptº Zool\ UF-Paraná” (DZUP). **Paratypes:** 2♂, 1♀, same data as holotype; 1♂, same data as holotype except 20.XII.1984 (DZUP); 1♀, same data as holotype except 14.I.1985 (DZUP).

**Etymology.** the new species name refers to the process of pygofer directed inward.

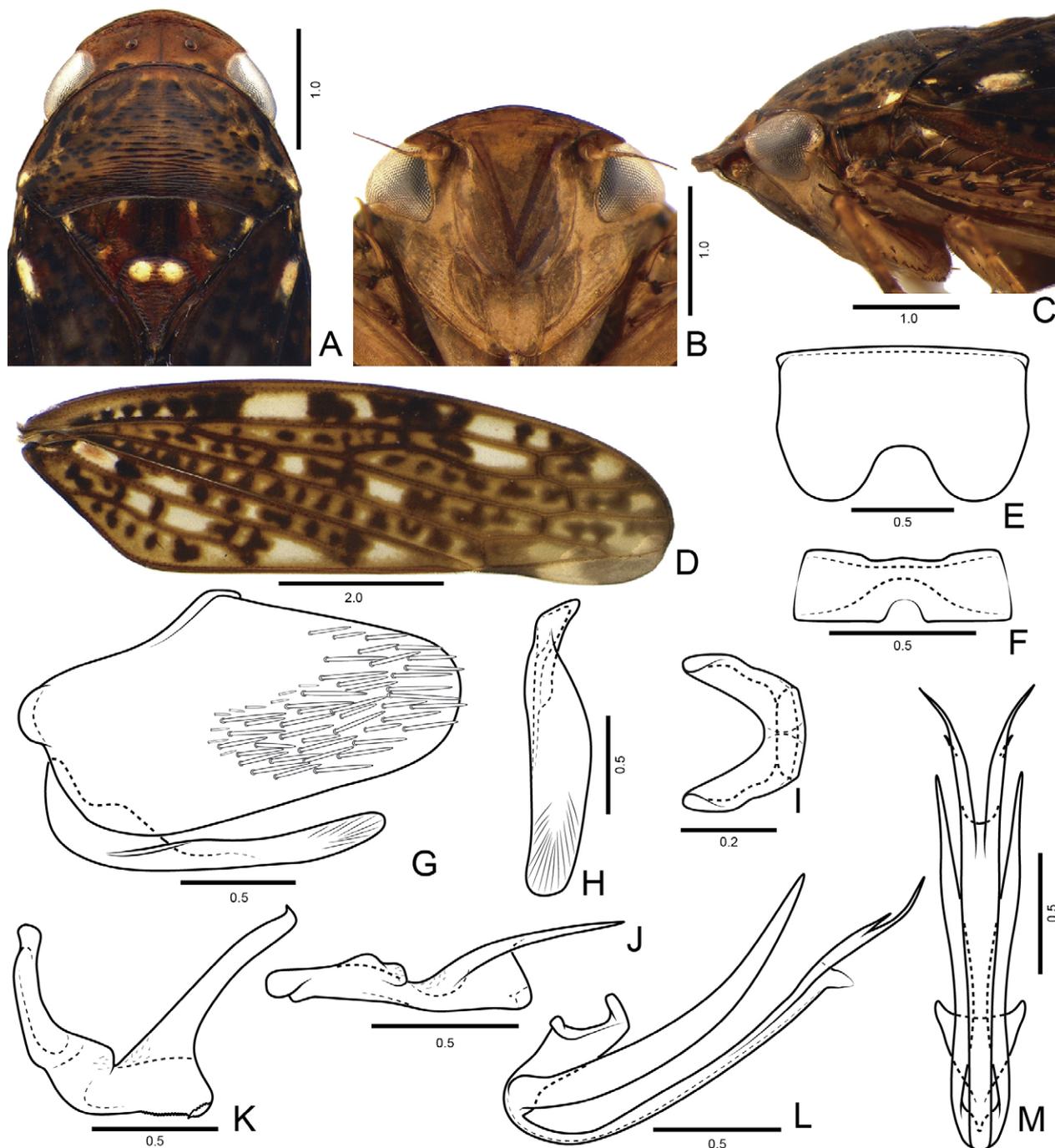
**Remarks.** *Effossana intrinseca* sp. nov. can be distinguished from *E. circumnota* sp. nov. by the pygofer (Fig. 39g) with a subapical process directed inward; the style (Fig. 39K) with ventral margin of blade without process, and the apex truncated and very wide, forming a thin and acute process directed dorsally.

***Effossana tenuemarginata* sp. nov.**

<https://zoobank.org/BE2F32D3-AEAD-4D31-B730-36E4D44E9683>

Figs 41, 43G, H

**Diagnosis.** Head, in lateral view (Fig. 41C), crown-face transition thin. Pygofer (Fig. 41G) without processes.



**Figure 41.** *Effossana tenuemarginata* sp. nov., holotype male. **A** head and thorax, dorsal view. **B** head, ventral view. **C** head and thorax, lateral view. **D** forewing. **E** sternite VIII, ventral view. **F** valve, ventral view. **G** pygofer, valve and subgenital plate, lateral view. **H** subgenital plate, ventral view. **I** connective, dorsal view. **J** style, dorsal view. **K** style, lateral view. **L** aedeagus, lateral view. **M** aedeagus, posterior view. Scale bars in mm.

Style, in lateral view (Fig. 41K), with blade short, dorsal margin forming conspicuous process directed dorsally, flattened laterally and abruptly tapered apically. Aedeagus (Fig. 41L, M) apodemal processes narrow and straight, almost as long as shaft, gradually tapered toward apex; shaft with pair of processes directed dorsally, anterior margin bearing a small spiniform process near mid-length.

**Measurements.** Total length: holotype male 9.7 mm; paratypes, males (n = 5) 9.7–10.3 mm.

**Coloration.** Head and thorax (Figs 41A–B, 43G–H) reddish-brown. Crown (Fig. 41A) with pair of rounded black spots near posterior margin, behind ocelli. Face (Fig. 41B) without maculae. Pronotum (Fig. 41A) with black punctures; larger black spots near anterior margin, behind eye; humeral angels with a small yellow macula; posterior margin with poorly defined dark brown transverse band; proepimeron (Fig. 41C), with transverse black stripe below pronotal carina. Mesonotum (Fig. 41A) with three pairs of yellow spots: two pairs near anterior margin and one near scutoscutelelar suture. Scutellum (Fig. 41A) with

pair of large yellow spots. Forewing (Fig. 41D) strongly marked by dark-brown mottling and yellow maculae; membrane translucent brown; veins dark brown. Metatibia (Fig. 41C) with cucullate bases of setae blacks.

**Description.** Head, in dorsal view (Fig. 41A), transocular width 8.1 tenths of humeral width of pronotum. Head, in frontal view (Fig. 41B), frons 1.3× longer than wide; clypeus 1.3× longer than wide; lateral margins parallel. Head, in lateral view (Fig. 41C), crown-face transition thin, with 5 transverse striae. Forewing (Fig. 41D) with appendix developed, as wide as first apical cell maximum width. Protibia AD row without differentiated setae. Metatibia PD, AD and AV rows with 23–24, 12 and 17–19 macrosetae respectively. Metatarsomere I elongated, about 4× longer than apical width; inner row of the ventral surface with 8–10 setae; pecten with 4 platellae. Metatarsomere II pecten with 2 platellae. Other characteristics as in generic description.

**Male terminalia.** Sternite VIII (Fig. 41E) 1.6× wider than long, lateral margins parallel; posterior margin with deep rounded excavation. Valve (Fig. 41F) 3× wider than long; posterior margin narrowly excavated, in lateral view, weakly convex. Pygofer, in lateral view (Fig. 41G), 1.8× longer than maximum height; anteroventral margin rounded; posterodorsal and posteroventral margins straight and slightly convergent posterad; apex broadly rounded. Subgenital plate, in ventral view (Fig. 41H), elongated, 4.7× longer than wide, maximum width near half length; inner margin straight; outer margin slightly rounded; apex rounded. Connective (Fig. 41I) with arms moderately robust. Style, in lateral view (Fig. 41K), with blade short, widened towards apex; ventral margin straight and serrated on apical 2/3; dorsal margin forming conspicuous process directed dorsally, flattened laterally and abruptly tapered apically, forming acute small tip curved anterad; apex rounded. Aedeagus (Fig. 41L, M) dorsal apodeme developed, dorsal margin slightly excavated, lateral margins weakly projected dorsolaterally; apodemal process elongated and narrow, almost as long as shaft, slightly curved dorsally and gradually tapered toward apex; shaft very long, slightly flattened dorsoventrally, basal portion curved, posterior portion almost straight; apex truncated, with pair of processes directed dorsally, anterior margin bearing a small spiniform process near mid-length. Other characteristics as in generic description.

**Female.** Unknown.

**Etymology.** The new species name refers to the crown-face transition thin.

**Material examined.** **Holotype male:** Brazil: Rondônia: “Brasil, Rondônia, Porto Velho, Rio Madeira\ 09°35'29"S 65°02'57"W\ Malaise 04–17.I.2012\ W. Datilo & G.R. Mazão” (MZSP). **Paratypes:** 1♂, “Brasil, Rondônia, Porto Velho, Rio Madeira\ 09°26'08"S 64°48'09"W\ Malaise 18–29.VI.2011\ Albuquerque & Ferreira” (MZSP); 1♂, same as preceding except 09°26'14"S 64°49'58"W (MZSP); 2♂, same as pre-

ceding except 09°35'29"S 65°02'57"W (DZUP). — **Amazonas:** 1♂, “Brasil: AM, Ipixuna, Rio Liberdade, Com.\ São Vicente no Estirão da Preta\ 07°21'47"S 071°52'07"W 175m\ 11–15.v.2011 Cavichioli,\ Gonçalves, Rafael\ & Takiya et al.” (DZRJ).

**Remarks.** *Effossana tenuemarginata* sp. nov. resembles *E. gatuna* comb. nov. and *E. scapa* comb. nov. by the shape of aedeagus with the apodemal processes straight. However, *E. tenuemarginata* sp. nov. can be separated from *E. gatuna* comb. nov. and *E. scapa* comb. nov. by the style (Fig. 41K), with blade short and dorsal margin forming a conspicuous process directed dorsally, flattened laterally and abruptly tapered apically.

### 3.3.4. *Propincurtara* gen. nov.

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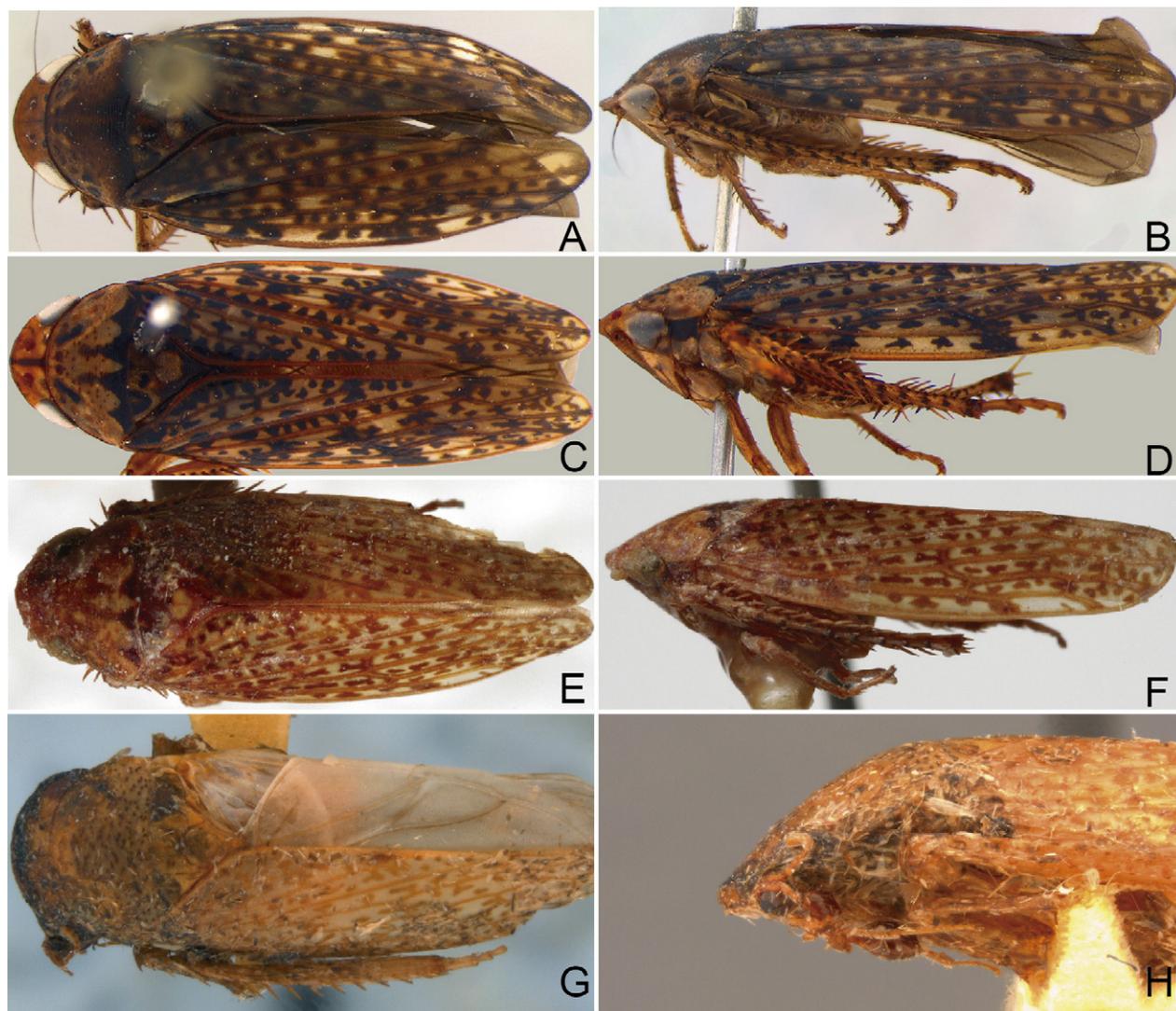
Figs 44–46

**Type species.** *Propincurtara longilinea* sp. nov.

**Diagnosis.** Elongated leafhoppers, medium to large size (11.1–13.6 mm). Head, in dorsal view (Fig. 44A), produced anterad, median length longer than half interocular width; crown surface with inconspicuous oblique striae between ocelli; in lateral view (Fig. 44C), crown-face transition thin; antennal ledge (Fig. 44B, C) indistinct, continuous to crown margin. Pronotum (Fig. 44A) with black punctures. Forewing (Fig. 44D) without accessory vein on external discal cell. Valve (Fig. 44G) without pair of oblique integument thickening. Metatarsomere I (Fig. 3S) plantar surface with outer row indistinct and inner row formed by several short and juxtaposed setae. Metatarsomere II (Fig. 3S) with platellae flanked by one inner and one outer tapered setae. Aedeagus (Fig. 44L, M) with apodemal processes; preatrium with pair elongated processes produced ventrally. First valvula (Fig. 45C, D) dorsal margin sinuous apically. Second valvula (Fig. 45E, F) with dorsal protuberance inconspicuous and truncated, located at half length of valvula; ventral margin with denticles apically.

**Coloration.** Head and thorax (Fig. 44A–D, 46A, B) yellowish brown. Pronotum (Fig. 44A) with dark punctures. Forewing (Fig. 44D) with scattered dark maculae.

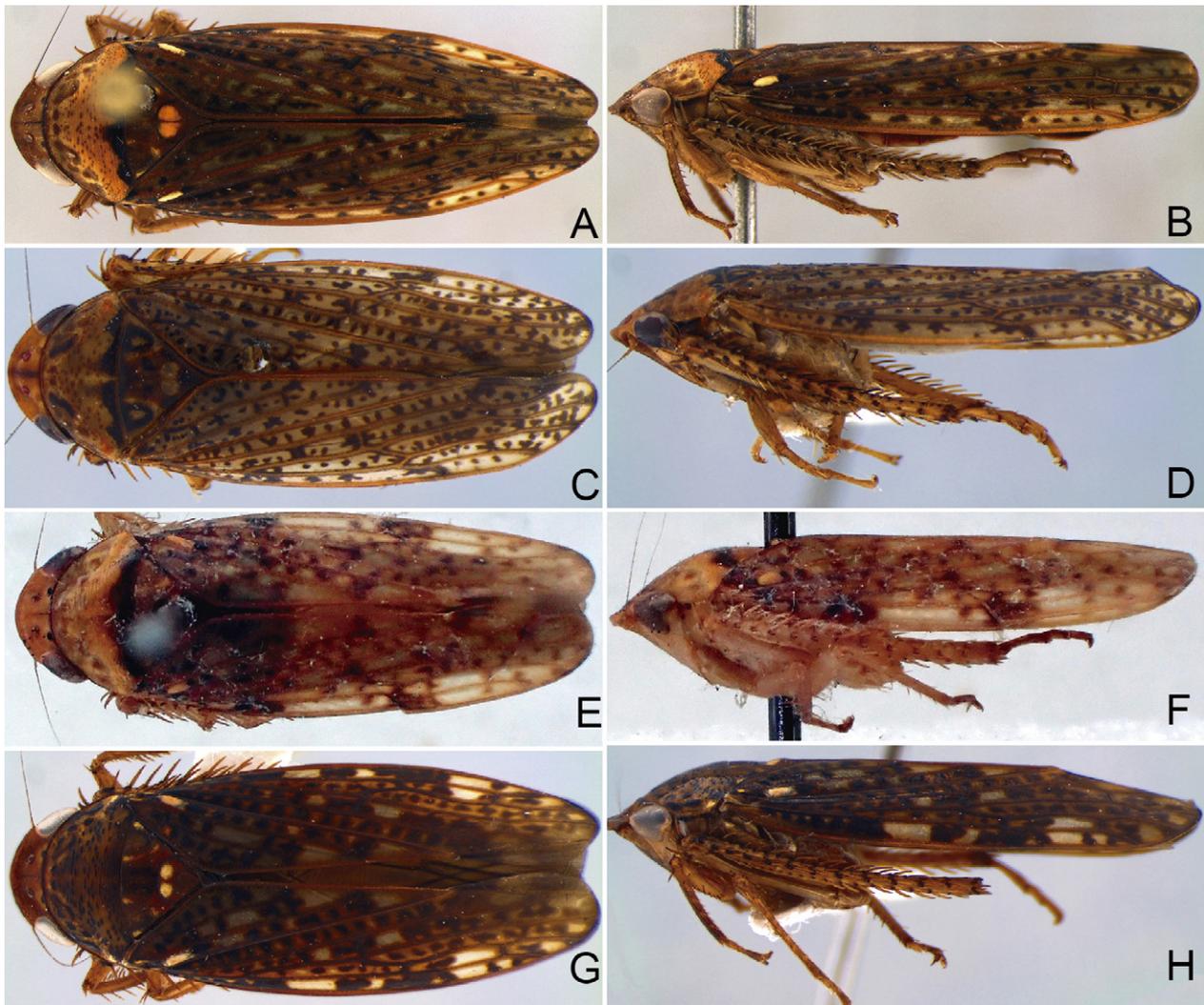
**Description.** Head, in dorsal view (Fig. 44A), produced anterad, median length longer than half interocular width; transocular width 8.5 tenths of humeral width of pronotum; anterior margin subtriangular; crown surface with inconspicuous oblique striae between ocelli; ocellus equidistant between anterior and posterior margins of crown and equidistant between midline and inner margin of eye. Head, in frontal view (Fig. 44B), face approximately as wide as high; frons 1.9× longer than wide, surface just below the crown-face transition not excavated; frontogenal suture distant from eye margin by slightly less



**Figure 42.** Species of *Effossana* gen. nov., dorsal (left) and lateral (right) views. **A, B** *E. assimulata* sp. nov., holotype male, DZUP. **C, D** *E. circumnota* sp. nov., holotype male, DZUP. **E, F** *E. fructa* comb. nov., holotype male, USNM. **G, H** *E. gatuna* comb. nov., holotype male, OSU.

than maximum width of clypeus and surpassing antennal ledge, extending to anterior margin of crown; antennal ledge continuous to lateral margin of crown; gena with ventrolateral margin rounded and slightly angled medially; maxillary plate produced ventrally as far as clypeus apex; clypeus 1.4× longer than wide, lateral margins straight and parallel, apex straight and carinated. Head, in lateral view (Fig. 44C), crown-face transition foliaceous, texture smooth medially and with few striae near of eye; frons and clypeus not inflated. Pronotum, in dorsal view (Fig. 44A), with transverse striae on the disc and posterior third; lateral margin slightly shorter than eye length; posterior margin slightly excavated; in lateral view (Fig. 44C), moderately declivous, continuous with head declivity. Mesonotum (Fig. 44A) as long as wide. Scutellum (Fig. 44A) almost flat. Forewing (Fig. 44D) 3.5× longer than wide, venation distinct; M vein with segment after the divergence between R+M and before the cross vein *m-cu*<sub>1</sub>, 4× longer than the length of *m-cu*<sub>1</sub>; external discal cell lacking inner-apical extra numeric vein; appendix narrow and bordering first to second apical cells; apex

rounded. Profemur 4× longer than wide; AD, AM, and PD rows reduced and poorly defined, with exception of apical setae AD<sub>1</sub>, AM<sub>1</sub>, and PD<sub>1</sub>, respectively; AV and PV rows formed by 5–6 and 4–5 setae respectively; IC row formed by slightly arched comb of fine setae, beginning at distal half of femur and extending to AM<sub>1</sub>. Protibia, in cross-section, semi-circular, with longitudinal carinae adjacent to PD row; AV row formed by long setae, slightly longer and thicker towards apex; dorsal rows with apical AD<sub>1</sub> and PD<sub>1</sub> setae developed; AD row without differentiated setae; PD row with 4–5 setae; PV row with 6–7 longer setae and undifferentiated intercalary setae. Metafemur with setal formula 2:2:1. Metatibia PD, AD, and AV rows with 25–26, 13–14, and 16–18 macrosetae, respectively; AD row without intercalary setae between macrosetae; PV row with setae of apical half formed by sequence of a thicker and 2–4 thinner setae, ending with a thick seta. Metatarsomere I (Fig. 3S) elongated, approximately 4× longer than wide at apex; ventral surface with outer row indistinct and inner row formed by several short and juxtaposed non-cucullate setae; apex with 6–7



**Figure 43.** Species of *Effossana* gen. nov., dorsal (left) and lateral (right) views. **A, B** *E. gloma* comb. nov., male, DZUP. **C, D** *E. intrinsicca* sp. nov., holotype male, DZUP. **E, F** *E. scapa* comb. nov., holotype male, BMNH. **G, H** *E. tenuemarginata* sp. nov., holotype male, DZUP.

platellae, flanked by one inner and one outer tapered seta. Metatarsomere II apex with 3 platellae, flanked by one inner and one outer tapered seta.

**Male terminalia.** Pygofer (Fig. 44G) without processes. Valve (Fig. 44F) without pair of oblique integument thickening. Connective (Fig. 44I) D-shaped; stem with lateral margins weakly sclerotized. Aedeagus (Fig. 44L, M) with apodemal processes; preatrium bearing pair of uncommonly elongated processes directed ventrad.

**Female terminalia.** First valvula (Fig. 45C, D) dorsal margin sinuous apically. Second valvula (Fig. 45E, F) with dorsal protuberance inconspicuous and truncated, located at half length of blade; ventral margin with denticles apically.

**Distribution.** Brazil.

**Etymology.** The genus name is feminine and combines the Latin word ‘propinquus’ (near, close) with *Curtara*, a superficially similar genus of Gyponini.

### *Propincurtara longilinea* sp. nov.

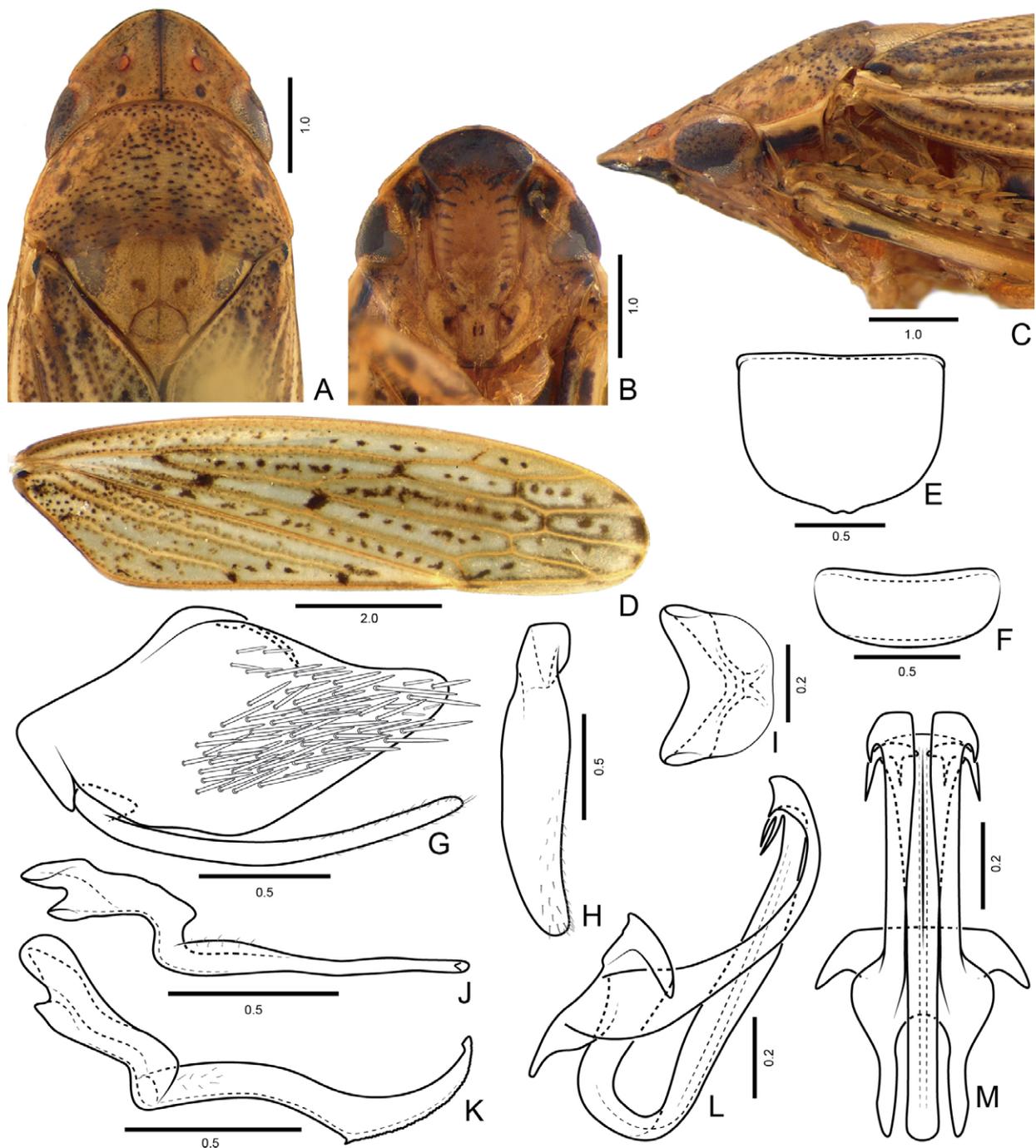
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Figs 44–46

**Diagnosis.** Style (Fig. 44L) blade thin and sinuous, with width approximately constant. Aedeagus (Fig. 44L, M) apodemal process elongated and curved dorsally, apex enlarged and truncated, with small acute process on outer margin, directed ventrally; shaft with two pairs of short apical processes, arising on anterior margin, directed ventrally.

**Measurements.** Total length: holotype male 11.2 mm; paratypes, males (n = 8) 10.5–11.3 mm, females (n = 10) 11.1–13.6 mm.

**Coloration.** Head and thorax yellowish-brown (Figs 44A–D, 46 A–B). Head, in dorsal view (Fig. 44A), with midline black; crown with few dark punctures near the

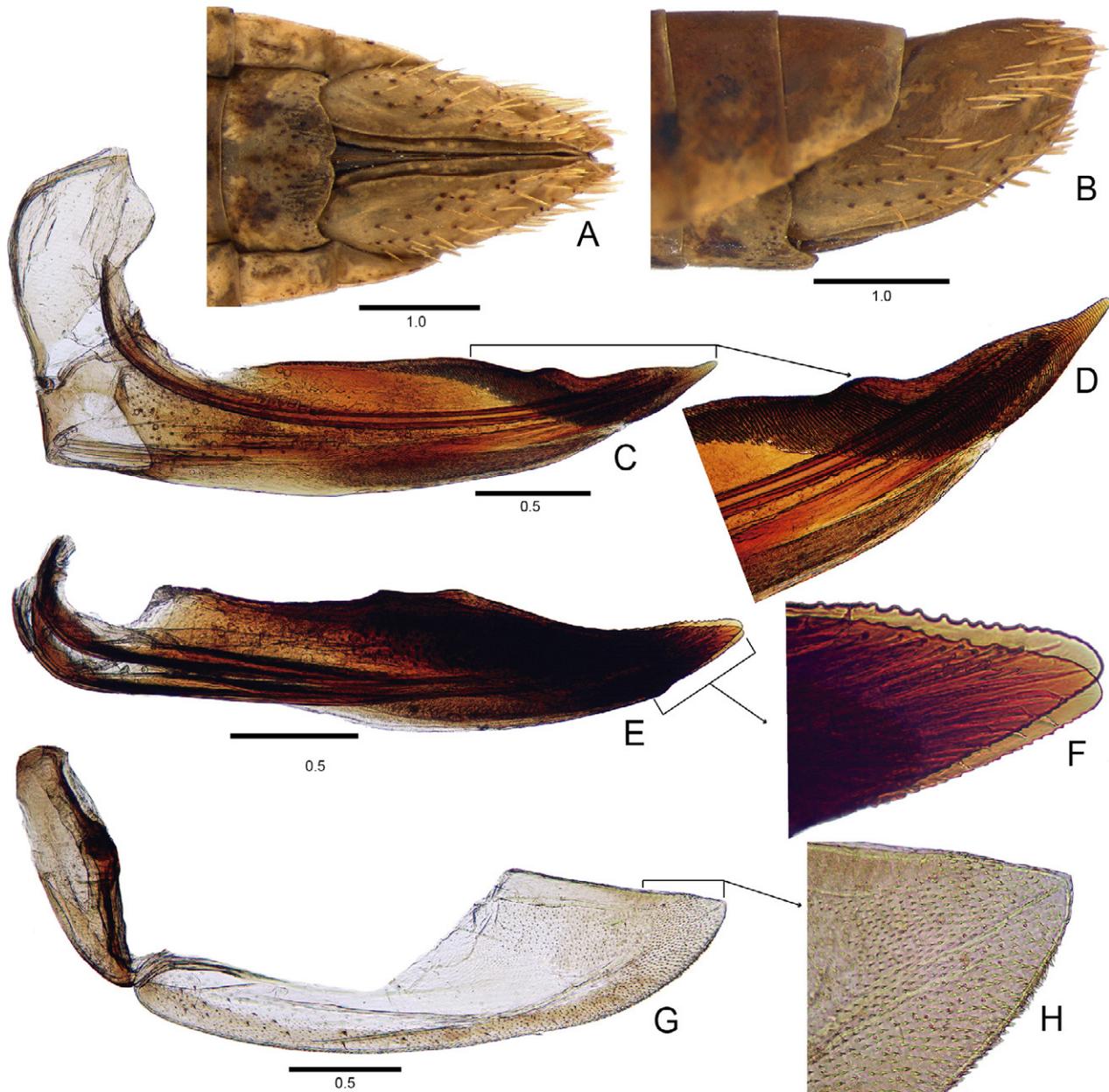


**Figure 44.** *Propincurtara longilinea* sp. nov., holotype male. **A** head and thorax, dorsal view. **B** head, ventral view. **C** head and thorax, lateral view. **D** forewing. **E** sternite VIII, ventral view. **F** valve, ventral view. **G** pygofer, valve and subgenital plate, lateral view. **H** subgenital plate, ventral view. **I** connective, dorsal view. **J** style, dorsal view. **K** style, lateral view. **L** aedeagus, lateral view. **M** aedeagus, posterior view. Scale bars in mm.

midline, pair of short longitudinal black lines adjacent to anterior margin of ocellus, pair of rounded black spots near posterior margin, behind ocelli. Head, in frontal view (Fig. 44B), frons with thin black bands over muscular impressions, dorsal portion black; antennal fovea black; gena with black punctures near ventral margin of eye; lorum with median black macula; clypeus with irregular black maculae medially; apical margin darkened. Pronotum (Fig. 44A) with black punctures, except behind eyes; proepimeron (Fig. 44C) with transverse light yellow and black bands below lateral carina of pronotum.

Mesonotum (Fig. 44A) with pair of brown rounded spots near scutoscullular suture. Forewing (Fig. 44D) basal third with brown punctures; veins light brown margined by dark brown; larger black maculae over cross veins of discal cells and scattered small black spots on apical 3/4. Profemur, with black punctures and pair of black maculae, one at base and one on apical third. Metatibia with cucullate bases of setae black.

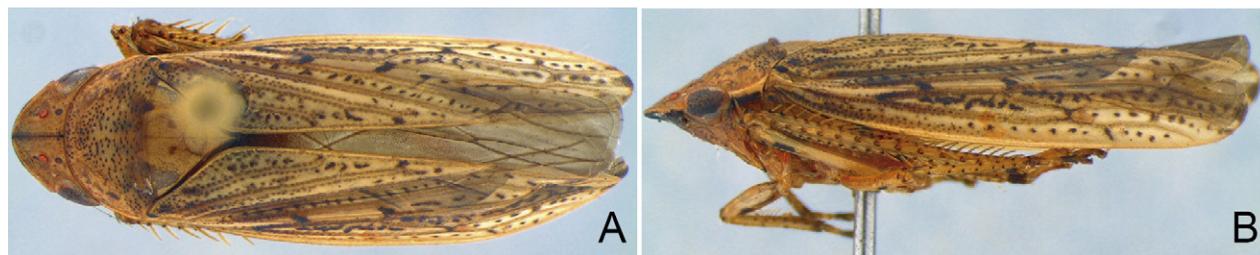
**Description.** External morphological characters as in generic description.



**Figure 45.** *Propincurtara longilinea* sp. nov., paratype female. **A** distal portion of abdomen, ventral view. **B** distal portion of abdomen, lateral view. **C** first valvifer and first valvula, lateral view. **D** apical portion of first valvula. **E** second valvula, lateral view. **F** apical portion of second valvula. **G** second valvifer and gonoplac, lateral view. **H** apical portion of gonoplac. Scale bars in mm.

**Male terminalia.** Sternite VIII (Fig. 44E) 1.3× wider than long, lateral margins straight, approximately parallel; posterior margin rounded and slightly emarginated. Valve (Fig. 44F), 2.6× wider than long; posterior margin rounded. Pygofer, in lateral view (Fig. 44G), 2× longer than maximum height; basodorsal process present, but reduced and thin; anteroventral margin rounded; posterodorsal margin slightly excavated; posteroventral margin straight; apex tapered and rounded, without processes; macrosetae dispersed on posterior two-thirds. Anal tube membranous. Subgenital plate, in lateral view (Fig. 44G), reaching pygofer apex; in ventral view (Fig. 44H), elongated, 4.7× longer than wide, with short setae on outer half; lateral margins approximately parallel; apex rounded. Connective (Fig. 44I) D-shaped; dorsal keel reduced; stem short and wide with lateral margins weakly

sclerotized. Style, in dorsal view (Fig. 44J), with external lobe reduced; in lateral view (Fig. 44K), blade thin and sinuous, with width approximately constant; ventral margin with apical third serrated; apex tapered and curved dorsally, forming a small acute dorsal process. Aedeagus (Fig. 44L, M) preatrium developed, forming pair of processes extended ventrally; dorsal apodeme developed, dorsal margin straight, lateral margins produced ventrolaterally; apodemal process elongated and curved anterad, slightly wider basally and narrowed subapically, apex enlarged and truncated, with small acute process on outer margin, directed ventrally; shaft J-shaped, approximately cylindrical, symmetrical, distal portion straight, slightly enlarged towards apex; apex with two pairs of short processes, arising on anterior margin, directed ventrally; outer pair about twice as long as the inner pair.



**Figure 46.** *Propincurtara longilinea* sp. nov., holotype male. **A** dorsal view. **B** lateral view.

**Female terminalia.** Sternite VII (Fig. 45A) 1.6× wider than long; posterolateral angles produced as far as posterior margin; posterior margin slightly excavated laterad of broad median lobe weakly emarginated. Pygofer (Fig. 45A, B) 1.9× longer than maximum height, 2.6× longer than sternite VII length; macrosetae distributed on ventral half and apex; apex oblique truncated. First valvifer (Fig. 45C) subtriangular, 1.5× longer than wide, anterior margin slightly rounded, dorsal margin straight, posterior margin rounded. First valvula (Fig. 45C) 5.1× longer than wide, slightly wider at median third; dorsal sculptured area strigate; dorsal margin sinuous at apical third; apex (Fig. 45D) strongly tapered and acute. Second valvula (Fig. 45E, F) 5.3× longer than wide, slightly wider at median third; dorsal protuberance truncated, located at half length of blade; dorsal margin with small, rounded teeth on apical third; ventral margin with denticles apically; apex abruptly narrowed and subacute. Second valvifer (Fig. 45G) 3.2× longer than wide. Gonoplac (Fig. 45G) 3.8× longer than wide; dorsoapical and ventroapical margins convergent apically; dorsoapical margin straight, with 1/3 length of blade; ventral margin evenly rounded; external surface with dentiform cuticular projections; apex (Fig. 45H) subacute.

**Etymology.** The species name is in reference to the elongated shape of body.

**Material examined. Holotype male: Brazil: Paraná:** “Estrada dos Castelhanos Paraná\ Brasil 790m 12/XI/2003\ malaise\ Ivamir leg” (DZUP). **Paratypes:** 1♂, “Guarapuava – PR\ (Santa Clara)\ 25.X.1985\ Exc. Dep. Zool.\ (Concitech)” (DZUP); 1♀, Parque Estadual do Marumbi, Piraquara – PR\ 25°29'13"S 48°58'30"W\ 24.I.2012\ LUZ Grossi,\ Cavichioli & Silva legs” (DZUP); 1♂, “Guarapuava – Paraná\ Est. Águas Santa Clara\ Brasil 01.XII.1986\ Lev. Ent. Profaupar\ Malaise” (DZUP); 1♂, same as preceding except 09.XI.1987 (DZUP); 1♂, same as preceding except 08.XII.1987 (DZUP); 1♀, same as preceding except 07.XII.1987 (DZUP); 1♀, “Brasil, Paraná, Parque\ Estadual de Vila Velha\ 25°13'5.9"S 50°2'31.2"W\ Malaise2\ 25. XII.2000\ Provive” (DZUP); 1♀, “Brasil, Paraná, Parque\ Estadual de Vila Velha\ 25°13'13.3"S 50°2'14.1"W\ Malaise3 04.XII.2000\ Provive” (DZUP); 1♀, same as preceding except 02.I.2001 (DZUP); 1♂, “Brasil, Paraná, Parque\ Estadual de Vila Velha\ 25°13'2.9"S 50°2'14.1"W\ Malaise4 30.X.2000\ Provive” (DZUP); 1♀, same as preceding except 06.XI.2000 (DZUP); 1♀, same as preceding except 29.X.2001 (DZUP); 1♂, “Brasil, Paraná, Parque\ Estadual de Vila Velha\ 25°13'27.6"S 50°1'52.7"W\ Malaise5 15.XI.1999\ Provive” (DZUP); 1♂, same as preceding except 29.XI.1999 (DZUP); 1♀, “Brasil, Paraná, S.J. dos Pinhais, 25°36'18"S 49°11'37"W 880m\ 19.X.2020 sweep\ A.C. Domahovski leg.” (DZUP).

— **Espírito Santo:** 1♂, “Brasil, ES, Santa\ Maria de Jetiba – Faz.\ Paulo Seick (Malaise)\ 20°2'31.1"S 40°41'51.3"W\ 29.XI–06.XII.2002\ M. Tazares & C. Azevedo” (DZUP). — **Rio de Janeiro:** 1♀, “RJ, Brasil, P. N. Itatiaia\ Casa do Pesquisador, light\ 27–30.X.2011 800m\ 22,454°S 44.608°W\ R.R. Cavichioli” (DZUP); 1♀, “Brasil, RJ, P.N. Itatiaia, Prox.\ Alojamento 2, 22°27'07.86"S, 44°36'27.95"W, 840m,\ Sweep, 25–28.X.2019\ A. C. Domahovski” (DZJR).

**Remarks.** Two specimens collected using sweeping net in the localities of São José dos Pinhais (State of Paraná) and Parque Nacional do Itatiaia (State of Rio de Janeiro) were found feeding on leaves of bamboo.

### 3.3.5. *Parcana* DeLong & Freytag stat. nov.

Figs 47–49

**Type species.** *Acuera ultima* DeLong & Freytag, 1974: 197.

**Diagnosis.** Medium size leafhoppers (9.0–13.0 mm). Head, in dorsal view (Fig. 47A), moderately produced anterad, median length as long as half interocular width; crown surface with *transverse* striae between ocelli; ocellus closer to midline than to inner margin of eye, with a small elongate black macula adjacent to anterior margin; posterior margin of crown with pair of rounded black spots behind ocelli. Head, in lateral view (Fig. 47B), crown-face transition thin, texture smooth medially or with scattered striations. Pronotum (Fig. 47A) with black punctures. Forewing (Fig. 47D) with black mottling; external discal cell with apical accessory vein. Pygofer (Fig. 47F) with or without apical processes. Valve without pair of oblique submedian integument thickening. Subgenital plate (Fig. 47G) commonly with long filiform setae. Connective (Fig. 47H) D-shaped, stem reduced. Style, in lateral view (DeLong and Freytag 1974: 199, figs 93, 98), usually with apex expanded, dorsal margin forming a subapical process directed anterad. Aedeagus (Fig. 47K, L) with apodemal processes.

**Coloration.** Head and thorax (Figs 47A–D, 48, 49) background yellowish-brown.; crown without black punctures and with a small elongate black macula adjacent to anterior margin of ocellus; posterior margin of crown with pair of rounded black spots behind ocelli. Face (Fig. 47B) commonly with transverse black bands

over muscular impressions and without black punctures. Pronotum (Fig. 47A) with black punctures. Proepimeron (Fig. 47C) with black band below pronotal carina. Forewing (Figs 48, 49) with black mottling. Profemur with or without black punctures and pair of black maculae. Metatibia (Figs 48, 49) with cucullate bases of setae blacks.

**Description.** Head, in dorsal view (Fig. 47A), moderately produced anterad, median length as long as half interocular width; transocular width 8.0 tenths pronotum humeral width; crown surface with *transverse* striae between ocelli; ocellus equidistant between anterior and posterior margins of crown and closer to midline than to inner margin of eye. Head, in frontal view (Fig. 47B), face wider than high; frons approximately 1.5× longer than wide, texture shagreen, surface just below crown-face transition not excavated; frontogenal suture distant from eye margin by half maximum width of clypeus and extending to anterior margin of crown; supra-antennal lobe carinated and oblique, advancing over the frons by short distance; gena with ventrolateral margin slightly rounded; maxillary plate produced ventrally as far as clypeus apex; clypeus longer than wide; lateral margins straight parallel or slightly divergent toward apex; apex weakly emarginated. Head, in lateral view (Fig. 47C), crown-face transition thin, not foliaceous, texture smooth medially or with scattered striations; anterior margin of crown slightly projected over anterior margin of eye; frons and clypeus not inflated. Pronotum, in dorsal view (Fig. 47A), with transverse striae on disc and posterior third; lateral margins as long or slightly longer than eye length; posterior margin slightly excavated; in lateral view (Fig. 47C), moderately declivous, continuous with head declivity. Mesonotum (Fig. 47A), slightly wider than long. Scutellum (Fig. 47A) not inflated. Forewing (Fig. 5D) M vein with segment after the divergence between R+M and before the cross vein *m-cu*<sub>1</sub> about 5× longer than the length of *m-cu*<sub>1</sub>; external discal cell with apical accessory vein; appendix moderately developed, bordering first to second apical cells; apex rounded. Profemur moderately elongated, 3.5× longer than wide; AD, AM, and PD rows reduced and poorly defined, with exception of apical setae AD<sub>1</sub>, AM<sub>1</sub>, and PD<sub>1</sub>, respectively; IC row formed by slightly arched comb of fine setae, beginning at distal half of femur and extending to AM<sub>1</sub>; AV and PV rows with 3–5 setae. Protibia, in cross-section, semi-circular, dorsal surface with longitudinal carina adjacent to PD row; AV row formed by long setae, slightly longer and thicker towards apex; dorsal rows with apical AD<sub>1</sub> and PD<sub>1</sub> setae developed; AD row with or without differentiated setae; PD row with 3 setae; PV row with 5–7 setae. Mesotibia with dorsal surface rounded. Metafemur with setal formula 2:2:1. Metatibia with AD with 1–3 intercalary setae between each macrosetae; PV row with setae of apical half formed by sequence of a longer and thicker seta, interspersed with 2–4 thinner and shorter setae, ending with a long and thick seta. Metatarsomere I ventral surface with two rows of 8–12 non-cucullate setae; pecten with 4–6 platellae, flanked by one

inner and one outer tapered seta. Metatarsomere II pecten with 2–4 platellae flanked by two inner and one outer tapered seta.

**Male terminalia.** Pygofer with (Fig. 47F; DeLong and Freytag 1974: fig. 80) or without (DeLong and Freytag 1974: figs 75, 85) apical processes. Valve without pair of oblique submedian integument thickening; posterior margin excavated. Subgenital plate with or without (Fig. 47G) long filiform setae. Connective (Fig. 47H) D-shaped, stem reduced. Style, in lateral view (DeLong and Freytag 1974: figs 78, 93) usually with apex expanded, dorsal margin forming subapical process directed anterad. Aedeagus (Fig. 47K; DeLong and Freytag 1974: fig. 82) with apodemal processes.

**Distribution.** Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua and Panamá.

**Remarks.** Herein, we recognized nine species of *Parcana* **stat. nov.** of which, three species, *P. animosa* **comb. nov.**, *P. concilia* **comb. nov.** and *P. mimica* **comb. nov.**, have the subgenital plate with long filiform setae along the external margin. This character is unknown in four species: *P. albororata* **comb. nov.**, *P. atitlana* **comb. nov.**, *P. ventusa* **comb. nov.** and *P. extara* **comb. nov.**, however, due to the similarity in the male genitalia, external morphology and coloration between *P. animosa* **comb. nov.** and *P. albororata* **comb. nov.**, between *P. concilia* **comb. nov.** and *P. atitlana* **comb. nov.**, and between *P. mimica* **comb. nov.** and *P. ventusa* **comb. nov.**, we consider it likely that these species also have the subgenital plate with long filiform setae. Therefore, *P. ultima* **comb. nov.** is the only confirmed species of the genus that the subgenital plate lacks filiform setae. With the transference of the South American species of *Parcana* **stat. nov.** to other genera (*A. gloma*, *A. patula*, and *A. rana*), now its distribution is restricted to the Central America.

### Species of *Parcana* **stat. nov.**

*P. albororata* (Fowler, 1903): 306 (**comb. nov.**) (*Gypona*). Honduras and México.

*P. animosa* (DeLong & Freytag, 1976): 52 (**comb. nov.**) (*Curtara* (*Curtarana*)). El Salvador, Honduras, México [novo registro], Nicaragua.

*P. atitlana* (Fowler, 1903): 305 (**comb. nov.**) (*Acuera* (*Parcana*)). Panamá.

*P. concilia* (DeLong & Freytag, 1974): 196 (**comb. nov.**) (*Acuera* (*Parcana*)). México.

*P. extara* (DeLong & Freytag, 1974): 198 (**comb. nov.**) (*Acuera* (*Parcana*)). Costa Rica.

*P. mimica* (DeLong & Freytag, 1974): 198 (**comb. nov.**) (*Acuera* (*Parcana*)). México.

*P. spreta* (Fowler, 1903): 304 (**comb. nov.**) (*Gypona*). Guatemala.

*P. ultima* (DeLong & Freytag, 1974): 197 (**comb. nov.**) (*Acuera* (*Parcana*)). México.

*P. ventusa* (DeLong & Freytag, 1976): 33 (**comb. nov.**) (*Curtara* (*Curtara*)). Guatemala.

## Key to males of *Parcana* stat. nov.

[*P. spreata* (Fowler) **comb. nov.** only known by the female.]

- 1 Face without transverse black bands over muscular impressions. Aedeagal shaft (DeLong and Freytag 1976: 93, fig. 336) with a ventral process as long as shaft length.....2
- 1' Face (Fig. 47B) with transverse black bands over muscular impressions. Aedeagal shaft (Fig. 47K) without ventral process .....3
- 2 Style (DeLong and Freytag 1976: 91, fig. 317) more expanded apically, dorsal margin with subapical process longer. Aedeagus (DeLong and Freytag 1976: 91, fig. 315) with ventral process cleft near base .....*P. albororata* (Fowler) **comb. nov.**
- 2' Style (DeLong and Freytag 1976: 93, fig. 337) moderately expanded apically, dorsal margin with subapical process shorter. Aedeagus (DeLong and Freytag 1976: 93, fig. 335) with ventral process cleft at apical third .....*P. animosa* (DeLong & Freytag) **comb. nov.**
- 3 Pygofer (Fig. 47F) with apical processes.....4
- 3' Pygofer (DeLong and Freytag, 1974: 199, fig. 95) without apical processes.....5
- 4 Pygofer (Fig. 47F) with single apical process long, curved dorsally. Style (Fig. 47J) not expanded apically. Aedeagus (Fig. 47K, L) with pair of subapical processes unbranched, directed dorsally .....*P. ultima* (DeLong & Freytag) **comb. nov.**
- 4' Style (DeLong and Freytag 1974: 195, fig. 78) expanded apically. Pygofer (DeLong and Freytag 1974: 195, fig. 80) with two short apical processes; apex excavated. Aedeagus (DeLong and Freytag 1974: 195, figs 76, 77) with pair of subapical processes branched near base, directed lateroventrally.....*P. concilia* (DeLong & Freytag) **comb. nov.**
- 5 Aedeagal shaft (DeLong and Freytag 1974: 197, figs 81, 82) with two pairs of long subapical processes .....*P. atitlana* (Fowler) **comb. nov.**
- 5' Aedeagal shaft (DeLong and Freytag 1974: 199, figs 91, 92) with one pair of long subapical processes .....6
- 6 Aedeagal shaft (DeLong and Freytag 1974: 199, fig. 96) with apex bifid forming two short proximal apical tips..  
.....*P. mimica* (DeLong & Freytag) **comb. nov.**
- 6' Aedeagal shaft (DeLong and Freytag 1974: 199, fig. 91) with apex not bifid.....7
- 7 Aedeagus (DeLong and Freytag 1974: 199, figs 91, 92) with apical portion of apodemal processes straight; shaft with subapical pair of processes, in posterior view, curved inward.....*P. extara* (DeLong & Freytag) **comb. nov.**
- 7' Aedeagus (DeLong and Freytag 1976: 79, figs 185, 186) with apical portion of apodemal processes curved dorsally; shaft with subapical pair of processes, in posterior view, straight, not curved inward.....  
.....*P. ventusa* (DeLong & Freytag) **comb. nov.**

### *Parcana ultima* (DeLong & Freytag) **comb. nov.**

Figs 47, 49E, F

*Acuera* (*Parcana*) *ultima* DeLong & Freytag, 1974: 197.

**Diagnosis.** Pygofer (Fig. 47F) with apical process long, curved dorsally. Style (Fig. 47J) not expanded apically. Subgenital plate (Fig. 47G) without filiform setae. Aedeagus (Fig. 47K, L) with pair of subapical processes not branched, directed dorsally.

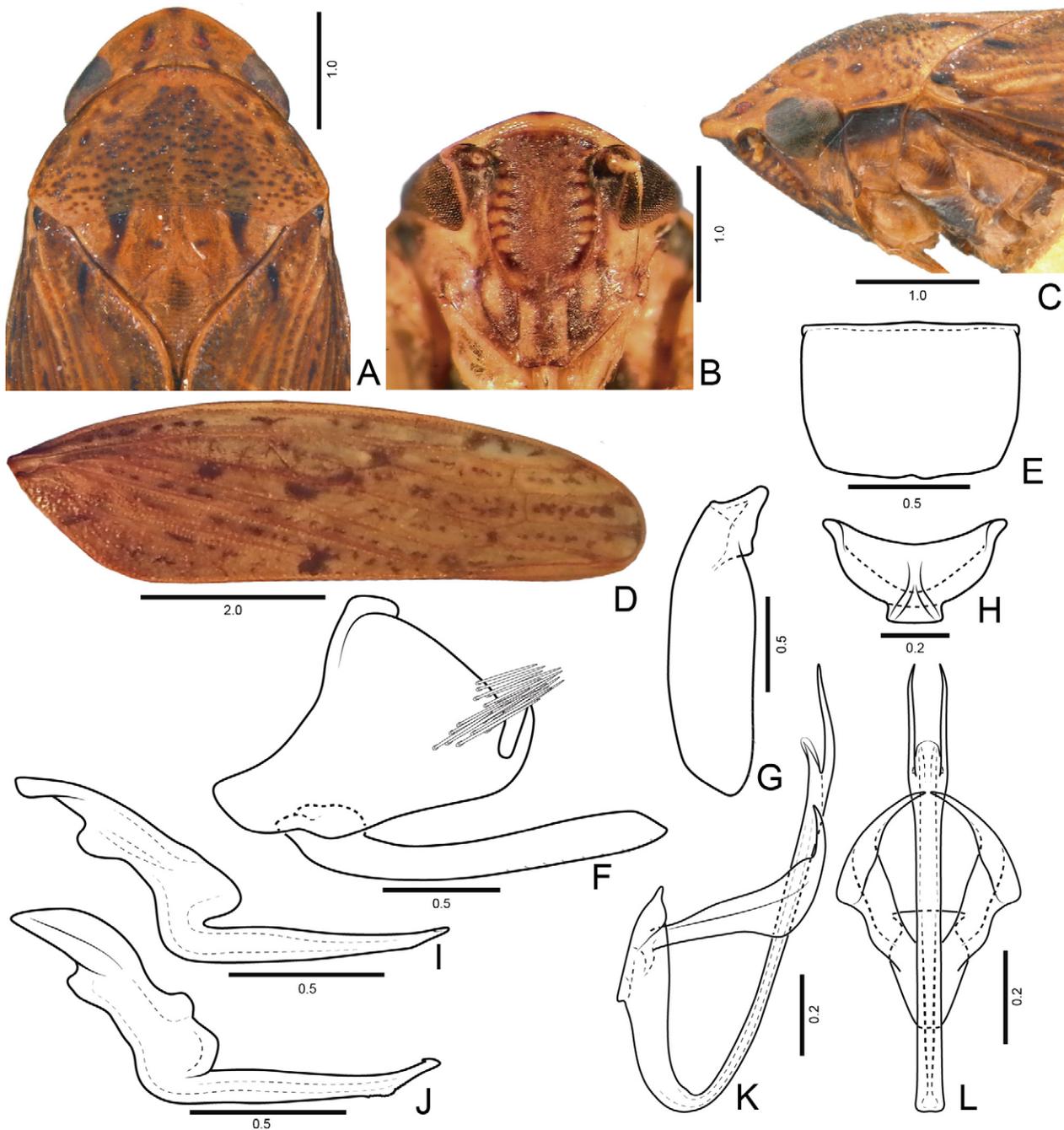
**Measurements.** Total length: male 12.0 mm, female 13.0 mm.

**Description.** External morphology as in generic description.

**Coloration.** Head and thorax (Fig. 49E, F) background yellowish-brown. Crown (Fig. 47A) without black punctures; apex with small black spot; small elongate black macula adjacent to anterior margin of ocellus; posterior margin of crown with pair of rounded black spots behind

ocelli. Face (Fig. 47B) with transverse black bands over muscular impressions. Pronotum (Fig. 47A) with black punctures and rounded black macula behind eye at one-third length of pronotum. Proepimeron (Fig. 47C) with wide black band below pronotal carina. Forewing (Fig. 47D) with scattered black mottling; larger black macula at apex of second anal vein and over cross veins of discal cells. Metatibia with cucullate bases of setae black.

**Male terminalia.** Sternite VIII (Fig. 47E) 1.4× wider than long; lateral margins almost parallel; posterior margin straight, with small notch at middle. Pygofer, in lateral view (Fig. 47F), 1.5× longer than maximum height; without basodorsal processes; dorsal and ventral margins straight; dorsal margin declivous toward apex; macrosetae present on posterodorsal quadrant; apex forming long hook-shaped process, curved dorsally. Subgenital plate, in lateral view (Fig. 47F), long, surpassing the pygofer apex; in ventral view (Fig. 47G), 3.5× longer than wide; outer margin with microsetae; lateral margins approximately parallel; apex obliquely truncated. Connective (Fig. 47H) D-shaped, dorsal keel and stem reduced. Style, in dorsal view (Fig. 47I), with outer lobe developed and rounded; in lateral view (Fig. 47J), blade

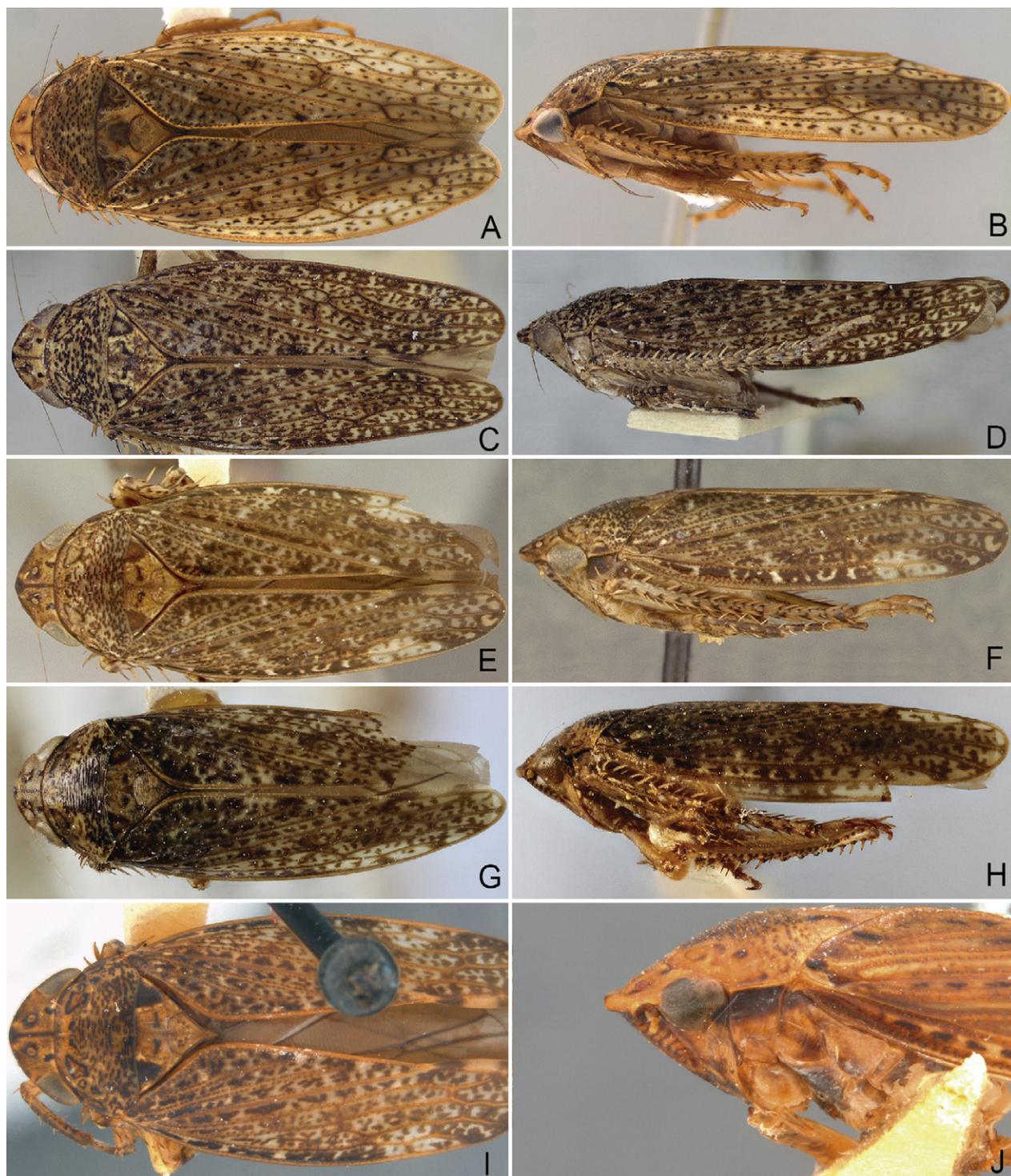


**Figure 47.** *Parcana ultima* comb. nov. holotype male. **A** head and thorax, dorsal view. **B** head, ventral view. **C** head and thorax, lateral view. **D** forewing. **E** sternite VIII, ventral view. **F** pygofer, valve and subgenital plate, lateral view. **G** subgenital plate, ventral view. **H** connective, dorsal view. **I** style, dorsal view. **J** style, lateral view. **K** aedeagus, lateral view. **L** aedeagus, posterior view. Scale bars in mm.

long and straight, slightly tapered toward apex; ventral margin serrated subapically; apex weakly bent dorsally, bearing dorsally a small subapical process. Aedeagus (Fig. 47K, L) preatrium reduced; dorsal apodeme not developed, dorsal margin straight, lateral margins not produced laterally; apodemal process almost reaching the aedeagus apex, slightly expanded subapically, apex acute and curved dorsally; shaft cylindrical, thin and long, strongly curved dorsally on basal third, apex weakly sclerotized with long pair of subapical processes, one-fourth length of shaft, straight, arising laterally and directed dorsally.

**Female terminalia.** Sternite VII with posterolateral corners rounded; posterior margin deeply excavated laterad of broad median lobe, which occupies half width of segment and is produced posteriorly as far as lateral angles. Ovipositor unknown.

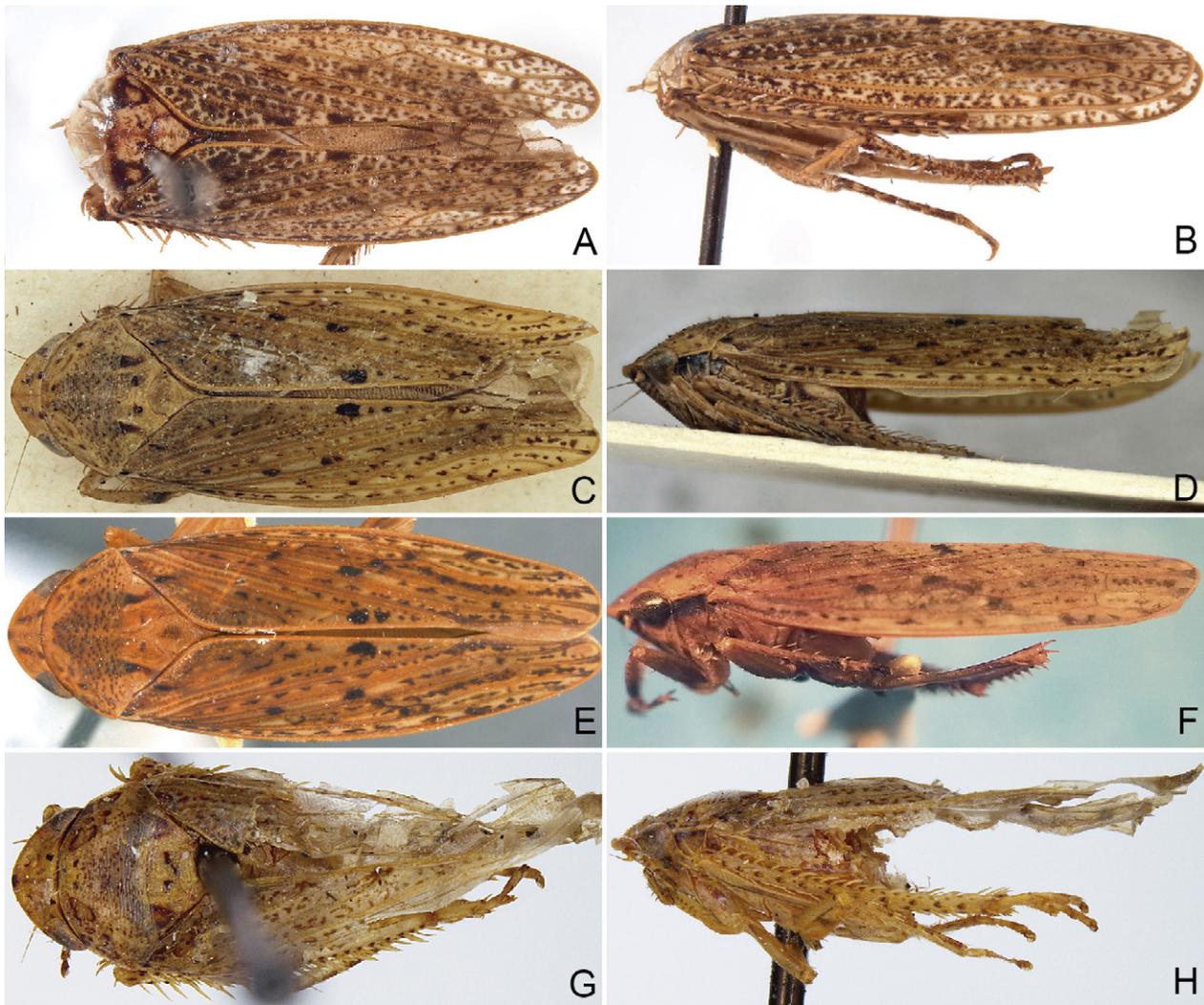
**Remarks.** Among the species of *Parcana* stat. nov., *P. ultima* comb. nov. is the species that most differs from all other species of this genus, due to the pygofer (Fig. 47F) having a robust apical process curved dorsally, the subgenital plate (Fig. 47G) without filiform setae, and the style (Fig. 47J) not broadened at apex. *Parcana ultima*



**Figure 48.** Species of *Parcana* *stat. nov.*, dorsal (left) and lateral (right) views. **A, B** *P. animosa* *comb. nov.*, male, DZRJ. **C, D** *P. atitlana* *comb. nov.*, holotype male, BMNH. **E, F** *P. concilia* *comb. nov.*, holotype male, OSU. **G, H** *P. extara* *comb. nov.*, holotype male, NCSU. **I, J** *P. lineatana* *syn. nov.*, holotype male, OSU.

**comb. nov.** apparently is more closely related to *P. spreta* **comb. nov.** due its similarity in the coloration, mainly the proepimeron (Fig. 49D, F) with a wide black band below pronotal carina and the forewings (Fig. 49C, E) with scattered black mottling and the presence of large black maculae at apex of second anal vein and over cross veins of discal cells. According to the original descriptions and illustrations of the female sternite VII of both species, they are similar, with posterolateral angles rounded

and the posterior margin excavated each side of a broad and rounded median lobe, however, in *P. ultima* **comb. nov.** the excavations are more rounded while in *P. spreta* **comb. nov.** are more acute. Based on these similarities, it is possible that *P. ultima* **comb. nov.** is a junior synonym of *P. spreta* **comb. nov.**, however, as the female sternite VII of both species is a little different, we consider that males of *P. spreta* **comb. nov.** need to be studied to confirm this hypothesis.



**Figure 49.** Species of *Parcana* stat. nov., dorsal (left) and lateral (right) views. **A, B** *P. mimica* comb. nov., holotype male, CAS. **C, D** *P. spreta* comb. nov., holotype female, BMNH. **E, F** *P. ultima* comb. nov., holotype male, OSU. **G, H** *P. ventusa* comb. nov., holotype male, USNM.

### ***Parcana concilia* DeLong & Freytag comb. nov.**

Fig. 48 E, F, I, J

*Acuera* (*Parcana*) *concilia* DeLong & Freytag, 1974: 196.

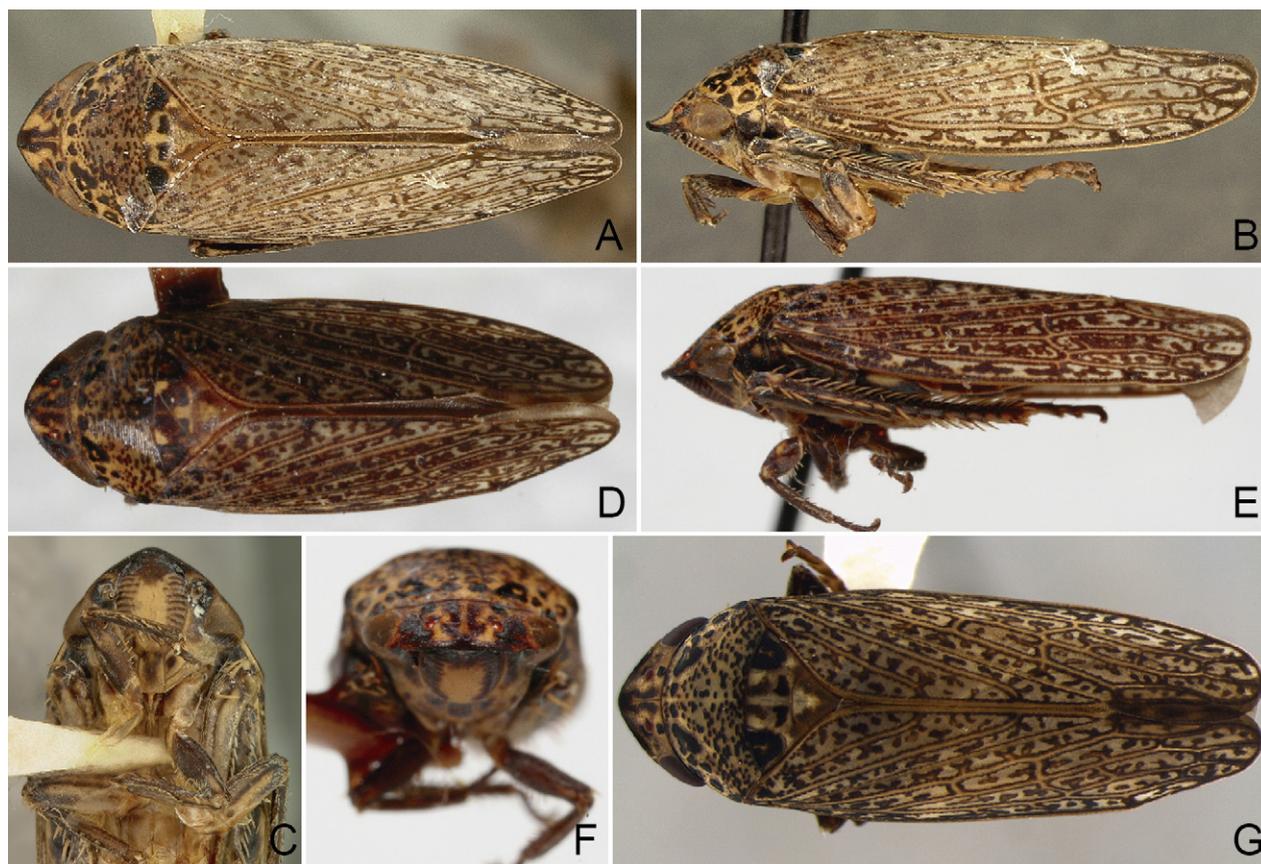
*Curtara* (*Curtara*) *lineatana* DeLong & Freytag, 1976: 25. **New synonymy.**

**Comments.** DeLong and Freytag (1974) described *Acuera concilia* (Fig. 48E, F) based on a single male specimen from Mexico which is labeled as “Finca Vergel, Chiapas, Mexico, VI-24-1935 (A. Dampf)”. DeLong and Freytag (1976) described *Curtara lineatana* (Fig. 48I, J) based on a single male from Mexico, that was collected in the same locality, at the same year and by the same collector: “Vergel, Chis., Mexico, at light, (M. F. 4239), V-21-1935 (Mrs. D. Dampf)”. According to the original descriptions and illustrations, both species shares similar size, coloration, and male genitalia. Therefore, we suggest that *C. lineatana* must be treated as a junior synonym of *Parcana concilia* comb. nov.

**Additional examined specimens of *Parcana* stat. nov.** *Parcana animosa* (DeLong & Freytag, 1976) comb. nov. **Mexico:** [new record] 1♂, “México, Chiapas, 22km\ W de Ocozocautla,\ Ejido Armando Zebadua\ 972m, 13–20.viii.2013,\ Melo & Rosa. Malaise” (DZUP); 1♂, “Mexico Oaxaca rt.190 km#36 Tulenito, 95m, 16,55278 –94,63056, 06/nov/01, C.H.Dietrich, sweeping” (INHS). — **Nicaragua:** 2♂, “NICARAGUA: Granada; Domitila Private Wildlife Reserve: Km 72.5 off the Panamerican Highway at El Manchón; 11°42'32.2"N 85°57'12.9"W; elev. ~50m; 31 Oct. – 9 Nov. 2010; J. Cryan, J. Urban, G. Svenson” (INHS).

***Parcana concilia* aff. (DeLong & Freytag, 1974) comb. nov. Mexico:** 1♂, “México, Chiapas, 35km\ E La Trinitaria, Tziscoa\ 16.102°N, 94.721°W, 1558m, 15.vii.2013,\ G. Melo & B. Rosa” (DZUP).

**Remarks.** The examined specimen of *P. concilia* comb. nov. differs from the holotype in the shape of the subapical processes of the aedeagal shaft. In the holotype, the processes are branched near base, forming two rami approximately equal in length, whereas in the studied specimen, the left process have only a small spiniform process near the base and the right process, four spines. However,



**Figure 50.** *Hamana manifesta* DeLong, 1942. A–C *A. inlustra* **syn. nov.**, male holotype, OSU, dorsal, lateral and ventral views. D–F *A. inlustra* **syn. nov.**, male paratype, USNM, dorsal, lateral and frontal views. G male specimen of *H. manifesta*, DZRJ, dorsal view.

as all other characteristics of the genitalia are equal to the holotype, we consider this as intraspecific variation.

### 3.3.6. *Hamana manifesta* DeLong

Fig. 50

*Hamana manifesta* DeLong, 1942: 86.

*Acuera (Acuera) inlustra* DeLong & Freytag, 1974: 186. **New synonymy.**

**Comments.** DeLong (1942) described *Hamana manifesta* (Fig. 50G) based on male and female specimens from the localities of Confalon, Medina, Presidio and Val Verde, Texas, USA, and illustrated the head, pronotum and mesonotum in dorsal view, as well as the male genitalia. DeLong and Freytag (1966) revised the genus *Hamana*, redescribed *H. manifesta* and provided a new illustration of the male genitalia. DeLong and Freytag (1974) described *Acuera inlustra* (Fig. 50A–F) based on the holotype from Chisos Mts., Texas, and 10 paratypes from Chihuahua and Primavera, Mexico, with illustrations of the male genitalia. Based on the original descriptions and illustrations of both species, the study of images of holotype and paratype of *Acuera inlustra* and the study of a specimen of *Hamana manifesta* from Texas,

USA, we conclude that there are no characters that distinguish these species. Therefore, we suggest that *Acuera inlustra* must be treated as a junior synonym *Hamana manifesta*.

### 3.3.7. Species of *Acuera* transferred to *Curtara* DeLong & Freytag

Fig. 51

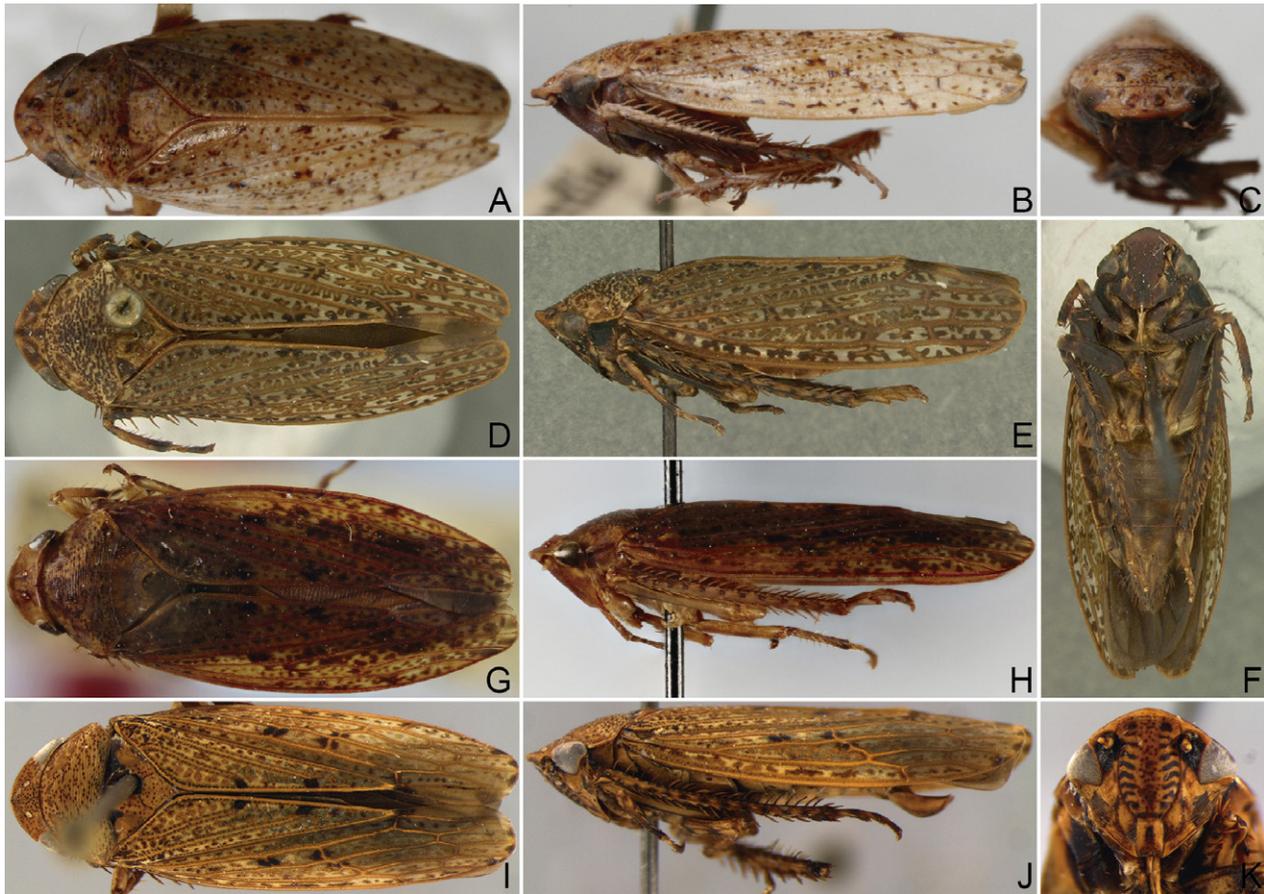
*Curtara facera* (DeLong & Freytag, 1974): 194 (**comb. nov.**) (*Acuera (Parcana)*). Mexico.

*Curtara labella* (Osborn, 1938): 45 (**comb. nov.**) (*Ponana*). Bolivia.

*Curtara nama* (DeLong & Freytag, 1974): 196 (**comb. nov.**) (*Acuera (Parcana)*). Peru.

*Curtara patula* (DeLong & Freytag, 1974): 194 (**comb. nov.**) (*Acuera (Parcana)*). Argentina and Brazil: Minas Gerais [new record], Paraná [new record] and Rio Grande do Sul [new record].

**Comments.** *Curtara* is the second largest genus of Gypsonini, currently comprising 171 described species. Our phylogenetic analysis including eleven species of *Curtara* recovered the genus as polyphyletic (Fig. 7). As in the results of the three previous unpublished analyzes of Gonçalves (2016) and Domahovski (2017, 2021b), we recovered *Curtara* forming two separate clades repre-



**Figure 51.** Species transferred to *Curtara*. **A–C** *C. facera* **comb. nov.**, holotype male, USNM, dorsal, lateral and frontal views. **D–F** *C. labella* **comb. nov.**, holotype female BMNH, dorsal, lateral and ventral views. **G, H** *C. nama* **comb. nov.**, holotype male, NCSU, dorsal and lateral views. **I–K** *C. patula* **comb. nov.**, male, DZUP, dorsal, lateral and ventral views.

senting the majority of the species of this genus. The first clade, comprising the type species of *Curtara* and also other species of the subgenera *Curtara* and *Mysticana*, was supported by four synapomorphies: 46:1, forewing with veins outlined by black coloration; 89:1, valve with pair of oblique submedian integument thickening; 97:1, pygofer with inner apical portion of dorsal margin weakly sclerotized; 143:1, ovipositor straight; and eight homoplasies: 10:0, anterior margin of crown, not projected over anterior margin of eye; 39:0, mesonotum, without pair of black maculae on median portion; 52:1, external discal cell bearing an apical accessory vein; 90:1, presence of excavation on posterior margin of valve; 91:1, excavation on posterior margin of valve deep; 117:0, subgenital plate with short filiform setae; 121:0, connective with dorsal median keel absent; and 131:1, apodemal process of aedeagus with subapical excavation on dorsal margin. We recovered *A. patula* (Fig. 51I–K) strongly supported (SR = 100) inside this clade and we suggest transfer this species to *Curtara*. The second clade was recovered with low support as sister group of *Effossana* **gen. nov.**, including the type species of the subgenera *Aradasoma*, *Labata*, *Sinchora*, *Remarana* and *Retusana* and received elevated branch support (SR = 95), being supported by two synapomorphies: 38:1, mesonotum with pair of black maculae near anterior margin; 49:1 clavus with a

cross vein between anal veins, near base, and five homoplasies: 10:0, anterior margin of crown, not projected over anterior margin of eye; 77:1 metatibia with AD row bearing 14 macrosetae; 85:1, female sternite VIII with median longitudinal carina on apical half; 98:1, pygofer with sclerotized processes apically; and 106:1, anal tube sclerotized. As a parer with the taxonomic review and phylogenetic analysis of *Curtara* is in preparation, we will not propose any taxonomic changes for its subgenera in this study.

We also suggest transferring *A. facera*, *A. labella*, and *A. nama* to the genus *Curtara*. *Acuera facera* (Fig. 51A–C) was described based on a male from Oaxaca, Mexico and placed in the subgenus *Parcana*. This species is very similar to *Curtara enadara* DeLong & Freytag, 1976, described from Acapulco, Mexico, in the coloration and shape of the male genitalia and apparently is phylogenetically related to this species.

Osborn (1938) originally described *Acuera labella* (Fig. 51D–F) in the genus *Ponana* Ball, 1920, based on a single female from Bolivia and DeLong (1977) transferred this species to the genus *Acuera*, not assigning it to any one of the subgenera. Based on our study we suggest that *A. labella* not belong to the genus *Acuera* or *Parcana* **stat. nov.** and we tentatively placed it in the genus *Curtara* until males can be studied.

*Acuera nama* (Fig. 51G–H) was described based on two males from Peru and placed in the subgenus *Parcana*. This species apparently is closely related to the clade composed by the type species of the subgenera *Ardasoma*, *Labata*, *Sinchora*, *Remarana* and *Retusana*, whereas *A. facera* and *A. labella* are related to the clade composed by species of the subgenera *Curtara* and *Mysticana*.

**Additional material examined.** *Curtara patula* (DeLong & Freytag, 1974) **comb. nov.** **Brasil: Minas Gerais:** 1♂, [new record], “Brazil: MG: P. N. do Caparaó, 20.40956°S 41.84904°W, 1517 m, 03–07. III.2017 M. Savaris & A. L. Norrbom” (DZUP). – **Paraná:** [new record] 4♂, 2♀, “Guarapuava – Paraná Est. Águas Santa Clara Brasil [dates between X.1986 and XII.1987] Lev. Ent. Profaupar Malaise” (DZUP); 2♂, “Brasil, PR, Foz do Jordão Salto Segredo x–xi.2004 E.D.G. Soares leg” (DZUP); 2♂, 1♀, “Brasil, Paraná, Parque Estadual de Vila Velha 25°13'5.9"S 50°2'31.2"W Malaise2 [dates between IX.1999 and X.2000] Provive” (DZUP). – **Rio Grande do Sul:** [new record]. 1♂, “Brasil, RS, Passo Fundo, M. Atlântica, 28°13'50.7"S 52°24'17.04"W, 671 m, 23.XII.2016, P.R.V. da Silva Pereira leg.” (DZUP).

## 4. Discussion

The relationships between the majority of the genera of Gyponini included in the analyzes were recovered with low branch support and therefore, changed between the preliminary analyzes (Fig. 7). We found *Acuera* as sister group to the clade composed by species of *Curtara* belonging to the subgenera *Curtara* and *Mysticana*. This relationship was supported by four synapomorphies: 3:1, crown with an apical black macula; 22:1, gena with a small black macula near mid-length of ventral margin; 35:1, proepimeron with black punctures; and 37:1, mesonotum with black punctures. *Acuera* and *Curtara* (*Curtara* + *Mysticana*) share characters mainly in the coloration, as for example, crown, face and pronotum with black punctures (6:1, 14:1 and 30:1), profemur with black maculae at base and on apical third (60:1), and the forewing with general coloration mottled. The combined morphological and molecular analysis of Gonçalves (2016) found *Acuera* as sister to the genus *Proxima* DeLong & Freytag, 1975 with moderate support, however, according to the author, it was not possible to establish a well-supported hypothesis of relationship between *Acuera* and the other genera of Gyponini, since there is no congruence between the analyzes.

We recovered *Coarctana* **gen. nov.** with low support as sister group to *Ponana* + (*Curtara* subgenera *Ardasoma*, *Labata*, *Retusana*, *Remarana* and *Sinchora* + *Effossana* **gen. nov.**). The new genus is similar to *Costanana* DeLong & Freytag, 1972, *Dumorpha* DeLong & Freytag, 1975, *Delongiana* Domahovski et al. 2020, *Nullana* DeLong, 1976, *Ponana* Ball, 1920, and *Regalana* DeLong & Freytag, 1975, by the crown with transverse striae (7:1) and the crown-face transition definite (8:0, 1 or 2). Among these genera, *Coarctana* **gen. nov.** apparently

is similar to *Ponana* and *Dumorpha* by the presence of apodemal processes of the aedeagus (128:1) however, the new genus can be easily differentiated by the aedeagus constricted between dorsal apodeme and atrium (127:1). The relationship between *Coarctana* **gen. nov.** and the other genera of Gyponini is unclear, because the topologies found in our study changed between analyzes and is incongruent to the unpublished studies of Gonçalves (2016) and Domahovski (2017, 2021b). However, the new genus was frequently recovered closely related or sister to *Ponana*.

Our analysis found *Effossana* **gen. nov.** as sister to *Curtara* (subgenera *Ardasoma*, *Labata*, *Retusana*, *Remarana* and *Sinchora*) with low support (SR > 50) and sustained by one synapomorphy, 111:1, subgenital plate with striae on apical half, and two homoplasies: 7:2, crown with oblique striae between ocelli and 76:1, AD row of the metatibia with 4–5 intercalary setae between each macrosetae. This relationship is congruent with the analysis of Domahovski (2017) where the bootstrap support was 56 and in Domahovski (2021b) with relative Bremer support of 21. *Effossana* **gen. nov.** is easily recognized and differentiated from the species of the subgenera of *Curtara* mentioned above and the other genera of Gyponini, mostly by the pronotum with irregular transverse black band on posterior margin (34:1); the clavus with two or more cross veinlets between anal veins (50:1); the male sternite VIII with posterior margin deeply excavated (86:2); the connective U-shaped (119:4); and characters of the female ovipositor, as the first valvula with anterior portion distinctly produced anterad (144:1); and the first valvula abruptly tapered apically (146:1). Other difference between *Effossana* **gen. nov.** and species of the subgenera *Ardasoma*, *Labata*, *Retusana*, *Remarana* and *Sinchora* is the shape of the female second valvulae. In the new genus, the dorsal protuberance is developed, and the teeth of the dorsal margin are present subapically whereas, in most of the species of the subgenera of *Curtara* mentioned above, the dorsal protuberance is absent or reduced and the teeth of the dorsal margin are absent.

*Propincurtara* **gen. nov.** was recovered with low branch support as sister to *Acuera* + *Curtara* (subgenera *Curtara* and *Mysticana*). This new species was also included in the unpublished studies of Domahovski (2017, 2021b) and was recovered in both with low support, closely related to species of *Acuera* or *Curtara*, having a long branch-length, sustained by one autapomorphy and eight homoplasies in Domahovski (2017) and one autapomorphy and 21 homoplasies in Domahovski (2021b). In our analysis, *Propincurtara* **gen. nov.** was supported by one autapomorphic character, 80:1, metatarsomere I with inner row of plantar setae multiseriate, and nine homoplastic characters: 13:1, ocellus equidistant between midline and inner margin of eye; 21:1, antennal ledge adjacent to anterior margin of crown; 32:1, pronotum with pair of rounded black spots behind eyes; 53:1, forewing with cross veins *m-cu*<sub>1</sub> and *m-cu*<sub>2</sub> black; 64:1, AV row of profemur with more than 6 setae; 75:0, AD row of metatibia without intercalary setae between macrosetae; 77:0, AD

row of metatibia with 12 macrosetae; 126:2, aedeagus with preatrium strongly developed; and 139:1, aedeagal shaft with two pairs of apical processes. In addition to these characters, *Propincurtara* **gen. nov.** differs from *Curtara* (subgenera *Curtara* and *Mysticana*) by the crown with inconspicuous striations, the forewing without accessory vein on external discal cell (52:0), the valve lacking pair of oblique submedian integument thickening (89:0) and the posterior margin not excavated (90:0), and the connective D-shaped (119:1). The new genus also differs from *Acuera* by the forewings without anastomosed maculae (47:1) and the central antepical cell without a cross vein near half length (52:0). In the new genus, the pecten of the metatarsomere II have only one tapered seta on each side of the rounded apically setae (platellae) whereas in almost all genera of Gyponini the metatarsomere II have two tapered setae on inner margin and one on external. The aedeagus and valvulae of the ovipositor of *Propincurtara longilinea* **sp. nov.** are uncommon compared to other genera of Gyponini, due to the preatrium forming a pair of processes projected ventrally, the first valvula with dorsal margin of apical portion undulated and the second valvula with dorsal protuberance truncated.

The relationships between *Parcana* **stat. nov.** and the other genera are still uncertain due the low branch support and consequently the different topologies found herein and in the three previous unpublished studies. Gonçalves (2016) recovered the type species of *Parcana*, as sister to the clade composed by the type species of the genera *Curtara*, *Negosiana*, *Prairiana*, *Sordana* and *Sulcana*. Domahovski (2017) found *Parcana ultima* as sister to the clade of *Curtara*, comprising the species *C. (Curtara) samera*, *C. (Curtara) concava*, *C. (Mysticana) apicala* and *Acuera (Parcana) patula*. Domahovski (2021b) recovered *Parcana ultima* as sister to the clade of *Effossana* **gen. nov.** + *Curtara* (comprising the type species of the subgenera *Ardasoma*, *Labata*, *Retusana*, *Remarana* and *Sinchora*). *Parcana* **stat. nov.** shares characters with species of the subgenera *Curtara* and *Mysticana* as the pronotum with black punctures (30:1) and the forewing with an accessory vein on external discal cell (52:1) however, differs by the crown, face and pronotum without black punctures (6:0, 14:0 and 30:0), the valve lacking pair of oblique submedian integument thickening (89:0), and the connective D-shaped (119:1). Only few specimens representing this group were obtained for our study and we believe if a larger number of species were included in a future analysis, a better supported hypothesis of relationship between *Parcana* **stat. nov.** and the other Gyponini genera might be found.

## 5. Conclusion

The majority of the Gyponini genera need revision and some of them were recovered as para- or polyphyletic in the unpublished analyzes of Gonçalves (2016) and

Domahovski (2017, 2021b) as for example, *Curtara* DeLong & Freytag, 1972, *Darma* Walker, 1858, *Gypona* Germar, 1821, *Gyponana* Ball, 1920, *Nullana* DeLong, 1976, *Tenuacia* DeLong, 1977, *Polana* DeLong, 1942 and *Ponana* Ball, 1920. In that way, a new revision and phylogeny is being produced for the genus *Curtara* aiming to contribute to the systematics of Gyponini.

Our taxonomic study found new diagnostic characters useful at genus level in the forewings, leg chaetotaxy, male sternite VIII, valve, connective and female ovipositor. Some of these structures were only recently included in the description and illustrations of new species and have been increasing in importance to the taxonomy of Gyponini while they are studied in a larger number of species (e.g., Engel and Takiya 2012; Gonçalves et al. 2013, 2014; Domahovski et al. 2014; Da-Silva and Coelho 2015; Domahovski and Cavichioli 2017, 2020).

Including the new genera and species described here and the proposed taxonomic changes, Gyponini now comprise 79 genera and 1461 valid species, *Acuera* now comprise 10 species and *Curtara* 165 species.

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## Supplementary material 1

### Sequence alignments

**Authors:** Domahovski AC, Cavichioli RR (2022)

**Data type:** .xlsx

**Explanation note:** Data matrix for phylogenetic analysis.

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**Link:** <https://doi.org/10.3897/asp.81.e81961.suppl1>

## Supplementary material 2

### Sequence alignments

**Authors:** Domahovski AC, Cavichioli RR (2022)

**Data type:** .doc

**Explanation note:** Tree distances.

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**Link:** <https://doi.org/10.3897/asp.81.e81961.suppl2>