Portanini Linnavuori, 1959 (Insecta: Hemiptera: Cicadellidae) from Peru: Checklist with new records and descriptions of two new species (#51460)

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Portanini Linnavuori, 1959 (Insecta: Hemiptera: Cicadellidae) from Peru: Checklist with new records and descriptions of two new species

Jádila Santos Prando [Corresp., 1, 2], **Clayton Corrêa Gonçalves** [2], **Daniela Maeda Takiya** [2]

[1] Programa de Pós-graduação em Biodiversidade e Biologia Evolutiva, Universidade Federal do Rio de Janeiro, Rio de Janeiro, RJ, Brazil

[2] Laboratório de Entomologia, Departamento de Zoologia, Instituto de Biologia, Universidade Federal do Rio de Janeiro, Rio de Janeiro, RJ, Brazil

Corresponding Author: Jádila Santos Prando
Email address: jadilasprando@hotmail.com

Portanini is a small tribe of neotropical leafhoppers that includes two genera: *Portanus* Ball, 1932 and *Metacephalus* Delong & Martinson, 1973. Herein, a checklist of portanines from Peru is given, including several new species records for the country, elevating the known diversity from nine to 22 species. In addition, four species have their department ranges expanded in Peru. Two new portanine species are also described: *Metacephalus mamaquilla* **sp. nov.** and *Portanus tambopata* **sp. nov.** both from Tambopata National Reserve, Madre de Dios, Peru and we make available habitus photos of other Portanini species from this reserve.

Portanini Linnavuori, 1959 (Insecta: Hemiptera: Cicadellidae) from Peru: checklist with new records and descriptions of two new species

Jádila Santos Prando[1,2], Clayton Corrêa Gonçalves[2], Daniela Maeda Takiya[2]

[1] Programa de Pós-graduação em Biodiversidade e Biologia Evolutiva, Instituto de Biologia, Universidade Federal do Rio de Janeiro, Rio de Janeiro, RJ, Brazil.
[2] Laboratório de Entomologia, Departamento de Zoologia, Instituto de Biologia, Universidade Federal do Rio de Janeiro, Rio de Janeiro, RJ, Brazil.

Corresponding Author:
Jádila Prando
Laboratório de Entomologia, Departamento de Zoologia, Instituto de Biologia, Universidade Federal do Rio de Janeiro, Caixa Postal 68044, Rio de Janeiro, 21941-971, RJ, Brazil.
Email address: jadilasprando@hotmail.com

Abstract

Portanini is a small tribe of neotropical leafhoppers that includes two genera: *Portanus* Ball, 1932 and *Metacephalus* Delong & Martinson, 1973. Herein, a checklist of portanines from Peru is given, including several new species records for the country, elevating the known diversity from nine to 22 species. In addition, four species have their department ranges expanded in Peru. Two new portanine species are also described: *Metacephalus mamaquilla* **sp. nov.** and *Portanus tambopata* **sp. nov.** both from Tambopata National Reserve, Madre de Dios, Peru and we make available habitus photos of other Portanini species from this reserve.

Introduction

The hemipteran infraorder Cicadomorpha comprises approximately 35,000 described species of plant sap-sucking insects distributed worldwide (*Dietrich, 2005*). It includes the superfamily Membracoidea that comprises the treehoppers (Membracidae, Aetalionidae, and Melizoderidae) and leafhoppers (Cicadellidae and Myerslopiidae) (*Deitz & Dietrich, 1993*). With approximately 21,000 species, 2,550 genera and 25 subfamilies, Cicadellidae is the largest hemipteran family, being cosmopolitan in distribution, occurring everywhere plants (their hosts) can survive (*Dietrich, 2013*; *Bartlett et al., 2018*).

Included in Aphrodinae subfamily, Portanini is one of the leafhopper tribes (*Dietrich, 2005*) erected by *Linnavuori* (*1959*) and restricted to the Neotropical region. Portanines can be recognized by their long and slender bodies; their crown triangularly produced; their ocelli on anterior margin of head, distant from the eyes; and the antennae unusually long (*Linnavuori,*

1959; *Felix & Mejdalani, 2016*). Currently, the tribe include 63 valid species divided into two genera: *Portanus* Ball, 1932 with 49 and *Metacephalus* Delong & Martinson, 1973 with 14 valid species (*Felix & Mejdalani, 2016*; *Souza, Takiya & Felix, 2017*; *Carvalho & Cavichioli, 2017*; *Freytag, 2017*; *Felix et al., 2020*). Members of *Metacephalus* can be distinguished from *Portanus* by the following set of male features (*Carvalho & Cavichioli, 2009*): (1) pygofer strongly produced posteriorly, usually with a pair of spiniform processes on posteroventral margin (pygofer slightly produced and with variable posterior margin in *Portanus*); (2) subgenital plates triangular, without transverse unpigmented line at basal third (subgenital plates with transverse unpigmented line at basal third in *Portanus*); and (3) connective V-shaped (T-shaped in *Portanus*).

The leafhopper fauna of the Neotropical region is poorly known and, approximately 5,000 species are described, but there can be easily 5,000 to 10,000 undescribed species in the region, and perhaps many more (*Freytag & Sharkey, 2002*). Peru is one of the megadiverse countries in the Neotropical region and currently only 634 species of some groups of leafhoppers are recorded from there, with only nine species of Portanini recorded (*Linnavuori ,1959*; *DeLong & Martinson, 1973*; *DeLong & Linnavuori, 1978*; *DeLong, 1980*; *DeLong, 1982*; *Lozada, 1992*; *Carvalho & Cavichioli, 2009*; *Costa & Lozada, 2010*; *Felix & Mejdalani, 2016*; *Souza, Takiya & Felix, 2017*).

In this paper, a checklist of Portanini from Peru is provided, where eleven species are herein firstly recorded, elevating the diversity of known Peruvian portanines from nine to 22 species and four species had their distribution expanded in the country. Additionally, two new species of Portanini from Tambopata National Reserve (Madre de Dios, Peru) are described and illustrated and habitus photos of the 10 Portanini species identified from this reserve are also provided.

Materials & Methods

Specimens studied are deposited in the following collections: Museo de Historia Natural, Universidad Nacional Mayor de San Marcos, Lima (MUSM); Coleção Entomológica Prof. José Alfredo Pinheiro Dutra, Instituto de Biologia, Universidade Federal do Rio de Janeiro, Rio de Janeiro (DZRJ); and Insect Collection, Illinois Natural History Survey, Champaign (INHS). Labels of type material are quoted separately, line breaks are indicated by a backslash (\) and additional information given between brackets ([ ]).

For species identification, male genitalia were prepared following *Oman* (*1949*), where the abdomen is cleared in 10% KOH hot solution for some minutes and washed for a short time in water. For the female genitalia, the protocol from *Zanol* (*1988*) was used, in which the abdomen is cleared in 10% KOH at room temperature for nearly 15 hours and washed with distilled water for 15 minutes. Observation and dissection of genital parts were conducted in glycerin. Structures were observed and photographed with a Leica M205C stereomicroscope equipped with a Leica DFC450 digital camera attached. Photographs at different focal planes were stacked with the software Leica Application Suite and edited in Adobe Photoshop®.

Studied genital structures were preserved in glycerin within microvials attached to the specimens. Morphological terminology follows *Dietrich* (*2005*).

The electronic version of this article in Portable Document Format (PDF) will represent a published work according to the International Commission on Zoological Nomenclature (ICZN), and hence the new names contained in the electronic version are effectively published under that Code from the electronic edition alone. This published work and the nomenclatural acts it contains have been registered in ZooBank, the online registration system for the ICZN. The ZooBank LSIDs (Life Science Identifiers) can be resolved and the associated information viewed through any standard web browser by appending the LSID to the prefix http://zoobank.org/. The LSID for this publication is: [http://zoobank.org/urn:lsid:zoobank.org:pub:EEA39E0C-D2C0-494C-B1D7-F7E6B3D818CD]. The online version of this work is archived and available from the following digital repositories: PeerJ, PubMed Central and CLOCKSS."

Results

Species descriptions

***Metacephalus* DeLong & Martinson, 1973**

Metacephalus DeLong & Martinson, 1973: 225. Type species: *M. albocrux* DeLong & Martinson, 1973.

Paraportanus Carvalho & Cavichioli 2009: 26. Type species: *P. jenniferae* Carvalho & Cavichioli, 2009 [synonymized by *Souza, Takiya & Felix, 2017*].

Metacephalus mamaquilla **sp. nov.**

urn:lsid:zoobank.org:act:8CD03270-1760-4962-8D9E-26F639FB8E04

(Figures 1, 2, 5A–5D)

Type locality. Refugio Amazonas, Madre de Dios, Peru.

Diagnosis. Male pygofer (Fig. 1C), in lateral view, subrectangular; posterior margin acute; with slender and acute preapical ventral process turned dorsally. Aedeagus (Figs. 1G–1I) apex with pair of long and slender divergent processes curved posteroventrally and with apices acute. Female sternite VII (Fig. 2C) subtriangular; lateral margins slightly sinuous and strongly convergent apically; posterior margin slightly convex.

Measurements (mm). Males (n=13)/females (n=5): body length, 5.5–6.0/5.9–6.3; crown length, 0.3–0.4/0.4–0.5; transocular width, 1.2–1.3/1.4; interocular width, 0.5–0.6/ 0.6; maximum pronotum width, 1.3–1.4/1.4–1.6; forewing length, 4.3–4.9/ 4.8–5.2.

Description. Head (Figs. 1A, 2A, 5A–5D), in dorsal view, with anterior margin rounded; crown median length approximately half to eight-tenths of interocular and three to four-tenths of transocular width; lateral frontal suture reaching ocellus; epicranial suture not extended to ocelli transverse line; texture shagreen. Pronotum (Figs. 5A and 5C) slightly wider than head; lateral margin angulate; dorsolateral carina conspicuous and complete; posterior margin straight; texture

smooth. Mesonotum (Figs. 5A and 5C) shagreen. Forewing (Figs. 1B and 2B) with distinct venation; three closed anteapical cells. Metatibia (Figs. 5B and 5D) with rows AD and PD both with 10–11 long cucullate setae intercalated by 0–3 shorter cucullate setae; tibia apex with three platellae between pair of outer slightly longer cucullate setae; first tarsomere slightly longer than combined length of second and third ones; tarsomeres posterior margin with three, two, and zero platellae, respectively, between pair of outer slightly longer setae.

Coloration. Crown (Figs. 5A and 5C) mostly orange; apex with pale-yellow macula; anterior third with pair of black Y-shaped macula (Figs. 5A and 5C), each surrounding respective ocellus; posterior two-thirds with pair of short longitudinal parallel pale-yellow stripes; posterior margin with pair of black spots adjacent to eyes. Ocellus red. Face (Figs. 1A and 2A) ivory to pale yellow; lateral margin of frontoclypeus and anteclypeus dark brown. Lorum (Figs. 1A and 2A) ivory. Gena (Figs. 1A and 2A) brown with posterior margin pale yellow. Pronotum (Figs. 5A and 5C) dark brown, with several ivory spots. Mesonotum (Figs. 5A and 5C) orange; anterior margin and pair of lateral triangular maculae dark brown; short pale-yellow stripe on anterior half. Scutellum (Figs. 5A and 5C) orange. Forewing (Figs. 1B and 2B) translucent brown; clavus with slender line along anal margin, large spot connected to line at apex of first anal vein and another at base, orange, additionally, three large dark-brown elongate maculae adjacent to orange longitudinal line; corium with slender brown line adjacent to claval suture, with three dark-brown maculae near costal margin: first small, near base, second forming broad oblique band extending close to Cu vein, and third forming oblique narrower band extending to base of inner anteapical cell. Thoracic venter ivory. Profemur with two large brown maculae, one larger at middle third and one smaller at apex; protibia pale yellow on dorsal surface and dark brown on ventral surface, setae dark brown; mesofemur with large brown subapical macula, mesotibia similar to protibia; metafemur pale yellow with slender brown stripe on dorsal surface, apex orange; metatibia pale yellow with brown areas, base orange; all tarsomeres pale yellow. Female: color pattern similar to male except for forewing with narrower dark-brown maculae (Fig. 2B).

Male genitalia. Pygofer (Fig. 1C), in lateral view, longer than high; subrectangular; posterior margin acute; with few macrosetae distributed near dorsal margin and at apex; posteroventral margin with slender and acute ventral process turned dorsally. Valve (Fig. 1D), in ventral view, about three times wider than long; posterior margin sinuous. Subgenital plate (Fig. 1D) extending slightly beyond apex of pygofer; slightly turned dorsally; in ventral view, surface with uniseriate robust macrosetae and fine long microsetae. Connective (Fig. 1E), in dorsal view, Y-shaped; apex fused with aedeagus preatrium. Style (Figs. 1E and 1F) with apodeme one-fifth of total length; apical fifth enlarged and appearing bifid due to elongate and robust preapical lobe; preapical lobe with few fine microsetae; preapical region sculptured; apex acute and curved outwards, bearing robust spine. Aedeagus (Figs. 1G–1I) with long preatrium; dorsal apodeme well developed, long and narrow; shaft tubular; apex with pair of long and slender divergent processes curved posteroventrally with apices acute. Anal tube segment X (Fig. 1C) with base conical and remainder tubular; with dentiform microsculpturing throughout.

Female genitalia. Sternite VII (Fig. 2C), in ventral view, as wide as long; subtriangular; lateral margins slightly sinuous and strongly converging apically; posterior margin convex. Pygofer (Fig. 2D), in lateral view, higher than long; subtriangular; ventral margin twice longer than dorsal margin; dorsal margin with concavity at apical third; macrosetae distributed on posterior two-thirds; some interspersed microsetae; apex angulate. First valvifer (Fig. 2E) subquadrangular. First valvula (Fig. 2E), in lateral view, expanded apically; ventral interlocking device located on basal fourth of blade; dorsal sculptured area on apical third, apical portion (Fig. 2F) with dorsal sculptured area elongate (with sculpturing elongate derived from a strigate pattern); apex falciform. Second valvifer (Fig. 2I) about three times higher than long. Second valvula (Figs. 2G and 2H) with apical half expanded, narrowing to apex; dorsal margin with 28 separate teeth without denticles (single specimen dissected); duct area with maculose sculpturing; ventral margin without preapical prominence or denticles; apex acute. Third valvula (Fig. 2I), in lateral view, with basal half distinctly narrower than apical half; microsetae distributed along ventral margin and near apex on dorsal margin; apex narrowly rounded. Anal tube segment X (Fig. 2D), in lateral view, short, length one-third of dorsal margin of pygofer; basal half conical; apical half cylindrical.

Remarks. *Metacephalus mamaquilla* **sp. nov.** is similar to *Metacephalus facetus* (Kramer, 1961) and *Metacephalus sakakibarai* (Souza, Takiya & Felix, 2017) in the aspect of the paired apical aedeagus processes, which are long and divergent in caudal view. However, the new species can be distinguished from all other *Metacephalus* species by the following characteristics: (1) male pygofer (Fig. 1C) with posterior margin acute and preapical acute ventral process turned dorsally; and (2) aedeagus (Fig. 1G–1I) with shaft apex curved dorsally with pair of long, narrow and divergent processes curved posteroventrally.

Etymology. The species epithet is a homage to the Inca goddess Mama Quilla, considered a defender of women. The species epithet is treated as a noun in apposition.

Material studied. Holotype. 1 male, "**PERU**, MD [Madre de Dios], Albergue \ Refugio Amazonas \ 12°52'30"[S]/69°24'35"[W] \ 231 m 20.ii.2016 \ J. Grados", "WIRED AMAZON \ PROJECT \ PAN TRAP" (MUSM). **Paratypes**. 1 male, same data as holotype (DZRJ); 1 male, same data as holotype, except "19.ii.2016" (MUSM); 1 male, same data as holotype, except "29.ii.2016" (MUSM); 1 male, same data as holotype, except "241 m 05.iii.2016 \ D. Couceiro" (MUSM); 1 male, same data as holotype, except "05.x.2016 \ D. Couceiro" (MUSM); 1 male, 2 females, same data as holotype, except "17.x.2016 \ D. Couceiro" (DZRJ); 3 males, same data as holotype, except "06.xi.2016 \ D. Couceiro" (DZRJ); 1 female, same data as holotype, except "241 m 02.iii.2017" (MUSM); 1 male, same data as holotype, except "241 m 04.iii.2017" (MUSM); 1 male, same data as holotype, except "241 m 10.iv.2017 \ D. Couceiro" (MUSM); 1 female, same data as holotype, except "241 m 20.iv.2017 \ D. Couceiro" (MUSM); 1 male, 1 female, same data as holotype, except "241 m 26.iv.2017 \ D. Couceiro" (MUSM).

***Portanus* Ball, 1932**

Portanus Ball, 1932: 18. Type species: *Scaphoideus stigmosus* Uhler, 1895.

Portanus tambopata **sp. nov.**
urn:lsid:zoobank.org:act: 9C799CBA-FD0C-4DB3-931D-7FB7ECA440E6
(Figures 3, 4, 5E–5H)
Type locality. Refugio Amazonas, Madre de Dios, Peru.
Diagnosis. Male pygofer (Fig. 3C), in lateral view, subtriangular; posterior margin truncate, with small dorsal teeth and subquadrate ventral lobe bearing slender and acute process directed posteriorly. Aedeagus (Figs. 3H–3J) preatrium slightly sinuous; shaft enlarged at base, narrowing towards apex; apex with single bifurcated process turned ventrally, sinuous and with apices turned outwards, resembling an anchor (Fig. 3I). Male anal tube (Figs. 3C and 3K) segment X with pair of small, lateral, strongly sclerotized toothed lobes at middle third. Female sternite VII (Fig. 4C) approximately rectangular; posterior margin with prominent rounded median lobe.
Measurements (mm). Males (n=5)/females (n=2): body length, 4.3–4.8/4.6–4.7; crown length, 0.4/0.4; transocular width, 1.1/1.2; interocular width, 0.5–0.6/0.6; maximum pronotum width, 1.0–1.1/1.1; forewing length, 3.3–3.6/3.5–3.7.
Description. Head (Figs. 3A, 4A, 5E–5H), in dorsal view, anterior margin angulate; with crown median length approximately seven to eight-tenths of interocular and three to four-tenths of transocular width; lateral frontal suture reaching ocellus; epicranial suture not extended to ocelli transverse line; texture shagreen. Pronotum (Figs. 5E and 5G) subequal to head width; lateral margin angulate; posterior margin straight; texture smooth with transverse striae. Mesonotum (Figs. 5E and 5G) shagreen. Forewing (Figs. 3B and 4B) with distinct venation; with three closed anteapical cells, median anteapical cell slightly longer than others. Metatibia (Figs. 5F and 5H) with row AD with 9-11 long cucullate setae intercalated by 3-4 shorter setae; PD row with 10 very long cucullate setae intercalated by one smaller long cucullate seta. First tarsomere slightly longer than combined length of second and third o[illegible]; tarsomeres posterior margin with three, two, and zero platellae, respectively, between pair of outer slightly longer setae.
Coloration. Crown (Figs. 5E and 5G) brown; anterior margin with dark brown line; apical third with subtriangular marking between ocelli, which extends to posterior margin as a median line, pale yellow; basal two-thirds with longitudinal pale-yellow line surrounded by a reddish-brown area. Ocellus red. Face and gena pale brown and lorum ivory (Figs. 3A and 4A). Pronotum (Figs. 5E and 5G) brown, with several ivory spots. Mesonotum (Figs. 5E and 5G) brown; pair of lateral triangular dark-brown maculae on anterior margin; posterolateral margin ivory. Scutellum (Figs. 5E and 5G) pale brown to ivory. Forewing (Figs. 3B and 4B) translucent yellowish brown; veins dark brown with alternating ivory spots; five dark brown triangular maculae along costal margin; apex dark brown. Thoracic venter ivory. Legs ivory; posterior apexes of tibia, first and second tarsomeres brown.
Male genitalia. Pygofer (Fig. 3C), in lateral view, slightly longer than high; subtriangular; posterior margin truncate, with small dorsal teeth and subquadrate ventral lobe bearing slender and acute process directed posteriorly; macrosetae distributed at median portion dorsally; microsetae at apex. Valve (Fig. 3E), in ventral view, oblong; wider than long; anterior and

posterior margin convex. Subgenital plate (Figs. 3D and 3E) extending posteriorly farther than pygofer apex; apical third upturned; in ventral view, basal third with transverse unpigmented line; surface with few uniseriate robust macrosetae and many long and fine microsetae at apical half. Connective (Fig. 3F), in dorsal view, Y-shaped; anterior margin with short median basiventral triangular projection; apex truncate. Style (Figs. 3F and 3G) with apodeme long, one-third of total length; apical third widened with preapical lobe elongate and robust; apex truncated with digitiform process; in lateral view, subcylindrical and sinuous. Aedeagus (Figs. 3H–3J) with long and slightly sinuous preatrium; dorsal apodeme not so sclerotized; shaft wider at base, narrowing towards apex; apex with single bifurcated process directed ventrally, with rami sinuous, half-length of shaft, with apices turned outwardly, resembling an anchor. Anal tube segment X (Figs. 3C and 3K) subcylindrical; as long as pygofer; with few denticles on ventral margin at base; with pair of small lateral, strongly sclerotized, toothed lobes at median third.

Female genitalia. Sternite VII (Fig. 4C), in ventral view, approximately rectangular; posterior margin with prominent rounded median lobe. Pygofer (Fig. 4D), in lateral view, higher than long; subtriangular; ventral margin twice longer than dorsal margin; dorsal margin with convex median portion; with long macrosetae concentrated at apical half; without microsetae; apex acute. First valvifer (Fig. 4E) subtrapezoidal. First valvula (Fig. 4E), in lateral view, expanded apically; ventral interlocking device located on basal third of blade; dorsal sculptured area on apical fourth, apical portion (Fig. 4F) with dorsal sculptured area strigate; apex acute. Second valvifer (Fig. 4I) three times higher than long. Second valvula (Figs. 4G and 4H), in lateral view, with apical half expanded, narrowing to apex; dorsal margin with 24 separate subtriangular teeth without denticles (single specimen dissected); duct area with maculose sculpturing; ventral margin without preapical prominence or denticles; apex acute. Third valvula (Fig. 4I) with basal half distinctly narrower than apical half; microsetae distributed on ventral margin and dorsal margin near apex; one apical macroseta; apex acute.

Remarks. *Portanus tambopata* **sp. nov.** is very similar to *Portanus bifurcus* Carvalho & Cavichioli, 2017, both species sharing: (1) a similar color pattern; and (2) posterior margin of male pygofer truncate with ventral lobe. However, the new species can be distinguished from the latter and other *Portanus* species by its posterior margin of male pygofer lobe with subquadrate ventral lobe bearing a long and slender process directed posterodorsally (Fig. 3C) (in *P. bifurcus*, posterior margin of male pygofer lobe with ventral lobe acute without slender process) and aedeagus apex with single bifurcated process directed ventrally, with rami apices turned outwardly like an anchor (Figs. 3H–3J) (in *P. bifurcus* aedeagus apex has pair of bifurcated processes, which have apices directed ventrally).

Etymology. The species epithet is a reference to Tambopata National Reserve, area from where the type series was collected. The species epithet is treated as a noun in apposition.

Material studied. Holotype. 1 male, "**PERU**, MD [Madre de Dios], Albergue \ Refugio Amazonas \ 12°52'30"[S]/69°24'35"[W] \ 231 m 28.iii.2016 \ D. Couceiro", "Malaise Trap" (MUSM). **Paratypes.** 1 female, same data as holotype, except: 241 m 01.xii.2016", "WIRED AMAZON \ PROJECT \ MALAISE TRAP" (MUSM); 1 female, same data as preceding, except

"231 m 15.v.2016" (DZRJ); 1 male, same data as holotype, except "02.x.2016" (MUSM); 2 males, same data as holotype, except "12.iv.2016; WIRED AMAZON \ PROJECT \ MALAISE TRAP" (DZRJ); 1 male, same data as preceding, except "26.ii.2016 \ J. Grados" (MUSM).

Checklist of Portanini from Peru

1) *Metacephalus albocrux* DeLong & Martinson, 1973
Distribution. Brazil (*Souza, Takiya & Felix, 2017*); Peru: Cusco [**New Record**], Ucayali (type locality: Pucallpa), and San Martín [**New Record**] Departments).
Material studied. PERU: 2 males, San Martín Prov., Concervación Mun. Zona Barreal, 23km S Picota, in dry forest, 7º4.88'S 76º18.89'W, 335m, Malaise, 6-15.iii.2005, M.E. Irwin and J.D. Vasquez (INHS). 2 males, Cusco, 3rd Km E Quincemil, 13º13'3"S 70º43'40"W, 633m, 20.viii-01.ix.2012, malaise, RR Cavichioli, JA Rafael, APM Santos & DM Takiya (DZRJ). 1 male, Cusco, Puente Inambari, 13º10'53"S 70º23'06"W, 365m 19.VIII.2012 light, APM Santos & DM Takiya (MUSM).

2) *Metacephalus bicornis* (Carvalho & Cavichioli, 2003)
(Figures 5I and 5J)
Distribution. Brazil (type locality: Vilhena, Rondônia State); Peru [**New Record**]: Madre de Dios Department.
Material studied. PERU: 1 male, Madre de Dios, Refugio Amazonas, Albergue, 12°52'30"S 69°24'35"W 231 m, 03.ix.2016, D. Couceiro, Malaise Trap.; Wired Amazon Project (MUSM). 1 male, same data as preceding, except 12.iv.2016 (DZRJ). 1 male, same data as preceding, except 14.x.2014, PAN Trap (MUSM).

3) *Metacephalus eburatus* (Kramer, 1964)
Distribution. Brazil (*Carvalho & Cavichioli, 2009*); Colombia (*Freytag & Sharkey, 2002*); Guyana (*Felix & Mejdalani, 2016*); Panama (type locality: Fort. Gulick, Canal Zone); Peru [**New Record**]: Loreto Department; Venezuela (*Kramer, 1964*).
Material studied. PERU: 2 males and 1 female, Dept. Loreto, San Juan de Pamplona, 35 km S Yurimaguas, Malaise in Oil Palm/Cacao Plantation, 6º7'38"S 76º11'26"W, 170m, 11-18.iv.2009, malaise, G. Antón, A. Maya, M.E. Irwin (INHS). 1 male, same data as preceding (DZRJ).

4) *Metacephalus elegans* (Kramer, 1961)
(Figures 5K and 5L)
Distribution. Brazil (*Carvalho & Cavichioli, 2009*); Colombia (*Freytag & Sharkey, 2002*); Peru [**New Record**]: Amazonas and Madre de Dios Departments; Venezuela (type locality: Culebra Community, Duida-Marahuaca National Park, Amazonas State).

Material studied. PERU: 1 male and 1 female, Madre de Dios, Refugio Amazonas, Albergue, 12°52’30”S 69°24’35”W 231 m, 03.v.2016, D. Couceiro, Malaise Trap.; Wired Amazon Project (MUSM). 1 male, Dept. Amazonas, Distr. Aguas Verdes, Bagua/Tarapoto Rd (5N) AT km 403, 5º41’23”S 77º38’13”W, 1125m, Malaise, 19-26.ix.2008, M.E. Irwin, G. Antón, A. Maya (INHS).

5) *Metacephalus facetus* (Kramer, 1961)

(Figures 6A and 6B)

Distribution. Brazil (*Carvalho & Cavichioli, 2009*); Colombia (*Freytag & Sharkey, 2002*); Peru [**New Record**]: Amazonas, Cusco and Madre de Dios Departments; Venezuela (type locality: Upper Cunucunuma River, Tapara, Amazonas State).

Material studied. **PERU**: 1 male, Dept. Amazonas, Distr. Aguas Verdes, Bagua/Tarapoto Rd (5N) AT km 403, 5º41’23”S 77º38’13”W, 1125m, Malaise, 24-31.x.2008, M.E. Irwin, G. Antón, A. Maya (INHS). 1 male, same data as preceding, except 8-15.vii.2008.1 male, same data as preceding, except 20-27.ii.2009 (INHS). 1 male, same data as preceding, except 6-13.iii.2009 (DZRJ). 1 male, Cusco, 19rd km W Quincemil, Rio Araza Tributary, 13º20’10”S 70º50’57”W, 874m, 23-31.viii.2012, malaise, RR Cavichioli, JA Rafael, APM Santos & DM Takiya (DZRJ). 1 male, Madre de Dios, Refugio Amazonas, Albergue, 12°52’30”S 69°24’35”W 231 m, 01.vi.2016, D. Couceiro, PAN Trap.; Wired Amazon Project (MUSM). 1 male, same data as preceding, except 01.xii.2006 (MUSM). 2 males, same data as preceding, except 02.x.2016 (MUSM). 3 males, same data as preceding, except 03.v.2016, malaise (DZRJ). 1 female, same data as preceding, except 03.xi.2016, malaise (DZRJ). 1 male, same data as preceding, except 09.iii.2016, 241m, malaise (MUSM). 1 male, same data as preceding, except 12.ii.2016, J. Grados (MUSM). 3 males, same data as preceding, except 12.iv.2016, malaise (DZRJ). 1 male, same data as preceding, except 15.xi.2016 (MUSM). 1 male, same data as preceding, except 17.x.2016 (MUSM). 1 male, same data as preceding, except 19.iii.2016, malaise, J. Grados (MUSM). 1 male, same data as preceding, except 21.xi.2016 (MUSM). 1 male, same data as preceding, except 08.iv.2018, 241m, malaise, J. Shoobridge (MUSM). 1 male, same data as preceding, except 21.vi.2017, 241m, malaise (MUSM). 1 female, same data as preceding, except 29.iii.2017, 241m, J. Shoobridge (MUSM). 1 female, same data as preceding, except 24.ii.2017, malaise, 241m, J. Grados (DZRJ). 1 female, same data as preceding, except 25.v.2018, 241m, J. Shoobridge (DZRJ).

6) *Metacephalus longicornis* (Osborn, 1923)

(Figures 6C and 6D)

Distribution. Argentina (*Linnavuori, 1959*); Bolivia (type locality: Sara Province, Santa Cruz de La Sierra Department); Brazil (*Carvalho & Cavichioli, 2009*; *Felix et al., 2020*); Peru [**New Record**]: Loreto, Madre de Dios and San Martín Departments; Venezuela (*Kramer, 1964*).

Material studied. PERU: 1 male, Madre de Dios, Refugio Amazonas, Albergue, 12°52’30”S 69°24’35”W 241 m, 8.iv.2018, D. Couceiro, malaise; Wired Amazon Project (MUSM). 1 male,

same label, except 18.iii.2017, J. Grados (DZRJ). 8 males and 2 females, Dept Loreto, San Juan de Pamplona, 35 km S Yurimaguas, Malaise in Oil Palm/Cacao Plantation, 6º7’38”S 76º11’26”W, 170m, 11-18.iv.2009, G. Antón, A. Maya, M.E. Irwin (INHS). 3 males and 1 female, same data as preceding (DZRJ). 10 males and 1 female, San Martín Prov., Concervación Mun. Zona Barreal, 23km S Picota, in dry forest, 7º4.88’S 76º18.89’W, 335m, Malaise, 6-15.iii.2005, M.E. Irwin and J.D. Vasquez (USNM). 2 males, same data as preceding (DZRJ).

7) *Metacephalus mamaquilla* sp. nov.

(Figures 1, 2, 5A–5D)

Distribution. Peru: Madre de Dios Department.

Material studied. *See above*.

8) *Metacephalus sakakibarai* Souza, Takiya & Felix 2017

(Figures 6E and 6F)

Distribution. Brazil (type locality: Ipixuna, Amazonas State); Peru [**New Record**]: Cusco and Madre de Dios Departments.

Material studied. **PERU**: 1 male, Madre de Dios, Refugio Amazonas, Albergue, 12°52’30”S 69°24’35”W 231 m, 02.x.2016, D. Couceiro, malaise; Wired Amazon Project (MUSM). 2 males, Cusco, 19rd km W quincemil, Rio Araza Tributary, 13º20’10”S 70º50’57”W, 847 m, 23-31.viii.2012, malaise, RR Cavichioli, JA Rafael, APM Santos & DM Takiya (MUSM). 2 males, same data as preceding (DZRJ).

9) *Metacephalus variatus* (Carvalho & Cavichioli, 2003)

(Figures 6G and 6H)

Distribution. Brazil (type locality: Ouro Preto d'Oeste, Rondônia State); Peru: Madre de Dios (*Carvalho & Cavichioli, 2009*) and San Martín [**New Record**] departments.

Material studied. PERU: 44 males, San Martín Prov., Concervación Mun. Zona Barreal, 23km S Picota, in dry forest, 7º4.88’S 76º18.89’W, 335m, Malaise, 6-15.iii.2005, M.E. Irwin and J.D. Vasquez (INHS). 10 males, same data as preceding (DZRJ). 1 male, Madre de Dios, Refugio Amazonas, Albergue, 12°52’30”S 69°24’35”W 241 m, 18.iii.2017, J. Grados, malaise; Wired Amazon Project (MUSM). 1 male, same label, except 19.iii.2016 (DZRJ).

10) *Portanus acerus* DeLong, 1976

Distribution. Bolivia (type locality: San Esteban, Santa Cruz de La Sierra, Santa Cruz Department); Peru [**New Record**]: Loreto and San Martín departments.

Material studied. PERU: 1 male, Dept Loreto, San Juan de Pamplona, 35 km S Yurimaguas, Malaise in Oil Palm/Cacao Plantation, 6º7’38”S 76º11’26”W, 170m, 11-18.iv.2009, G. Antón, A. Maya, M.E. Irwin (INHS). 15 males, San Martín Prov., Concervación Mun. Zona Barreal, 23km S Picota, in dry forest, Malaise, 7º4.88’S 76º18.89’W, 335m, 6-15.iii.2005, M.E. Irwin and J.D. Vasquez (INHS). 5 males, same data as preceding (DZRJ).

11) *Portanus avis* DeLong, 1980
Distribution. Peru (type locality: Sinchona [precise locality unknown]).

12) *Portanus bilineatus* DeLong, 1982
Distribution. Peru (type locality: Sinchona [precise locality unknown]).

13) *Portanus boliviensis* (Baker, 1923)
Distribution. Argentina (*Linnavuori, 1959*); Bolivia (type locality: Las Juntas, Santa Cruz de La Sierra Department); Brazil (*Souza & Takiya, 2014*); Peru: Vilcanota [probably Cusco Department] (*Linnavuori, 1959*).

14) *Portanus cellus* DeLong, 1980
Distribution. Peru (type locality: Sinchona [precise locality unknown]).

15) *Portanus cephalatus* DeLong, 1980
Distribution. Peru (type locality: Sinchona [precise locality unknown]).

16) *Portanus dentatus* DeLong, 1980
Distribution. Peru: Sinchona (type locality [precise locality unknown]) and Amazonas Department [**New Record**].
Material studied. PERU: 1 male, Dept. Amazonas, Distr. Aguas Verdes, Bagua/Tarapoto Rd (5N) AT km 403, 5º41’23”S 77º38’13”W, 1125m, Malaise, 24-31.x.2008, M.E. Irwin, G. Antón, A. Maya (INHS). 2 males, same label data, except, 12-19.ix.2008 (INHS). 3 males and 1 female, same label data, except, 29.v-5.vi.2009 (DZRJ).

17) *Portanus inflatus* DeLong & Linnavuori, 1978
Distribution. Peru: Sinchona (type locality [precise locality unknown]) and Pasco Department [**New Record**].
Material studied. PERU: 1 male, Pasco Department, P.N. Yanachaga Chemillén, Puesto de Control Huampal, on windows, at night, 06.x.2002, 10º11’08” S 75º34’25” W, 1050m, R.A. Rakitov (INHS).

18) *Portanus ocellatus* Carvalho & Cavichioli, 2003
(Figures 6I and 6J)
Distribution. Brazil (type locality: Sinop, Mato Grosso State); Peru [**New Record**]: Cusco and Madre de Dios Departments.
Material studied. PERU: 1 male, Cusco, Puente Inambari, 13º10’53”S 70º23’06”W, 365m 19.VIII.2012 light, APM Santos & DM Takiya (MUSM). 1 male, Madre de Dios, Refugio Amazonas, Albergue, 12°52’30”S 69°24’35”W 241 m, 09.iii.2016, D. Couceiro, Malaise Trap;

Wired Amazon Project (MUSM). 3 males, same data as preceding, except 12.iv.2016 (MUSM). 1 male, same data as preceding, except 19.iv.2016 (MUSM). 1 male, same data as preceding, except 21.vi.2016 (MUSM). 1 female, same data as preceding, except 28.viii.2016 (MUSM). 2 males and 2 females, same data as preceding, except 02.x.2016 (DZRJ). 1 male, same data as preceding, except 03.xi.2016 (DZRJ).

19) *Portanus retusus* Linnavuori & DeLong, 1979

Distribution. Bolivia (type locality: Lamba, Clapare (sic!) [Chapare] Province, Cochabamba Department); Peru [**New Record**]: Cusco Department.

Material studied. PERU: 1 male and 1 female, Cusco, Ttio, 13º31'54"S 70º53'55"W, 2000m, Light, 30.viii.2012, APM Santos & DM Takiya (MUSM).

20) *Portanus sagittatus* Carvalho & Cavichioli, 2004

(Figures 6K and 6L)

Distribution. Brazil (type locality: Ouro Preto d'Oeste, Rondônia State); Peru [**New Record**]: Cusco and Madre de Dios departments.

Material studied. PERU: 2 males, Madre de Dios, Mazuco, 12RD km E Mazuco, PT e Amanapu, 13º2'51.1"S 70º20'45.9"W, 382m, malaise, 18-22.viii.2012, R Cavichioli, JA Rafael, APM Santos & DM Takiya (MUSM). 2 males, dame data as preceding (DZRJ). 1 male, Cusco, 3rd Km E Quincemil, 13º13'3"S 70º43'40"W, 633m, 20.viii-01.ix.2012, malaise, RR Cavichioli, JA Rafael, APM Santos & DM Takiya (MUSM). 1 male, Madre de Dios, Refugio Amazonas, Albergue, 12°52'30"S 69°24'35"W 231 m, 03.v.2016, D. Couceiro, Malaise Trap.; Wired Amazon Project (MUSM). 1 male, same data as preceding, except 241 m, 21.vi.2017 (DZRJ).

21) *Portanus tambopata* sp. nov.

(Figures 3, 4, 5E–5H)

Distribution. Peru: Madre de Dios Department.

Material studied. *See above*.

22) *Portanus uhleri* Kramer, 1964

Distribution. Argentina (type locality: Loreto, Misiones Province); Peru [**New Record**]: San Martín Department.

Material studied. PERU: 17 males and 1 female, San Martín Prov., Concervación Mun. Zona Barreal, 23km S Picota, in dry forest, 7º4.88'S 76º18.89'W, 335m, Malaise, 6-15.iii.2005, M.E. Irwin and J.D. Vasquez (INHS). 5 males, same data as preceding (DZRJ).

Additional and comparative material examined

Portanus bifurcus. 1 male, **BRASIL**: Amazonas, Tefé, Várzea, 1-5.xi.2016, 03º45'18.94"S 61º43'2.82"W Malaise, JA Oliveira, DMM Mendes, JA Rafael, cols (INPA).

Discussion

The present revision of leafhopper material collected in Tambopata National Reserve and Peruvian material from different collections, resulted in the finding of two undescribed species and a great number of new records for known species from Peru. Portanini, with nine species recorded until the present work, now have 22 species recorded for this country. The majority of Portanini species are only known from original male genitalia drawings and/or descriptions. Because of this, pictures of dorsal and lateral habitus of species of Portanini collected from Tambopata National Reserve are provided, to help in the identification of specimens for future studies with this tribe.

Cicadomorpha is an understudied group in South America, with representatives of several lineages not having been studied for decades or centuries, and those that are currently being studied are far too diverse and have a great number of undescribed species (*Freytag & Sharkey, 2002*; *Costa & Lozada, 2010*; *Bartlett et al., 2018*). For the particular case of leafhoppers of Peru, only two checklists exist, recording 634 species of some subfamilies of Cicadellidae (*Lozada, 1992*; *Lozada, 1997*), however, this number seems to be outdated due to the lack of complete studies for this group that could reveal a much higher diversity (*Costa & Lozada, 2010*). The same probably applies to the currently 679 leafhopper species recorded from Colombia (*Freytag & Sharley, 2002*). Given the size of the country, even the approximately 1,800 leafhopper species recorded from Brazil, is also known to be completely underestimated (*Takiya et al., 2020*).

Conclusions

This study more than doubles the number of portanine leafhoppers recorded from Peru. It definitely adds to the knowledge about leafhoppers from the Neotropical region, with the description of new species, new records, and habitus photos of Portanini specimens. Our results indicate the necessity of more taxonomic studies to better document the biodiversity from this megadiverse region.

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Figure 1

Metacephalus mamaquilla sp. nov., male holotype.

(A) Head and anterior thorax, ventral view. (B) Forewing, dorsal view. (C) Pygofer and anal tube, lateral view. (D) Valve and subgenital plates, ventral view. (E) Connective and styles, dorsal view. (F) Style, lateral view. (G) Aedeagus, lateral view. (H) Aedeagus , dorsal view. (I) Aedeagus, posterior view. Scale bars: (A–B) 1 mm; (C–I) 0.2 mm.

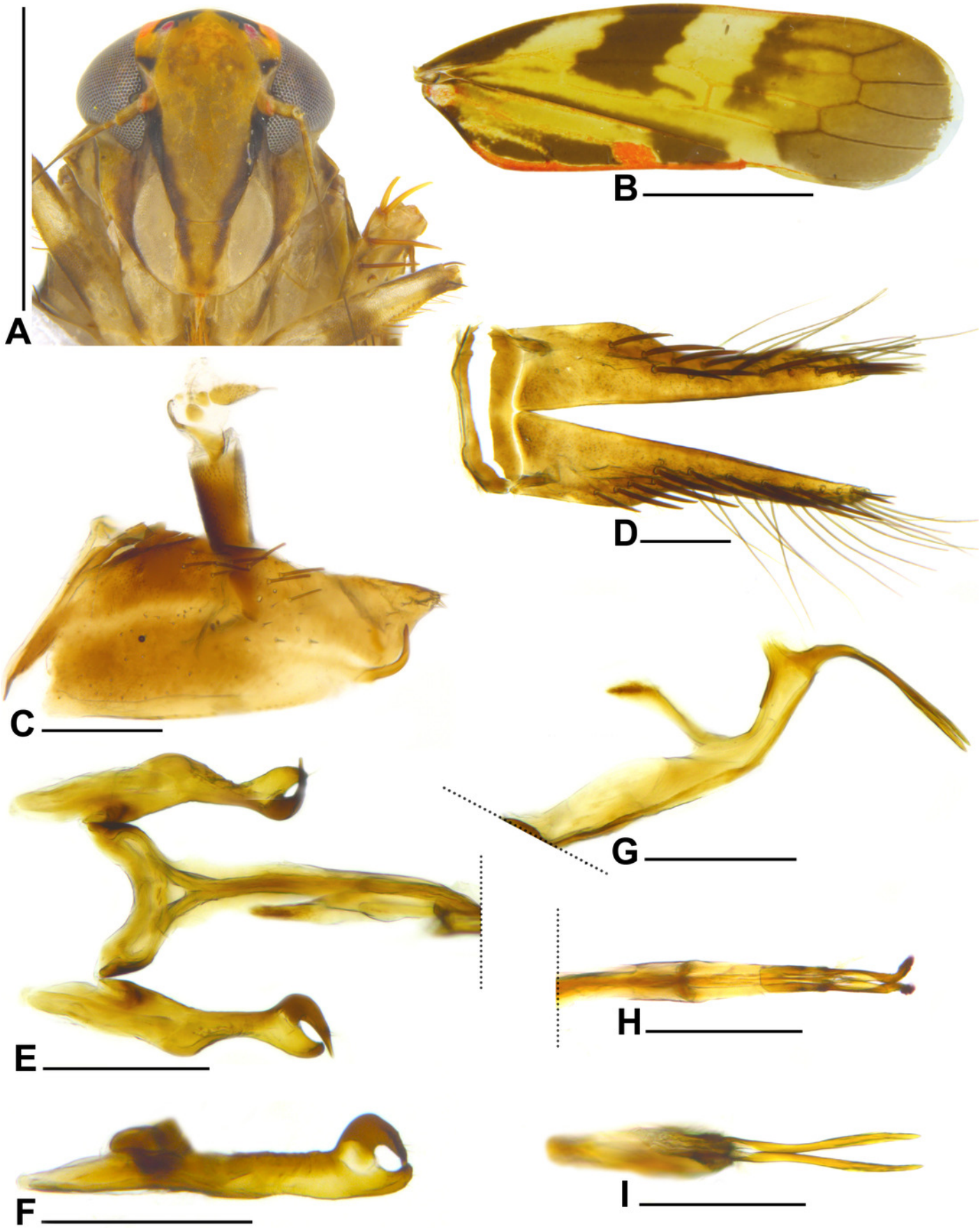
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Figure 2

Metacephalus mamaquilla sp. nov., female paratype.

(A) Head and anterior thorax, ventral view. (B) Forewing, dorsal view. (C) Sternite VII, ventral view. (D) Pygofer and anal tube, lateral view. (E) First valvifer and first valvula, lateral view. (F) Apical portion of first valvula, lateral view. (G) Second valvula, lateral view. (H) Apical portion of second valvula, lateral view. (I) Second valvifer and gonoplac, lateral view. Scale bars: (A–B) 1 mm; (C–I) 0.2 mm.

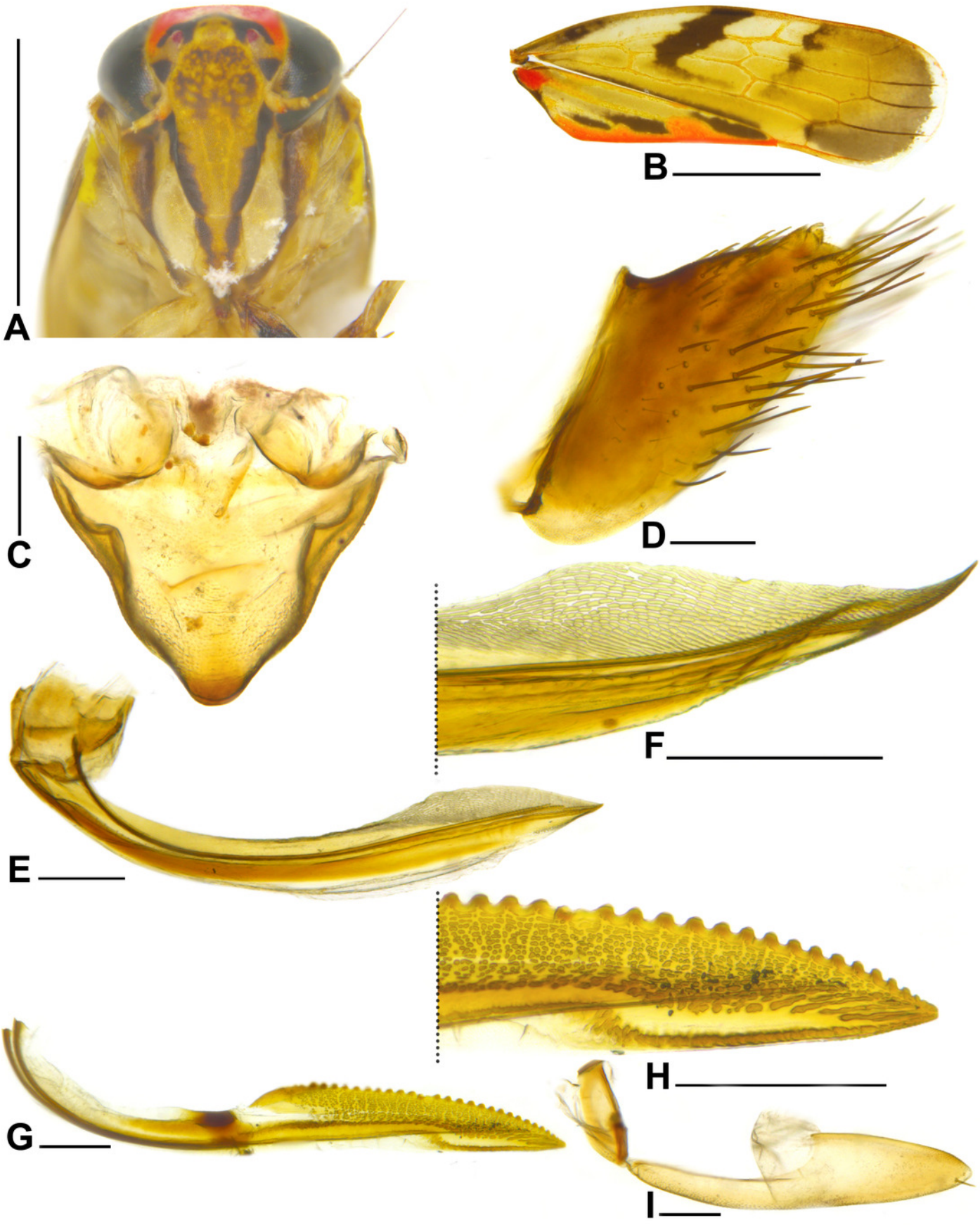
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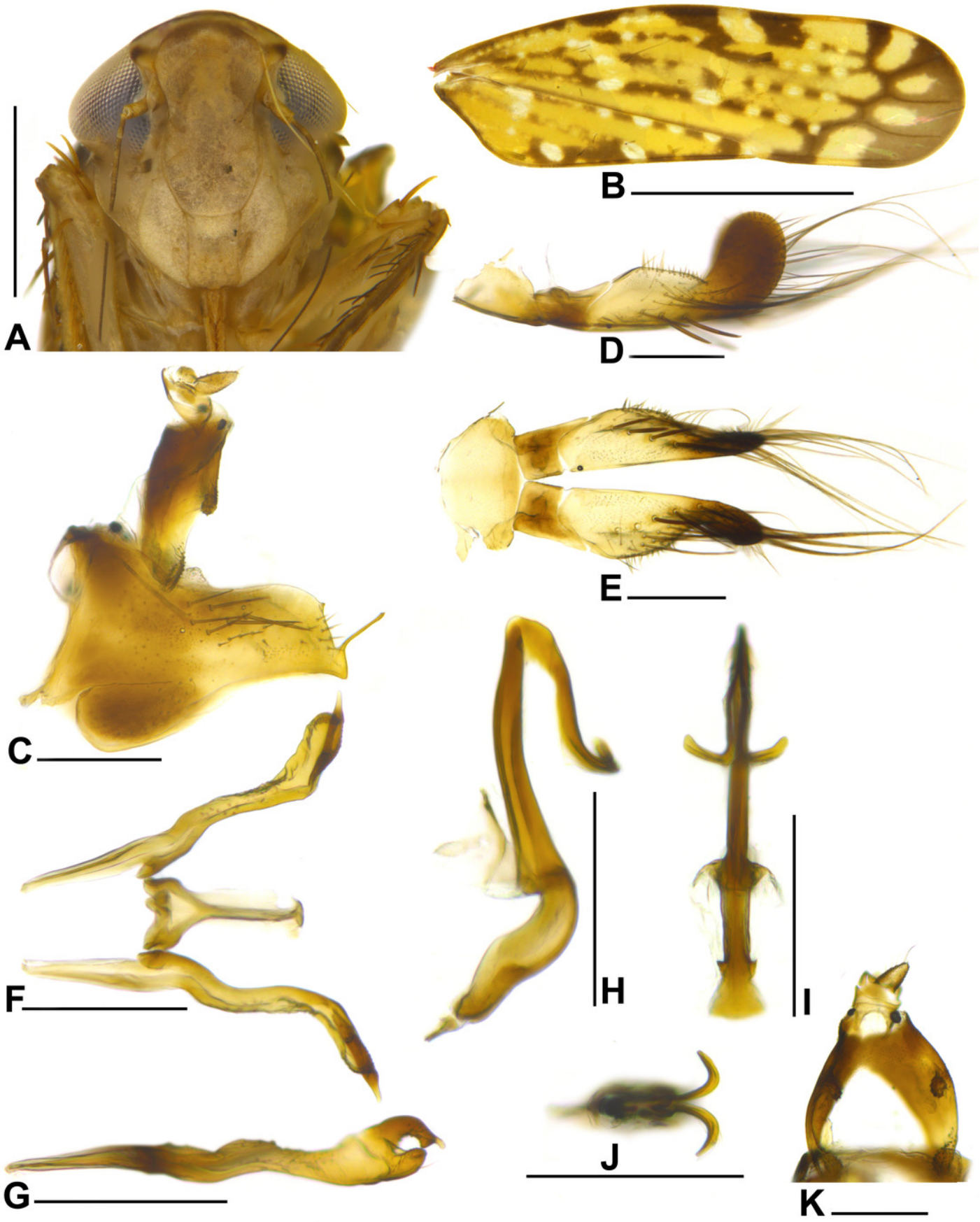
Figure 3

Portanus tambopata sp. nov., male holotype.

(A) Head and anterior thorax, ventral view. (B) Forewing, dorsal view. (C) Pygofer and anal tube, lateral view. (D) Valve and subgenital plate, lateral view. (E) Valve and subgenital plates, ventral view. (F) Connective and styles, dorsal view. (G) Style, lateral view. (H) Aedeagus, lateral view. (I) Aedeagus, posterior view. (J) Aedeagus, dorsal view. (K) Anal tube, ventro-posterior view. Scale bars: (A–B) 1 mm; (C–K) 0.2 mm.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K

Figure 4

Portanus tambopata sp. nov., female paratype.

(A) Head and anterior thorax, ventral view. (B) Forewing, dorsal view. (C) Sternite VII, ventral view. (D) Pygofer and anal tube, lateral view. (E) First valvifer and first valvula, lateral view. (F) Apical portion of first valvula, lateral view. (G) Second valvula, lateral view. (H) Apical portion of second valvula, lateral view. (I) Second valvifer and gonoplac, lateral view. Scale bars: (A–B) 1 mm; (C–I) 0.2 mm.

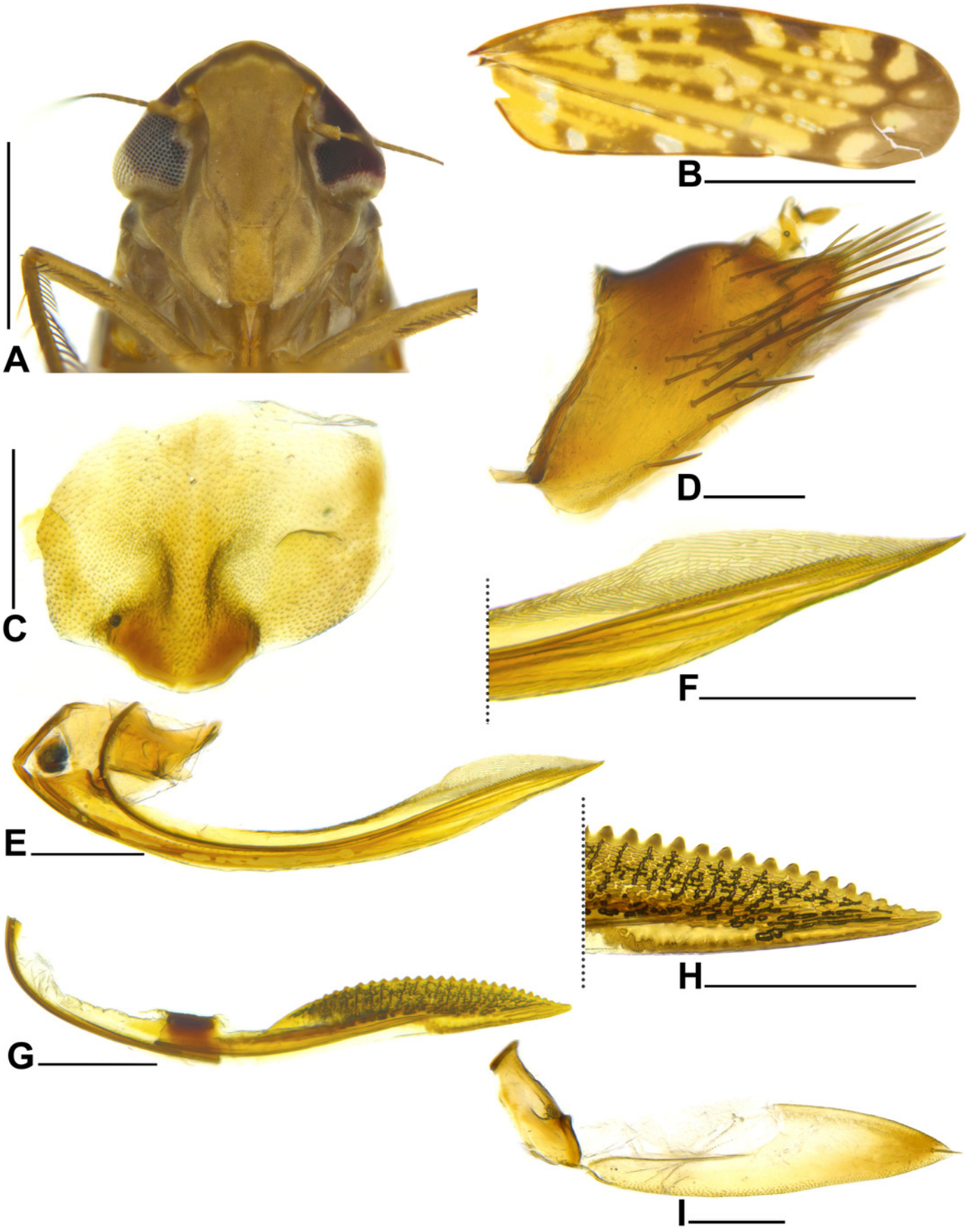
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Figure 5

Dorsal and lateral habitus of Portanini species recorded from Tambopata National Reserve from Peru.

(A–B) *Metacephalus mamaquilla* **sp. nov.**, male holotype. (C–D) *Metacephalus mamaquilla* **sp. nov.**, female paratype. (E–F) *Portanus tambopata* **sp. nov.**, male holotype. (G–H) *Portanus tambopata* **sp. nov.**, female paratype. (I–J) *Metacephalus bicornis* (Carvalho & Cavichioli, 2003), male. (K–L) *Metacephalus elegans* (Kramer, 1961), male. Scale bars: 1 mm.

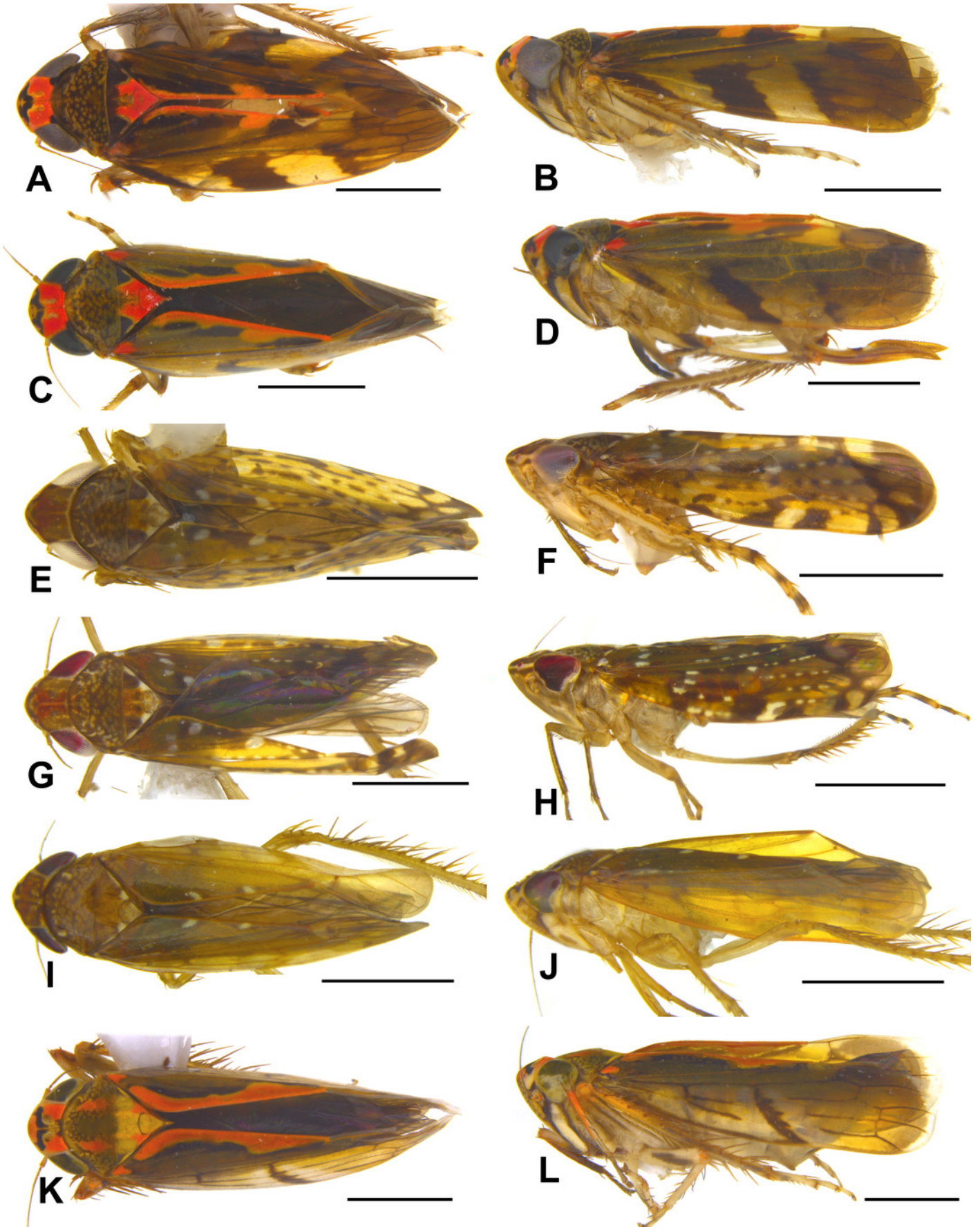
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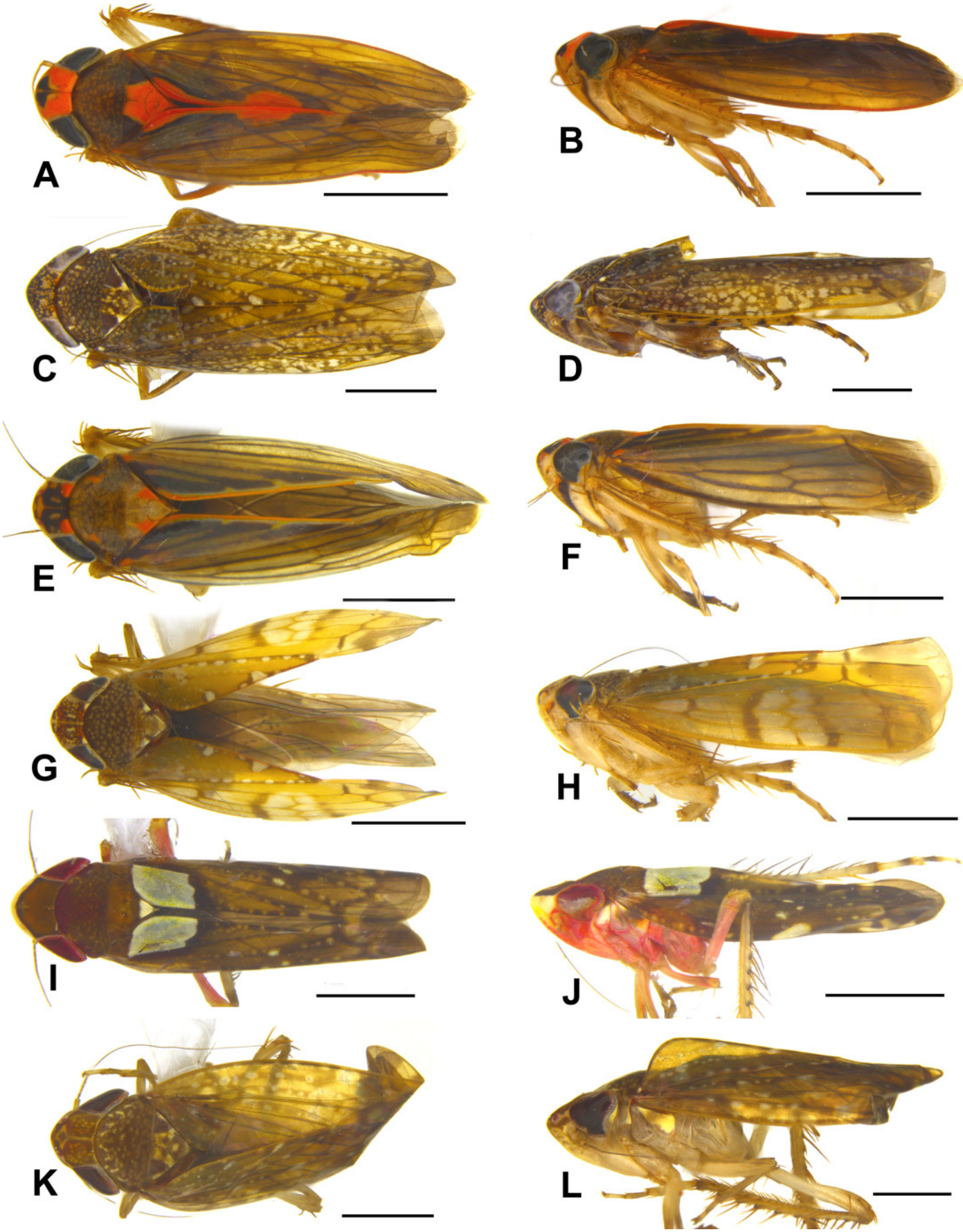
Figure 6

Dorsal and lateral habitus of Portanini species recorded from Tambopata National Reserve from Peru.

(A–B) *Metacephalus facetus* (Kramer, 1961), male. (C–D) *Metacephalus longicornis* (Osborn, 1923), male. (E–F) *Metacephalus sakakibarai* Souza, Takiya & Felix 2017, male. (G–H) *Metacephalus variatus* (Carvalho & Cavichioli, 2003), male. (I–J) *Portanus ocellatus* Carvalho & Cavichioli, 2003, male. (K–L) *Portanus sagittatus* Carvalho & Cavichioli, 2004, male. Scale bars: 1 mm.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