

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

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19 **Abstract**

20 Portanini *Linnavuori, 1959* is a small tribe of neotropical leafhoppers that includes two genera:
21 *Portanus* Ball, 1932 and *Metacephalus* Delong & Martinson, 1973. Herein, a checklist of
22 portanines from Peru is given, including several new species records for the country, elevating
23 the known diversity from nine to 22 species. In addition, four species have their department
24 ranges expanded in Peru. Two new portanine species are also described: *Metacephalus*
25 *mamaquilla* **sp. nov.** and *Portanus tambopata* **sp. nov.** both from Tambopata National Reserve,
26 Madre de Dios, Peru and we make available habitus photos of other Portanini species from this
27 reserve.
28

29 **Introduction**

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

37 ~~Included in Aphrodinae subfamily~~, Portanini *Linnavuori (1959)* is one of the leafhopper
38 tribes of Aphrodinae (Dietrich, 2005) erected by *Linnavuori (1959)* and restricted to the
39 Neotropical region. Portanines can be recognized by their long and slender bodies; their crown

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40 triangularly produced; their ocelli on anterior margin of head, distant from the eyes; and the
41 antennae unusually long (Linnavuori, 1959; Felix & Mejdalani, 2016). Currently, the tribe
42 include 63 valid species divided into two genera: *Portanus* Ball, 1932 with 49 and *Metacephalus*
43 DeLong & Martinson, 1973, with 49 and 14 valid species respectively (Felix & Mejdalani, 2016;
44 Souza, Takiya & Felix, 2017; Carvalho & Cavichioli, 2017; Freytag, 2017; Felix et al., 2020).
45 Members of *Metacephalus* can be distinguished from *Portanus* by the following set of male
46 features (Carvalho & Cavichioli, 2009): (1) pygofer strongly produced posteriorly, usually with
47 a pair of spiniform processes on posteroventral margin (pygofer slightly produced and with
48 variable posterior margin in *Portanus*); (2) subgenital plates triangular, without transverse
49 unpigmented line at basal third (subgenital plates with transverse unpigmented line at basal third
50 in *Portanus*); and (3) connective V-shaped (T-shaped in *Portanus*).

51 The leafhopper fauna of the Neotropical region is still poorly known with and,
52 approximately 5,000 described species are described, but there can be easily be 5,000 to 10,000
53 undescribed species in the region, and perhaps many more (Freytag & Sharkey, 2002). Peru has
54 is one of the most megadiverse leafhopper faunas countries in the Neotropical region with and
55 currently only 634 species of which of some groups of leafhoppers are recorded from there, with
56 only nine species of Portanini are recorded (Linnavuori, 1959; DeLong & Martinson, 1973;
57 DeLong & Linnavuori, 1978; DeLong, 1980; DeLong, 1982; Lozada, 1992; Carvalho &
58 Cavichioli, 2009; Costa & Lozada, 2010; Felix & Mejdalani, 2016; Souza, Takiya & Felix,
59 2017).

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

66 **Materials & Methods**

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

73 For species identification, male genitalia were prepared following Oman (1949), where
74 the abdomen is cleared in 10% KOH hot solution for some minutes and washed for a short time
75 in water. For the female genitalia, the protocol from Zanol (1988) was used, in which the
76 abdomen is cleared in 10% KOH at room temperature for nearly 15 hours and washed with
77 distilled water for 15 minutes. Observation and dissection of genital parts were conducted in
78 glycerin. Structures were observed and photographed with a Leica M205C stereomicroscope
79

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80 equipped with a Leica DFC450 digital camera attached. Photographs at different focal planes
81 were stacked with the software Leica Application Suite and edited in Adobe Photoshop®.
82 Studied genital structures were preserved in glycerin within microvials attached to the
83 specimens. Morphological terminology follows *Dietrich (2005)*.

84 The electronic version of this article in Portable Document Format (PDF) will represent a
85 published work according to the International Commission on Zoological Nomenclature (ICZN),
86 and hence the new names contained in the electronic version are effectively published under that
87 Code from the electronic edition alone. This published work and the nomenclatural acts it
88 contains have been registered in ZooBank, the online registration system for the ICZN. The
89 ZooBank LSIDs (Life Science Identifiers) can be resolved and the associated information viewed
90 through any standard web browser by appending the LSID to the prefix <http://zoobank.org/>. The
91 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
92 the following digital repositories: PeerJ, PubMed Central and CLOCKSS."
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94

95 **Results**

96

97 **Species descriptions**

98

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

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

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

104

105 ***Metacephalus mamaquilla* sp. nov.**

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

107 (Figures 1, 2, 5A–5D)

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

109 **Diagnosis.** Male pygofer (Fig. 1C), in lateral view, subrectangular; posterior margin acute; with
110 slender and acute preapical ventral process turned dorsally. Aedeagus (Figs. 1G–1I) apex with
111 pair of long and slender divergent processes curved posteroventrally and with apices acute.

112 Female sternite VII (Fig. 2C) subtriangular; lateral margins slightly sinuous and strongly
113 convergent apically; posterior margin slightly convex.

114 **Measurements** (mm). Males (n=13)/females (n=5): body length, 5.5–6.0/5.9–6.3; crown length,
115 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
116 pronotum width, 1.3–1.4/1.4–1.6; forewing length, 4.3–4.9/ 4.8–5.2.

117 **Description.** Head (Figs. 1A, 2A, 5A–5D), in dorsal view, with anterior margin rounded; crown
118 median length approximately half to eight-tenths of interocular and three to four-tenths of
119 transocular width; lateral frontal suture reaching ocellus; epicranial suture not extended to **ocelli**

120 transverse line; texture shagreen. Pronotum (Figs. 5A and 5C) slightly wider than head; lateral
121 margin angulate; dorsolateral carina conspicuous and complete; posterior margin straight; texture
122 smooth. Mesonotum (Figs. 5A and 5C) shagreen. Forewing (Figs. 1B and 2B) with distinct
123 venation; three closed anteapical cells. Metatibia (Figs. 5B and 5D) with rows AD and PD both
124 with 10–11 long cucullate setae intercalated by 0–3 shorter cucullate setae; tibia apex with three
125 platellae between pair of outer slightly longer cucullate setae; first tarsomere slightly longer than
126 combined length of second and third ones; tarsomeres posterior margin with three, two, and zero
127 platellae, respectively, between pair of outer slightly longer setae.

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

148 **Male genitalia.** Pygofer (Fig. 1C), in lateral view, longer than high; subrectangular; posterior
149 margin acute; with few macrosetae distributed near dorsal margin and at apex; posteroventral
150 margin with slender and acute ventral process turned dorsally. Valve (Fig. 1D), in ventral view,
151 about three times wider than long; posterior margin sinuous. Subgenital plate (Fig. 1D)
152 extending slightly beyond apex of pygofer; slightly turned dorsally; in ventral view, surface with
153 uniseriate robust macrosetae and fine long microsetae. Connective (Fig. 1E), in dorsal view, Y-
154 shaped; apex fused with aedeagus preatrium. Style (Figs. 1E and 1F) with apodeme one-fifth of
155 total length; apical fifth enlarged and appearing bifid due to elongate and robust preapical lobe;
156 preapical lobe with few fine microsetae; preapical region sculptured; apex acute and curved
157 outwards, bearing robust spine. Aedeagus (Figs. 1G–1I) with long preatrium; dorsal apodeme
158 well developed, long and narrow; shaft tubular; apex with pair of long and slender divergent

Commented [MW5]: Do you mean "extended to transverse line between ocelli"?

Commented [MW6]: It is more usual to put color first before structure. Here it is between to different structure, external and genitalia

Commented [MW7]: As the lorum and gena are part of the face they should be separated by a semicolon.

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159 processes curved posteroventrally with apices acute. Anal tube segment X (Fig. 1C) with base
160 conical and remainder tubular; with dentiform microsculpturing throughout.

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

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

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

186 **Material studied.** **Holotype.** 1 male, “PERU, MD [Madre de Dios], Albergue \ Refugio
187 Amazonas \ 12°52’30”[S]/69°24’35”[W] \ 231 m 20.ii.2016 \ J. Grados”, “WIRED AMAZON \
188 PROJECT \ PAN TRAP” (MUSM). **Paratypes.** 1 male, same data as holotype (DZRJ); 1 male,
189 same data as holotype, except “19.ii.2016” (MUSM); 1 male, same data as holotype, except
190 “29.ii.2016” (MUSM); 1 male, same data as holotype, except “241 m 05.iii.2016 \ D. Couceiro”
191 (MUSM); 1 male, same data as holotype, except “05.x.2016 \ D. Couceiro” (MUSM); 1 male, 2
192 females, same data as holotype, except “17.x.2016 \ D. Couceiro” (DZRJ); 3 males, same data as
193 holotype, except “06.xi.2016 \ D. Couceiro” (DZRJ); 1 female, same data as holotype, except
194 “241 m 02.iii.2017” (MUSM); 1 male, same data as holotype, except “241 m 04.iii.2017”
195 (MUSM); 1 male, same data as holotype, except “241 m 10.iv.2017 \ D. Couceiro” (MUSM); 1
196 female, same data as holotype, except “241 m 20.iv.2017 \ D. Couceiro” (MUSM); 1 male, 1
197 female, same data as holotype, except “241 m 26.iv.2017 \ D. Couceiro” (MUSM).

198

Commented [MW9]: Isn't this more or less the case in all leafhoppers?

199 **Portanus Ball, 1932**

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

201

202 *Portanus tambopata* sp. nov.

203 urn:lsid:zoobank.org:act:9C799CBA-FD0C-4DB3-931D-7FB7ECA440E6

204 (Figures 3, 4, 5E–5H)

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

206 **Diagnosis.** Male pygofer (Fig. 3C), in lateral view, subtriangular; posterior margin truncate, with
207 small dorsal teeth and subquadrate ventral lobe bearing slender and acute process directed
208 posteriorly. Aedeagus (Figs. 3H–3J) preatrium slightly sinuous; shaft enlarged at base, narrowing
209 towards apex; apex with single bifurcated process turned ventrally, sinuous and with apices
210 turned outwards, resembling an anchor (Fig. 3I). Male anal tube (Figs. 3C and 3K) segment X
211 with pair of small, lateral, strongly sclerotized toothed lobes at middle third. Female sternite VII
212 (Fig. 4C) approximately rectangular; posterior margin with prominent rounded median lobe.

213 **Measurements** (mm). Males (n=5)/females (n=2): body length, 4.3–4.8/4.6–4.7; crown length,
214 0.4/0.4; transocular width, 1.1/1.2; interocular width, 0.5–0.6/0.6; maximum pronotum width,
215 1.0–1.1/1.1; forewing length, 3.3–3.6/3.5–3.7.

216 **Description.** Head (Figs. 3A, 4A, 5E–5H), in dorsal view, anterior margin angulate; with crown
217 median length approximately seven to eight-tenths of interocular and three to four-tenths of
218 transocular width; lateral frontal suture reaching ocellus; epicranial suture not extended to ocelli
219 transverse line; texture shagreen. Pronotum (Figs. 5E and 5G) subequal to head width; lateral
220 margin angulate; posterior margin straight; texture smooth with transverse striae. Mesonotum
221 (Figs. 5E and 5G) shagreen. Forewing (Figs. 3B and 4B) with distinct venation; with three closed
222 anteapical cells, median anteapical cell slightly longer than others. Metatibia (Figs. 5F and 5H)
223 with row AD with 9–11 long cucullate setae intercalated by 3–4 shorter setae; PD row with 10
224 very long cucullate setae intercalated by one smaller long cucullate seta. First tarsomere slightly
225 longer than combined length of second and third ones; tarsomeres posterior margin with three,
226 two, and zero platellae, respectively, between pair of outer slightly longer setae.

227 **Coloration.** Crown (Figs. 5E and 5G) brown; anterior margin with dark brown line; apical third
228 with subtriangular marking between ocelli, which extends to posterior margin as a median line,
229 pale yellow; basal two-thirds with longitudinal pale-yellow line surrounded by a reddish-brown
230 area. Ocellus red. Face and gena pale brown and lorum ivory (Figs. 3A and 4A). Pronotum (Figs.
231 5E and 5G) brown, with several ivory spots. Mesonotum (Figs. 5E and 5G) brown; pair of lateral
232 triangular dark-brown maculae on anterior margin; posterolateral margin ivory. Scutellum (Figs.
233 5E and 5G) pale brown to ivory. Forewing (Figs. 3B and 4B) translucent yellowish brown; veins
234 dark brown with alternating ivory spots; five dark brown triangular maculae along costal margin;
235 apex dark brown. Thoracic venter ivory. Legs ivory; posterior apexes of tibia, first and second
236 tarsomeres brown.

237 **Male genitalia.** Pygofer (Fig. 3C), in lateral view, slightly longer than high; subtriangular;
238 posterior margin truncate, with small dorsal teeth and subquadrate ventral lobe bearing slender

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Commented [MW11]: See above comment

239 and acute process directed posteriorly; macrosetae distributed at median portion dorsally;
240 microsetae at apex. Valve (Fig. 3E), in ventral view, oblong; wider than long; anterior and
241 posterior margin convex. Subgenital plate (Figs. 3D and 3E) extending posteriorly farther than
242 pygofer apex; apical third upturned; in ventral view, basal third with transverse unpigmented
243 line; surface with few uniseriate robust macrosetae and many long and fine microsetae at apical
244 half. Connective (Fig. 3F), in dorsal view, Y-shaped; anterior margin with short median
245 basiventral triangular projection; apex truncate. Style (Figs. 3F and 3G) with apodeme long, one-
246 third of total length; apical third widened with preapical lobe elongate and robust; apex truncated
247 with digitiform process; in lateral view, subcylindrical and sinuous. Aedeagus (Figs. 3H–3J) with
248 long and slightly sinuous preatrium; dorsal apodeme not so sclerotized; shaft wider at base,
249 narrowing towards apex; apex with single bifurcated process directed ventrally, with rami
250 sinuous, half-length of shaft, with apices turned outwardly, resembling an anchor. Anal tube
251 segment X (Figs. 3C and 3K) subcylindrical; as long as pygofer; with few denticles on ventral
252 margin at base; with pair of small lateral, strongly sclerotized, toothed lobes at median third.
253 **Female genitalia.** Sternite VII (Fig. 4C), in ventral view, approximately rectangular; posterior
254 margin with prominent rounded median lobe. Pygofer (Fig. 4D), in lateral view, higher than
255 long; subtriangular; ventral margin twice longer than dorsal margin; dorsal margin with convex
256 median portion; with long macrosetae concentrated at apical half; without microsetae; apex
257 acute. First valvifer (Fig. 4E) subtrapezoidal. First valvula (Fig. 4E), in lateral view, expanded
258 apically; ventral interlocking device located on basal third of blade; dorsal sculptured area on
259 apical fourth, apical portion (Fig. 4F) with dorsal sculptured area strigate; apex acute. Second
260 valvifer (Fig. 4I) three times higher than long. Second valvula (Figs. 4G and 4H), in lateral view,
261 with apical half expanded, narrowing to apex; dorsal margin with 24 separate subtriangular teeth
262 without denticles (single specimen dissected); duct area with maculose sculpturing; ventral
263 margin without preapical prominence or denticles; apex acute. Third valvula (Fig. 4I) with basal
264 half distinctly narrower than apical half; microsetae distributed on ventral margin and dorsal
265 margin near apex; one apical macroseta; apex acute.
266 **Remarks.** *Portanus tambopata* sp. nov. is very similar to *Portanus bifurcus* Carvalho &
267 Cavichioli, 2017, both species sharing: (1) a similar color pattern; and (2) posterior margin of
268 male pygofer truncate with ventral lobe. However, the new species can be distinguished from the
269 latter and other *Portanus* species by its posterior margin of male pygofer lobe with subquadrate
270 ventral lobe bearing a long and slender process directed posterodorsally (Fig. 3C) (in *P. bifurcus*,
271 posterior margin of male pygofer lobe with ventral lobe acute without slender process) and
272 aedeagus apex with single bifurcated process directed ventrally, with rami apices turned
273 outwardly like an anchor (Figs. 3H–3J) (in *P. bifurcus* aedeagus apex has pair of bifurcated
274 processes, which have apices directed ventrally).
275 **Etymology.** The species epithet is a reference to Tambopata National Reserve, area from where
276 the type series was collected. The species epithet is treated as a noun in apposition.
277 **Material studied. Holotype.** 1 male, “PERU, MD [Madre de Dios], Albergue \ Refugio
278 Amazonas \ 12°52'30”[S]/69°24'35”[W] \ 231 m 28.iii.2016 \ D. Couceiro”, “Malaise Trap”

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279 (MUSM). **Paratypes.** 1 female, same data as holotype, except: 241 m 01.xii.2016”, “WIRED
280 AMAZON \ PROJECT \ MALAISE TRAP” (MUSM); 1 female, same data as preceding, except
281 “231 m 15.v.2016” (DZRJ); 1 male, same data as holotype, except “02.x.2016” (MUSM); 2
282 males, same data as holotype, except “12.iv.2016; WIRED AMAZON \ PROJECT \ MALAISE
283 TRAP” (DZRJ); 1 male, same data as preceding, except “26.ii.2016 \ J. Grados” (MUSM).

284

285 **Checklist of Portanini from Peru**

286

287 **1) *Metacephalus albocrux* DeLong & Martinson, 1973**

288 **Distribution.** Brazil (*Souza, Takiya & Felix, 2017*); Peru: Cusco [**New Record**], Ucayali (type
289 locality: Pucallpa), and San Martín [**New Record**] Departments).

290 **Material studied. PERU:** 2 males, San Martín Prov., Concervación Mun. Zona Barreal, 23km S
291 Picota, in dry forest, 7°4.88’S 76°18.89’W, 335m, Malaise, 6-15.iii.2005, M.E. Irwin and J.D.
292 Vasquez (INHS). 2 males, Cusco, 3rd Km E Quincemil, 13°13’3’’S 70°43’40’’W, 633m, 20.viii-
293 01.ix.2012, malaise, RR Cavichioli, JA Rafael, APM Santos & DM Takiya (DZRJ). 1 male,
294 Cusco, Puente Inambari, 13°10’53’’S 70°23’06’’W, 365m 19.VIII.2012 light, APM Santos & DM
295 Takiya (MUSM).

296

297 **2) *Metacephalus bicornis* (Carvalho & Cavichioli, 2003)**

298 (Figures 5I and 5J)

299 **Distribution.** Brazil (type locality: Vilhena, Rondônia State); Peru [**New Record**]: Madre de
300 Dios Department.

301 **Material studied. PERU:** 1 male, Madre de Dios, Refugio Amazonas, Albergue, 12°52’30’’S
302 69°24’35’’W 231 m, 03.ix.2016, D. Couceiro, Malaise Trap.; Wired Amazon Project (MUSM). 1
303 male, same data as preceding, except 12.iv.2016 (DZRJ). 1 male, same data as preceding, except
304 14.x.2014, PAN Trap (MUSM).

305

306 **3) *Metacephalus eburatus* (Kramer, 1964)**

307 **Distribution.** Brazil (*Carvalho & Cavichioli, 2009*); Colombia (*Freytag & Sharkey, 2002*);
308 Guyana (*Felix & Mejdalani, 2016*); Panama (type locality: Fort. Gulick, Canal Zone); Peru [**New**
309 **Record**]: Loreto Department; Venezuela (*Kramer, 1964*).

310 **Material studied. PERU:** 2 males and 1 female, Dept. Loreto, San Juan de Pamplona, 35 km S
311 Yurimaguas, Malaise in Oil Palm/Cacao Plantation, 6°7’38’’S 76°11’26’’W, 170m, 11-
312 18.iv.2009, malaise, G. Antón, A. Maya, M.E. Irwin (INHS). 1 male, same data as preceding
313 (DZRJ).

314

315 **4) *Metacephalus elegans* (Kramer, 1961)**

316 (Figures 5K and 5L)

317 **Distribution.** Brazil (*Carvalho & Cavichioli, 2009*); Colombia (*Freytag & Sharkey, 2002*); Peru
318 **[New Record]:** Amazonas and Madre de Dios Departments; Venezuela (type locality: Culebra
319 Community, Duida-Marahuaca National Park, Amazonas State).

320 **Material studied. PERU:** 1 male and 1 female, Madre de Dios, Refugio Amazonas, Albergue,
321 12°52'30"S 69°24'35"W 231 m, 03.v.2016, D. Couceiro, Malaise Trap.; Wired Amazon Project
322 (MUSM). 1 male, Dept. Amazonas, Distr. Aguas Verdes, Bagua/Tarapoto Rd (5N) AT km 403,
323 5°41'23"S 77°38'13"W, 1125m, Malaise, 19-26.ix.2008, M.E. Irwin, G. Antón, A. Maya
324 (INHS).

325

326 **5) *Metacephalus facetus* (Kramer, 1961)**

327 (Figures 6A and 6B)

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

331 **Material studied. PERU:** 1 male, Dept. Amazonas, Distr. Aguas Verdes, Bagua/Tarapoto Rd
332 (5N) AT km 403, 5°41'23"S 77°38'13"W, 1125m, Malaise, 24-31.x.2008, M.E. Irwin, G. Antón,
333 A. Maya (INHS). 1 male, same data as preceding, except 8-15.vii.2008. 1 male, same data as
334 preceding, except 20-27.ii.2009 (INHS). 1 male, same data as preceding, except 6-13.iii.2009
335 (DZRJ). 1 male, Cusco, 19rd km W Quincemil, Rio Araza Tributary, 13°20'10"S 70°50'57"W,
336 874m, 23-31.viii.2012, malaise, RR Cavichioli, JA Rafael, APM Santos & DM Takiya (DZRJ).
337 1 male, Madre de Dios, Refugio Amazonas, Albergue, 12°52'30"S 69°24'35"W 231 m,
338 01.vi.2016, D. Couceiro, PAN Trap.; Wired Amazon Project (MUSM). 1 male, same data as
339 preceding, except 01.xii.2006 (MUSM). 2 males, same data as preceding, except 02.x.2016
340 (MUSM). 3 males, same data as preceding, except 03.v.2016, malaise (DZRJ). 1 female, same
341 data as preceding, except 03.xi.2016, malaise (DZRJ). 1 male, same data as preceding, except
342 09.iii.2016, 241m, malaise (MUSM). 1 male, same data as preceding, except 12.ii.2016, J.
343 Grados (MUSM). 3 males, same data as preceding, except 12.iv.2016, malaise (DZRJ). 1 male,
344 same data as preceding, except 15.xi.2016 (MUSM). 1 male, same data as preceding, except
345 17.x.2016 (MUSM). 1 male, same data as preceding, except 19.iii.2016, malaise, J. Grados
346 (MUSM). 1 male, same data as preceding, except 21.xi.2016 (MUSM). 1 male, same data as
347 preceding, except 08.iv.2018, 241m, malaise, J. Shoobridge (MUSM). 1 male, same data as
348 preceding, except 21.vi.2017, 241m, malaise (MUSM). 1 female, same data as preceding, except
349 29.iii.2017, 241m, J. Shoobridge (MUSM). 1 female, same data as preceding, except 24.ii.2017,
350 malaise, 241m, J. Grados (DZRJ). 1 female, same data as preceding, except 25.v.2018, 241m, J.
351 Shoobridge (DZRJ).

352

353 **6) *Metacephalus longicornis* (Osborn, 1923)**

354 (Figures 6C and 6D)

355 **Distribution.** Argentina (*Limnavuori, 1959*); Bolivia (type locality: Sara Province, Santa Cruz de
356 La Sierra Department); Brazil (*Carvalho & Cavichioli, 2009; Felix et al., 2020*); Peru [**New**
357 **Record**]: Loreto, Madre de Dios and San Martín Departments; Venezuela (*Kramer, 1964*).
358 **Material studied. PERU:** 1 male, Madre de Dios, Refugio Amazonas, Albergue, 12°52'30"S
359 69°24'35"W 241 m, 8.iv.2018, D. Couceiro, malaise; Wired Amazon Project (MUSM). 1 male,
360 same label, except 18.iii.2017, J. Grados (DZRJ). 8 males and 2 females, Dept Loreto, San Juan
361 de Pamplona, 35 km S Yurimaguas, Malaise in Oil Palm/Cacao Plantation, 6°7'38"S
362 76°11'26"W, 170m, 11-18.iv.2009, G. Antón, A. Maya, M.E. Irwin (INHS). 3 males and 1
363 female, same data as preceding (DZRJ). 10 males and 1 female, San Martín Prov., Conservación
364 Mun. Zona Barreal, 23km S Picota, in dry forest, 7°4.88'S 76°18.89'W, 335m, Malaise, 6-
365 15.iii.2005, M.E. Irwin and J.D. Vasquez (USNM). 2 males, same data as preceding (DZRJ).
366

367 **7) *Metacephalus mamaquilla* sp. nov.**

368 (Figures 1, 2, 5A–5D)

369 **Distribution.** Peru: Madre de Dios Department.

370 **Material studied.** *See above.*

371

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

373 (Figures 6E and 6F)

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

376 **Material studied. PERU:** 1 male, Madre de Dios, Refugio Amazonas, Albergue, 12°52'30"S
377 69°24'35"W 231 m, 02.x.2016, D. Couceiro, malaise; Wired Amazon Project (MUSM). 2 males,
378 Cusco, 19rd km W quincemil, Rio Araza Tributary, 13°20'10"S 70°50'57"W, 847 m, 23-
379 31.viii.2012, malaise, RR Cavichioli, JA Rafael, APM Santos & DM Takiya (MUSM). 2 males,
380 same data as preceding (DZRJ).
381

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

383 (Figures 6G and 6H)

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

386 **Material studied. PERU:** 44 males, San Martín Prov., Conservación Mun. Zona Barreal, 23km
387 S Picota, in dry forest, 7°4.88'S 76°18.89'W, 335m, Malaise, 6-15.iii.2005, M.E. Irwin and J.D.
388 Vasquez (INHS). 10 males, same data as preceding (DZRJ). 1 male, Madre de Dios, Refugio
389 Amazonas, Albergue, 12°52'30"S 69°24'35"W 241 m, 18.iii.2017, J. Grados, malaise; Wired
390 Amazon Project (MUSM). 1 male, same label, except 19.iii.2016 (DZRJ).
391

392 **10) *Portanus acerus* DeLong, 1976**

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

395 **Material studied. PERU:** 1 male, Dept Loreto, San Juan de Pamplona, 35 km S Yurimaguas,
396 Malaise in Oil Palm/Cacao Plantation, 6°7'38"S 76°11'26"W, 170m, 11-18.iv.2009, G. Antón,
397 A. Maya, M.E. Irwin (INHS). 15 males, San Martín Prov., Conservación Mun. Zona Barreal,
398 23km S Picota, in dry forest, Malaise, 7°4.88'S 76°18.89'W, 335m, 6-15.iii.2005, M.E. Irwin and
399 J.D. Vasquez (INHS). 5 males, same data as preceding (DZRJ).

400

401 **11) *Portanus avis* DeLong, 1980**

402 **Distribution.** Peru (type locality: Sinchona [precise locality unknown]).

403

404 **12) *Portanus bilineatus* DeLong, 1982**

405 **Distribution.** Peru (type locality: Sinchona [precise locality unknown]).

406

407 **13) *Portanus boliviensis* (Baker, 1923)**

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

411

412 **14) *Portanus cellus* DeLong, 1980**

413 **Distribution.** Peru (type locality: Sinchona [precise locality unknown]).

414

415 **15) *Portanus cephalatus* DeLong, 1980**

416 **Distribution.** Peru (type locality: Sinchona [precise locality unknown]).

417

418 **16) *Portanus dentatus* DeLong, 1980**

419 **Distribution.** Peru: Sinchona (type locality [precise locality unknown]) and Amazonas
420 Department [**New Record**].

421 **Material studied. PERU:** 1 male, Dept. Amazonas, Distr. Aguas Verdes, Bagua/Tarapoto Rd
422 (5N) AT km 403, 5°41'23"S 77°38'13"W, 1125m, Malaise, 24-31.x.2008, M.E. Irwin, G. Antón,
423 A. Maya (INHS). 2 males, same label data, except, 12-19.ix.2008 (INHS). 3 males and 1 female,
424 same label data, except, 29.v-5.vi.2009 (DZRJ).

425

426 **17) *Portanus inflatus* DeLong & Linnavuori, 1978**

427 **Distribution.** Peru: Sinchona (type locality [precise locality unknown]) and Pasco Department
428 [**New Record**].

429 **Material studied. PERU:** 1 male, Pasco Department, P.N. Yanachaga Chemillén, Puesto de
430 Control Huampal, on windows, at night, 06.x.2002, 10°11'08" S 75°34'25" W, 1050m, R.A.
431 Rakitov (INHS).

432

433 **18) *Portanus ocellatus* Carvalho & Cavichioli, 2003**

434 (Figures 6I and 6J)

435 **Distribution.** Brazil (type locality: Sinop, Mato Grosso State); Peru [**New Record**]: Cusco and
436 Madre de Dios Departments.

437 **Material studied.** PERU: 1 male, Cusco, Puente Inambari, 13°10'53"S 70°23'06"W, 365m
438 19.VIII.2012 light, APM Santos & DM Takiya (MUSM). 1 male, Madre de Dios, Refugio
439 Amazonas, Albergue, 12°52'30"S 69°24'35"W 241 m, 09.iii.2016, D. Couceiro, Malaise Trap;
440 Wired Amazon Project (MUSM). 3 males, same data as preceding, except 12.iv.2016 (MUSM).
441 1 male, same data as preceding, except 19.iv.2016 (MUSM). 1 male, same data as preceding,
442 except 21.vi.2016 (MUSM). 1 female, same data as preceding, except 28.viii.2016 (MUSM). 2
443 males and 2 females, same data as preceding, except 02.x.2016 (DZRJ). 1 male, same data as
444 preceding, except 03.xi.2016 (DZRJ).

445

446 **19) *Portanus retusus* Linnavuori & DeLong, 1979**

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

449 **Material studied.** PERU: 1 male and 1 female, Cusco, Ttio, 13°31'54"S 70°53'55"W, 2000m,
450 Light, 30.viii.2012, APM Santos & DM Takiya (MUSM).

451

452 **20) *Portanus sagittatus* Carvalho & Cavichioli, 2004**

453 (Figures 6K and 6L)

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

456 **Material studied.** PERU: 2 males, Madre de Dios, Mazuco, 12RD km E Mazuco, PT e
457 Amanapu, 13°2'51.1"S 70°20'45.9"W, 382m, malaise, 18-22.viii.2012, R Cavichioli, JA Rafael,
458 APM Santos & DM Takiya (MUSM). 2 males, same data as preceding (DZRJ). 1 male, Cusco,
459 3rd Km E Quincemil, 13°13'3"S 70°43'40"W, 633m, 20.viii-01.ix.2012, malaise, RR Cavichioli,
460 JA Rafael, APM Santos & DM Takiya (MUSM). 1 male, Madre de Dios, Refugio Amazonas,
461 Albergue, 12°52'30"S 69°24'35"W 231 m, 03.v.2016, D. Couceiro, Malaise Trap.; Wired
462 Amazon Project (MUSM). 1 male, same data as preceding, except 241 m, 21.vi.2017 (DZRJ).

463

464 **21) *Portanus tambopata* sp. nov.**

465 (Figures 3, 4, 5E-5H)

466 **Distribution.** Peru: Madre de Dios Department.

467 **Material studied.** *See above.*

468

469 **22) *Portanus uhleri* Kramer, 1964**

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

472 **Material studied.** PERU: 17 males and 1 female, San Martín Prov., Conservación Mun. Zona
473 Barreal, 23km S Picota, in dry forest, 7°4.88'S 76°18.89'W, 335m, Malaise, 6-15.iii.2005, M.E.
474 Irwin and J.D. Vasquez (INHS). 5 males, same data as preceding (DZRJ).

475

476 **Additional and comparative material examined**

477 *Portanus bifurcus*. 1 male, **BRASIL**: Amazonas, Tefé, Várzea, 1-5.xi.2016, 03°45' 18.94"S
478 61°43'2.82"W Malaise, JA Oliveira, DMM Mendes, JA Rafael, cols (INPA).

479

480 **Discussion**

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

489 Cicadomorpha is an understudied group in South America, with representatives of several
490 lineages not having been studied for decades or centuries, and those that are currently being
491 studied are far too diverse and have a great number of undescribed species (*Freytag & Sharkey,*
492 *2002; Costa & Lozada, 2010; Bartlett et al., 2018*). For the particular case of leafhoppers of
493 Peru, only two checklists exist, recording 634 species of some subfamilies of Cicadellidae
494 (*Lozada, 1992; Lozada, 1997*), however, this number seems to be [outdated](#) due to the lack of
495 complete studies for this group that could reveal a much higher diversity (*Costa & Lozada,*
496 *2010*). The same probably applies to the currently 679 leafhopper species recorded from
497 Colombia (*Freytag & Sharley, 2002*). Given the size of the country, even the approximately
498 1,800 leafhopper species recorded from Brazil, is also [considered known](#) to be completely
499 underestimated (*Takiya et al., 2020*).

500

501

502 **Conclusions**

503 This study [adds to the knowledge of leafhoppers from the Neotropical region. It more than](#)
504 [doubles](#) the number of portanine leafhoppers recorded from Peru. [It definitely adds to the](#)
505 [knowledge about leafhoppers from the Neotropical region](#), with the description of new species,
506 new records, and habitus photos of Portanini specimens. Our results indicate the necessity of
507 more taxonomic studies to better document the biodiversity from this megadiverse [leafhopper](#)
508 [region](#).

509

510

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514 A previous version of this manuscript has been reviewed by G. Mejdalani (Museu Nacional /

Commented [MW13]: Rephrased

Commented [MW14]: "a highly underestimate"?

Commented [MW15]: changed

Commented [MW16]: Does this read better?

Commented [MW17]:

515 UFRJ), J. Mermudes (UFRJ), M. Felix (Instituto Oswaldo Cruz / Fundação Oswaldo Cruz), and
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522 Other Peruvian specimens were either collected under permits obtained with the help of A.
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524
525

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