

Taxonomic notes of *Hemixantha* (Diptera: Richardiidae) with description of a new species from the Amazon Region

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ABSTRACT. Richardiidae is represented by ca. 180 species in 33 genera. A new species of *Hemixantha*, now totaling 20 species, is described from the Amazon Region, state of Pará, Brazil, and from Teoponte, Bolivia. *Hemixantha maculosa* **sp. nov.**, *H. picta* Hennig, 1937 and *H. pulchripennis* Hendel, 1911 are richardiids known to have an extensively banded wing pattern. *Hemixantha maculosa* **sp. nov.** represents the first record of *Hemixantha* from the state of Pará and this species can be distinguished from *H. picta* and *H. pulchripennis* by anepisternum and dorsal half of anepimeron bright yellow and vein R_{2+3} slightly sinuous. Besides the hyaline areas on the wing of *H. maculosa* are very distinct from these other species, as follows: (1) subtrapezoidal median area in cell cu_{a1} extended anteriorly to vein M_1 , separated from hyaline area in cell dm ; (2) two oblique areas from costal margin almost to or beyond vein R_{4+5} , one proximal to and one distal to level of crossvein $r-m$; (3) a circular area on basal part of cell r_{4+5} and (4) a triangular area on basal region of cell m_1 . An identification key, diagnoses, description and redescriptions, and illustrations to the species of *Hemixantha* with an extensively banded wing pattern are provided.

KEY WORDS. *Hemixantha maculosa* **sp. nov.**; Neotropical; new record; terminalia; wing.

Richardiidae is a family of tephritoid Diptera represented by ca. 180 species in 32 genera that are allocated to two subfamilies: Richardiinae and Epiplateinae (HANCOCK 2010). The family is essentially Neotropical in distribution.

Of the two subfamilies, Richardiinae is the most diverse, encompassing more than 90% of the species described (STEYSKAL 1968). Even though many morphological differences can be found among the included genera, a preliminary phylogenetic analysis indicates that the subfamily is a strongly-supported monophyletic group (WENDT & ALE-ROCHA, unpublished data). From a historical perspective, the taxonomy of the Richardiinae has been relatively poorly studied but interest in it has been revived in a few recent contributions, as follows: new taxa were described (PEREZ-GELABERT & THOMPSON 2006, CARVALHO *et al.* 2011, ALENCAR *et al.* 2013); a genus was re-described (WENDT & ALE-ROCHA 2012) and, especially important, a key to all genera (HANCOCK 2010) was published.

In Brazil, 13 genera and 60 species of Richardiinae have been recorded but only 16 species are known to occur in the Brazilian Amazon (ACZÉL 1950, STEYSKAL 1968, ALENCAR *et al.* 2013). Of these, only five are known from the state of Pará: *Beebeomyia flavimaculata* (Hennig, 1937), *Odontomera ruficauda* Hendel, 1936, *Ozaenina moderata* Hennig, 1938, *Richardiodes rectinervis* Hendel, 1912, and *Setellia pernix* (Gerstaecker, 1860) (STEYSKAL 1968). This number, however, probably underestimates the real diversity of the group in the region.

At the beginning of the 20th century, HENDEL (1911a) and HENNIG (1937, 1938) published important taxonomic contributions, with new records, descriptions and re-descriptions of species of Richardiidae, especially from Bolivia. Thus the fauna of richardiids from Bolivia is relatively well known, where 13 genera and 35 species have been recorded (STEYSKAL 1968).

Richardiids usually have the wing hyaline or yellowish, with round or transverse spots at the base, apex and/or median region. However, five known species, *Schnusimyia parvula* Hendel, 1911, *Richardia tephritina* Enderlein, 1912, *R. schnusei* Hendel, 1911, *Hemixantha picta* Hennig, 1937 and *H. pulchripennis* Hendel, 1911, and the new species herein described, have spots on the wing forming an extensively banded pattern that superficially resembles the bands of some species of Tephritidae, for instance *Parastenopa* Hendel, 1914 and *Rhagoletis* Loew, 1862. There are some hypotheses about the function of the wing banded patterns in tephritoids (e.g., SIVINSKI & WEBB 1986, MATHER & ROITBERG 1987, SIVINSKI & PEREIRA 2005). For instance, tephritid species with markings on the wings are considered jumping spider mimics (e.g., GREENE *et al.* 1987) or wasp mimics (e.g., WHITE 1999). However, in most cases, the adaptive significance of the markings remains obscure (SIVINSKI 1999).

Hemixantha was proposed by LOEW (1873) as a monotypic genus for *H. spinipes*. Thereafter, 19 species and one subspecies were described in the genus, especially by HENDEL (1911a) and

HENNIG (1937, 1938). However, the last contribution describing a new species of *Hemixantha* dates back to the 1930s (HENNIG 1938). The genus occurs from Costa Rica to southeastern Brazil, but most species are recorded from the Amazon Region, especially from Brazil, Peru and Bolivia (STEYSKAL 1968).

In this paper, we describe and illustrate a new species of *Hemixantha* with an extensively banded wing pattern, from the state of Pará, Brazil, and La Paz Province, Bolivia. The new species represents the first record of the genus from Pará. We also compare *H. maculosa* sp. nov. with the two other species of the genus with patterns on the wings: *H. picta* and *H. pulchripennis*. Furthermore, we provide diagnoses and redescrptions for the latter two species. Sexual dimorphism in the wing patterns is also demonstrated for the first time.

MATERIAL AND METHODS

Specimens listed in the material examined section belong to the following institutions (curator name within parenthesis): INPA – Instituto Nacional de Pesquisas da Amazônia, Manaus, Amazonas, Brazil (Augusto Loureiro Henriques); MPEG – Museu Paraense Emílio Goeldi, Belém, Pará, Brazil (Orlando Tobias Silveira); MZSP – Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil (Carlos José Einicker Lamas); SMT – Senckenberg Natural History Collections Dresden, Museum of Zoology (Museum für Tierkunde), Dresden, Germany (Uwe Kallweit); USNM – National Museum of Natural History, Smithsonian Institution, Washington, D.C., USA (Allen Lee Norrbom).

The terminology for the external morphological characters follows CUMMING & WOOD (2009), except the terminology for the terminalia, which follows WHITE *et al.* (1999).

When providing label data of the type material, we separated individual lines with a forward slash (/) and individual labels are cited within quotation marks. Information within square brackets ([]) indicates additional data that are not present on the specimen labels.

TAXONOMY

Identification key to the species of *Hemixantha* with an extensively banded wing pattern

1. Wing cell r_{4+5} with a circular hyaline sub-basal area (Fig. 1, indicated with red arrow); vein R_{2+3} slightly sinuous (Fig. 1). Anepisternum and dorsal half of anepimeron bright yellow (Fig. 5). Brazil: Pará; Bolivia: La Paz Province *H. maculosa* sp. nov.
- 1'. Wing cell r_{4+5} with hyaline sub-basal area, but never circular in shape (Figs 2 and 3, indicated with red arrows); vein R_{2+3} straight (Figs 2 and 3). Anepisternum and anepimeron bright brown (Fig. 23) 2
2. Coxae, basal half or more of fore femur, and mid and hind tibiae dark brown. Wing with wide oblique hyaline area at

middle, from costal margin to cell dm, separated from subtriangular hyaline area at middle of cell cua_1 (Fig. 4, indicated with black arrow) Brazil: Amazonas *H. pulchripennis* Hendel

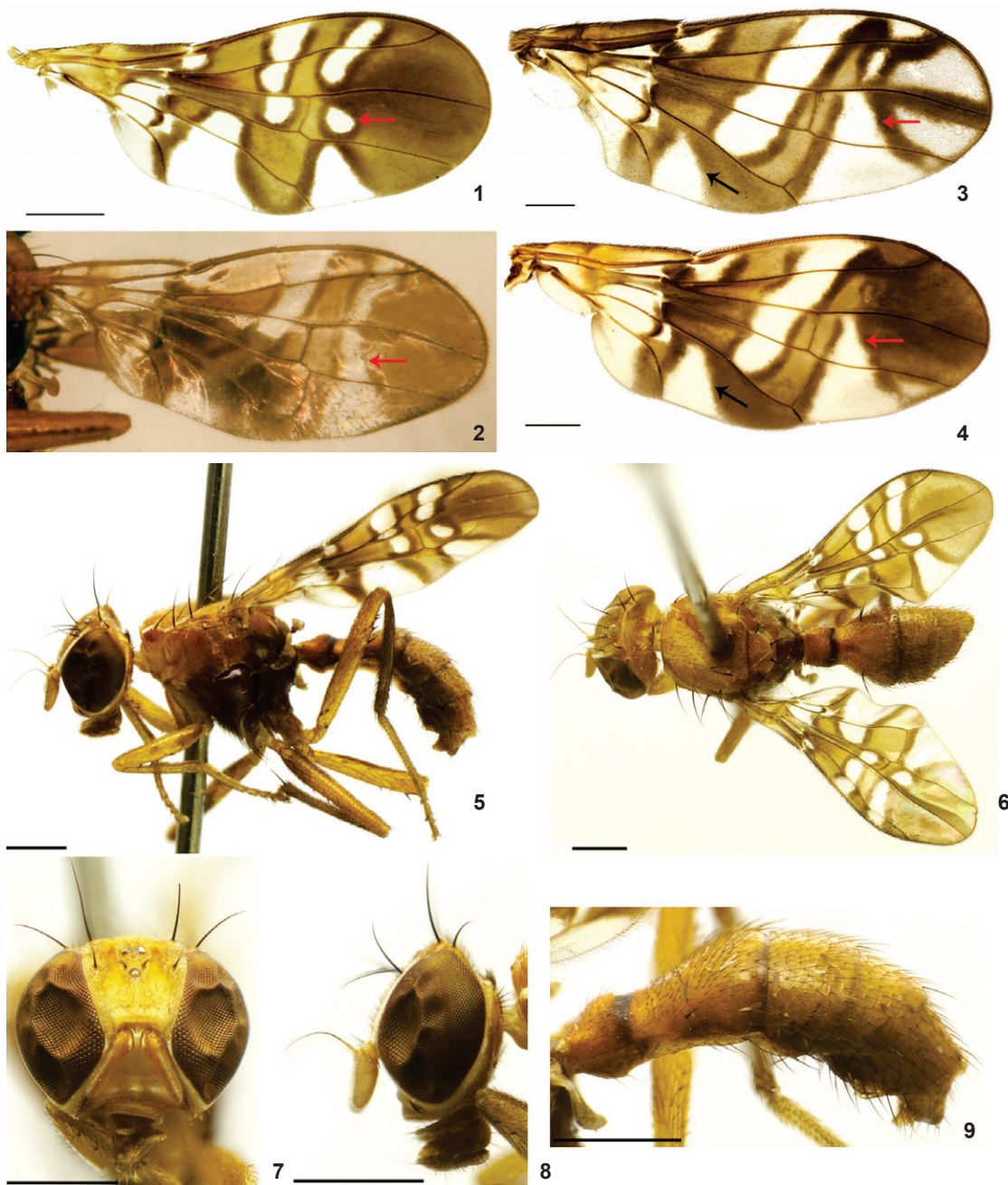
- 2'. Fore coxa, fore femur, and mid and hind tibiae entirely yellow (Fig. 23). Wing (at least in female) with two complete transverse hyaline areas, and one across middle from cell r_1 to cell cu_1 slightly oblique, and another on apical third of wing (Fig. 2). Bolivia *H. picta* Hennig

Hemixantha maculosa sp. nov.

Figs 1, 5-12, 15-22

Diagnosis. *Hemixantha maculosa* sp. nov. differs from *H. picta* and *H. pulchripennis* in the following features: anepisternum and dorsal half of anepimeron bright yellow and vein R_{2+3} slightly sinuous. Moreover, the hyaline areas on the wing differ as follows: subtrapezoidal median area in cell cua_1 extended anteriorly to vein M_1 , separated from hyaline area in cell dm; two oblique areas from costal margin almost to or beyond vein R_{4+5} , one proximal to and one distal to level of crossvein r-m; a circular area on basal part of cell r_{4+5} and a triangular area on basal region of cell m_1 .

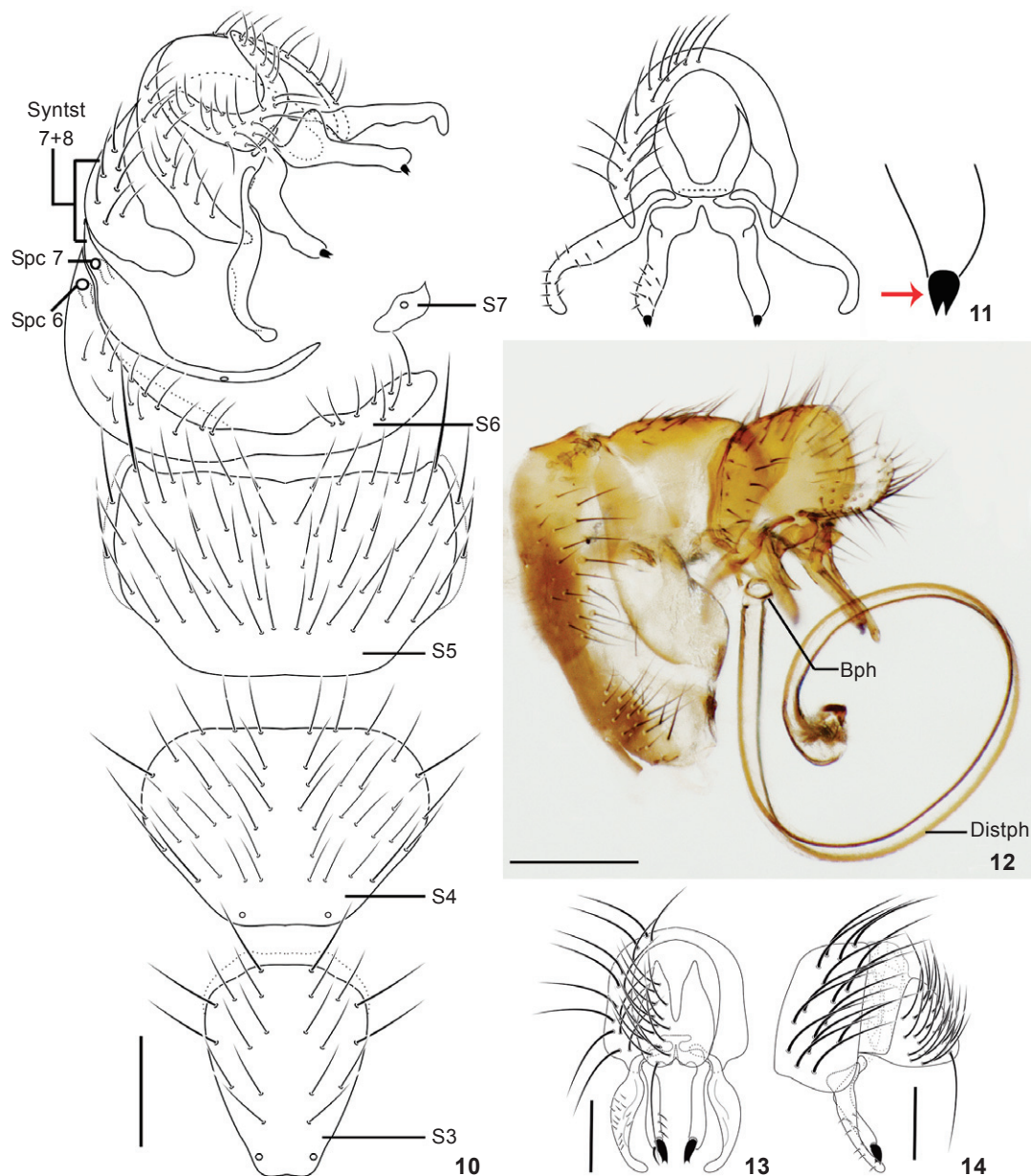
Description. Holotype male: measurements: 3.7 mm (body length), 3.1 mm (wing), 1.8 mm (abdomen). **Head** (Figs 7 and 8): Yellow, covered with whitish pollinosity. Scape and pedicel yellow. First flagellomere light brown. Arista brown. Clypeus, palpus and prementum yellow. Genal and postgenal setae weak. Postgena with short and white sparse setae. **Thorax** (Figs 5 and 6): Scutum, scutellum and postpronotal lobe yellow, covered with dense whitish pollinosity. Prosteronum, proepimeron and proepisternum whitish-yellow. Anepisternum and dorsal half of anepimeron bright yellow. Katepisternum, ventral half of anepimeron, meron and katatergite bright dark brown. Anatergite and mediotergite dark brown covered with white pollinosity. Halter whitish on basal half and brown on the apical half. **Legs**: Yellow, except mid coxa, mid femur on basal third, and hind tibia brown. Fore femur with four and two spines on antero- and posteroventral surfaces, respectively. Mid femur on anteroventral surface with a row of spines beginning at base, and another on posteroventral surface beginning on apical third. Hind femur with spines from apical 2/5 on antero- and posteroventral surfaces; anterodorsal seta absent. **Wing** (Fig. 1): Orange brown with margins bordering hyaline areas brown, and with the following hyaline areas: alula, anal lobe except distal margin, cells bm and cup and small areas aligned with them in cell br and r_1 , subtrapezoidal area at middle of cell cua_1 extended to vein M_1 , two oblique areas from costal margin, one proximal to crossvein r-m extended to vein M_1 , slightly interrupted at vein R_{4+5} , and another distal to r-m extended to at least R_{4+5} , a circular area on basal part of cell r_{4+5} , and triangular area on basal part of cell m_1 . Vein R_{2+3} slightly sinuous. **Abdomen**: Yellow, except brown band on basal fourth of syntergite 1+2; covered with black setulae (Fig. 9). Syntergite



Figures 1-9. (1-4) Wings: (1) *Hemixantha maculosa* sp. nov., paratype male; (2) *Hemixantha picta* holotype female; (3-4) *Hemixantha pulchripennis*: (3) male; (4) female. Red arrows indicate hyaline areas on cell r_{4+5} ; black arrows indicate subtriangular hyaline area at middle of cell cua_1 . (5-9) *Hemixantha maculosa* sp. nov., holotype male: (5) habitus, lateral; (6) habitus, dorsal; (7) head, frontal; (8) head, lateral; (9) abdomen, lateral. Scale bars: 0.5 mm.

1+2 twice as wide at apex as at base; twice as long as tergite 3. Tergites 3-5 gradually narrower than apex of syntergite 1+2. Sternite 1 absent. Sternites 2-7 yellow; sternite 2 divided into two parts: anterior very reduced and slightly sclerotized, and

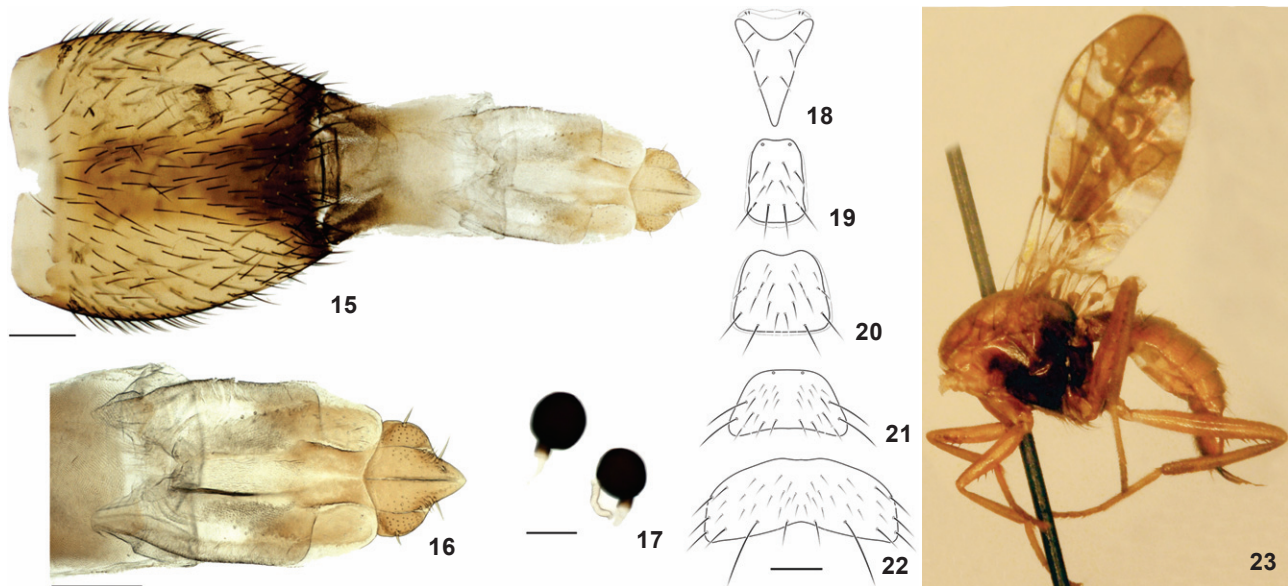
posterior elongated, Y-shaped and relatively sclerotized; sternite 3 longer than wide, with base narrower than apex (Fig. 10); sternite 4 wider than long, subtrapezoidal (Fig. 10); sternite 5 developed, distinctly wider than long (Fig. 10). Sternite 6 short,



Figures 10-14. Male terminalia: (10-13) *Hemixantha maculosa* sp. nov., paratype: (10) sternites, epandrium, surstyli and proctiger, ventral view; (11) epandrium, lateral and medial surstylus, and proctiger, posterior view, in the right side preniseta in detail (indicated by the red arrow); (12) sternite 6, sytergosternite 7+8, epandrium, surstyli, proctiger and phallus, lateral view; (13-14) *Hemixantha pulchripennis* epandrium, surstyli and proctiger: (13) posterior view; (14) lateral view. (Bph) Basiphallus, (Distph) distiphallus, (S) sternite, (Spc) spiracle, (Syntst) sytergosternite. Scale bars: 0.2 mm.

very wide and ciliated (Fig. 10). Sternite 7 very reduced (Fig. 10). **Terminalia** (Figs 10-12): Lateral surstylus longer than medial surstylus, curved, without projection and medially wider than basal and apical parts; apex slender and distinctly curved (Fig. 11). Medial surstylus with a semicircular projection on

anterior basal part (Fig. 11). Preniseta slightly developed and symmetrically bifurcated apically, inserted on apex of medial surstylus (Fig. 11, indicated with red arrow). Proctiger slightly sclerotized, rounded and covered with setae of different lengths. Distiphallus long and flexible, with two sclerotized ribbons



Figures 15-23. (15-22) *Hemixantha maculosa* sp. nov., paratype female, terminalia: (15) oviscape, eversible membrane, segment 8 and cerci; (16) segment 8 and cerci in detail; (17) spermathecae; (18) sternite 2; (19) sternite 3; (20) sternite 4; (21) sternite 5; (22) sternite 6. Scale bars: 15-16, 18-22: 0.1 mm; 17: 0.05 mm. (23) *Hemixantha picta* holotype female, habitus, lateral view.

connected by membrane; apex of one ribbon modified into a set of setae and with an asymmetrical and sclerotized plate (Fig. 12).

Variation. The paratype male from Taperinha, Pará (MZSP) is slightly different in the hyaline areas on the wing: basal part of cell r_1 with a small hyaline area, and the oblique area from costal margin, distal to r-m, is continuous to the circular area on basal part of cell r_{4+5} , forming only a hyaline area.

Female: similar to male, except: the paratype from Bolivia (USNM) has mesopleura yellow, except for meron and katatergite brown. **Abdomen** (Figs 18-22): sternites 2-6 yellow; sternite 3 rectangular, longer than wide (Fig. 19); sternite 4 as wide as long, subtrapezoidal (Fig. 20); sternite 5 developed, distinctly wider than long (Fig. 21). Sternite 6 short and wide (Fig. 22). **Terminalia** (Figs 15-17): Oviscape 0.84 mm long, yellow, with longitudinal and central areas and apical margin brown (Fig. 15). Taenia brown, short, one-fifth as long as oviscape; slightly less sclerotized than oviscape. Eversible membrane brown and slightly sclerotized on basal 2/3, hyaline and membranous on apical third (Fig. 15). Sternite 8 0.15 mm long, not fused, shorter than tergite 8. Cerci dome-shaped, enlarged at base and gradually narrower at apex (Fig. 16). Two spherical spermathecae (Fig. 17).

Material examined. Holotype male, MPEG: "Brasília[Pará]\Vitória do Xingú\Margem dir.[right margin of the river] - R.[river] Xingu\12 - 14-XII-2000" "Ilha [Island] Taboca\Mata de Várzea\Arm. [trap] Malaise 10\C. Maciel & J. Dias [col.]". Remarks on the holotype: specimen in good condition, with no damage. Paratypes: same data as holotype (1 female, 1 male,

INPA; 1 female, 1 male, MPEG); Brazil, Pará, Santarém, Fazenda [Farm] Taperinha, x-xi.1970, Expedição Permanente do Amazonas col. (1 male, MZSP); Bolivia, La Paz Province, Teoponte, San Juanito, 15°29'69"S 67°47'80.3"W, 08.iv.2001, A.L. Norrbom col. (1 female, USNM).

Type locality. Taboca Island, Vitória do Xingu, Pará, Brazil.

Geographic distribution. Brazil, Pará; Bolivia, La Paz Province.

Remarks. This is the first record of *Hemixantha* from the state of Pará.

Etymology. The specific epithet refers to the marks on the wing (from Latin *maculosus* = spotted).

Hemixantha picta Hennig, 1937

Figs 2, 23, 24

Hemixantha picta Hennig, 1937: 312. Holotype, female, Senckenberg Natural History Collections Dresden (Museum für Tierkunde). Type locality: Mapiri, Bolivia. Distribution: Bolivia. References: Hennig, 1937: 307 (key); Aczél, 1950: 27 (catalog); Steyskal, 1968: 5 (catalog).

Diagnosis. Similarly to *H. pulchripennis*, *H. picta* has the mesopleuron entirely brown. As in *H. maculosa*, the legs of *H. picta* are yellow, except for the mid and hind coxae brown. Nevertheless, the hyaline areas of the wing of *H. picta* are diagnostic: the wing has two complete transverse and slightly curved areas, one at the middle (proximal to r-m) extending to the posterior margin in cell cu, and another at the apical third of the wing.

Redescription. Holotype female (Fig. 23): **Measurements** (following HENNIG 1937: 312): 6.0 mm body length, without the head; 6.0 mm wing. **Head:** lost. **Thorax:** scutum, scutellum, proepimeron, proepisternum and prosternum yellow. Scutum and scutellum covered with whitish pollinosity. Mesopleuron and mediotergite bright brown. Posterior half of katatergite, anatergite and laterals of mediotergite with weak white pollinosity. Halter yellowish at basal half and brown at apical half. **Legs:** Yellow, except mid and hind coxae brown. Fore femur with spines beginning on preapical region. Mid femur on anteroventral surface with row of spines beginning at base and another on posteroventral surface beginning on apical third. Hind femur with spines from apical half; anterodorsal seta absent. **Wing** (Fig. 2): brown, except for the following hyaline areas: alula, basal fourth area, except for yellowish area at base of costal cell continuous until sub-base of cell br; sub-base of cell r_1 ; two complete transverse and slightly curved areas, one at the middle (proximal to r-m) extending to the posterior margin in cell cu_1 and another at the apical third of the wing. Vein R_{2+3} straight. **Abdomen:** yellow with black setulae. Syntergite 1+2 with four laterodorsal setae; apex twice wider than base; 2.3 times longer than tergite 3. Tergites 3-5 slightly narrower than syntergite 1+2. Sternites not observed. **Terminalia:** not dissected, observed only externally: oviscape at median region and taenia dark brown. Cerci dome-shaped, enlarged at the base and gradually narrower at the apex (Fig. 24).

Male. Unknown.

Material examined. Holotype female, SMT: "Bolivia – Mapiiri\18.III.[19]03" "*Hemixantha picta* [handwritten label]" "Staatl. Museum für Tierkunde Dresden\Coll. W. SCHNUSE, 1911".

Geographic distribution: Bolivia.

Remarks on the holotype. Specimen in relatively good condition, except for the head, left mid and hind legs, which are missing.

Hemixantha pulchripennis Hendel, 1911

Figs 3-4, 13-14, 25-33

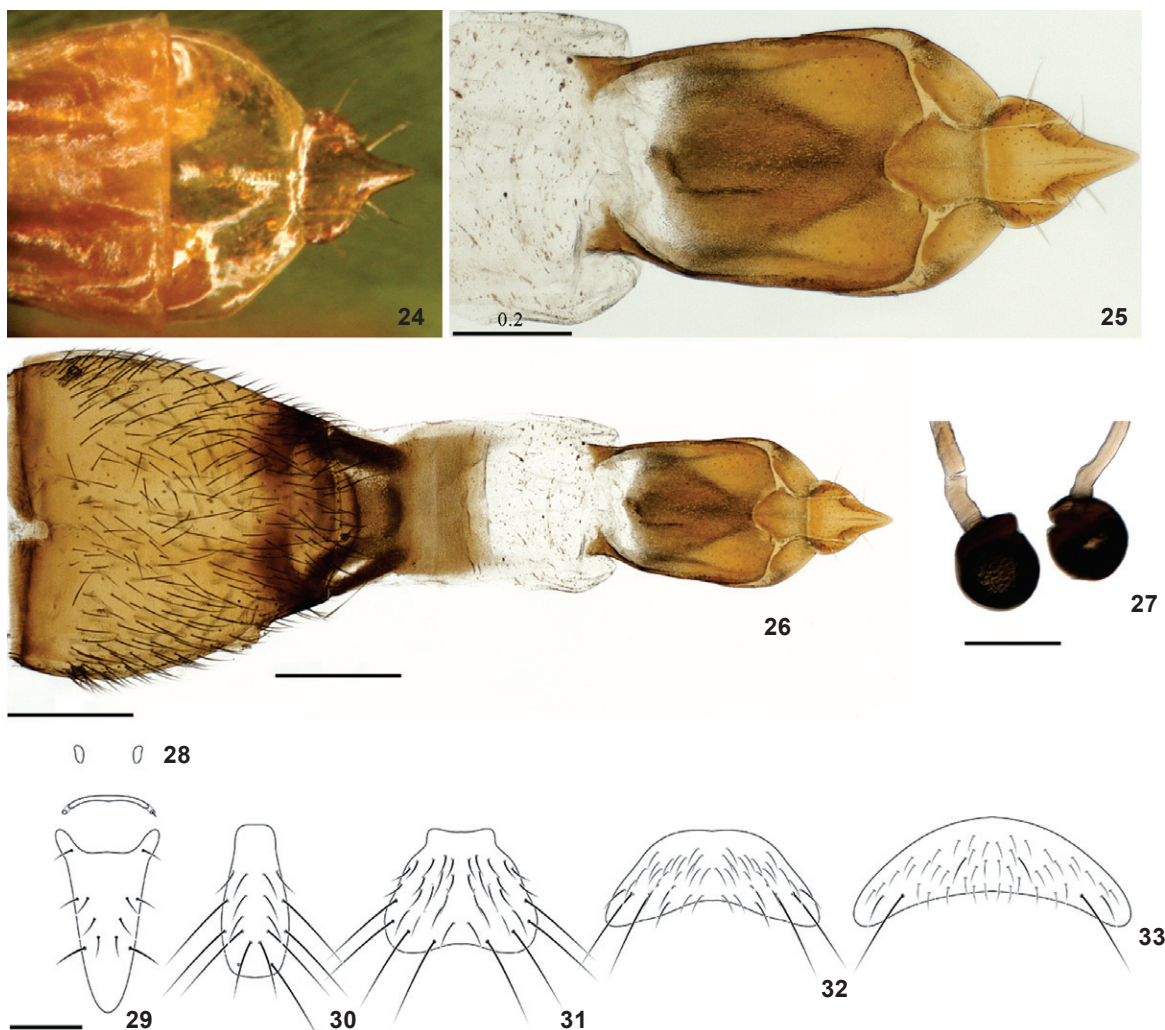
Hemixantha pulchripennis Hendel, 1911a: 262. Syntypes males, Hungarian Natural History Museum (Hendel, 1911a). Type locality: Manaus, Amazonas, Brazil. Distribution: Brazil. References: Hendel, 1911a: 258 (key), 1911b: plate 2 (figs 46-47, lateral habitus, head in frontal view); Hennig, 1937: 307 (key); Aczél, 1950: 27 (catalog); Steyskal, 1968: 5 (catalog).

Diagnosis. *Hemixantha pulchripennis* and *H. picta* have the mesopleuron entirely brown, but *H. pulchripennis* differs in having all coxae, fore femur, basal half of mid and hind femora, and mid and hind tibiae dark brown. Also, the pattern of the hyaline areas on the wing of *H. pulchripennis* (Fig. 3) differs considerably from the wing patterns of *H. maculosa* and *H. picta*: subtriangular or slightly oval area at middle of cell cua_1 not extended anteriorly beyond vein cu_1 and separated from hyaline area in cell dm (Fig. 3, indicated with black arrow), a wide transversal and oblique area at middle of wing from costal margin to cell dm, subtriangular preapical area in cell m_1 extended anteriorly to vein R_{4+5} (Fig. 3, indicated with red arrow); and three apical hyaline areas: one very reduced and subtriangular area in cell r_1 , one subtrapezoidal area in cell r_{2+3} and one smaller and subtrapezoidal area on cell r_{4+5} . Vein R_{2+3} straight. **Terminalia** (Figs 13 and 14): lateral surstylus slightly larger than medial surstylus; lateral surstylus without projection and on median region wider than basal and apical regions; medial surstylus with slightly semicircular projection on anterior basal region; preniseta distinctly stronger (Fig. 13) than in *H. maculosa* (Fig. 11), symmetrically bifurcated at the apex, inserted at the apex of medial surstylus; proctiger slightly sclerotized, very developed, rounded, covered with long setae and with a distinct long pair of setae on ventral surface (Figs 13 and 14); distiphallus similar to *H. maculosa*.

only beyond vein cu_1 and separated from hyaline area in cell dm (Fig. 3, indicated with black arrow), wide transversal and oblique area at the middle of wing from the costal margin to cell dm; subtriangular preapical area in cell m_1 extended anteriorly to vein R_{4+5} (Fig. 3, indicated with red arrow); and three apical hyaline areas present only in males: one very reduced and subtriangular area in cell r_1 , one subtrapezoidal area in cell r_{2+3} and one smaller and subtrapezoidal area on cell r_{4+5} (Fig. 3).

Redescription. Male: **Measurements** ($n = 3$): 5.5-6.8 mm (body length), 5.0-6.0 mm (wing), 2.7-3.1 mm (abdomen). **Head:** yellow, covered with whitish pollinosity. Scape and pedicel yellow. First flagellomere entirely brown or brown on dorsal half and yellow on ventral half. Arista brown. Clypeus and prementum yellow. Palpus yellow or brown. Genal and postgenal setae weak. Postgena with short and white sparse setae. **Thorax:** scutum, scutellum on dorsal surface, proepimeron, proepisternum and prosternum yellow. Scutum and scutellum covered with dense whitish pollinosity. Mesopleuron, metapleuron, mediotergite and scutellum on ventral surface bright dark brown. Posterior half of katatergite, anatergite and lateral of mediotergite with weak white pollinosity. Halter yellowish on basal half and brown on apical half. **Legs:** coxae, basal half of fore femur, or entire fore femur, mid femur on basal half, hind femur on second quarter portion, mid and hind tibiae dark brown. Trochanter, sometimes fore femur on apical half, fore tibia, mid femur on apical half, hind femur on first fourth and apical half, and tarsomeres yellow. Fore femur with spines from apical third. Mid femur on anteroventral surface with row of spines beginning at base and another on posteroventral surface beginning on apical half. Hind femur with spines from apical half; anterodorsal preapical seta weak. **Wing** (Fig. 3): brown, except by the following hyaline areas: alula, base of br, base and sub-base of cell r_1 , cells bm and cup, basal half of anal lobe, subtriangular or slightly oval area at middle of cell cua_1 not extended anteriorly beyond vein cu_1 and separated from hyaline area in cell dm (Fig. 3, indicated with black arrow), a wide transversal and oblique area at middle of wing from costal margin to cell dm, subtriangular preapical area in cell m_1 extended anteriorly to vein R_{4+5} (Fig. 3, indicated with red arrow); and three apical hyaline areas: one very reduced and subtriangular area in cell r_1 , one subtrapezoidal area in cell r_{2+3} and one smaller and subtrapezoidal area on cell r_{4+5} . Vein R_{2+3} straight. **Terminalia** (Figs 13 and 14): lateral surstylus slightly larger than medial surstylus; lateral surstylus without projection and on median region wider than basal and apical regions; medial surstylus with slightly semicircular projection on anterior basal region; preniseta distinctly stronger (Fig. 13) than in *H. maculosa* (Fig. 11), symmetrically bifurcated at the apex, inserted at the apex of medial surstylus; proctiger slightly sclerotized, very developed, rounded, covered with long setae and with a distinct long pair of setae on ventral surface (Figs 13 and 14); distiphallus similar to *H. maculosa*.

Comments. According to HENDEL (1911a), two syntypes males of *Hemixantha pulchripennis* are deposited at the Hun-



Figures 24-33. (24) *Hemixantha picta* holotype female, terminalia; (25-33) *Hemixantha pulchripennis* female: (25) segment 8 and cerci; (26) oviscapae, eversible membrane, segment 8 and cerci; (27) spermathecae; (28) sternite 1; (29) sternite 2; (30) sternite 3; (31) sternite 4; (32) sternite 5; (33) sternite 6. Scale bars: 25, 29-33 = 0.2 mm; 26, 28 = 0.5; 27 = 0.1

garian Natural History Museum, Budapest, Hungary. Because the institution does not lend type material, we could not study the syntypes of this species. However, HENDEL (1911a, b) provided a reasonably detailed description and an excellent figure of the habitus of *H. pulchripennis* in profile, which allowed us to reliably identify this species. Also, the specimens we used in the redescription are from the type locality. Before this contribution, only the male of *H. pulchripennis* was known. Fortunately, we found females in the INPA collection from the type locality (Manaus, Brazil). Females are similar to males, except for differences in the hyaline areas of the wing (Figs 3 and 4), as following described. **Measurements** ($n = 2$): 5.0-6.0 mm (body length), 4.5-5.0 mm (wing), 2.6-2.9 mm (abdomen). **Wing** (Fig. 4): brown, except for the following hyaline areas:

alula, base of cell br, base and sub-base of cell r_1 ; cells bm and cup, basal half of anal lobe, subtriangular or slightly oval median area on cell cua_1 (Fig. 4, indicated with black arrow), a wide transverse and oblique median area from the costal margin to cell dm, triangular preapical area from R_{4+5} to posterior margin of wing (Fig. 4, indicated with red arrow); apical fourth completely brown, without hyaline areas (Fig. 4). **Abdomen**: yellow, with brown band on basal fourth of syntergite 1+2; covered with black setulae. Syntergite 1+2 1.5 times wider at apex than at base; 2.5 times longer than tergite 3. Tergites 3-5 gradually narrower than apex of syntergite 1+2. Sternites 1-6 yellow; sternite 1 present, but reduced into two very small sub-circular plates and weakly sclerotized (Fig. 28); sternite 2 divided into two portions: anterior very reduced and slightly

sclerotized and posterior elongated, gradually narrower and relatively sclerotized (Fig. 29); sternite 3 longer than wide, with base narrower than apex (Fig. 30); sternite 4 wider than long, with subtrapezoidal shape (Fig. 31); sternite 5-6 distinctly wider than long (Figs 32 and 33). **Terminalia:** oviscape 1.2 mm long, light brown (Fig. 26). Taenia dark brown, short, one sixth as long as oviscape, as sclerotized as oviscape. Eversible membrane brown and slightly sclerotized on basal half; hyaline and membranous on apical half (Fig. 26). Sternite 8 0.2 mm long, completely fused, slightly shorter than tergite 8 (Fig. 25). Cerci dome-shaped, with enlarged base and apex gradually narrowed (Fig. 25). Two spherical spermathecae (Fig. 27).

Material examined. BRAZIL, Amazonas: Manaus, 16.VII.1969, E.V. Silva *leg.*, 1 female (INPA); idem, 31.III.1977, L. Albuquerque *leg.*, 1 female (INPA); idem, Campus Universitário (UFAM), 20.VIII.1978, J.A. Rafael *leg.*, 1 male (INPA); idem, 14.X.1978, idem, 1 male (INPA), idem, Reserva Km 41 (area 1501, Esteio farm, 2°26'56"S, 59°46'12"W), PDBFF (Biological Dynamics of Forest Fragments Project, Sub-bosque), 18-19.IX.2004, R. Querino *leg.*, (1 male, INPA).

Geographical distribution. Northern portion of Brazil (state of Amazonas).

DISCUSSION

Hemixantha had 19 species and one subspecies known and now it is composed by 20 species and one subspecies. *Hemixantha maculosa* sp. nov., *H. picta* and *H. pulchripennis* are easily distinguished from all other species of *Hemixantha* by the spots on the wing forming an extensively banded pattern. And these three species differ considerably from each other in the pattern of the spots on the wing, and in the coloration of pleuron and legs. The sexual dimorphism can be observed in species of some genera of Richardiidae, for instance in *Richardia* Robineau-Desvoidy, 1830, *Megalothoraca* Hendel, 1911 and *Batrachophthalmum* Hendel, 1911, and the differences between the sexes are present in the head shape or the spines on the legs (only in *Richardia*). The sexual dimorphism found in *H. pulchripennis* is for first time reported to the genus; moreover, the difference in the spots on the wing is for the first time found in Richardiinae. This attribute is also found in *Automola* Loew, 1873 (Epiplateinae).

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