ZOOLOGIA 29 (6): 589–597, December, 2012
Available online at www.scielo.br/zool

Four species of the new Amazonian sharpshooter *Daedaloscarta* gen. nov. (Insecta: Hemiptera: Cicadellidae)

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ABSTRACT. Four new species, *Daedaloscarta erwini* **sp. nov.** (Peru: Loreto), *D. maculata* **sp. nov.** (Brazil: Amazonas), *D. mene* **sp. nov.** (Ecuador: Orellana), and *D. redacta* **sp. nov.** (Brazil: Amazonas) are described and placed in the new genus *Daedaloscarta* **gen. nov.** Species of the new genus can be readily distinguished from other Cicadellini genera by their: (1) dark brown to black dorsal coloration with contrasting large ivory spots; (2) crown produced and round anteriorly (Figs 1-8); (3) pronotum narrower than transocular width of head, with lateral margins parallel; (4) male pygofer with pair of acute finger-like processes arising at dorsal margin directed inwardly and ventrally; (5) subgenital plates with apical two-thirds very slender; (6) aedeagus very large with shaft elongate, with an unpaired basidorsal, elongate bifurcate basiventral, and paired retrorse lateral processes at midlength of shaft; and (7) paraphyses bifurcate and slender. All known specimens are associated with *terra firme* or flooded Amazonian forests and were collected by light trapping or insecticidal fogging.

KEY WORDS. Amazonian forest; biodiversity; Cicadellinae; taxonomy.

The sharpshooter tribe Cicadellini in the New World currently comprises approximately 175 genera and 1200 species (Young 1977, Hamilton 1985, Mejdalani 1994, Nielson & Godoy 1995, Takiya *et al*. 2001, 2003, Takiya & Cavichioli 2005, Cavichioli 1996, 1998, 2000a, b, 2003, 2008, 2010). The vast majority of these genera were redescribed (64) or erected (91) by Young (1977) in his taxonomic revision of the New World Cicadellini (including the Old World genus *Cicadella* Latreille). Because of the accessibility, organization, and breadth of this monograph, sharpshooter taxonomists have had little trouble on defining taxa based on newly available material.

Members of the Cicadellini can usually be distinguished from other leafhoppers by their 1) ocelli located on crown, nearly always closer to posterior margin than to apex or anterolateral margin; 2) frontogenal sutures almost always extending onto crown up to or near ocelli; 3) antennal ledges usually not strongly protuberant in dorsal view; 4) face usually not pubescent; 5) proepisternum exposed; 6) forewings with inner apical cell parallel to long axis of wing; 7) posterior knees (articulation femur-tibia) usually attaining lateral lobe of pronotum at rest position; 8) posterior tibiae with macrosetae in four regular rows and usually compressed laterally; and (9) male pygofer and/or subgenital plates nearly always with macrosetae and/or microsetae not evenly dispersed (Young 1968). Most of these characters are also found in other leafhopper lineages and considerable variation is found within the group, which is in accordance with the recovery of its paraphyly in relation to two other leafhopper lineages based on the analyses of both morphological characters and DNA sequences (D.M. Takiya unpubl. data).

In the present paper we describe four new species from the Amazon basin (Brazil, Ecuador, and Peru) and place them in the newly proposed Cicadellini genus *Daedaloscarta* **gen. nov.** New species herein included in *Daedaloscarta* **gen. nov.** will key out to *Scoposcartula* Young, 1977 in couplet 159 of the most recent, however outdated, taxonomic key to genera of New World Cicadellini (Young 1977) because of the rugose aspect of the frons. The external morphology and dark coloration with white spots and stripes closely resembles (and is sometimes indistinguishable) from known species of *Amblyscartidia* Young, 1977, *Cardioscarta* Melichar, 1932, *Paratubana* Young, 1977, and *Pegogonia* Young, 1977. However, *Daedaloscarta* **gen. nov.** species can be distinguished from species of the above-mentioned genera by their unique pygofer dorsal processes and aedegal shaft with basidorsal, basiventral, and paired lateral processes.

MATERIAL AND METHODS

Specimens studied herein are deposited in the following collections: Coleção Entomológica Prof. José Alfredo Pinheiro Dutra, Departamento de Zoologia, Universidade Federal do Rio de Janeiro (DZRJ); Coleção Entomológica Pe. Jesus Santiago

Moure, Departamento de Zoologia, Universidade Federal do Paraná, Curitiba (DZUP); Escuela Politécnica Nacional, Quito (EPNC); Instituto Nacional de Pesquisas da Amazônia, Manaus (INPA); Museu Nacional, Universidade Federal do Rio de Janeiro, Rio de Janeiro (MNRJ); Museo de Historia Natural, Universidad Nacional Mayor de San Marcos, Lima (MUSM); Museum für Tierkunde, Dresden (SMTD); and United States National Museum, Smithsonian Institution, Washington, D.C. (USNM). All specimens belonging to EPNC are currently on indefinite loan to USNM.

In quotations of label data, a reversed virgule (\) separates lines on a label. Morphological terminology follows mainly Young (1968, 1977), except for the head which follows Hamilton (1981), as suggested by Mejdalani (1998). Terminology for leg chaetotaxy follows Rakitov (1997). Terminology for female genitalia follows Nielson (1965). Techniques for preparation of genital structures follow those of Oman (1949). The dissected parts are stored in microvials with glycerin.

TAXONOMY

Daedaloscarta Cavichioli & Takiya, **gen. nov.**

Figs 1-36

Type-species: *Daedaloscarta erwini* Cavichioli & Takiya, **sp. nov.**

Length. Males, 11.3-12.2 mm; females 10.4-12.3 mm.

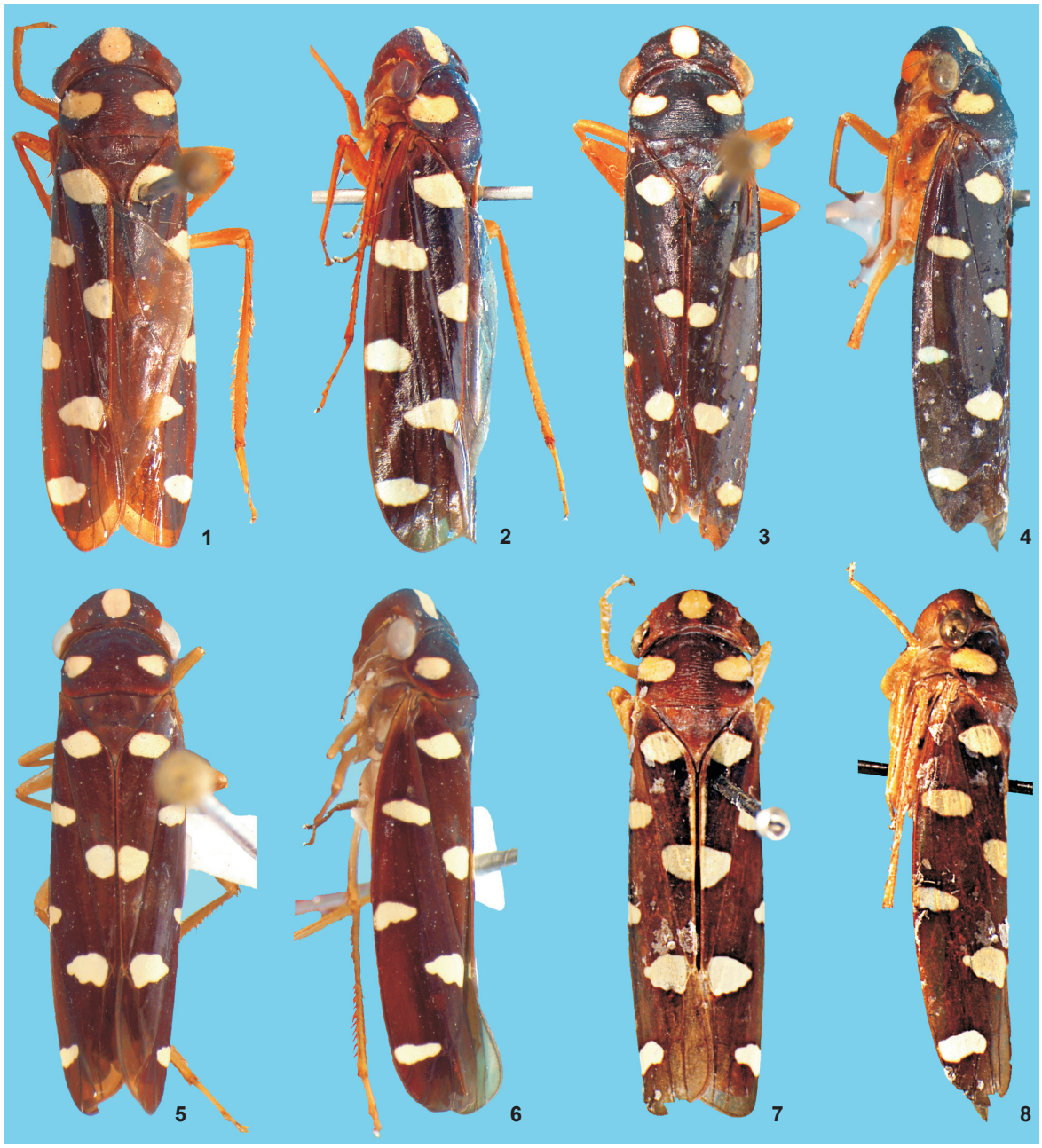
Diagnosis. Large black cicadellines with ivory spots (Figs 1-8); crown produced and round anteriorly (Figs 1-8); pronotum narrower than transocular width of head, with lateral margins parallel (Figs 1, 3, 5, 7); hindtibiae with anterodorsal row of macrosetae with intercalary setae; male pygofer with pair of acute finger-like processes arising at dorsal margin directed inwardly and ventrally (Figs 10, 21, 33); subgenital plates with apical two-thirds very slender (Figs 11, 22, 28, 34); aedeagus very large with shaft elongate, with an unpaired basidorsal, elongate bifurcate basiventral, and paired retrorse lateral processes at midlength of shaft (Figs 13, 24, 30, 36); paraphyses bifurcate and slender (Figs 12, 23, 29, 35); female sternite VII posterior margin with median angulate concavity (Fig. 15); and internal sternite VIII membranous.

Crown (Figs 1-8) well produced; median length from 4/10 to 6/10 interocular width and 3/10 to 4/10 transocular width; anterior margin rounded; with slight median fovea and without sculpturing or setae; without carina at transition from crown to face. Epicranial suture distinct and extending to anterior margin of crown. Frontogenal sutures extending onto crown and attaining ocelli. Ocelli (Figs 1, 3, 5, 7) located on or slightly before imaginary line between anterior eye angles, each equidistant from adjacent eye angle and median line of crown. Antennal ledges in dorsal view not protuberant (Figs 1, 3, 5, 7); in lateral view convex and oblique, and slightly carinate (Figs 2, 4, 6, 8). Antennae almost twice combined length of crown and pronotum. Frons (Figs 2, 4, 6, 8) convex; muscle impressions distinct. Epistomal suture complete. Clypeus (Figs 2, 4, 6, 8) in lateral view continuing profile of frons; ventral portion more horizontal; inferior margin convex.

Pronotum (Figs 1, 3, 5, 7) narrower than transocular width; lateral margins parallel; median length almost 2/3 transhumeral width; dorsopleural carinae complete; posterior margin approximately rectilinear; disk slightly striate, with fovea at anterior margin; without pubescence. Mesonotum (Figs 1, 3, 5, 7) slightly striate behind transverse sulcus. Forewings (Figs 1-8) with membrane; veins distinct, not elevated; with four apical cells of which base of third is more apical than base of fourth; without an anteapical plexus of veins; texture opaque and without sculpturing; in rest position exceeding apex of ovipositor. Hindwings with vein R2+3 incomplete. Hindlegs with femoral setal formula 2:1:1; anterodorsal row of macrosetae with very short intercalary setae (approximately 5); first tarsomere with length greater than combined length of two more distal tarsomeres, two parallel rows of short setae on plantar surface.

Male genitalia. Pygofer (Figs 9, 20, 26, 32) well produced; with pair of acute finger-like processes arising at dorsal margin directed posteroventrally (Figs 10, 21, 27, 33); posterior margin narrowly round; macrosetae dispersed from basal third to apex and with few microsetae on basiventral area. Valve (Figs 11, 22, 28, 34) transversely linear and very narrow; lateral margins curving dorsally, articulating with pygofer. Subgenital plates (Figs 9, 20, 26, 32), in lateral view, extending posteriorly slightly farther than half length of pygofer; in ventral view, subtriangular with apical two-thirds abruptly narrowed and slender (Figs 11, 22, 28, 34); few scattered microsetae; not fused basally (except fused basally for a short distance in *D. maculata* **sp. nov.**). Styles (Figs 12, 23, 29, 35) fairly robust; extending posteriorly well beyond apex of connective; without preapical lobe. Connective (Figs 12, 23, 29, 35) very short and H-shaped; with median dorsal keel. Aedeagus (Figs 13-14, 24-25, 30-31, 36) large; with basilateral apodemes short and robust; shaft elongate and slightly curved dorsally, with an unpaired basidorsal process, an elongate bifurcate slender basiventral process, extending almost to apex of shaft, and paired retrorse lateral processes near midlength; apex membranous. Paraphyses (Figs 12, 23, 29, 35) present; with rami approximately twice the length of basal shaft, very slender and delicate, approximately parallel or divergent, apex acute. Segment X of anal tube long (Figs 20, 26, 32), without rows of macrosetae.

Female genitalia. Sternite VII (Fig. 15) well produced; posterior margin with median rectangular reentrance. Internal sternite VIII forming simple membranous plate. Pygofer (Fig. 16) moderately produced; posterior margin subacute; macrosetae distributed along ventroapical margin to apex. First valvulae of ovipositor (Fig. 15) in ventral view with bases bearing anterior margins broadly round, and with a distinct finger-like projection arising from the superior inner margin and extending ventrally. Second valvulae of ovipositor (Fig. 17) broad in apical two-thirds; dorsal margin rectilinear, bearing approximately 40



Figures 1-8. Dorsal and dorsolateral habitus of *Daedaloscarta* **gen. nov.** species: (1-2) *D. erwini* **sp. nov.**; (3-4) *D. maculata* **sp. nov.**; (5-6) *D. mene* **sp. nov.**; (7-8) *D. redacta* **sp. nov.**

continuous teeth; each tooth (Fig. 18) subtriangular and with denticles throughout whole length; preapical area (Fig. 19) with denticles on dorsal and ventral margins; apex acute.

Coloration. Dorsal background color dark brown to black with large ivory spots, being one on crown, pair on pronotum, and on each forewing, two on clavus and four on corium (Figs 1-8). Ventral portion pale white to reddish-yellow (Figs 2, 4, 6, 8). Membrane fuscous. All species are very similar regarding their color pattern.

Etymology. The new genus is named after the skillful craftsman Dædalus, who, amongst his many creations, constructed wings for himself and his son Icarus. Fatally, Icarus

did not listen to his father and flew so high his wings melted and he fell off the skies.

Distribution. Specimens of the new species included in *Daedaloscarta* **gen. nov.** were all collected in *terra firme* and flooded Amazonian forests either by canopy fogging or light trapping, in Brazil, Ecuador, and Peru.

Remarks. The species of *Daedaloscarta* **gen. nov.** are similar with the species of *Amblyscartidia* Young, 1977, *Cardioscarta* Melichar, 1932, *Paratubana* Young, 1977 and *Pegogonia* Young, 1977 and *Sphaeropogonia maculipennis* Schmidt, 1928 with respect general coloration, but can be easily distinguished by male genitalia characters given in the diagnosis.

Daedaloscarta included species

Daedaloscarta erwini **sp. nov.** Peru (Loreto Province).
Daedaloscarta maculata **sp. nov.** Brazil (Amazonas State)
Daedaloscarta mene **sp. nov.** Ecuador (Orellana Province).
Daedaloscarta redacta **sp. nov.** Brazil (Amazonas State)

Taxonomic key to males of *Daedaloscarta*

1. Aedeagus shaft base with short unpaired dorsal process and ventral unpaired bifurcate process without lateral spiniform projections (Fig. 24) ..... *D. maculata* **sp. nov.**

1'. Aedeagus shaft base with long unpaired dorsal process and ventral unpaired bifurcate process with paired lateral spiniform projections 2

2. Aedeagus shaft without preapical ventral concavity and ventral unpaired process bifurcate anteriorly to lateral spiniform projections (Fig. 30) ..... *D. mene* **sp. nov.**

2'. Aedagus shaft with preapical ventral concavity and ventral unpaired process bifurcate posteriorly to lateral spiniform projections (Figs 13 and 36) 3

3. Aedeagus shaft with pair of lateral retrorse processes at midlength short and acute (Fig. 36) .... *D. redacta* **sp. nov.**

3'. Aedeagus shaft with pair of lateral retrorse processes at midlength long and with bifid apex (Fig. 13) .... *D. erwini* **sp. nov.**

Daedaloscarta erwini Cavichioli & Takiya, **sp. nov.**

Figs 1, 2, 9-19

Type-locality. Loreto, Peru.

Length. Male, 11.9 mm; female, 12.3 mm

Male genitalia. Aedeagus (Fig. 13) with shaft elongate, subcylindrical; unpaired basidorsal process long and acute; slender basiventral process shorter than aedeagus shaft, reaching apical third of shaft, bifurcate at apical third, with pair of small lateral spiniform dorsolateral processes arising before bifurcation (Fig. 14), apex curved dorsally; pair of lateral slender spiniform retrorse processes, almost as long as basidorsal process, with apex bifurcate; with preapical ventral concavity. Paraphyses (Fig. 12) rami parallel. Other characteristics as in generic description.

Female genitalia. Second valvulae of ovipositor with approximately 42 dorsal teeth (Figs 17, 18). Other characteristics as in generic description.

Coloration. Dorsal background dark brown (Fig. 1). Frons and clypeus dark brown (Fig. 2).

Remarks. *Daedaloscarta erwini* **sp. nov.** shares with *D. redacta* **sp. nov.** similarities in the male genitalia, including (1) basiventral process with paired dorsolateral processes arising before the bifurcation (Figs 14, 36); (2) shaft with preapical ventral concavity (Figs 13, 36); and (3) paraphyses rami approximately parallel (Figs 12, 35). However, *D. erwini* **sp. nov.** can be distinguished from all other *Daedaloscarta* **gen. nov.** species by the long, slender, and bifurcate paired lateral retrorse processes of shaft (Fig. 13).

Type-specimens were collected by insecticidal fogging up to 40m in a secondary flooded forest in Loreto, Peru.

Etymology. The species epithet is given in honor of Dr. Terry Erwin (USNM), who while searching for carabid beetles, uncovered an extremely high undescribed diversity of sharpshooter leafhoppers by sampling Amazonian forest canopies with insecticidal fog.

Material examined. Holotype: male, "Peru, LO: Cmp.\S. Branch 13.V.90\75°20'W 5°12'S\Erwin et al.", "Secondary Fldplain\Insect fogging\to 40 m up swamp forest\Ficus + epiphytes", MUSM. Paratype: female, same data as holotype, MUSM.

Daedaloscarta maculata Cavichioli & Takiya, **sp. nov.**

Figs 3, 4, 20-25

Type-locality. Reserva Florestal Walter Egler, Rio Preto da Eva, Amazonas, Brazil.

Length. Male, 11.3 mm.

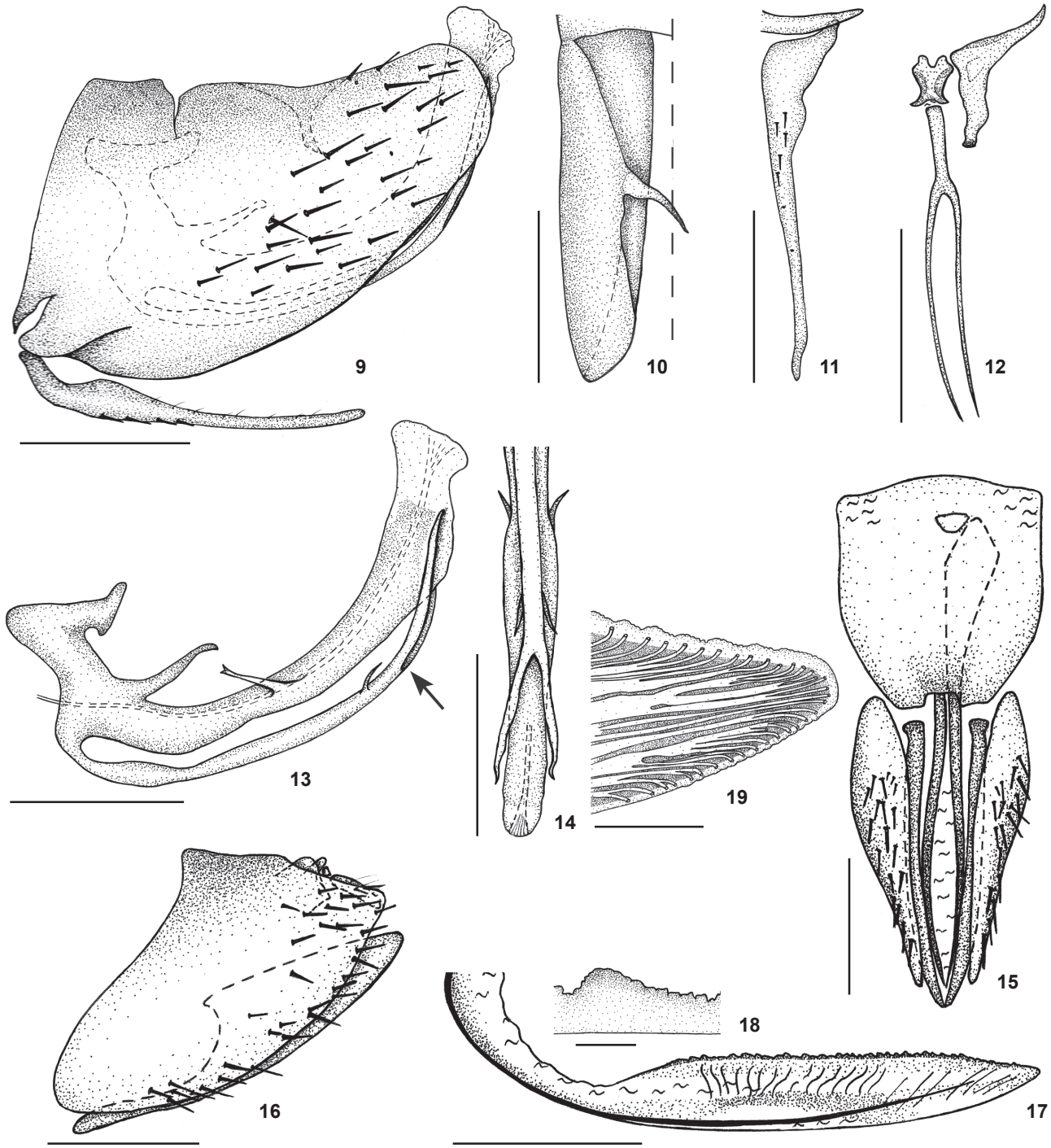
External features as in generic description.

Male genitalia. Aedeagus (Fig. 24) with shaft elongate, subcylindrical; unpaired basidorsal process very short and acute; slender basiventral process as long as aedeagus shaft, bifurcate at apical third, without lateral spiniform projections (Fig. 25), apex straight; pair of lateral acute retrorse flanges, curved dorsally; without preapical ventral concavity. Paraphyses (Fig. 23) rami divergent. Other characteristics as in generic description.

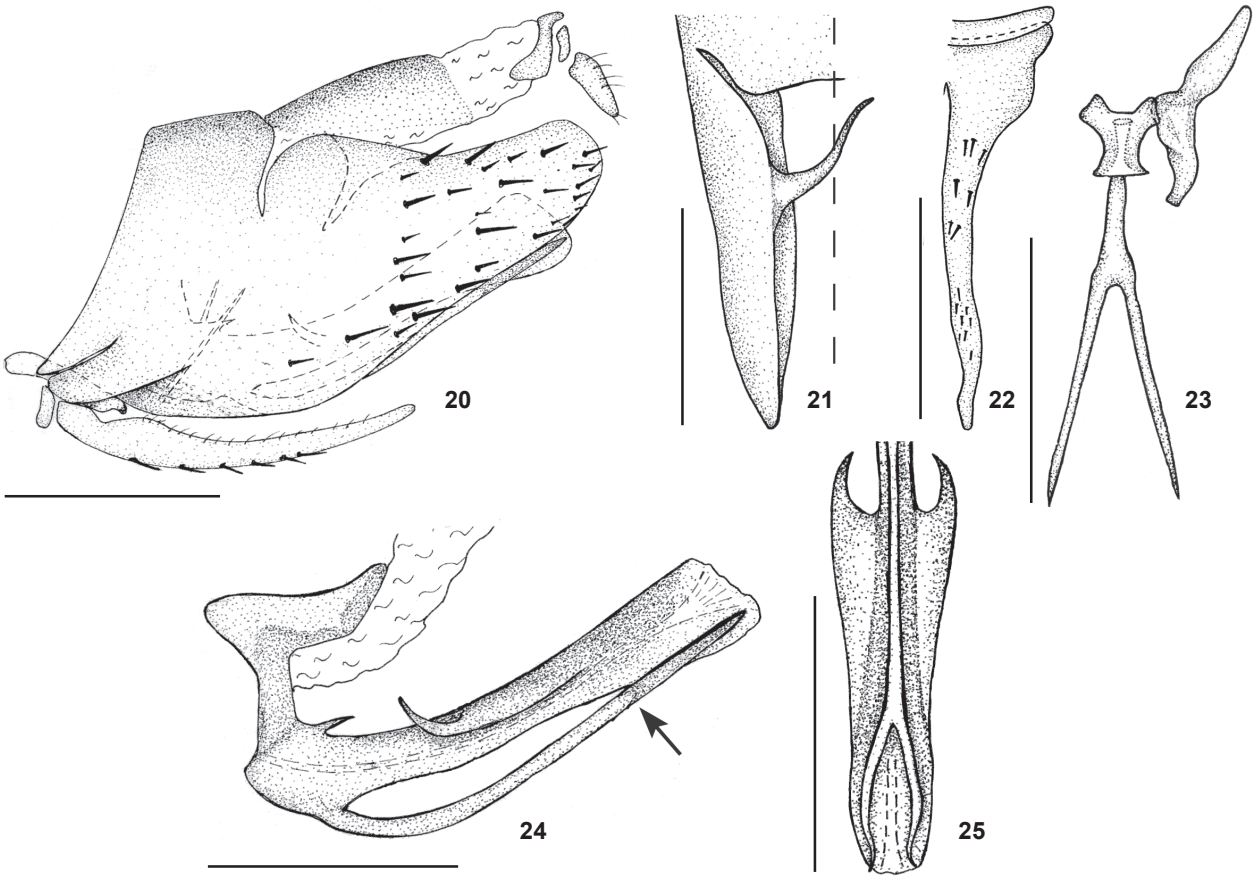
Female unknown.

Coloration. Dorsal background black (Fig. 3). Frons black with lateral yellow areas (Fig. 4). Clypeus black with pale yellow apex.

Remarks. *Daedaloscarta maculata* **sp. nov.** shares with *D. mene* **sp. nov.** similarities in the male genitalia, including (1) shaft without preapical ventral concavity (Figs 24, 30) and (2) paraphyses rami approximately divergent (Figs 23, 29). However, it can be distinguished from all other *Daedaloscarta* **gen. nov.** species by (1) very short and acute basidorsal process of the aedeagus shaft (Fig. 24); (2) paired lateral flanges of shaft (Fig. 24); and (3) basiventral process without lateral spiniform projections and with apex straight (Fig. 25).



Figures 9-19. Genitalia of *Daedaloscarta erwini* **sp. nov.** (9-14) Male holotype: (9) genital capsule, valve and anal tube not illustrated, lateral view; (10) left pygofer lobe, dorsal view, setae not illustrated; (11) valve and left subgenital plate, ventral view; (12) connective, right style, and paraphyses, dorsal view; (13) aedeagus, lateral view (arrow points to bifurcation of unpaired ventral process); (14) aedeagus, ventral view; (15-19) female paratype: (15) sternite VII, base of right first valvula, pygofer, gonoplacs, and remaining valvulae, ventral view; (16) pygofer and gonoplacs, lateral view; (17) valvula II, lateral view; (18) tooth XVIII of valvula II, lateral view, scale bar = 0.02 mm; (19) apex of valvula II, lateral view, scale bar = 0.1 mm. All other scale bars = 1.0 mm.



Figures 20-25. Male genitalia of *Daedaloscarta maculata* **sp. nov.**, holotype: (20) genital capsule and anal tube, lateral view; (21) left pygofer lobe, dorsal view, setae not illustrated; (22) valve and left subgenital plate, ventral view; (23) connective, right style, and paraphyses, dorsal view; (24) aedeagus, lateral view, arrow points to bifurcation of unpaired ventral process; (25) aedeagus, ventral view. Scale bars = 1.0 mm.

The holotype was collected in one of INPA's forest reserves, Reserva Florestal Walter Egler (02°43'S 59°47'W), located in Rio Preto da Eva municipality, along AM-010 (Manaus-Itacoatiara) road.

Etymology. The species epithet refers to the contrasting spotted color pattern shared by all members of the new genus.

Material examined. Holotype: male, "Brasil – Amazonas\ Manaus – Itacoatiara\Reserva Egler\12-V-1978\A. Y. Harada Col.", INPA.

Daedaloscarta mene Cavichioli & Takiya, **sp. nov.**

Figs 5, 6, 26-31

Type-locality. Reserva Étnica Waorani, Orellana, Ecuador

Length. Males, 11.3-11.4 mm; females, 10.4-11.5 mm.

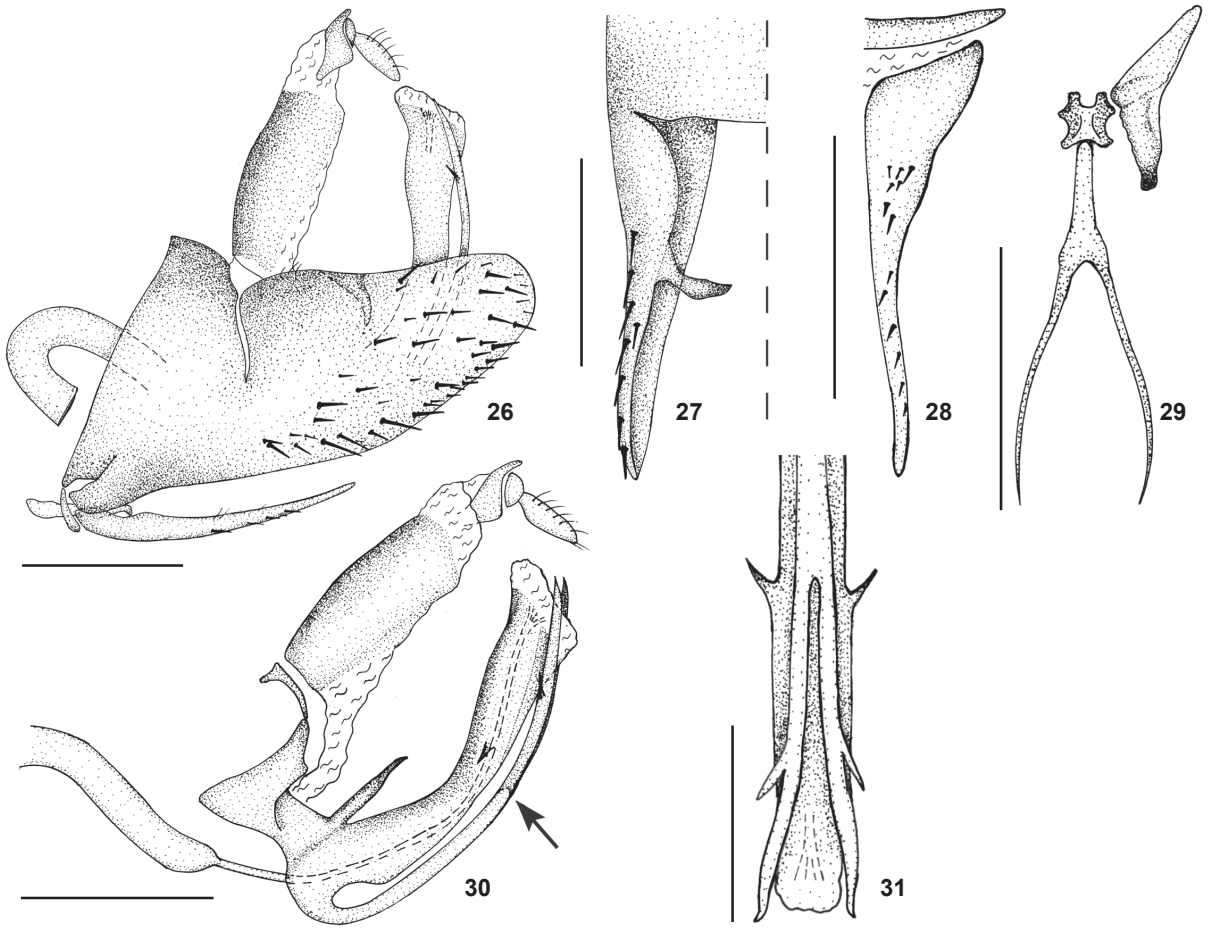
Male genitalia. Aedeagus (Fig. 30) with shaft elongate, subcylindrical; unpaired basidorsal process long and acute; slender basiventral process slightly longer than aedeagus shaft, bifurcate approximately at midlength, with pair of small lateral spiniform dorsolateral processes arising after bifurcation (Fig. 31), apex curved dorsally; pair of very short and acute lateral retrorse processes; without preapical concavity. Paraphyses (Fig. 29) divergent. Other characteristics as in generic description.

Female genitalia. Second valvulae of ovipositor with approximately 42 dorsal teeth. Other characteristics as in generic description.

Coloration. Dorsal background dark brown (Fig. 5). Frons and clypeus dark brown (Fig. 6).

Remarks. *Daedaloscarta mene* **sp. nov.** is similar to *D. maculata* **sp. nov.** (see remarks above). However, it can be readily distinguished from all other species of *Daedaloscarta* **gen. nov.** by the ventral unpaired process bifurcate anteriorly to lateral spiniform projection (Fig. 31).

Daedaloscarta mene **sp. nov.** was collected only at the Orellana Province, at lowland Amazon Rainforest (Western: Orellana Province, Ecuador).



Figures 26-31. Male genitalia of *Daedaloscarta mene* **sp. nov.**, holotype: (26) genital capsule and anal tube, lateral view; (27) left pygofer lobe, dorsal view; (28) valve and left subgenital plate, ventral view; (29) connective, right style, and paraphyses, dorsal view; (30) aedeagus, lateral view, arrow points to bifurcation of unpaired ventral process; (31) aedeagus, ventral view. Scale bars = 1.0 mm.

Etymology. The species epithet is derived from *meñe* meaning jaguar in Waorani (Huaorani), a revered animal, whose spirits will keep animal game closer to humans and choose adoptive fathers who become shamans and can tell humans where to hunt (Rival 2002).

Material examined. Holotype: male, "Ecuador: Orellana Province\Reserva Étnica Waorani, Transect\Ent., 1 km S. Onkone Gare Camp,\220m 00°39'10"S 076°26'00"W", "09-Feb-1999, Erwin\transect T/1 T. L. Erwin\et al. fogging terra firme\forest, lot#2002", EPNC. Paratypes: male, same data as holotype except "6-Oct-1995, T. L. Erwin\et al. fogging terra firme\forest lot#1219", INPA; female, same data as holotype except "3-Jul-1995", "lot#1109", INPA; female, same data as holotype except "10-Feb-1995", "lot#1992", EPNC; female, same data as holotype except "5-Feb-1996", "lot#1434", USNM; female, same data as holotype except "25-Jun-1994", "lot#739", DZRJ; female, same data as holotype except "Jun-1996", "lot#1531", DZUP; female, same data as holotype except "5-Feb-1996, "lot#1433", MNRJ.

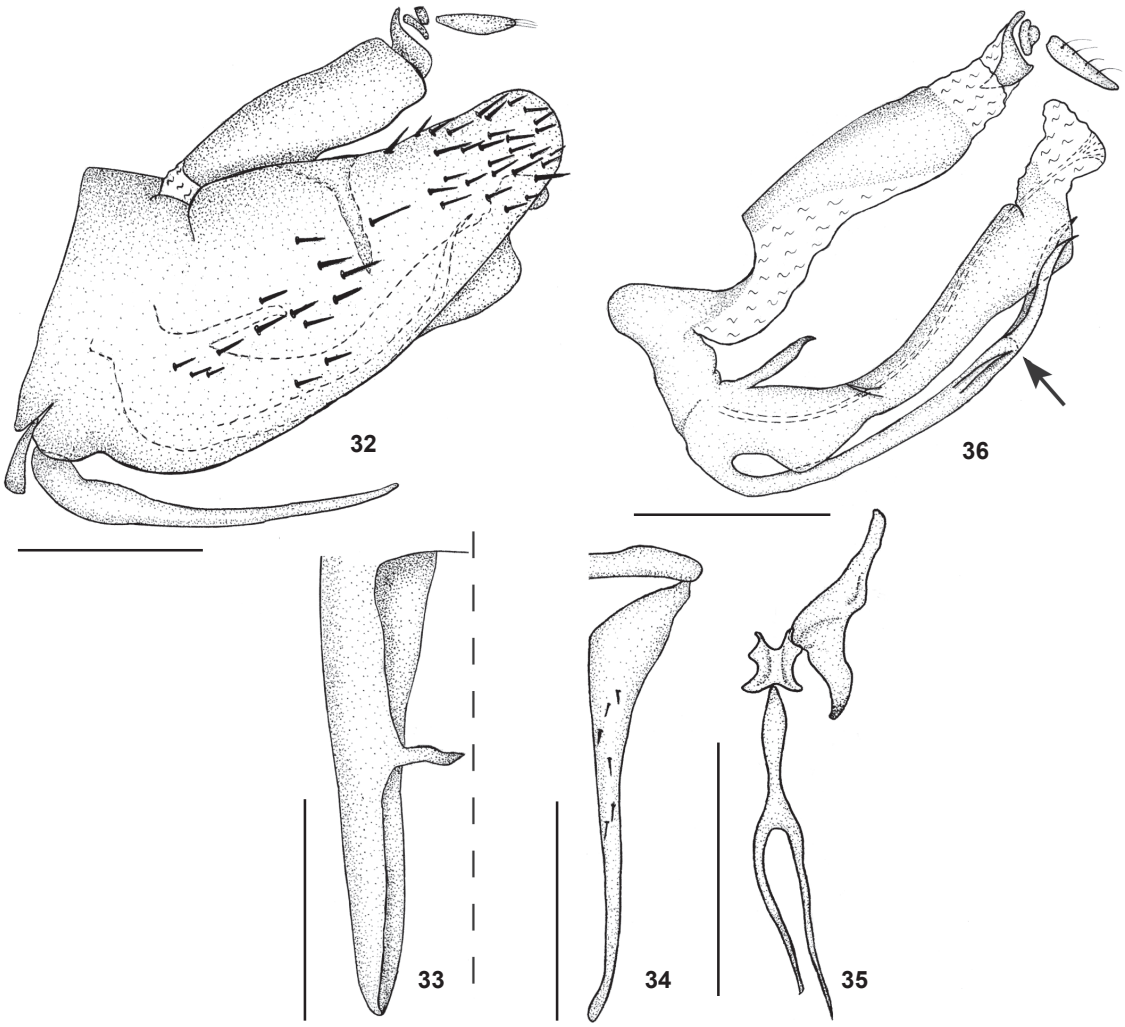
Daedaloscarta redacta Cavichioli & Takiya, **sp. nov.**

Figs 7, 8, 32-36

Type-locality. São Paulo de Olivença, Amazonas, Brazil.

Length. Males, 11.4 – 12.2 mm.

Male genitalia. Aedeagus (Fig. 36) with shaft elongate, subcylindrical; unpaired basidorsal process long and acute; slender basiventral process shorter than aedeagus shaft, reaching apical third of shaft, bifurcate at apical third, with pair of small lateral spiniform dorsolateral processes arising before bifurcation, apex curved slightly dorsally; pair of short and acute lateral spiniform retrorse processes; paratype has an additional pair of very small setae-like ventrolateral projections at base of



Figures 32-36. Male genitalia of *Daedaloscarta redacta* **sp. nov.**, holotype: (32) genital capsule and anal tube, lateral view; (33) left pygofer lobe, dorsal view, setae not illustrated; (34) valve and left subgenital plate, ventral view; (35) connective, right style, and paraphyses, dorsal view; (36) aedeagus, lateral view. Scale bars = 1.0 mm.

apical fourth; with preapical ventral concavity. Paraphyses (Fig. 35) approximately parallel. Other characteristics as in generic description.

Female unknown.

Coloration. Dorsal background dark brown (Fig. 7). Frons brown (holotype, Fig. 8) or with lateral pale spots (paratype). Clypeus brown.

Remarks. *Daedaloscarta redacta* **sp. nov.** is very similar to *D. erwini* **sp. nov.** (see remarks above). However, it can be readily distinguished from all other species of *Daedaloscarta* **gen. nov.** by the combination of (1) basiventral process with paired dorsolateral processes arising before the bifurcation (Fig. 36); (2) very short and acute paired lateral processes of the shaft (Fig. 36); and (3) shaft with preapical ventral concavity (Fig. 36).

Specimens of the new species were collected along the Solimões River (Amazonas, Brazil). There are two labels attached to the paratype, with different dates and collecting localities distant by approximately 600km along the Rio Solimões. This specimen was most probably attracted to the lights of the boat during the traverse between the two cities (sole means of transportation in the region) between 20 and 22.V.1991. The holotype was collected in another town a bit further upstream. Considering the imprecise data, it is difficult to say if the species occurs in forests of right (Tefé) and/or left (Tonantins and São Paulo de Olivença) margins of the Solimões River.

Etymology. The species epithet refers to the small size of the paired lateral processes of the shaft, one of the diagnostic differences when compared to the similar, *D. erwini* **sp. nov.**

Material examined. Holotype: male, "São Paulo\de Olivença", "Amazonas", "1921\5", SMTD. Paratype: male, "Tonantins – AM\20.V.91\Luz do barco\N. D. Paraluppi, col.", "Brazil, Amazonas\Tefé, 22.V.1991\N. D. Paraluppi col.", INPA

ACKNOWLEDGMENTS

T. Erwin, M. Pogue, and W. Steiner (USNM) provided access to the Smithsonian Institution rainforest canopy fogging Ecuadorian samples to C. H. Dietrich (University of Illinois). We thank A. Henriques and J. A. Rafael (INPA), G. Lamas and P. Lozada (MUSM), and R. Emmrich (SMTD) for access to their collections and loan of specimens. The holotype of *D. redacta* was deposited at Coleção Entomológica, Departamento de Biologia, Universidade do Amazonas, access granted by N. Aguiar. The senior author is a research productivity fellow from Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq; process 303.127/2010-4). This research was partially funded by PROTAX/CNPq research grants to the senior (process 561.298/2010-6) and junior (process 562.303/2010-3) authors. This paper is contribution number 1886 of the Departamento de Zoologia, Universidade Federal do Paraná.

LITERATURE CITED

Cavichioli, R.R. 1996. *Albiniana*, gen. nov. e revalidação de *Alocha* Melichar, 1926 (Homoptera, Cicadellidae, Cicadellinae). **Revista Brasileira de Zoologia 13** (3): 677-683.

Cavichioli, R.R. 1998. *Clypelliana mejdalanii* gen. n. e sp. n. (Homoptera, Cicadellidae, Cicadellinae) do Mato Grosso e Pará, Brasil. **Revista Brasileira de Zoologia 15** (3): 613-616.

Cavichioli, R.R. 2000a. *Jeepiulus flavus* gen. n. and sp. n. (Hemiptera, Auchenorrhyncha, Cicadellidae) from Mato Grosso and Rondônia, Brazil. **Insecta Mundi 14** (4): 221-224.

Cavichioli, R.R. 2000b. *Wolfniana* gen. n. and redescription of *Wolfniana limbatula* (Osborn, 1926) comb. n. (Hemiptera, Auchenorrhyncha, Cicadellidae). **Insecta Mundi 14** (4): 253-255.

Cavichioli, R.R. 2003. *Fingeriana dubia* gen. nov. e sp. nov. de Cicadellini (Hemiptera, Auchenorrhyncha, Cicadellidae) do sudeste e sul do Brasil. **Revista Brasileira de Zoologia 20** (2): 247-249.

Cavichioli, R.R. 2008. A new Neotropical sharpshooter genus *Spinagonalia* (Insecta, Hemiptera, Cicadellidae, Cicadellinae) with description of a new species from Citrus orchands and grapevines. **Zootaxa 1746**: 61-64

Cavichioli, R.R. 2010. *Lebaziella* gen.nov. (Insecta: Hemiptera: Cicadellidae: Cicadellini): a new sharpshooter genus with descriptions of two new species. **Zootaxa 2566**: 57-63

Hamilton, K.G.A. 1981. Morphology and evolution of the rhynchotan head (Insecta: Hemiptera, Homoptera). **Canadian Entomologist 113** (11): 953-974.

Hamilton, K.G.A. 1985. Review of *Draeculacephala* Ball (Homoptera, Auchenorrhyncha, Cicadellidae). **Entomologische Abhandlungen aus dem Staatlichen Museum für Tierkunde Dresden 49** (5): 83-103.

Mejdalani, G.L.F. 1994. A new genus of Cicadellini from Brazil. **Revista Brasileira de Biologia 54** (2): 219-222.

Mejdalani, G. 1998. Morfologia externa dos Cicadellinae (Homoptera, Cicadellidae): comparação entre *Versigonalia ruficauda* (Walker) (Cicadellini) e *Tretogonia cribrata* Melichar (Proconiini), com notas sobre outras espécies e análise da terminologia. **Revista Brasileira de Zoologia 15** (2): 451-544.

Nielson, M.W. 1965. A revision of the genus *Cuerna* (Homoptera, Cicadellidae). **Technical Bulletin of the United States Department of Agriculture 1318**: 1-48.

Nielson, M.W. & C. Godoy. 1995. A new genus and new species of cicadelline leafhoppers from Costa Rica (Cicadellidae: Cicadellinae). **Contributions on Entomology International 1** (2): 189-204.

Oman, P.W. 1949. The Nearctic leafhoppers (Homoptera: Cicadellidae). A generic classification and check list. **Memoirs of the Entomological Society of Washington 3**: 1-253.

Rakitov, R.A. 1997. On differentiation of the cicadellid leg chaetotaxy (Homoptera: Auchenorrhyncha: Membracoidea). **Russian Entomological Journal 6** (3-4): 7-27.

Rival, L.M. 2002. **Trekking Through History: The Huaorani of Amazonian Ecuador.** New York, Columbia University Press, XX+246p.

Takiya, D.M. & R.R. Cavichioli. 2005. The new South American sharpshooter genus *Lanceoscarta* gen.n. (Insecta: Hemiptera: Cicadellidae: Cicadellinae) with description of three new species. **Entomologische Abhandlungen 62** (2): 175-183

Takiya, D.M.; G. Mejdalani & M. Felix. 2001. A new genus and species of Cicadellini (Hemiptera Cicadellidae Cicadellinae) from Southeastern Brazil. **Tropical Zoology 14**: 175-183.

Takiya, D.M.; R.R. Cavichioli & G. Mejdalani. 2003. *Caragonia*, a new genus of Cicadellini (Hemiptera: Cicadellidae) from Southeastern Brazil. **Zootaxa 335**: 1-10.

Young, D.A. 1968. Taxonomic study of the Cicadellinae (Homoptera: Cicadellidae), Part 1, Proconiini. **Bulletin of the United States National Museum 261**: 1-287.

Young, D.A. 1977. Taxonomic study of the Cicadellinae (Homoptera: Cicadellidae), Part 2, New World Cicadellini and the genus *Cicadella*. **Technical Bulletin of the North Carolina Agricultural Experiment Station 239**: 1-1135.

Submitted: 01.VII.2012; Accepted:27.XI.2012.
Editorial responsibility: Claudio J.B. de Carvalho