SYSTEMATICS, MORPHOLOGY AND PHYSIOLOGY

Description of the *Aguatala compsa* Young (Hemiptera: Cicadellidae: Cicadellinae) Female

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Descrição da Fêmea de *Aguatala compsa* Young (Hemiptera: Cicadellidae: Cicadellinae)

RESUMO - A fêmea de *Aguatala compsa* Young é descrita e ilustrada pela primeira vez com base em espécimes provenientes da Colômbia, consistindo em novo registro de distribuição para o gênero monotípico *Aguatala* Young. A genitália feminina de *A. compsa* é detalhadamente descrita e comparada com aquelas de gêneros supostamente próximos, pertencentes ao grupo genérico *Erythrogonia* (*sensu* Young).

PALAVRAS-CHAVE: Cigarrinha, morfologia, Membracoidea, Cicadellini

ABSTRACT - The female of *Aguatala compsa* Young is for the first time described and illustrated based on specimens from Colombia. This consists also on a new distribution record for the monotypic genus *Aguatala* Young. The female genitalia of *A. compsa* are described in detail and compared with those of supposedly related genera belonging to the *Erythrogonia* generic group (*sensu* Young).

KEY WORDS: Leafhopper, morphology, Membracoidea, Cicadellini

The subfamily Cicadellinae is composed of leafhoppers that feed on the xylem of vascular plants. Most genera of this economically important subfamily (all species being potential vectors of xylem-borne phytopathogenic bacteria) are still in need of taxonomic studies (Takiya & Mejdalani 2004). According to Young (1968), the subfamily is divided into two tribes: a cosmopolitan Cicadellini and a New World Proconiini. The Cicadellini, which includes the genus herein studied, currently comprises 266 genera and 1,886 species (McKamey 2007).

The genus *Aguatala* Young comprises a single species, *A. compsa* Young, which is uncertainly recorded from Venezuela (Young 1977, McKamey 2007). The species was so far known only from two males. Young (1977) included *Aguatala* in his *Erythrogonia* generic group and observed that *Aguatala* is similar to *Erythrogonia* Melichar. *Aguatala* can be distinguished from *Erythrogonia*, as well as from other Neotropical Cicadellini, by the following combination of characters (see Young 1977): (1) clypeus with contour of its lower portion more horizontal than profile of frons (continuing the profile in *Erythrogonia*), (2) pronotal width much greater than transocular width of head (shorter in *Erythrogonia*) (Fig 1), (3) lateral margins of pronotum strongly convergent anteriorly (parallel in *Erythrogonia*) (Fig 1), (4) male pygofer with macrosetae located on posterior half of disk (often covering a considerable portion of disk in *Erythrogonia*), (5) aedeagus with a pair of dorsoapical processes, and (6) paraphyses with short stalk and narrow elongate rami.

In the present paper, the genus *Aguatala* is for the first time recorded from Colombia and the previously unknown female of *A. compsa* is described and illustrated. The female genitalia of *Aguatala* are compared to those of supposedly related genera in the *Erythrogonia* generic group.

Material and Methods

The studied specimens are deposited in the collection of the Departamento de Entomologia, Museu Nacional (MNRJ), Universidade Federal do Rio de Janeiro. Label data are given inside quotations with a reversed virgule (\) separating lines. Morphological terminology follows mainly Young (1977), except for the head (Mejdalani 1998) and for the female genitalia (Nielson 1965, Hill 1970, Davis 1975). The use of the term gonoplac (= third ovipositor valvula) follows Mejdalani (1998). Techniques for preparation of male and female genital structures follow, respectively, Oman (1949) and Mejdalani (1998). The dissected parts are stored in microvials with glycerin.

Results

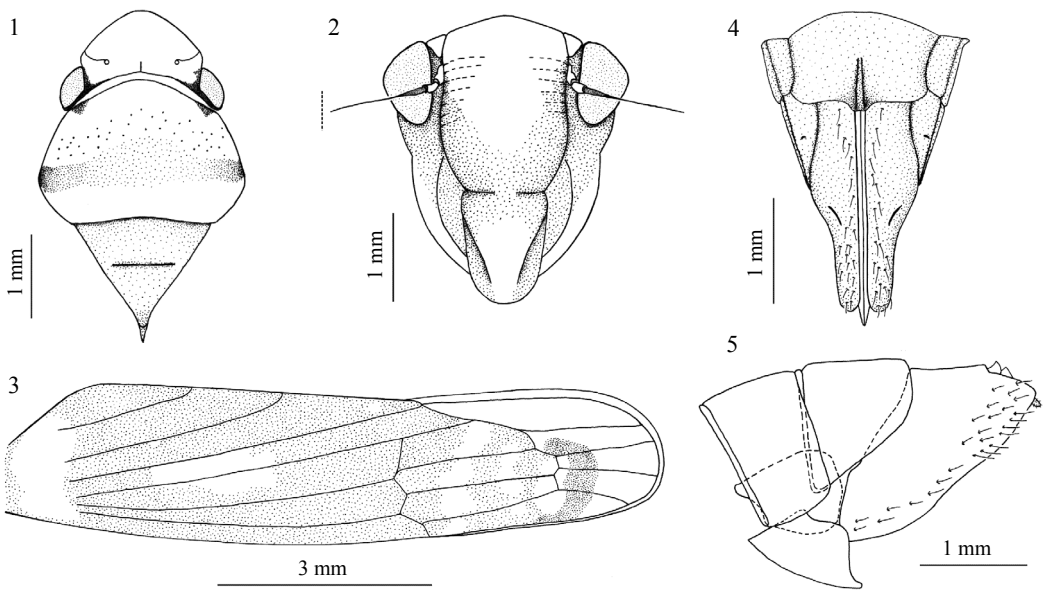
Aguatala compsa Young (Figs 1-12)

Description of the female. Length, 11.6 mm. Head (Fig 1), in dorsal view, deltoid, well produced, with anterior margin rounded; median length of crown approximately one-half interocular width and three-tenths transocular width; without carina at transition from crown to frons; slight carina on posterolateral margins of crown behind compound eyes, in lateral view. Surface of crown, in lateral view, with more elevated area behind ocelli, forming angle with more anterior portion; in dorsal view smooth, without sculpturing or setae. Frontogenal sutures, in dorsal view, extending onto crown and attaining ocelli; the latter located slightly before imaginary line between anterior eye angles; each ocellus closer to adjacent eye angle than to median line of crown. Antennal ledges, in dorsal view, not protuberant. Frons (Fig 2), in frontal view, slightly flattened medially; muscle impressions distinct. Epistomal suture incomplete medially. Clypeus (Fig 2), in frontal view, strongly swollen on superior portion, swollen area narrowing toward apex; in lateral view, continuing profile of frons on superior portion, inferior portion nearly horizontal.

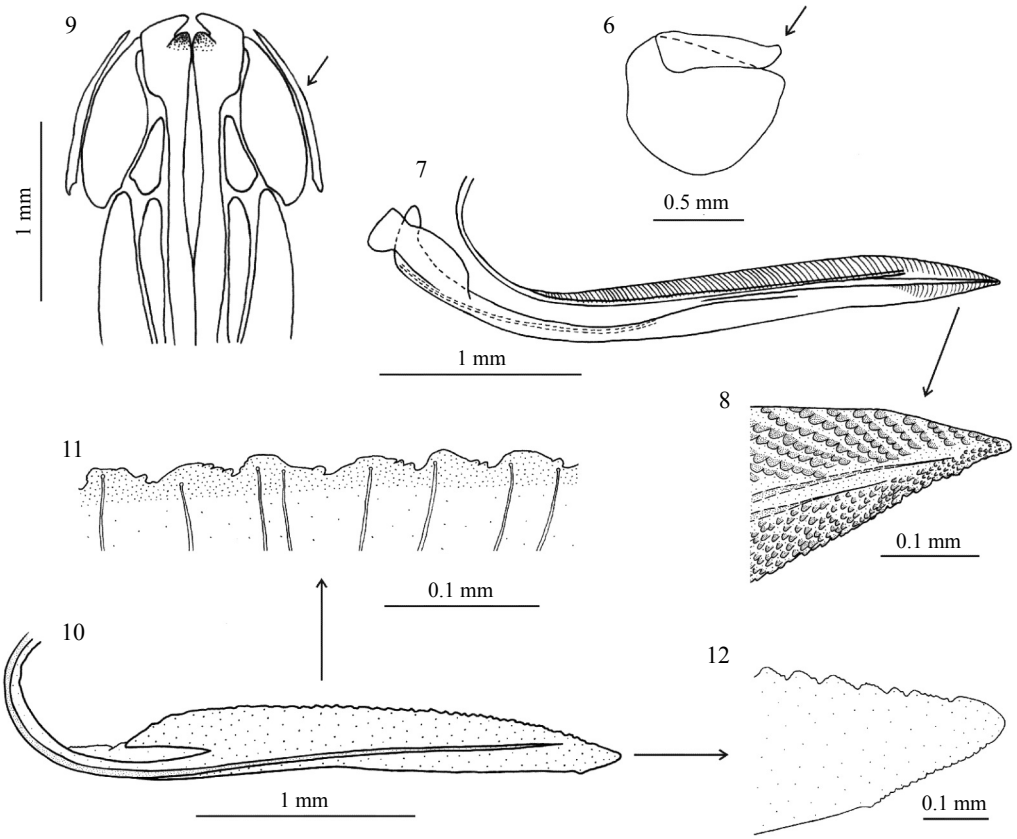
Thorax (Fig 1), in dorsal view, with pronotal width distinctly greater than transocular width of head. Pronotum with lateral margins convergent anteriorly; dorsopleural carinae incomplete; pronotal surface with some punctures on median portion; posterior margin almost rectilinear. Scutellum (= scutellum behind transverse sulcus *sensu* Young), in lateral view, slightly swollen. Forewings (Fig 3), in rest position, extending well beyond apex of ovipositor; without plexus of veins on apical portion; with three closed anteapical cells; base of fourth apical cell more proximal than base of third; corium with coriaceous texture; membrane distinct, restricted mostly to apical cells. Hindlegs with femoral setal formula 2:1:1; first tarsomere with two parallel rows of small setae on plantar surface, its length greater than combined length of two more distal tarsomeres.

Color. Crown and pronotum (Fig 1) yellow; inner margins of eyes outlined by black maculae; eyes black; pronotum with broad, transverse brown band between humeral angles, anterior margin of band expanded on median portion, anterolateral pronotal margins with inconspicuous brown marks. Mesonotum (Fig 1) mostly reddish-brown with brown apex. Forewings (Fig 3) dark red with conspicuous, irregular pale yellow maculae as follows: large basal one on corium and clavus extending nearly from costal margin to inner claval margin, one on basal half of corium adjacent to claval sulcus, one group of maculae on posterior portion of corium, some of them forming transverse stripe from outer wing margin to inner apical cell, other smaller spots also present; membrane with dark brown area. Face (Fig 2) yellow; inferior half of frons with somewhat V-shaped brown macula; this macula continuous with brown areas on genae, lora, and upper and lateral portions of clypeus. Abdomen, in ventral view, chiefly red; sternite VII and pygofer mostly black, the former with red lateral marks.

Female genitalia. Sternite VII (Fig 4), in ventral view, with posterior margin approximately transverse, rounded laterally, forming short projection medially; median portion of sternite with sulcus extending approximately from posterior half to apex of projection, lateral borders of sulcus slightly carinate. Internal sternite VIII membranous, not forming sclerites. Pygofer (Fig 5), in lateral view, well produced posteriorly; posterior margin narrowly rounded; surface with macrosetae on posterior portion and extending anteriorly along ventral margin; with few small microsetae mostly on basal portion.



Figs 1-5 *Aguatala compsa* female. 1, head, pronotum, and mesonotum, dorsal view. 2, face, anterior view. 3, forewing. 4, apical portion of abdomen, ventral view. 5, apical portion of abdomen, lateral view.



Figs 6-12 *Aguatala compsa* female. 6, valvifer I, lateral view (arrow indicates associated sclerite). 7, valvula I of ovipositor, general lateral view. 8, apical portion of valvula I, showing dorsal and ventral sculptured areas, lateral view. 9, valvifers I and II and basal portions of valvulae I, gonoplacs, and pygofer, ventral view (arrow indicates sclerite associated with valvifer I). 10, valvula II, general lateral view. 11, aspect of teeth from median portion of valvula II, lateral view. 12, apical portion of valvula II, lateral view.

Valvifers I (Fig 6), in lateral view, with elongate, rectangular associated sclerite on superior portion, slightly expanded posteriorly. Valvulae I of ovipositor (Fig 7), in lateral view, with dorsal margin of shaft approximately rectilinear behind basal curvature; dorsal sculptured area (Fig 8) formed by diagonally arranged rows of scale-like processes extending from basal portion of shaft to apex; ventral sculptured area (Fig 8) formed by scale-like processes restricted to apical portion of shaft; ventral interlocking device distinct on basal half of shaft; apex of shaft acute; base of valvulae I (Fig 9), in ventral view, expanded, with pair of digitiform processes directed inwardly. Valvulae II (Fig 10), in lateral view, expanded behind basal curvature; dorsal margin of shaft moderately convex, covered by round or subtriangular, contiguous teeth from basal portion to apex; teeth (Fig 11) and ventroapical portion of shaft (Fig 12) bearing denticles; shaft with inconspicuous preapical prominence; apex acute. Gonoplacs, in lateral view, expanded at apical half; apex obtuse; shaft narrowing slightly on apical half toward apex; surface with few small setae and many minute spines on apical portion and extending anteriorly along ventral margin.

Material examined. Colombia. One female, "X/94 \ Casobuy [Casabuy Corregimiento, Nariño Department] \ Hoja \ Acosta-Rojas" (MNRJ). One male, "Sandona [Sandoná Municipality, Nariño Department]", plus other illegible data (MNRJ).

Discussion

The specimens of *A. compsa* herein studied were identified using the original description and illustrations of Young (1977). The male genitalia agree perfectly well with those of the holotype. However, our specimens are distinctly larger (male, 11.9 mm, female, 11.6 mm) than the holotype (8.4 mm) and have a more deltoid head. The median length of crown corresponds to approximately one-half of interocular width and three-tenths of transocular width in our specimens, whereas in the holotype these ratios are slightly different (six-tenths and four-tenths, respectively). Although our female is slightly smaller than the male, the former could be associated with the latter due to their remarkably similar color patterns. The species is newly recorded from Colombia. The specimens were collected in two localities in Nariño Department that are close to each other (less than 30 km apart). *Aguatala compsa* was previously known only from Venezuela, although it is

important to mention that Young (1977) considered the latter country record as uncertain.

The female genitalia have yielded useful characters for the taxonomy of sharpshooters, as demonstrated by several authors (*e.g.*, Nielson 1965, Young 1977, Mejdalani 1995, 1998, Takiya & Mejdalani 2004). However, the morphological diversity found in the female genitalia is still poorly known when compared to our current knowledge of the male genitalia. The present study revealed the occurrence of peculiar features in the female genitalia of *Aguatala*, such as a pair of digitiform processes on the basal portion of valvulae I (Fig 9) and a distinct sclerite on the superior portion of valvifers I (Fig 6), which can be added to the combination of features that distinguish the genus.

As pointed out in the introduction, Young (1977) treated *Aguatala* in the *Erythrogonia* generic group. In this group, he placed *Aguatala* near *Erythrogonia* Melichar, *Inuyana* Young, and *Tettisama* Young. Among the latter three genera, the female genitalia of *Tettisama* [based on *T. quinquemaculata* (Germar)] were described in detail by Mejdalani (1998). Hence, we concentrate our discussion in the comparison between *Aguatala* and *Tettisama*, with the goal of pointing out potentially useful taxonomic features in the female genitalia. The sternite VII in *Tettisama* has the posterior margin distinctly concave, whereas in *Aguatala* it is approximately transverse (Fig 4); in addition, the sternite VII of *Aguatala* has on posterior portion a peculiar sulcus with carinate margins. In *Tettisama*, the internal sternite VIII is conspicuously developed, being formed by a large semicircular ventral sclerite and three smaller dorsal sclerites, whereas in *Aguatala* the sternite VIII is membranous, without sclerites. The valvifers I in *Tettisama* do not have the associated dorsal sclerite observed in *Aguatala* (Fig 6), and the valvulae I in the former genus do not have basal digitiform processes like those of the latter (Fig 9). The valvulae II are also distinct in the two genera; in *Tettisama*, the dorsal margin of the shaft is distinctly and regularly convex, whereas in *Aguatala* the dorsal margin is more rectilinear, only moderately convex (Fig 10).

A study of the female genitalia in *Erythrogonia* is currently underway (Carvalho & Mejdalani, unpublished data) and has already revealed a series of peculiar characters, such as a large spiniform process in the valvifer I of *E. phoenicea* (Signoret), a feature that is not present in *Aguatala*. The internal sternite VIII in *Inuyana* (based on *I. ucaya* Young) has distinct sclerites (Young 1977, sclerites of the "genital chamber"), whereas in *Aguatala* it is membranous. The preliminary results herein discussed indicate that the female genitalia may provide useful features for the taxonomy of members of the *Erythrogonia* generic group.

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