



Description of the female genitalia of *Megagallia punctaticollis* (Stål) (Cicadellidae, Megophtalminae, Agalliini) and first record from Paraná State

Descrição da genitália feminina de *Megagallia punctaticollis* (Stål) (Cicadellidae, Megophtalminae, Agalliini) e primeiro registro para o Estado do Paraná

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Abstract

The poorly known genus *Megagallia* Linnavuori, 1954 is monotypic and endemic to the Brazilian fauna, recorded only from the Atlantic Forest of Rio de Janeiro State. Herein is described the female genitalia of *Megagallia punctaticollis* (Stål, 1862) and the first record from Paraná State is reported.

Keywords: Auchenorrhyncha, Hemiptera, leafhoppers, Brazil, taxonomy

Resumo

O gênero pouco conhecido *Megagallia* Linnavuori, 1954 é monotípico e endêmico da fauna Brasileira, registrado apenas para a Mata Atlântica do Estado do Rio de Janeiro. Aqui é descrita a genitália feminina de *Megagallia punctaticollis* (Stål, 1862) e o primeiro registro para o Estado do Paraná é reportado.

Palavras-chave: Auchenorrhyncha, Hemiptera, cigarrinhas, Brasil, taxonomia



Introduction

The cosmopolitan tribe Agalliini is the largest of the four tribes of Megophthalminae and the most diverse in the New World where approximately 290 species in 25 genera are recorded (Rodrigues et al., 2012; Gonçalves & Dietrich, 2013). Stål (1862) described *Bythoscopus punctaticollis* from Rio de Janeiro State, Brazil. Osborn (1924) and then Oman (1938) treated this species as member of *Agallia* Curtis, 1833 providing illustrations of body and external male terminalia. Later, Linnavuori (1954) erected the genus *Megagallia* to include *B. punctaticollis* as type-species and provided a detailed description of overall morphology. *Megagallia* is easily separated from the other related South American genera by its robust and large size of body, 5.5 mm or more in length, the anterior margin of crown upturned, the distance between ocelli greater than the distance from ocellus to eye, and the pronotum coarsely pitted (Kramer, 1964).

This work aims to increase the morphological knowledge in the tribe Agalliini through the description of the female genitalia of *M. punctaticollis*. Additionally, the distribution of this species is expanded to the Paraná State, Brazil, in an area of Araucaria forest.

Material and methods

The specimens studied are deposited in the Coleção Entomológica Pe. Jesus Santiago Moure, Universidade Federal do Paraná, Curitiba, Brazil (DZUP); Coleção Entomológica Prof. José Alfredo Pinheiro Dutra, Departamento de Zoologia, Instituto de Biologia, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil (DZRJ); and Coleção Entomológica, Museu Nacional, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil (MNRJ). The descriptive terminology adopted herein follows Young (1968, 1977). Techniques used for the dissection of genitalia follow Oman (1949), with modifications described by Cavichioli & Takiya (2012). The use of the terms dorsal prominence (DP) and dorsal

hyaline area (DHA) follows Gonçalves et al. (2007) and gonoplac (= third ovipositor valvula) follows Mejdalani (1998). Terminalia were analyzed and subsequently stored in microvials attached to the corresponding specimen pin. Digital images of habitus were obtained with a Leica MZ12.5 stereomicroscope with attached digital cam SCMOS 14000KPA and stacked using CombineZ5 software. Illustrations of male genitalia were drawn with Adobe Illustrator CS6 software. First and second valvulae and gonoplacs were separated and mounted on a temporary slide covered with cover slip and then photographed using a Nikon optical microscope with digital cam SCMOS 05000KPA attached. Verbatim label data are transcribed between quotation marks, with a backslash (\) separating the lines on the labels.

Results

Taxonomy

Megagallia punctaticollis (Stål)

(Figs. 1-2)

Bythoscopus punctaticollis Stål, 1862: 54

Agallia punctaticollis: Osborn, 1924: 384

Agallia punctaticollis: Oman, 1938: 417

Megagallia punctaticollis: Linnavuori, 1954: 128

Measurements

Total length: male (n = 6), 5.9–6.2 mm; female (n = 2), 6.9–7.0 mm.

Coloration

Ground color (Fig. 1A-F) from dark to light brown. Face (Fig. 1C, F) lighter-brown with several dark maculae: pair of small spots on vertex dorsad of ocelli; thin stripe on epicranial suture and extending ventrolateral of ocelli forming an inverted Y; large irregular maculae surrounding

ocellus and extending to near eye margin; frons with large irregular macula medially; large irregular maculae near antennal pits, maxillary plate and apex of lorum; and inverted Y macula on clypeus. Pronotum (Fig. 1A, D) varying from dark brown with black maculae near anterior margin to light brown with brown maculae forming a middle longitudinal stripe and three lateral maculae: two smaller near anterior margin and a larger occupying most of posterior surface. Mesonotum (Fig. 1A, D) with dark lateral angles, middle longitudinal stripe, and pair of small spots near scutoscutellar suture; scutellum with lateral margins and apex whitish. Meso and metapleurae (Fig. 1B–C, E–F) black or dark brown. Forewing (Fig. 1A–B, D–E) mottled with light and dark

maculae; basal third mostly brown, middle third mostly whitish with veins outlined with brown or dark brown, apical third brown with veins whitish; clavus frequently with pair of large whitish maculae at apex and midlength of claval suture. Legs (Fig. 1B–C, E–F) pro and mesofemur with basal half black or brown.

Female terminalia

Sternite VII (Fig. 2A–B) 1.5x wider than long; posterolateral angles rounded, not produced posterad; posterior straight. Internal sternite VIII membranous. Pygofer (Fig. 2A–B), in lateral view, 1.5x longer than maximum height; ventral margin broadly rounded; dorsal margin straight;

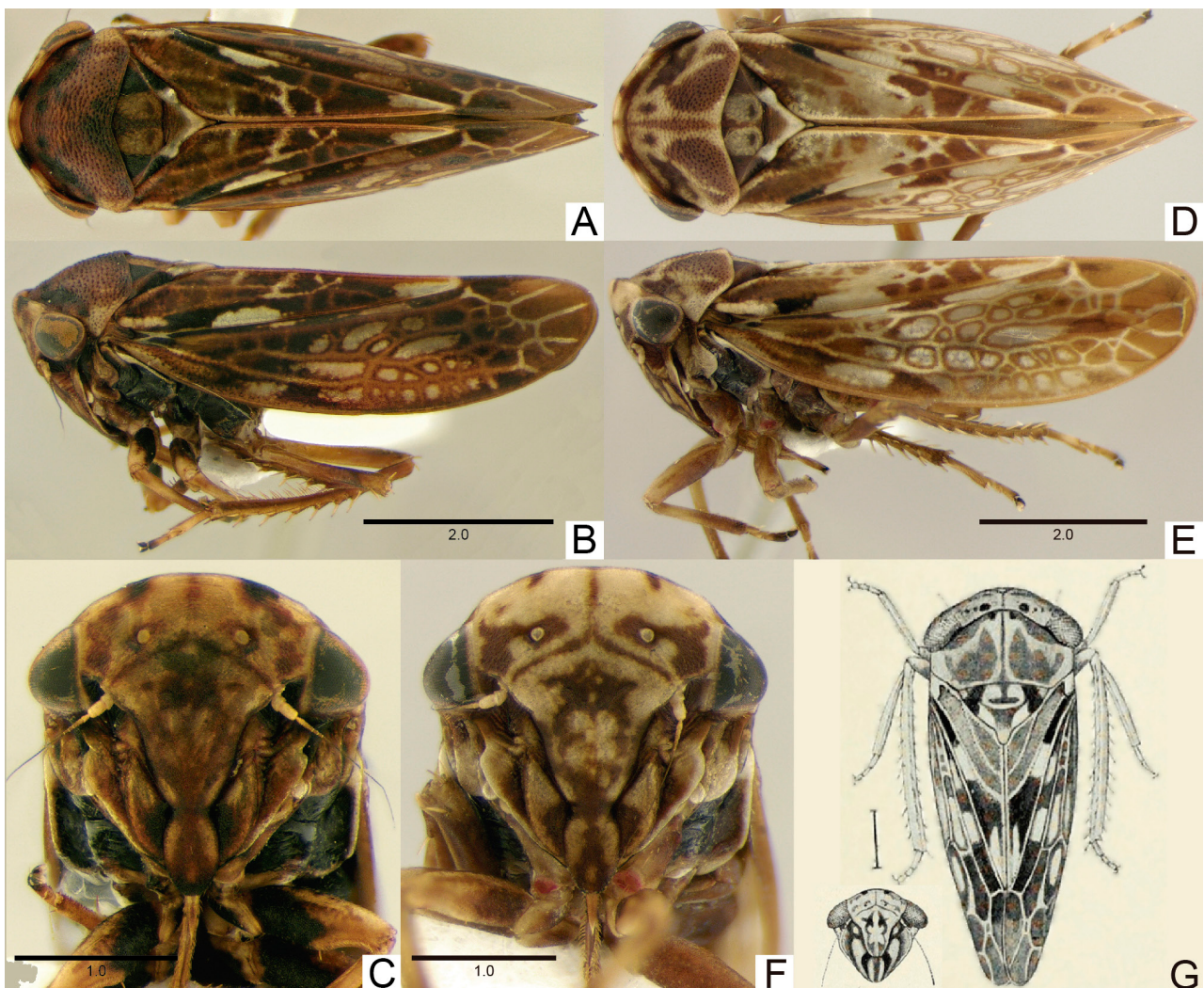


Figure 1. A–G. *Megagallia punctaticollis* (Stål). A–C) Habitus of male. D–F) Habitus of female. A, D) Dorsal view. B, E) Lateral view. C, F) Face, frontal view. G) Illustrations modified from Osborn (1924). Scales in mm.

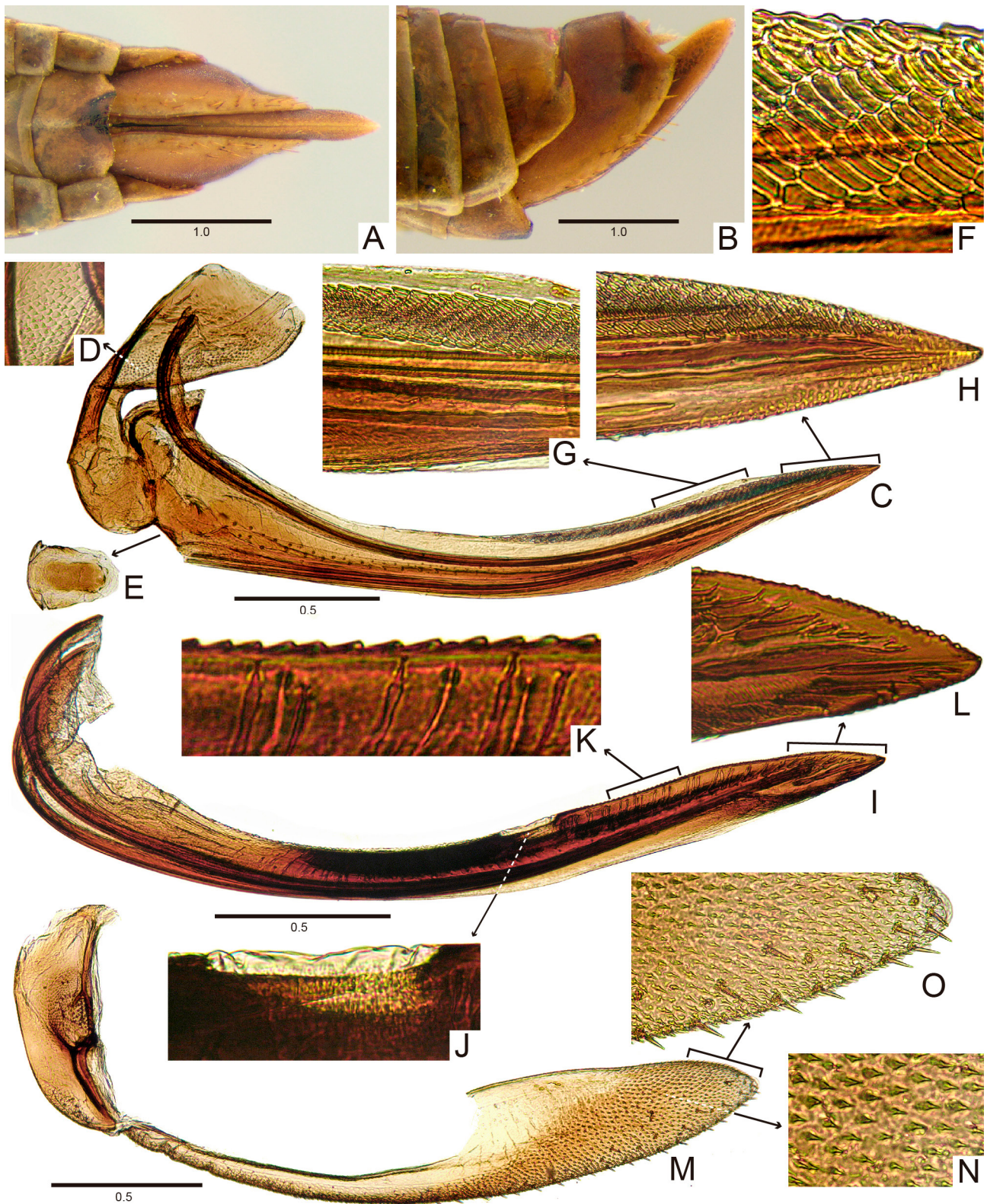


Figure 2 A–O. *Megagallia punctaticollis* (Stål), female terminalia. A) Distal portion of abdomen, ventral view. B) Distal portion of abdomen, lateral view. C) First valvifer and first valvula, lateral view. D) Outer surface of first valvifer. E) Sclerotized membrane. F) Dorsal sculptured area at higher magnification. G) Subapical portion of first valvula. H) Apical portion of first valvula. I) Second valvulae, lateral view. J) Dorsal hyaline area. K) Denticles of second valvula. L) Apical portion of second valvula. M) Second valvifer and gonoplac, lateral view. N) Outer surface of gonoplac with spiniform cuticular projections. O) Ventroapical portion of gonoplac.

macrosetae short, distributed only near ventral margin forming two-three irregular longitudinal rows; apex broad, transversely truncated. Ovipositor (Fig. 2A–B) long, surpassing apex of pygofer. First valvifer (Fig. 2C) nearly triangular, higher than long; anteroventral portion continuous with the basal portion of first valvula, forming a convex expansion; outer surface (Fig. 2D) with few small dentiform cuticular projections. First valvulae united ventrally near base by small elliptic sclerotized membrane (Fig. 2E). First valvula (Fig. 2C) ca. 6.7 times higher than long, evenly curved dorsally and gradually tapering to apex; higher near base than medially; ventral interlocking device long, extending over basal 2/3; dorsal sculptured area (Fig. 2C, F–G) areolate, with areolas near rectangular, not extending to dorsal margin medially or to ventral margin apically; apex (Fig. 2C, H) tapered and acute. Second valvulae (Fig. 2I) ca. 12.3x longer than high, evenly curved dorsally and narrow; dorsal hyaline area (DHA) present near midlength (Fig. 2J); minute triangular denticles after the DHA to apex (Fig. 2K); dorsal prominence (DP) absent; apex (Fig. 2L) tapered and acute, with denticles on ventral margin. Second valvifer (Fig. 2M) broad, 2.8x higher than long; posterior margin with integument ticking branched near the group of sensory setae. Gonoplac (Fig. 2M) ca. 5.7x longer than high; dorsoapical margin almost straight, with 2/5 length of gonoplac; outer surface (Fig. 2N) with many spiniform cuticular projections; ventral margin (Fig. 2M, O) broadly rounded with several short setae on and near margin; apex subacute.

Examined material

1♂, “Brasil, Paraná, S. [São] J. [José] dos Pinhais, 25°36'18"S\ 49°11'37"W 880m\ 01-31.VII.2018 Malaise\ A.C. Domahovski leg.” (DZUP); 1♂, same data except “1-31.VII.2018” (DZUP); 1♂, same data except “1-30.VIII.2018” (DZUP); 1♂, same data except “1-30.IV.2019” (DZUP); 1♂, same data except “1-31.V.2020” (DZUP); 1♂, same data except “1-30.XI.2021”

(MNRJ); 1♀, same data except “1-31.V.2022” (DZUP); 1♀, same data except “1-31.VIII.2022” (DZUP); 1♂, same data except “1-31.X.2022” (DZUP).

Discussion

The female genitalia is only known for few species of Agalliini recorded from Brazil: *Omanagallia obscura* Dietrich, 1993 (Dietrich, 1993); *Agallia catiae* Gonçalves, Mejdalani & Coelho, 2007 (Gonçalves et al., 2007); five species of *Agalliopsis* Kirkaldy, 1907 (Gonçalves et al., 2009); *Euragallia mejdalanii* Gonçalves & Zanol, 2010 (Gonçalves & Zanol, 2010); *Paranagallia takiyae* Gonçalves & Nielsen, 2010 (Gonçalves & Nielsen, 2010); *Chromagallia longistilata* (Coelho & Dutra, 1992), *Rubragallia saucia* (Stål, 1862) and three species of *Neorubragallia* Gonçalves & Dietrich 2013 (Gonçalves et al. 2008; Gonçalves & Dietrich, 2013). The poorly explored and so far, low morphological variation in the female genitalia structures and consequently, in fact, the low taxonomic importance for the recognition and separation of species contributed to this small number of species whose genitalia were studied. However, the taxonomic use of female genitalia in Cicadellidae has gained much importance in recent decades, mainly to the taxonomy at the genus level or higher which might reflect as a source of information broadly useful for morphology-based phylogenetic studies.

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Conflicts of interest

The author declares no conflict of interest.

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