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RESEARCH ARTICLE

Kunzeana Oman: first record in South America, with description of a new species (Hemiptera: Cicadellidae: Typhlocybinae)

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Abstract: A new species of *Kunzeana* Oman, 1949 (Hemiptera: Cicadellidae: Typhlocybinae), *Kunzeana zantedeschia* **sp. nov.** is described and illustrated based on specimens from Minas Gerais, southeastern Brazil. The new species differs from its congeners by a membranous sheath surrounding the aedeagal stem and a pair of short dorsal processes at aedeagus base.

Key words: Leafhopper, Auchenorrhyncha, Cicadomorpha, Dikraneurini, taxonomy, Neotropical Region.

Introduction

Oman (1949) erected *Kunzeana* (Dikraneurini) to accommodate 15 species of *Dikraneura* Hardy, 1850 and designated *D. kunzei* Gillette, 1898 as the type species. Ruppel & DeLong (1951) added five new species and one new variety to *Kunzeana* Oman. Young (1952) revised this genus, transferring two species to *Kunzella* Young, 1952 and one to *Alconeura* Ball & DeLong, 1925; furthermore, he transferred one species of *Dikrella* Oman, 1949, one of *Erythria* Fieber, 1866 and one of *Dikraneura* to *Kunzeana*. In his list of known

species, Young (1952) did not mention those species described by Ruppel & DeLong (1951). Ruppel & Delong (1952ab) described nine and eight new species of *Kunzeana*, respectively.

The genus *Kunzeana* includes 36 described species until now and occurs in the United States, Mexico, Cuba, Guatemala, Honduras, Nicaragua, and Panama (Oman 1949; Ruppel & DeLong 1951, 1952ab; Young 1952). Herein we describe a new species *Kunzeana zantedeschia* **sp. nov.** based on the male and female specimens from Minas Gerais State, Brazil, being the first record of the genus in South America.

Material and methods

The study area, Mata do Paraíso (20°46'–20°48'S; 45°50'–45°52'W) which is located at Viçosa municipality, Minas Gerais State, occupies an area of approximately 194 ha, at altitudes between 600 and 700 m a.s.l. The vegetation is of secondary Atlantic Forest, subtype Semideciduous Forest, under progressive regeneration. Coelho & Da-Silva (2003), Gonçalves *et al.* (2007, 2009) and Coelho & Nessimian (2009) provided descriptions of the study area.

The specimens were collected with a "Luiz de Queiroz" light trap (Silveira Neto & Silveira 1969), using 15W, 100v, U.V. light bulbs, adapted according to Ferreira & Martins (1982). Light trap was suspended at a height of about 2.5 meters above ground level and operated between 6:00 p.m. and 6:00 a.m.

For morphological studies of the genital structures, because of its fragility, clearing was accomplished by immersion of the entire abdomen in a solution of KOH 10% previously heated (process modified from Oman 1949). For illustration, genital structures were embedded in glycerin gelatin (Pennak 1978). Photographs were taken with a camera EC3 attached to a stereomicroscope Leica S8AP0, and a camera DMC 2900 attached to a microscope Leica DM4000 B LED, using the image stacking software CombineZP. The color pattern here described is the post-mortem coloration. In living or recently collected individuals, the coloration can be more vivid relative to that of old preserved specimens. Morphological terminology follows mainly Young (1952), except for the wings, based on Dworakowska (1993), and female genitalia based on Balduf (1934) and Blocker & Triplehorn (1985).

The type specimens are deposited in the Coleção Entomológica Professor José Alfredo Pinheiro Dutra, Departamento de Zoologia, Instituto de Biologia, Universidade Federal do Rio de Janeiro (DZRJ), Rio de Janeiro, RJ, and in Museu Regional de Entomologia, Universidade Federal de Viçosa (MEUV), Viçosa, MG, Brazil.

Results

Genus: *Kunzeana* Oman, 1949

Diagnosis: Forewing with base of apical cells I, II and III forming an irregular transverse line; apical cell II narrower than either adjoining apical cells; apical cell I with apex not reaching apex of wing. Hind wing with anal veins completely fused; submarginal vein extending around wing apex of R+M then basad along costal margin; CuA_2 and $MP_2 + CuA_1$ separated apically; CuP confluent with submarginal vein in basal half of wing, basad of vein MP_2.

Distribution: the United States, Mexico, Cuba, Guatemala, Honduras, Nicaragua, Panama, and Brazil.

***Kunzeana zantedeschia* sp. nov.** (Figs. 1–3)

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Diagnosis: Forewing with apical cell II narrower than adjacent cells and apical cell III narrower in base than in apex (Fig. 2A). Hind wing with CuA_2 free from a more apical point than MP_2 (Fig. 2B). Aedeagus long, tubular, with a membranous sheath surrounding the stem; atrial area ring-shaped with a dorsolateral pair of long, tubular, thin (whip-like) processes, and a pair of short dorsal processes (Fig. 2I–J).

Description

Male: Total length 3.1–3.2 mm. Color pale-yellow (Fig. 1). Head with anterior margin rounded, moderately pronounced; crown with interocular width approximately equal to median length; anterior margin with a rounded yellow spot between median line and inner edge of eye (closest to eye); posterior margin whitish-yellow with diffuse irregular longitudinal band halfway up crown each side of median line. Eye brown. Pronotum with whitish lateral edges; median length approximately 1.3 times median length of crown, maximum width about 1.5 times median length, laterobasal angles far exceeding width of head. Mesonotum yellowish-brown, anterolateral angles and posterior margin whitish-yellow; two yellow-white diffuse irregularly contoured longitudinal stripes (each side of median line). Scutellum yellowish-brown; yellow-white spot (each side of median line) along anterior margin, in continuation to the mesonotal stripes. Forewing (Fig. 2A) yellowish, apical contour smoky-brown; apical cells narrow and elongated, apical cell II narrower than adjacent cells, apical cell III narrower in base than in apex, outer apical cell shorter, not attaining wing apex; claval area white. Hind wing (Fig. 2B) with CuA_2 free from a more apical point than MP_2.

Figure 1. *Kunzeana zantedeschia* **sp. nov.**, female, laterodorsal view.

Abdominal apodeme (Fig. 2C) small, delicate, apex rounded, slightly surpassing base of fourth sternite.

Subgenital plate (Fig. 2D) narrow and elongated, approximately one fourth of its length exceeding apex of pygofer; longitudinal folds near outer edge, following four

macrosetae in middle third; longitudinal row of small and robust setae in apical third; apical half with thin and stiff setae sparsely distributed on outer margin; apex narrow, rounded and rugose, slightly curved to outer side. Pygofer (Fig. 2E) elongated, posterior margin rounded; groups of short microsetae in dorsal margin and in posterodorsal area; internal dorsal process (Fig. 2F) with sinuous preapical area, gradually tapering to pointed apex, directed posteroventrally. Stylus (Fig. 2G–H) long, slender, slightly sinuous, preapical lobe small but distinct with three setae; distal branch with sharp curvature in half-length, with two setae; apical region finely toothed, apex rounded; three circular impressions (possibly lost setae) linearly arranged in basal half of apical branch, between preapical lobe and curvature. Connective (Fig. 2J) robust, plate-shaped, with lateral branches short. Aedeagus (Fig. 2I–J)

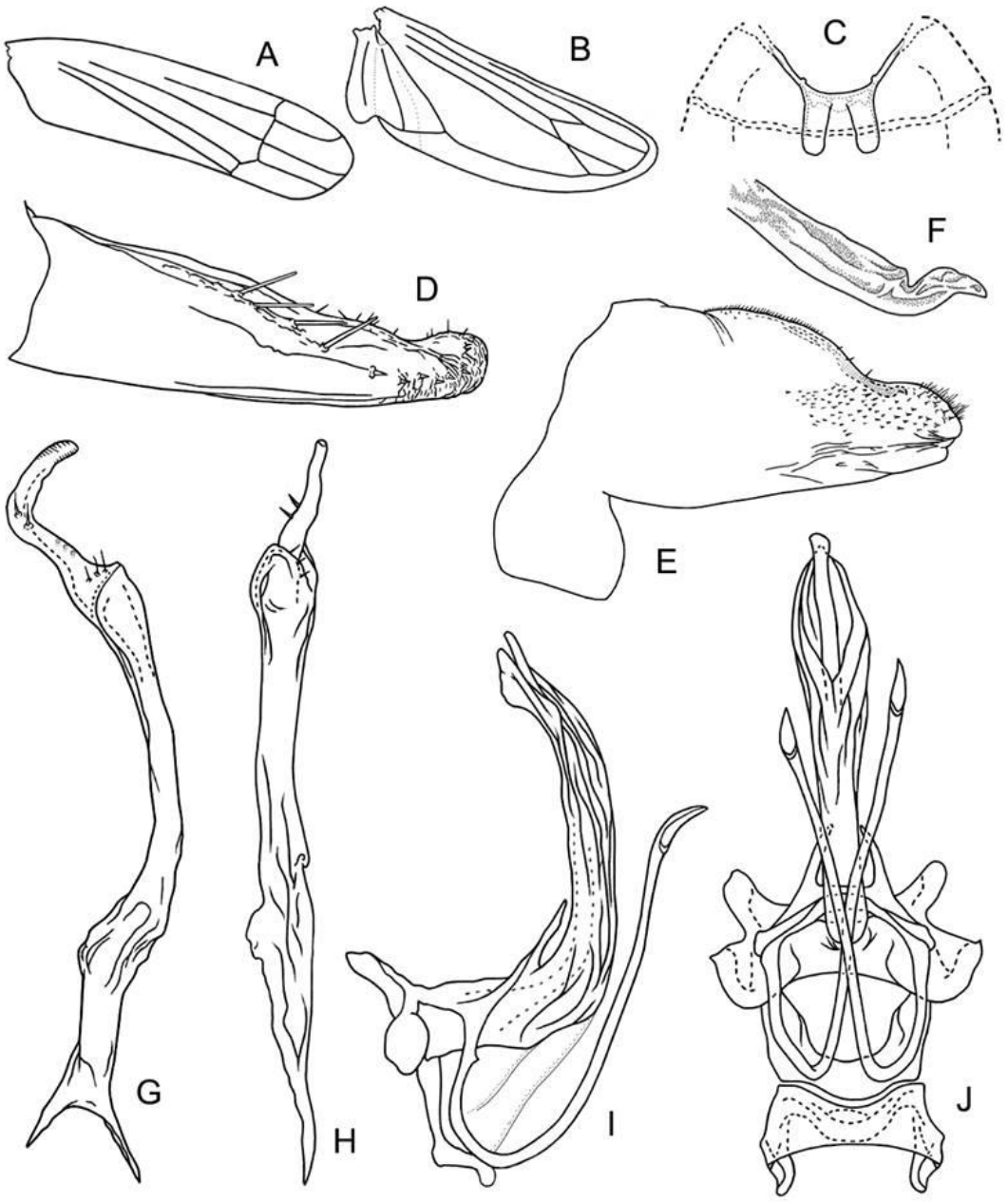

Figure 2. *Kunzeana zantedeschia* **sp. nov.**, male. **A,** forewing; **B,** hindwing; **C,** abdominal apodeme; **D,** subgenital plate; **E,** pygofer side, lateral view; **F,** process of pygofer side, lateral view; **G,** style, lateral view; **H,** style, ventral view; **I,** aedeagus, lateral view; **J,** aedeagus and connective, ventral view.

long, tubular, apparently robust by presence of membrane with many twisted longitudinal folds involving stem; stem thin, apical third exposed ventrally; dorsal apodeme developed in robust "H", branches expanded forming a pair of laterodorsal and a pair of lateroventral lobes; atrial area ring-shaped with two pairs of processes; dorsolateral pair long, tubular, thin (whip-like), extended to base of connective, curved following stem reaching its apical third, apex acute, apical area concave; pair of short dorsal processes to shaft, with large bases apart each other, apexes narrow and converging.

Female: Total length 3.0–3.2 mm. Color and external morphology as in male.

Sternite VII (Fig. 3A) triangular, apex truncate; basal 2/3 of lateral margins nearly parallel distinctly converging in apical third to apex. Pygofer (Fig. 3B) elongated, caudal margin with four setae, ventral margin with nine setae. Valvulae sharply bent in half-length.

Figure 3. *Kunzeana zantedeschia* **sp. nov.**, female. **A,** sternite VII; **B,** pygofer (lateral view); **C,** valvula I; **D,** right valvula II; **E,** left valvula II; **F,** valvula III.

Valvulae I (Fig. 3C): Dorsal margin of apical 1/3 finely crenulated, with tiny teeth of rounded contour, continuing in minute oblique-notched ridges extending to ventroapical area; dorsal preapical area abruptly tapering to apex acute. Right valvula II (Fig. 3D): Dorsal margin of apical 1/3 with pointed or rounded stout teeth, shorter apically; apex rounded, slightly angled ventrally. Left valvula II (Fig. 3E): Dorsal margin of apical 1/3 serrate, formed by sharp teeth of irregular size; apex narrow, rounded. Valvula III (Fig. 3F): middle

curvature less pronounced than in other valvulae, apex broadly rounded; apical 1/3 gradually tapering to apex; dorsal margin thick; apical area with 2 or 3 irregular rows of small setae from dorsal to ventral margins; ventral margin sculptured, in shape of overlapping scales, from base of apical 1/3 to curvature area of valvulae (where is less conspicuous).

Type material: Holotype ♂, Brazil, Minas Gerais, Viçosa, Mata do Paraíso, 08/ii/1993, PSF Ferreira leg. (DZRJ). Paratypes: 1 ♂, 9 ♀♀, same place and collector as holotype, 08/ii/1992 (6 ♀♀, DZRJ), 08/ii/1993 (1 ♂, MEUV), 14/x/1992 (1 ♀, MEUV), 20/x/1992 (2 ♀♀, MEUV).

Etymology: Referring to the generic epithet of arum lily, *Zantedeschia aethiopica* (L.) Spreng (Alismatales: Araceae). Alluding to the similarity of the aedeagus with arum lily flower.

Remarks: *Kunzeana zantedeschia* **sp. nov.** clearly resembles those species cited by Ruppel & DeLong (1952) as having "the most bizarre aedeagi", by presenting longer processes than any other species of the genus. Resemblance is particularly striking with *K. tomazella* Ruppel & DeLong, 1952, *K. vomerella* Ruppel & DeLong, 1952, *K. scimetara* Ruppel & DeLong , 1952, *K. meta* Ruppel & DeLong, 1952, as well as three other species not described by Ruppel & DeLong (1952) - *K. sandersi* (Ball & DeLong, 1925), *K. aurulenta* (Lawson, 1930), and *K. curiosa* (Beamer, 1945) (DeLong & Caldwell 1937; Beamer 1945; Caldwell & Martorell 1950). This similarity is due to the general shape of the aedeagus.

Kunzeana zantedeschia **sp. nov.** can be differentiated from other species of *Kunzeana* by a membranous sheath surrounding the aedeagal stem and a pair of short dorsal processes at aedeagus base (Fig. 2I–J). The description of *K. zantedeschia* **sp. nov.** from Brazil represents the first record of the genus in South America, considerably extending its known distribution.

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