

Revision of the genus *Typhlocybella* Baker, 1903 (Hemiptera: Cicadellidae: Typhlocybinae: Dikraneurini) and description of a new species from Argentina

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Abstract

The dikraneurine leafhopper genus *Typhlocybella* Baker is revised based on a comparative morphological study, and a key for identification of males is provided. Five valid species are recognized, four of which were previously described and another one new, *Typhlocybella affinis* **sp. nov.** *Typhlocybella parva* Ruppel & DeLong is re-described.

Key words: Auchenorrhyncha, morphology, distribution, taxonomy

Introduction

The typhlocybine leafhopper genus *Typhlocybella* belonging to the tribe Dikraneurini was erected by Baker (1903) with *T. minima* from Nicaragua as the type species. DeLong & Knull (1946) added *T. minuta* from USA, Caldwell and Martorell (1952) added *T. maculata* from Puerto Rico, Ruppel & DeLong (1953) added *T. parva* from Mexico, and Catalano *et al.* (2009) added *T. maidica* from Argentina. Thus, five species of the genus have been reported previously, distributed throughout the Americas. In this paper, we review the previously described species included in the *Typhlocybella*, describe a new species, *T. affinis* **n. sp.** from Argentina, and re-describe the species *T. parva*. In addition, a key to identify *Typhlocybella* species is given.

Material and methods

The adults examined were collected in Buenos Aires (Chacabuco, Pergamino), Mendoza (La Consulta), and Tucumán (San Miguel de Tucumán) provinces from Argentina. Insects were collected with net and aspirators in maize and sorghum crops. Specimens were prepared for light microscope examination according to standard taxonomic techniques. The illustrations were drawn using a light microscope with a camera lucida. Morphological terminology follows Young (1952), Southern (1982) and Balduf (1934). The individuals under study were compared with type materials of *T. minima* (INHS), *T. maculata* (USNM), *T. parva* (OSUC), and *T. maidica* (MLP). The type-series of the newly described species is housed in the collection of the Museo de Ciencias Naturales de La Plata (MLP).

Results

Genus *Typhlocybella* Baker, 1903

Diagnosis. Hindwing with vannal veins completely fused, submarginal vein absent at wing apex. Forewing with third apical cell short, triangular, petiolate, embracing entire wing apex. Male subgenital plates finely pilose, style with single tapering apical extension, and aedeagus with pair of long ventral processes.

Distribution. Southeast United States to Argentina.

Key to males of genus *Typhlocybella* Baker (excluding *T. minuta* (DeLong))

1. Male pygofer without processes. Aedeagus with pair of processes not extending well beyond apex of shaft. 2
- 1'. Male pygofer with processes. Aedeagus with pair of ventral processes extending well beyond apex of shaft 4
2. Male pygofer with notch in middle of posterior margin. 3
- 2'. Male pygofer without notch, with tiny spines on posterodorsal margin. Aedeagus with pair of lateral processes (Fig. 3 and 4). Crown with pair of dark brown spots *T. maculata* Caldwell y Martorell
3. Aedeagus with pair of ventral processes; aedeagal apex bifurcated (Fig. 12) *T. parva*. Ruppel y DeLong
- 3'. Aedeagus with pair of lateral processes projected dorsally, apex curved abruptly upward (Fig. 6). *T. minima* Baker
4. Male pygofer with dorsal spine-like process on caudal margin; aedeagus and aedeagal processes with several small spines (Fig. 1 and 2) *T. maidica* Catalano
- 4'. Male pygofer with ventral process curved dorsally; aedeagus and aedeagal processes with few small spines (Fig. 15 and 19). *T. affinis* n. sp.

Previously described species

Typhlocybella maculata Caldwell & Martorell 1952

(Figs. 1–2)

Notes. No specimens other than the type series were seen, including the male holotype, female allotype and paratypes of both sexes from Maricao Insular Forest, at middle altitudes, Nov. and Oct., 1947 (USNM). The holotype had the genitalia dissected.

Distribution. Puerto Rico (Caldwell & Martorell 1952).

Host plants. On grasses (Caldwell & Martorell 1952).

Typhlocybella maidica Catalano 2009

(Figs. 3–4)

Notes. This species closely resembles *T. affinis* n. sp., but differs in having a small spine-like process on the pygofer, and darker body coloration.

Distribution. Argentina. Buenos Aires, Mendoza and Córdoba (Catalano *et al.* 2009).

Host plants. Maize (*Zea mays* L.), sorghum (*Sorghum vulgare* L.), and crabgrass (*Digitaria sanguinalis* (L.) (Brentassi *et al.* 2010).

Typhlocybella minima Baker 1903

(Figs. 5–6)

Notes. The type series of this species is apparently lost. Non-type materials were seen (INHS). Caldwell and Martorell (1952) re-described this species.

Distribution. Puerto Rico (Caldwell & Martorell 1952), USA, Nicaragua (Baker 1903), Colombia, Costa Rica, Cuba, Panama (Freytag & Sharkey 2002).

Host plants. papaya (*Carica papaya*), grasses, weeds, bushes (Caldwell & Martorell 1952).

Typhlocybella minuta (DeLong 1924), *nomen dubium*

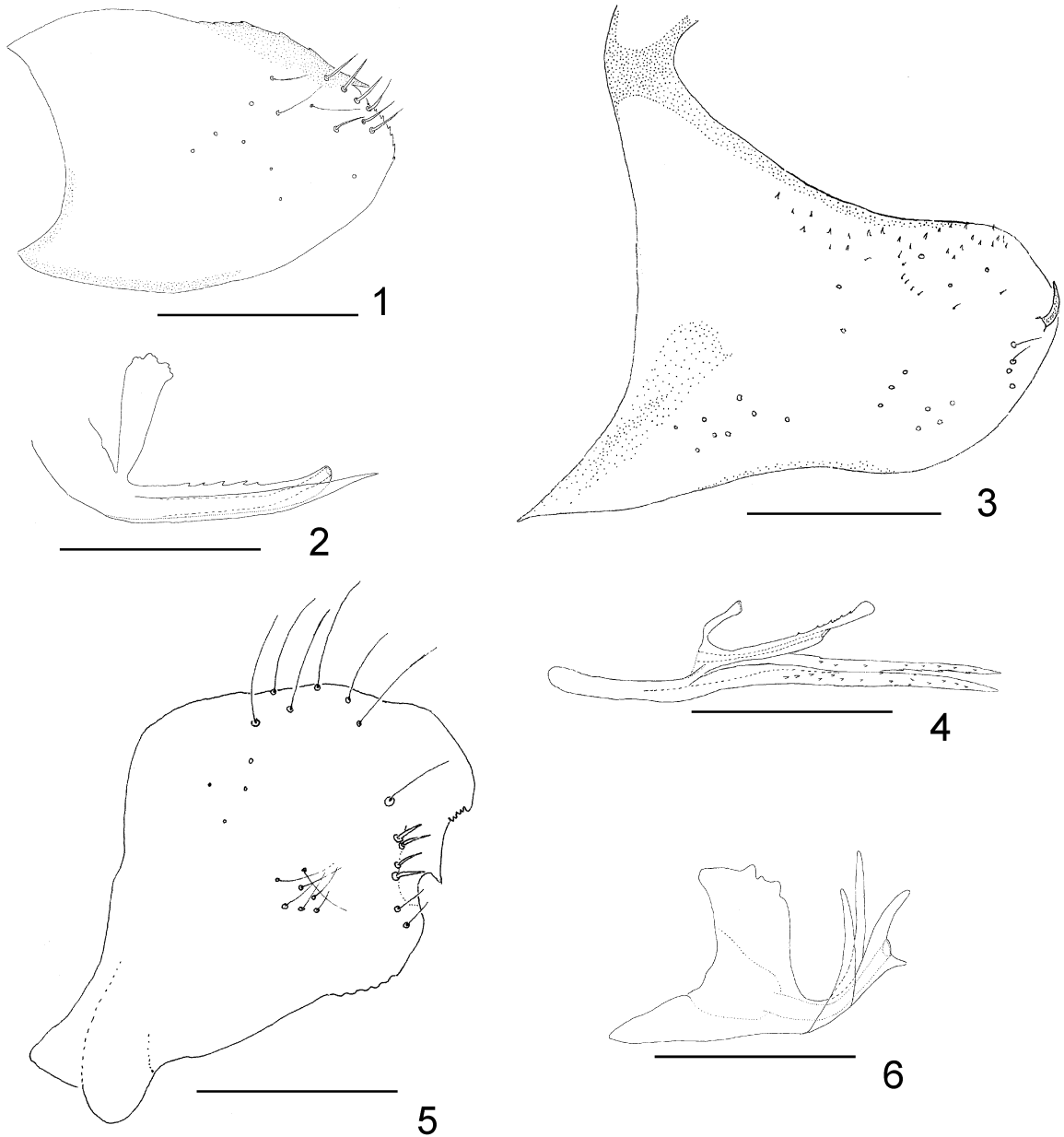
Empoa minutus DeLong 1924: 68

Typhlocyba minutus DeLong & Caldwell 1937: 68

Typhlocybella minuta DeLong & Knull 1946:77

Notes. The type series of this species, described from Miami, Florida, is apparently lost and the original description does not contain sufficient information to clarify its identity.

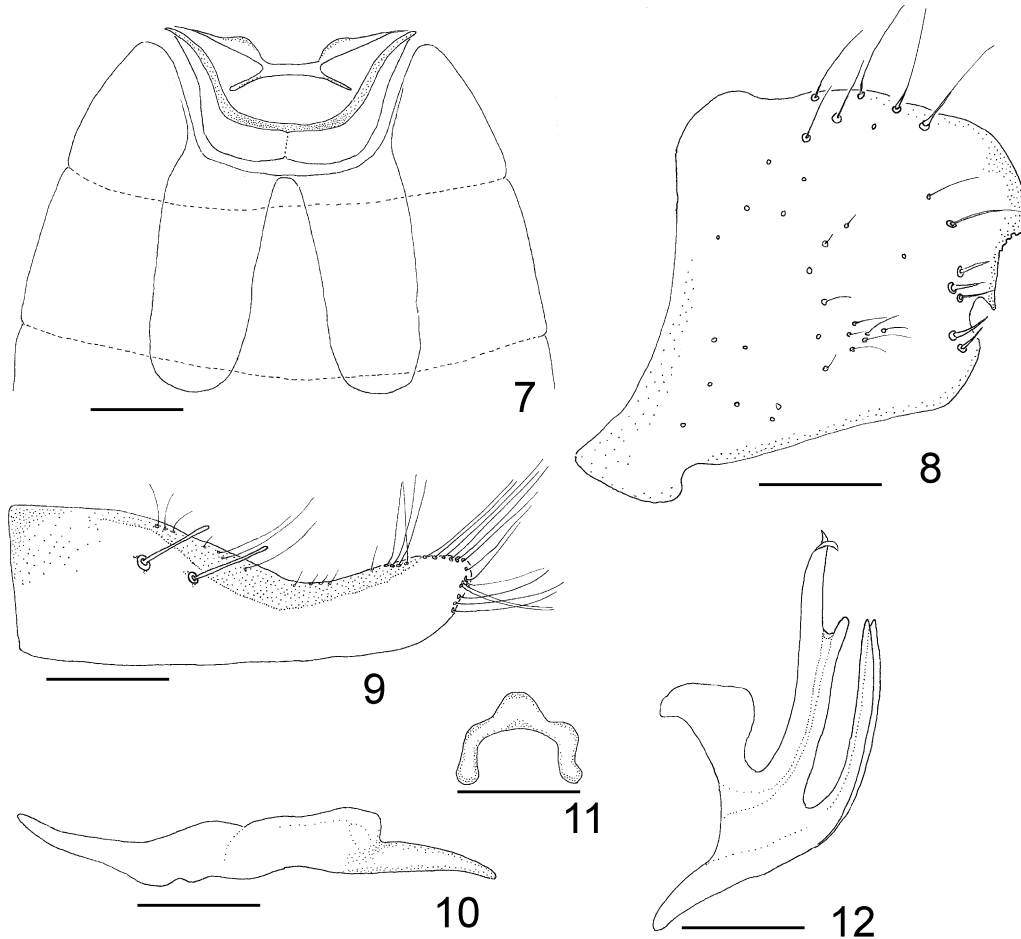
Distribution. USA (DeLong 1924).



FIGURES 1–6. Previously described *Typhlocybella* spp. 1–2) *T. maculata*; 3–4) *T. maidica*; 5–6) *T. minima*. Scale bar = 0,1 mm.

Re-described species***Typhlocybella parva* Ruppel & DeLong 1953**

(Figs. 7–12)

Diagnosis. Length: 2.4 mm.

FIGURES 7–12. *Typhlocybella parva* Ruppel & DeLong 1953. Male: 7) sternal apodemes; 8) pygofer, lateral view; 9) subgenital plate; 10) style; 11) connective; 12) aedeagus. Scale bar = 0,1 mm.

Coloration: yellow to white, with a longitudinal median white stripe from crown to pronotum and small brown spots in the forewing.

First sternal complex (1S) (Fig. 7) with sternal bar sclerotized with downward curved apex; dorsal apodeme well developed with broad medial notch, reaching sternal bar. Second sternal apodemes (2S) (Fig. 7) long, reaching fourth segment.

Male genitalia: Pygofer (Fig. 8), quadrangular in lateral view, with small circular notch in the median caudal margin, a row of 6 or 8 macrosetae on caudal margin, a group of long and fine setae on dorsal margin and numerous microsetae irregularly arranged on disk. Subgenital plate (Fig. 9), in lateral view, broad at base, with two strong and long macrosetae in basal half and numerous fine and long microsetae on dorsal margin. Style (Fig. 10) with preapical lobe quadrate, apical extension tapered, without setae. Connective (Fig. 11) U-shaped, with apex turned dorsally, aedeagal articulation subterminal. Aedeagus (Fig. 12) with short preatrium, large and triangular dorsal aedeagal apodeme, shaft compressed, curved upward, area dorso-apical projected dorsally and ending in a bifurcate apex; a pair of ventral processes dorsally directed. Gonopore terminal.

Type material examined. *T. parva*: Holotype male Cuernavaca, Morelos, Mexico, December 28, 1949, Beamer col., 1 paratype male Cuernavaca, Morelos, Mexico, December 28, 1949, Beamer col., 6 paratypes (4 males and 2 females) Mex. City, Guerrero, Mexico, December 27, 1949, Beamer col., 1 paratype female Mex. City, Guerrero, Mexico, December 27, 1949, Shaw col. OSUC.

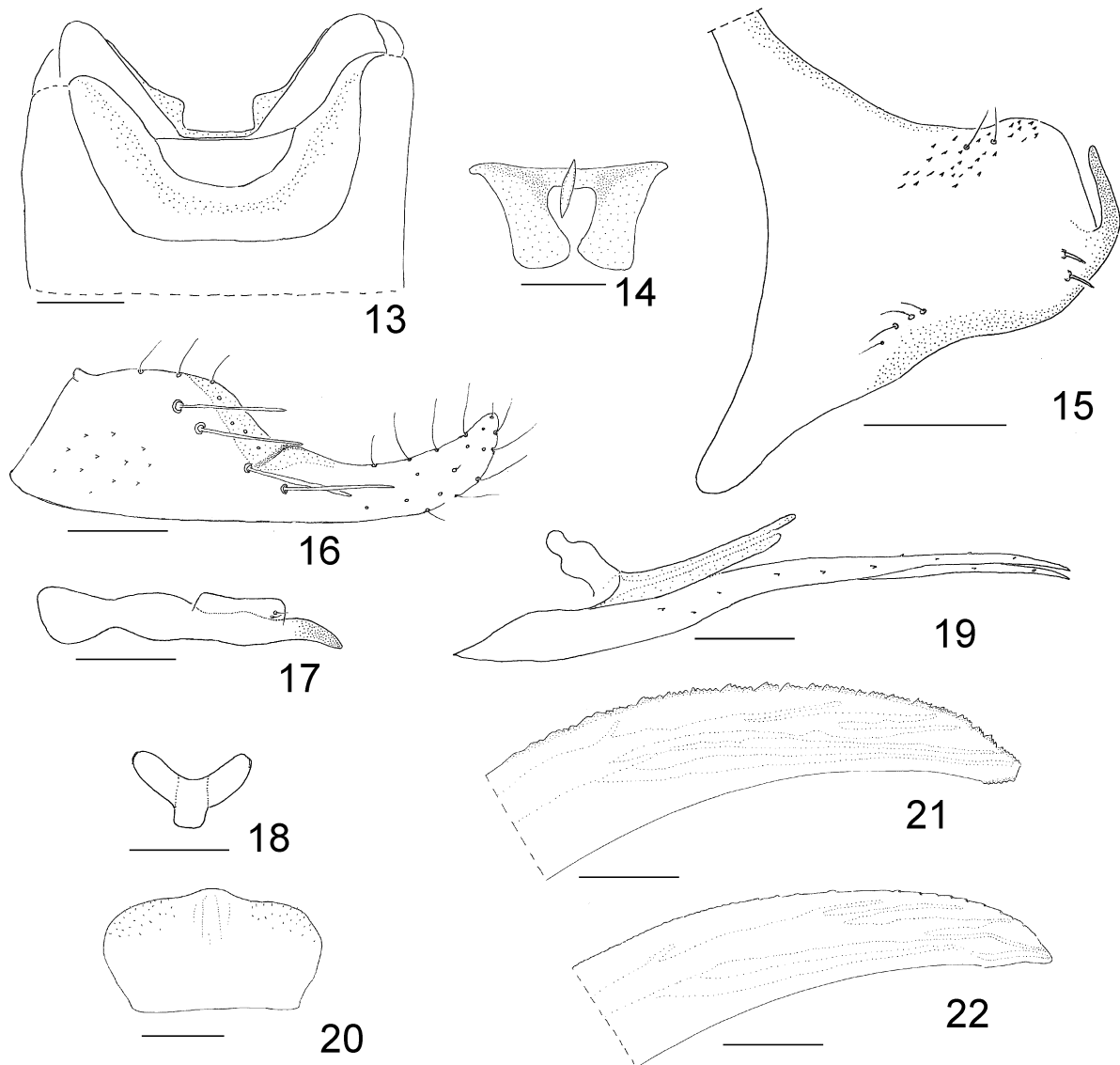
Notes. Examination of the type material of this species indicates that three of the dissected specimens (1 paratype male Cuernavaca, Morelos, Mexico, December 28, 1949, Beamer col., and 2 paratypes males, Mex. City, Guerrero, Mexico, December 27, 1949, Beamer col.) do not correspond to the description of *T. parva*. Instead, these specimens agree with the description and the characters observed in the examined material of *T. minima*. Only one specimen dissected (1 paratype male, Mex. City, Guerrero, Mexico, December 27, 1949, Beamer col.) agrees somewhat with the description of *T. parva*, but shows small differences from the original description (Ruppel & DeLong 1953) in the shape of the aedeagus processes. This difference could not be verified because the genitalia of the holotype are cleared almost to the point of invisibility.

Distribution. Mexico (Ruppel & DeLong 1953).

New species

Typhlocybella affinis n. sp.

(Figs. 13–22)



FIGURES 13–22. *Typhlocybella affinis* n. sp. Male: 13) sternal apodemes; 14) tergal apodemes; 15) pygofer, lateral view; 16) subgenital plate; 17) style; 18) connective; 19) aedeagus. Female: 20) sternite VII; 21) large valve; 22) small valve. Scale bar = 0,1 mm.

Diagnosis. Length: 2.7–2.9 mm.

Coloration: White to yellow, with a pair of longitudinal yellowish bands extending across crown, pronotum and scutellum. Basal half of forewing yellowish, and apical half smoky.

Fore and hind wing venation characteristic of genus.

First sternal complex (1S) (Fig. 13) with sternal bar sclerotized and straight; dorsal apodeme well developed with broad medial notch, reaching sternal bar. Second sternal apodeme (2S) (Fig. 13) short with two lobules fused in middle, not extending beyond abdominal segment 3. Second tergal apodeme (Fig. 14) with two long tongue-shaped plates suspended below transverse shallow wall, length:width ratio about 3:1.

Male genitalia: Pygofer (Fig. 15), in lateral view, quadrangular; with a ventro-caudal process curved dorsally, with two or three setae at base; two or three macrosetae and several microsetae arranged near dorsal margin, and four or five macrosetae on ventral margin. Subgenital plate (Fig. 16) broad at base, narrowing to apex, with oblique longitudinal row of four or five strong and long macrosetae in basal half, and numerous, fine and long microsetae on both margins. Style (Fig. 17) with preapical lobe quadrate with one or two microsetae; apical extension slightly curved and tapered apically. Connective (Fig. 18) triangular, aedeagal articulation terminal. Aedeagus (Fig. 19) with depressed and short preatrium; elongate dorsal aedeagal apodeme; shaft compressed, slightly curved upward; pair of sub-parallel tapering ventral processes directed caudad, arising from shaft base, sparsely covered with small spines; gonopore oval, subterminal.

Female genitalia: Sternite VII (Fig. 20) convex with a triangular lobe in middle, and several microsetae. Pygofer, in lateral view, wider at base than apex, usually with 7 or 8 macrosetae in row on caudo-ventral margin, and 2 or 3 slender setae on dorsal-caudal margin. Second valvulae slender, 12 times longer than broad, curved in apical half, rounded at apex; large valve (Fig. 21) with 20 to 22 strong teeth irregularly denticulate, ventral margin with 3 to 5 small teeth, with 3 sclerotized longitudinal bars, ramified apically, on lateral surface; small valve (Fig. 22) with 18 or 19 small teeth, and 3 sclerotized longitudinal bars on lateral surface.

Etymology. The specific name *affinis* refers to the similarity in habitat to *T. maidica*.

Type material. Holotype: Argentina. Pergamino, December 30, 2010, Catalano col. Deposited at MLP.

Paratypes: 3 males and 2 females, on maize, Tucumán, September 2004, Virla col.; 1 female, on maize, Buenos Aires: Chacabuco, December 4, 2006; 1 female, on maize, Mendoza: La Consulta February 12, 2007, Lanati col.

Host plants. Maize (*Zea mays* L.), sorghum (*Sorghum vulgare* L.), and crabgrass (*Digitaria sanguinalis* (L.)).

Distribution. Tucumán: San Miguel de Tucumán; Buenos Aires: Chacabuco, Pergamino; Mendoza: La Consulta.

Note. This species resembles *T. maidica* in having a similarly pair of ventral processes in the aedeagus but differs in its paler coloration, in the long, ventral process in the pygofer, the shorter connective, and the smaller and fewer spines in the aedeagal processes.

Acknowledgements

The authors wish to thank Dr. Stuart McKamey, Creighton Freeman and Chris Dietrich for the loan of type specimens. Thanks also are due to Dr. Eduardo Virla and Ing. Silvio Lanati for their kindness in sending me the material they collected for identification purposes. This work was funded by Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET) and Comisión de Investigaciones Científicas de la Provincia de Buenos Aires (CIC).

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