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A new species of the grass-feeding leafhopper genus *Amblysellus* Sleesman (Hemiptera: Cicadellidae: Deltocephalinae) from western Mexico, with a checklist and key to species

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Abstract

A new Mexican leafhopper species, *Amblysellus raygozai* **sp. nov.**, is described and illustrated from western Mexico. Specimens were collected over perennial grasses. A key for all recognized species within the country is provided.

Key words: Deltocephalini, Auchenorrhyncha, morphology, seasonal morphs, Jalisco

Resumen

Una nueva especie de chicharrita Mexicana, *Amblysellus raygozai* **sp. nov.**, es descrita e ilustrada del occidente de México. Los especímenes fueron colectados sobre pastos perenes. Se provee una clave para todas las especies reconocidas dentro del país.

Palabras clave: Deltocephalini, Auchenorrhyncha, morfología, morfos estacionales, Jalisco

Introduction

The grass-specialist leafhopper tribe Deltocephalini Dallas, 1870 (Hemiptera: Auchenorrhyncha: Cicadellidae: Deltocephalinae) has 68 genera recognized worldwide, of which 44 are reported in the Americas. Members of this tribe can be distinguished from other deltocephalines by the presence of a linear connective with the arms closely appressed anteriorly and the stem fused to the aedeagus. These leafhoppers constituted a monophyletic clade in the recent phylogenetic analysis of the subfamily Deltocephalinae (Zahniser & Dietrich 2013). Deltocephalini feed on diverse grass species and typically inhabit grassland ecosystems worldwide (Zahniser & Dietrich 2013).

The genus *Amblysellus* was described by Sleesman (1929) with *Amblycephalus curtisii* Fitch, a common leafhopper found in eastern USA and Canada, as its type species. Later, Kramer (1971) transferred five species to this genus from *Deltocephalus* and described one species from USA, *A. wyomus*. Subsequently, DeLong & Hamilton (1974) redefined the classification of the genus and described one North American species, *A. acuerus* (USA), and seven Latin American species, *A. cereus* (Guatemala), *A. dedecus*, *A. necopinus, A. copulus*, *A. macularis* (Mexico), *A. torqus*, and *A. excavus* (Ecuador). Most recently, Xing & Li (in Li *et al*. 2011) described the only species known

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from the Old World, *A. longiplates*, from southern China. Until now, the genus contained 18 species including 5 from Mexico.

Herein a new species of *Amblysellus* from western Mexico is described and illustrated. A key is given to separate all species known in the country.

Material and methods

Morphological criteria and terminology follow Dietrich (2005), Rakitov (1998), and Kramer (1950). Male and female terminalia were analyzed following the technique of Triplehorn & Johnson (2005) and Oman (1949) for auchenorrhychous samples with the following modifications: abdomens of specimens studied were cleared with hot 15% KOH solution, rinsed 3 times in distilled water and soaked with acetic acid to neutralize any remaining KOH, and stored in microvials with glycerine pinned beneath the specimen.

Labels of specimens were recorded verbatim in a single line, a reversed virgule (\) separates rows within a label. Digital habitus photographs were taken using a camera mounted on a Carl Zeiss stereomicroscope Stemi 2000c, images from multiple focal planes were stacked using Combine ZP software. Illustrations were drawn using a camera lucida and then vectorized in GIMP (gimp.org). Body length was measured from the anterior margin of the crown to the apex of the forewing in repose. Measurements were extracted by an electronic vernier in ImageJ software (imagej.nih.gov).

Material examined are housed in the following collections:

INHS	Illinois Natural History Survey, Champaign, Illinois, USA
CNIN	Colección Nacional de Insectos, Instituto de Biología, Universidad Nacional Autónoma de México, CDMX, Mexico
CZUG	Colección Entomológica, Centro de Estudios en Zoología, Universidad de Guadalajara, Zapopan, Jalisco, Mexico
CAJAPE	Colección de Auchenorrhyncha de J. Adilson Pinedo Escatel
CEAM	Colección de Insectos del Instituto de Fitosanidad, Colegio de Postgraduados, Estado de México, Mexico
OSUC	C. A. Triplehorn Insect Collection, Columbus, Ohio, USA.
USNM	United States National Museum of Natural History, Washington, DC, USA.

Taxonomy

Subfamily Deltocephalinae

Tribe Deltocephalini

Amblysellus Sleesman

Amblysellus Sleesman, 1929: 131
Type species: *Amblycephalus curtisii* Fitch, 1851

Diagnosis. Small and superficially flattened leafhoppers, overall coloration stramineous with ochraceous regions and usually with one or more pairs of large black spots on crown. Forewing macropterous, or sub-macropterous with three anteapical cells. Pygofer without processes, pointed. Aedeagus without basal processes, atrium developed, shaft slender with ventrolateral flanges; apex with median cleft on ventral surface.

Distribution. Canada, USA, Mexico, Guatemala, Ecuador, Argentina, and China.

Checklist of *Amblysellus* from Mexico

Species	Distribution
A. necopinus DeLong & Hamilton, 1974	Veracruz, Jalisco, Morelos, Oaxaca, Michoacán, and Hidalgo
A. macularis DeLong & Hamilton, 1974	Chiapas, Morelos, Ciudad de México, and Veracruz
A. dedecus DeLong & Hamilton, 1974	Chiapas, Estado de México, Ciudad de México, and Guanajuato
A. copulus DeLong & Hamilton, 1974	Veracruz, Morelos, and Ciudad de México
A. raygozai **sp. nov.**	Jalisco

Key to species of *Amblysellus* from Mexico

1 Aedeagus evenly curved dorsad . . . . . ***raygozai* sp. nov.**
- Aedeagus nearly straight or abruptly bent dorsad in distal half 2
2 Crown with a slender black transverse stripe near anterior margin. Style apophysis expanded and truncate apically . . . . . ***copulus*** DeLong & Hamilton
- Crown with a broad band or spots on anterior margin. Style apophysis conical or angulate apically 3
3 Crown without transverse band, only spots present on anterior margin. Style apophysis twisted or angulate 4
- Crown with a broad irregular black band along anterior margin. Style with apex of apophysis broad, pointed, not twisted . . . . . ***macularis*** DeLong & Hamilton
4 Crown with circular spots. Style apophysis twisted. Aedeagal shaft broad in lateral view . . . . ***necopinus*** DeLong & Hamilton
- Crown with irregular spots. Style apophysis not twisted, angulate. Aedeagal shaft slender with preapical constriction in lateral view . . . . . ***dedecus*** DeLong & Hamilton

***Amblysellus raygozai* sp. nov.**
(Figs. 1–3)
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Description. Overall coloration stramineous to olivaceous in sub-macropterous male and female (Fig. 1 A–B, E–F) to dark-brown in macropterous female (Fig. 1 C–D). Head wider than protonum; crown stramineous with two pairs of small black sports on anterior margin, inner pair next to midline and lateral near ocelli; longer than width between eyes; eye wider than distance between eyes; anterior margin forming acute angle in dorsal view. Face, yellowish with brown marks; frontoclypeus with many transverse arcuate dark-brown stripes, stripes wider on top than basally, midline with interrupted yellowish vertical band, broad basally; anteclypeus yellowish laterally, brownish centrally; gena yellowish, in some females brownish distally (Fig. 1 G–I). Pronotum stramineous, wider than long; scutellum, flat in lateral view, short, fully yellowish in submacropterous individuals (Fig. 1 A–B); forewing in males reaching posterior margin of tergite V or VII in repose, in females usually tergite VII and VII uncovered; venter and abdomen black preapically; genital capsule light stramineous with black or pale macrosetae (Fig. 1 E–F).

Macropterous female with face darker, anteclypeus with a apical half black, gena with black band below eyes, pronotum with four longitudinal brownish lines, mesonotum with basolateral triangles black, venter and abdomen brown (Fig. 1 C–D).

Male genitalia. Apodemes inconspicuous in dorsal view. Pygofer 2.3x longer than tall, conical, well–sclerotized dorsally; long and short macrosetae well distributed along more than 1/3 of lateral pygofer surface; basolaterad cleft longer than half pygofer length, posterior margin with small fine setae (Fig. 2 A). Anal tube in lateral view, same length as width, not elongate, thin and membranous. Valve in ventral view with posterior margin slightly notched medially, not produced posteromesad, 2.4x wider than long; anterior margin strongly rounded and projected anterad. Subgenital plate in ventral view, shorter than pygofer, triangular, slightly longer than wide, lateral margin convex; apex more or less angulate, forming less than 90º angle, strong stout uniseriate macrosetae arranged basally on lateral margin, fine setae intercalated between macrosetae row (Fig. 2 B). Style bilobed basad; medial lobe slightly produced dorsad, not elongate; preapical lobe absent; apophysis sinuate, short, surface smooth; apex curved mesad, blunt or pointed dorsad in lateral view (Fig. 2 C). Connective in ventral view 1.2x longer than aedaegus. Aedeagus in lateral view, evenly curved dorsad, shaft uniformly slender, lateroventral flanges near middle shaft (Fig. 2 D); in ventral view, flanges narrowing toward apex (Fig. 2 E), gonoduct poorly developed, gonopore preapically on ventral surface, as wide as shaft (Fig. 2 F).

FIGURE 1. Habitus of *Amblysellus raygozai* **sp. nov.**; A—sub-brachypterous male, dorsal view; B—sub-brachypterous female, dorsal view; C—macropterous female, dorsal view; D—macropterous female, lateral view; E—sub-brachypterous female, lateral view; F—sub-brachypterous male, lateral view; G—sub-brachypterous male, anterior view; H—sub-brachypterous female, anterior view; I—macropterous female, anterior view.

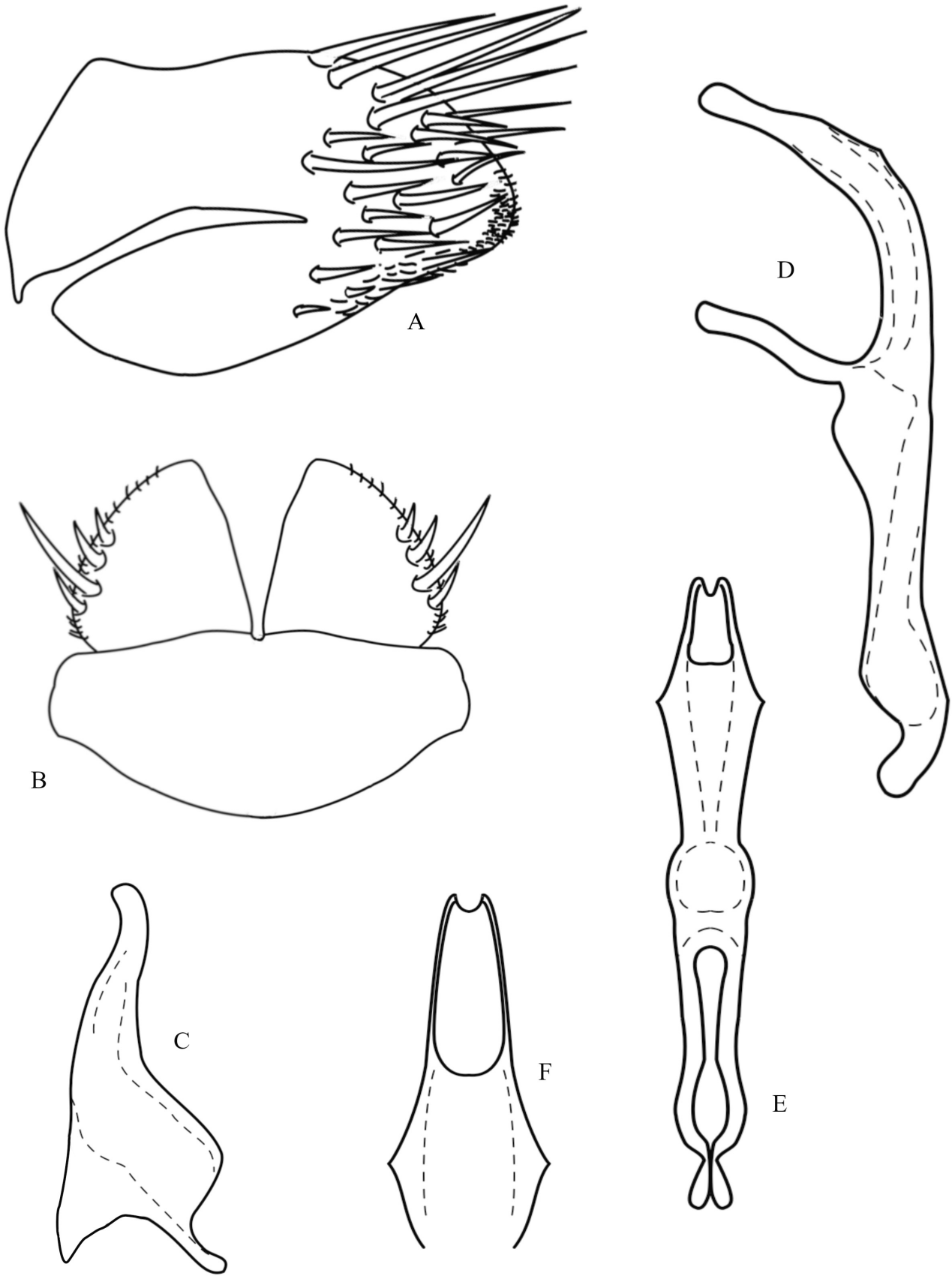

FIGURE 2. Male genitalia of *Amblysellus raygozai* **sp. nov.**; A—pygofer, lateral view; B—valve and plates, ventral view; C—style, ventral view; D—aedeagus and connective, lateral view; E—aedeagus and connective, ventral view; F—apex of aedeagus, caudal view.

Female genitalia. Pygofer in lateral view, 2.1x longer than tall, long stout macrosetae scattered over surface near posterior and caudal margin. Ovipositor not protruding beyond pygofer apex. First valvula (Fig. 3 A), ramus not strongly convex; dorsal sculpturing pattern imbricate (Fig. 3B), reaching dorsal margin and not restricted to apex (Fig. 3 C), sculpturing restricted to apical portion. Second valvula (Fig. 3 D), broadened apically, membranous and unpigmented medially; without dorsal tooth; dorsal teeth on apical portion, small, serrated and regularly shaped, (Fig. 3 E); ducts wide and not reaching dorsal margin. Third valvula (Fig. 3 F), without apical setae. Sternite VII (Fig. 3 G) in ventral view, wider than long; trilobed; ventral surface conspicuously punctate.

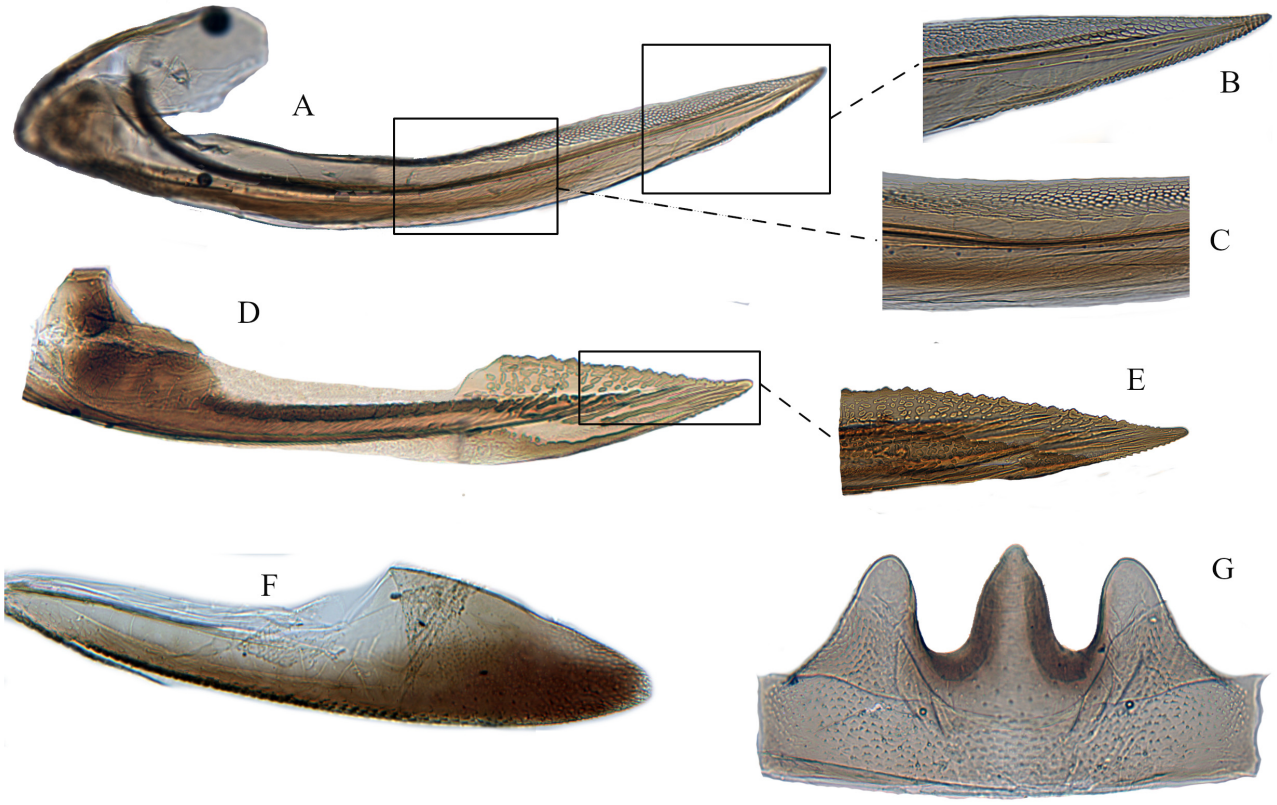

FIGURE 3. Female genitalia of *Amblysellus raygozai* **sp. nov.**; A—first valvula, lateral view; B—dorsal and apical sculpturing of first valvula, lateral view; C—medial dorsal sculpturing of first valvula, lateral view; D—second valvula, lateral view; E—dorsal and apical sculpturing of second valvula, lateral view; F—third valvula, caudal view; G—female seventh sternite, ventral view.

Nymphs. Overall coloration pale with two distinct minute black spots on anterior margin of crown.

Measurements. Body, length sub-brachypterous ♂ 2.58–3.00 mm, ♀ 3.24–3.35 mm, macropterous ♀ 3.37–3.48 mm; width 0.96–1.08 mm. Head, width 0.87–0.97 mm; midlength 0.35–0.39 mm; eye width 0.39–0.46 mm; eye length 0.17–0.20 mm; corona mid width before eyes 0.484–0.486 mm; corona posterior width between eyes 0.31–0.35 mm; distance between ocelli 0.40–0.42 mm; frontoclypeus width 0.39–0.42 mm; frontoclypeus length 0.57–0.66 mm; anteclypeus width 0.16–0.18 mm; anteclypeus length 0.21–0.23 mm; lorum width 0.09–0.10 mm; lorum length 0.21–0.23 mm; gena width 0.17–0.21 mm; gena length 0.32–0.36 mm. Pronotum, width 0.75–0.84 mm; length 0.33–0.35 mm. Scutellum, width 0.37–0.52 mm; length 0.18–0.24 mm. Forewing, length 1.43–2.26 mm. Male capsule, pygofer tall 0.48–0.51 mm; pygofer length 0.94–0.96 mm; valve width 0.37–0.39 mm; valve length 0.82–0.83 mm; valve width 0.37–0.39 mm; valve length 0.81–0.83 mm; subgenital plate width 0.35–0.37 mm; subgenital plate length 0.40–0.41 mm; style length 0.75–0.77 mm. Female capsule, pygofer tall 0.65–0.68 mm; pygofer length 1.59–1.68 mm.

Material type. Holotype ♂ (INHS)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20°44’49”N 103°30’48”W, 1,662 m, 31 Enero 2014, Pinedo-Escatel Col.; Paratypes, Total 18♂ and 17♀; 4♂, 5♀ (INHS)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20°44’N, 103°30’W; 1,662 m, 31 Enero 2014, Pinedo-Escatel Col.; 1♂, 1♀ (USNM)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20°44’N, 103°30’W; 1,662 m, 11 Junio 2014, Pinedo-Escatel Col.; 4♂, 2♀ (CAJAPE)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20°44’N,

103°30’W; 1,662 m, 11 Junio 2014, Pinedo-Escatel Col.; 3♂, 3♀ (CNIN)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20°44’N, 103°30’W; 1,662 m, 19 Diciembre 2013, Pinedo-Escatel Col.; 3♂, 3♀ (CEAM)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20°44’N, 103°30’W; 1,662 m, 19 Diciembre 2013, Pinedo-Escatel Col.; 2♂, 3♀ (CZUG)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20°44’N, 103°30’W; 1,662 m, 19 Diciembre 2013, Pinedo-Escatel Col; 1♂, 3♀ (OSUC)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20°44’N, 103°30’W; 1,662 m, 19 Diciembre 2013, Pinedo-Escatel Col.

Other material examined. Total 56♂ and 82♀; 1♂, 1♀ (CAJAPE)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20°44’ 43.532”N 103°30’59.19”W, 1,662 m, 20 Noviembre 2013, Pinedo-Escatel, J.A. Col.; 1♂ (CAJAPE)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20°44’ 43.532”N 103°30’59.19”W, 1,662 m, 19 Diciembre 2013, Pinedo-Escatel, J.A. Col.; 1♂, 1♀ (CAJAPE)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20°44’ 43.532”N 103°30’59.19”W, 1,662 m, 03 Marzo 2014, Pinedo-Escatel, J.A. Col.; 1♂, 1♀ (CAJAPE)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20°44’ 43.532”N 103°30’59.19”W, 1,662 m, 18 Marzo 2014, Pinedo-Escatel, J.A. Col.; 1♂ (CAJAPE)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20°44’ 43.532”N 103°30’59.19”W, 1,662 m, 26 Mayo 2014, Pinedo-Escatel, J.A. Col.; 3♀ (CAJAPE)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20°44’ 43.532”N 103°30’59.19”W, 1,662 m, 11 Junio 2014, Pinedo-Escatel, J.A. Col.; 2♂, 2♀ (CAJAPE)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA \ 20°44’ 43.532”N 103°30’59.19”W, 1,662 m, 10 Septiembre 2014 \ Pinedo-Escatel, J.A. Col.; 1♀ (CAJAPE)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20°44’ 43.532”N 103°30’59.19”W, 1,662 m, 09 Octubre 2014, Pinedo-Escatel, J.A. Col.; 3♂, 5♀ (CAJAPE)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20° 44′34.52″ N 103° 30′41.44″ W, 1,666 m, 20 Nov 2013, Pinedo-Escatel, J.A. Col.; 10♂, 15♀ (CAJAPE)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20° 44′34.52″ N 103° 30′41.44″ W, 1,666 m, 04 Dic 2013, Pinedo-Escatel, J.A. Col.; 12♂, 18♀ (CAJAPE)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20°44’ 34.52”N 103°30’41.48”W, 1,666 m, 19 Diciembre 2013, Pinedo-Escatel, J.A. Col.; 5♂, 6♀ (CAJAPE)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20°44’ 34.52”N 103°30’41.48”W, 1,666 m, 02 Enero 2014, Pinedo-Escatel, J.A. Col.; 1♂, 3♀ (CAJAPE)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20°44’ 34.52”N 103°30’41.48”W, 1,666 m, 15 Febrero 2014, Pinedo-Escatel, J.A. Col.; 1♂, 1♀ (CAJAPE)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20°44’ 34.52”N 103°30’41.48”W, 1,666 m, 01 Abril 2014, Pinedo-Escatel, J.A. Col.; 2♂, 6♀ (CAJAPE)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20°44’ 34.52”N 103°30’41.48”W, 1,666 m, 09 Julio 2014, Pinedo-Escatel, J.A. Col.; 1♂, 8♀ (CAJAPE)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA \ 20°44’ 34.52”N 103°30’41.48”W, 1,666 m, 09 Agosto 2014 \ Pinedo-Escatel, J.A. Col.; 1♂ (CAJAPE)—MEXICO: Jalisco, Cd Guzmán, Campos experimentales Driscoll´s, 19°40’54.18”N 103°31’29.32”W, 1,628 m, 18 Septiembre 2015, Pinedo-Escatel, J.A. Col.; 7♂, 11♀ (CAJAPE)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20°44’39.2”N 103°30’56.5”W; 1,662 m, Mayo 2014, Torres-Moreno Col.;

Juvenile material examined. 1 nymph (CAJAPE)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20°44’49”N 103°30’48”W, 1,662 m, Mayo 2014, Becerra-Chiron I.M. Col.; 1 nymph (CAJAPE)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20°44’49”N 103°30’48”W, 1,662 m, Abril 2015, Becerra-Chiron I.M. Col.

Phenology. Specimens collected throughout dry (October-March) and wet season (June-September) in Mexico, highest abundance was reported in December (Moya-Raygoza & Becerra-Chiron 2014; Pinedo-Escatel & Moya-Raygoza 2015, 2018).

Biological notes. Not reported as vector of any plant pathogen (treated as *Amblysellus* sp. in Torres-Moreno *et al*. 2015, vouchers examined).

Natural enemies. Parasitized by dryinids, *Gonatopus* spp. (Becerra-Chiron *et al*. 2017, considered as *Amblysellus* sp., vouchers examined).

Etymology. This is species is named in honor of Prof. Dr. Gustavo Moya Raygoza, University of Guadalajara.

Distribution. Mexico, restricted to Las Agujas and Cd. Guzmán, both localities from Jalisco state (Fig. 4).

Host reported. *Cynodon dactylon*, *C. plechtostachyus*, *Brachiaria plantaguinea*, *B. brizantha*, *Eulesine indica*, *Chloris gayana*, *Digitaria ciliaris*, *Melinis mutiflora*, *Eragrotis curvula*, *Panicum maximun*, and *Rhynchelytrum repens* (Moya-Raygoza & Becerra-Chiron 2014; Pinedo-Escatel & Moya-Raygoza 2015, 2018).

Remarks. The new species, *A. raygozai*, is similar in dorsal appearance to *A. necopinus*, but it can be recognized easily by the more angulate anterior head margin, presence of small (not large) spots on the crown, and the evenly curved aedeagus with blunt apex.

Notes. Many specimens of *A. raygozai* were observed feeding and mating on the same host-plants of the related species, *A. necopinus*.

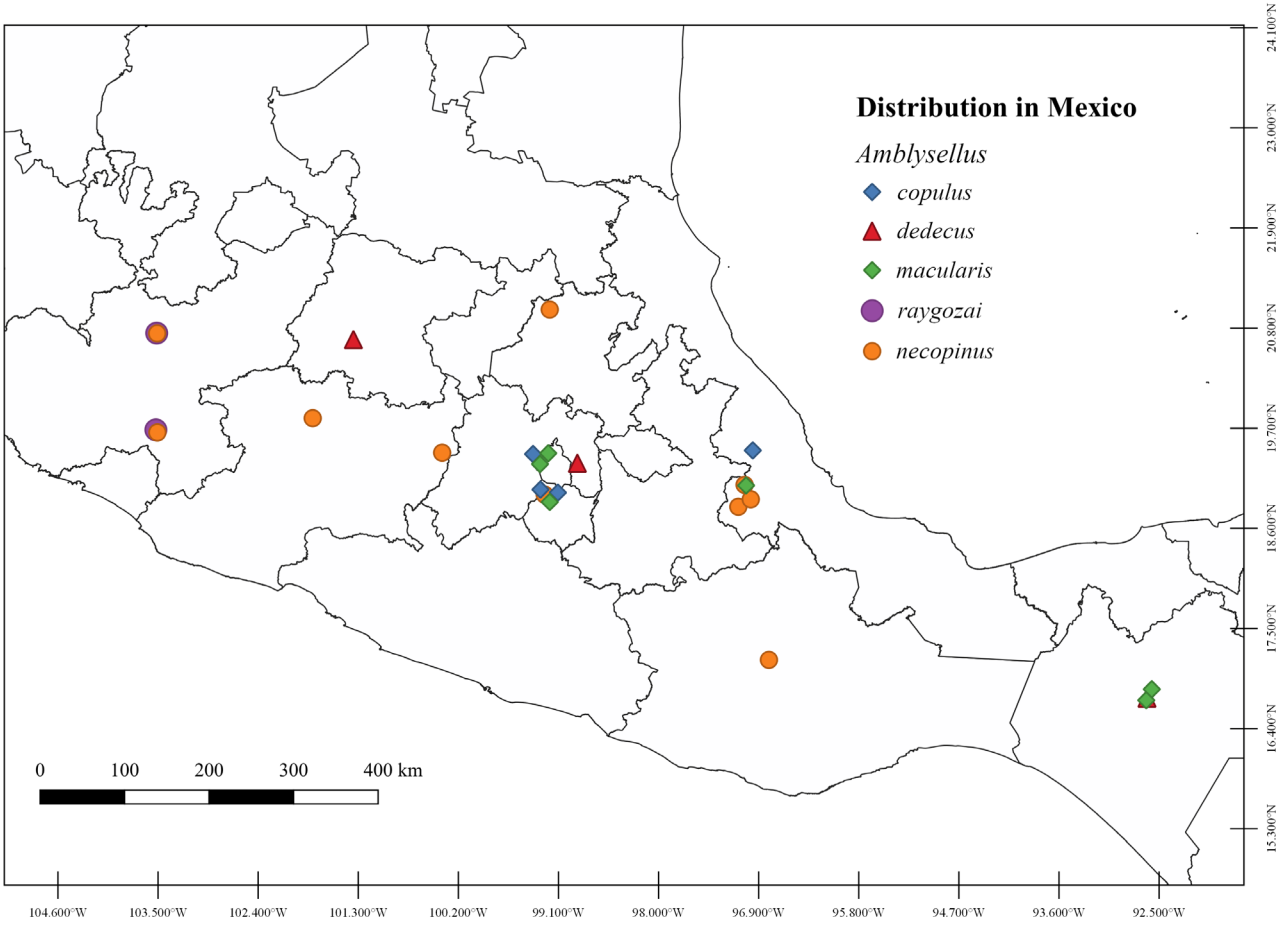

FIGURE 4. Distributional map of the genus *Amblysellus* in Mexico.

Amblysellus necopinus DeLong & Hamilton

Amblysellus necopinus DeLong & Hamilton, 1974: 845 [sp. nov.]

Material examined. Total 66♂ and 44♀; 3♂ (CAJAPE)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20°44.588'N 103°30.698'W, 1659m, 20 Noviembre 2012, Pinedo-Escatel J.A. Col.; 5♂, 5♀ (CAJAPE)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20°44.588'N 103°30.69'W, 1659m, 12 Diciembre 2012, Pinedo-Escatel J.A. Col.; 2♂ (CAJAPE)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20°44.588'N 103°30.698'W, 1659m, 18 Diciembre 2012, Pinedo-Escatel J.A. Col., Red Entomológica; 4♂, 2♀ (CAJAPE)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20°44.588'N 103°30.698'W, 1659m, 4 Enero 2017, Pinedo-Escatel J.A. Col., Red Entomológica; 6♂, 2♀ (CAJAPE)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20°44.588'N 103°30.698'W, 1659m, 15 Enero 2013, Pinedo-Escatel J.A. Col., Red Entomológica; 2♂, 5♀ (CAJAPE)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20°44.58'N 103°30.69'W, 1659m, 30 Enero 2013, Pinedo-Escatel J.A. Col.; 2♂, 2♀ (CAJAPE)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA \ 20°44.588'N 103°30.698'W, 1659m, 12 Febrero 2016 \ Pinedo-Escatel J.A. Col., Red Entomológica; 4♂, 1♀ (CAJAPE)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20°44.588'N 103°30.698'W, 1659m, 19 Dic 2013, Pinedo-Escatel J.A. Col.; 5♂, 4♀ (CAJAPE)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20°44.588'N 103°30.698'W, 1659m, 03 Enero 2014, Pinedo-Escatel J.A. Col.; 11♂, 8♀ (CAJAPE)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20°44.58'N 103°30.70'W, 1659m, 01 Abril 2017, Pinedo-Escatel J.A. Col., Red Entomológica; 1♂ (CAJAPE)—MEXICO: Jalisco, Cd Guzmán, Rancho Tintero, 19°39'11.7"N 103°30'29.2"W, 1649m, 12 Agosto 16, Pinedo-Escatel J.A. and Douglas R. Colls., Red Entomológica; 12♂, 10♀ (CAJAPE)—MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA, 20°44.58'N 103°30.69'W, 1659m, 26 Mayo 2014, Pinedo-Escatel J.A. Col.; 3♂, 1♀ (CAJAPE)–MEXICO: Jalisco, Zapopan, Las Agujas, CUCBA \ 20°44.588'N 103°30.698'W, 1659m, 06 Noviembre 2015 \ Pinedo-Escatel J.A. Col., Red Entomológica.

Distribution. Mexico: Veracruz, Jalisco, Morelos, Oaxaca, Michoacán and Hidalgo states (Fig. 4).

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