





A new genus and species of Paralimnini leafhoppers from Israel (Hemiptera: Cicadellidae: Deltocephalinae)

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Abstract

A new genus and species of the leafhopper tribe Paralimnini are described from Israel, viz., *Paraphysifer* Sinaiko & Dietrich **gen. n.** with *P. wilsoni* Sinaiko & Dietrich **sp. n.** as type species.

Key words: Auchenorrhyncha, Palearctic, morphology, taxonomy, paraphysis

Introduction

The leafhopper fauna of Israel was last surveyed comprehensively by Linnavuori (1962). That survey found three genera and eight species of Paralimnini to reside in Israel. While conducting a new survey of Israeli leafhoppers recently, we discovered specimens belonging to an undescribed genus. They are difficult to place in any known genus, and most closely key out to either *Psammotettix* Haupt, 1929 or to *Cleptochiton* Emeljanov, 1959, in Emeljanov's (1999) key that includes nearly all known Palearctic paralimnine genera, but differ from them and all other known genera of the tribe in a certain detail of the male genitalia.

Materials and methods

The material studied here is deposited in the National Collection of Insects, the Steinhardt Museum of Natural History, National Research Center, Tel Aviv University, Israel (SMNH-TAU), and Illinois Natural History Survey (INHS). Morphological terminology follows Dietrich (2005). Digital photographs were taken with a QImaging Micropublisher 3.3 digital camera mounted on an Olympus BX41 stereo microscope, with a DinoLite Eyepiece Camera mounted on a Leica M165C stereo microscope, and with a Nikon D1x digital SLR camera configured with lenses by Microptics, Digital Lab XLT system. Photographs were modified with Adobe Photoshop CS3.

Taxonomy

Subfamily Deltocephalinae

Tribe Paralimnini

Paraphysifer Sinaiko & Dietrich **gen. n.**

Type species: *P. wilsoni* Sinaiko & Dietrich **sp. n.**, by original designation.

Head shape. Head in dorsal view distinctly wider than pronotum. Crown slightly produced and bluntly angulate medially, basal width between eyes $\sim 1.3\times$ greater than median length; crown texture glabrous; transition from crown to face rounded; ocelli well developed, on anterior margin separated from eyes by slightly more than one ocellar diameter.

Face almost as wide as long (1.04 ratio), very slightly convex in profile; frontoclypeus relatively broad, maximum width about half that of face, tapered ventrally to about half maximal width; anteclypeus flat, tapered towards apex to about half basal width, lateral margins straight; lorum relatively narrow, about half as wide as anteclypeus; lorum well separated from genal margin, border between lorum and gena fuscous. Face texture shagreen. Crown texture shagreen anteriorly, longitudinally striate posteriorly.

Wing venation. Forewing with four apical and three subapical cells, inner anteapical cell closed basally and petiolate apically, outer anteapical cell thin, not extended to costal margin, petiolate both basally and apically; appendix narrow at base, broadened to about twice basal width, then tapered to initial width toward apex.

Leg chaetotaxy. Profemur row AV with ~ 7 short, robust setae in proximal half and thin, short AV1 apicad (similar in shape and length to IC setae); AM1 enlarged, located at midheight of femur, well separated from apex; IC row with ~ 7 thin, delicate setae about twice length of basal AV seta; protibial AD with single distal seta (missing in holotype, only socket present), PD with 4 evenly spaced macrosetae; AV with 14 macrosetae, PV with 7 macrosetae (arranged as 1, 4, and 2 along the tibia basad).

Metafemur macrosetal formula 2+2+1, Metatibial AV with 11 macrosetae followed by 23 shorter, more delicate seta basad; PV and AD with 14 and 12 macrosetae that decrease in size basad, respectively; PD with 6 macrosetae and 1-4 shorter setae between each pair of macrosetae; tarsomeres 1 and 3 with two plantar rows of (4 and 3, respectively) short, robust setae; distal pecten of first tarsomere with 3 platellae amidst 4 macrosetae (2 on each side).

Male genitalia. Pygofer relatively short and tall, weakly incised dorsally with short median posterodorsal lobe; lateral lobe with numerous macrosetae in posterodorsal half, apex broadly rounded, without teeth or processes. Segment X short and broad, well sclerotized laterally, membranous dorsally, without teeth or processes. Valve relatively long, broadly rounded posteromedially. Subgenital plates short, articulated to valve, with single row of macrosetae laterally. Style nearly as long as connective, apophysis elongate, preapical lobe angulate, apex evenly curved laterad with blunt tip, without obvious teeth or microsculpture. Connective elongate, racquet-shaped with posterior stem broadened posteriorly to V-shaped apex and shorter than anterior arms. Paraphysis present, short, articulated between apex of connective and base of aedeagal preatrium, with pair of apodemes extended dorsolaterad and terminating with weakly sclerotized lobe articulated to base of segment X, apex extended posterad below aedeagus and terminating in pair of short, depressed digitiform processes. Aedeagus bulbous, sack-like, curved strongly anterodorsad, very broad in lateral view, in posterior view with broad longitudinal cleft extended over most of shaft housing gonopore, apex narrow and strongly compressed. Sclerotized dorsal connective absent.

Etymology. This genus name, a masculine noun, is based on the unusual diagnostic feature, the paraphysis (see Remarks).

Remarks. In the most comprehensive available key to Paralimnini genera (Emeljanov, 1999) *Paraphysifer* keys out either to *Psammotettix* Haupt, 1929 or to *Cleptochiton* Emeljanov, 1959, but it may be separated from these genera by the presence of the paraphysis. The subgenital plates of the new genus are very similar to those of *Psammotettix* in being very narrow with most of their length confined to the lateral margin of the valve and only a short distal lobe extended posterad of the valve. However, neither *Psammotettix* nor most other described genera of Paralimnini have a true paraphysis in the male genitalia. Stiller (2010) labeled some structures in the male genitalia of some species of *Vilargus* Theron as paraphyses but these are not true paraphyses (*sensu* Dai & Dietrich, 2011) because they are fused either to the connective or to the base of the aedeagus rather than being movably articulated between the connective and aedeagus. The genitalia of *Vilargus* also differ from those of the new genus in being asymmetrical and in having the connective process unbranched. Among previously described genera of Paralimnini, only the widespread Old World genus *Nicolaus* Lindberg includes some species, e.g., *N. dentatus* (Theron), that appear to have true paraphyses. These consist of elongate, paired processes, separated at the base and movably articulated to the aedeagal preatrium rather than a single structure with posterior lobes as in *Paraphysifer*. Some species of *Nicolaus* also have subgenital plates resembling those of the new genus, but species of *Nicolaus* differ in the more elongated form of the body, lack of large brown spots on the forewing, and presence of a dorsal process or apical tooth, or both, on the male pygofer lobe.

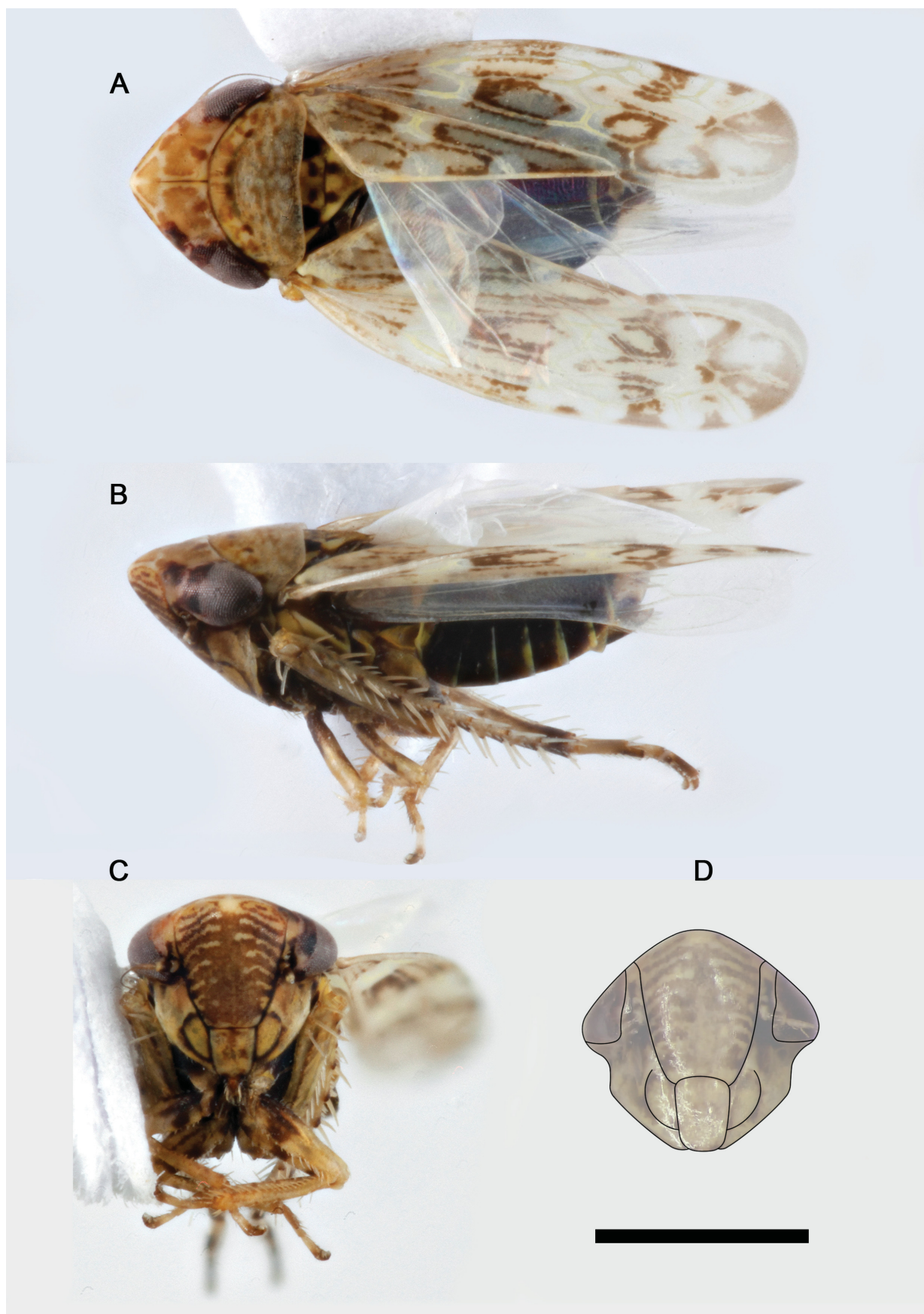


FIGURE 1. *Paraphysifer wilsoni* Sinaiko & Dietrich **sp. n.** A: habitus, dorsal view; B: habitus, lateral view; C, D: face. Scale: 1mm (A–C to scale).

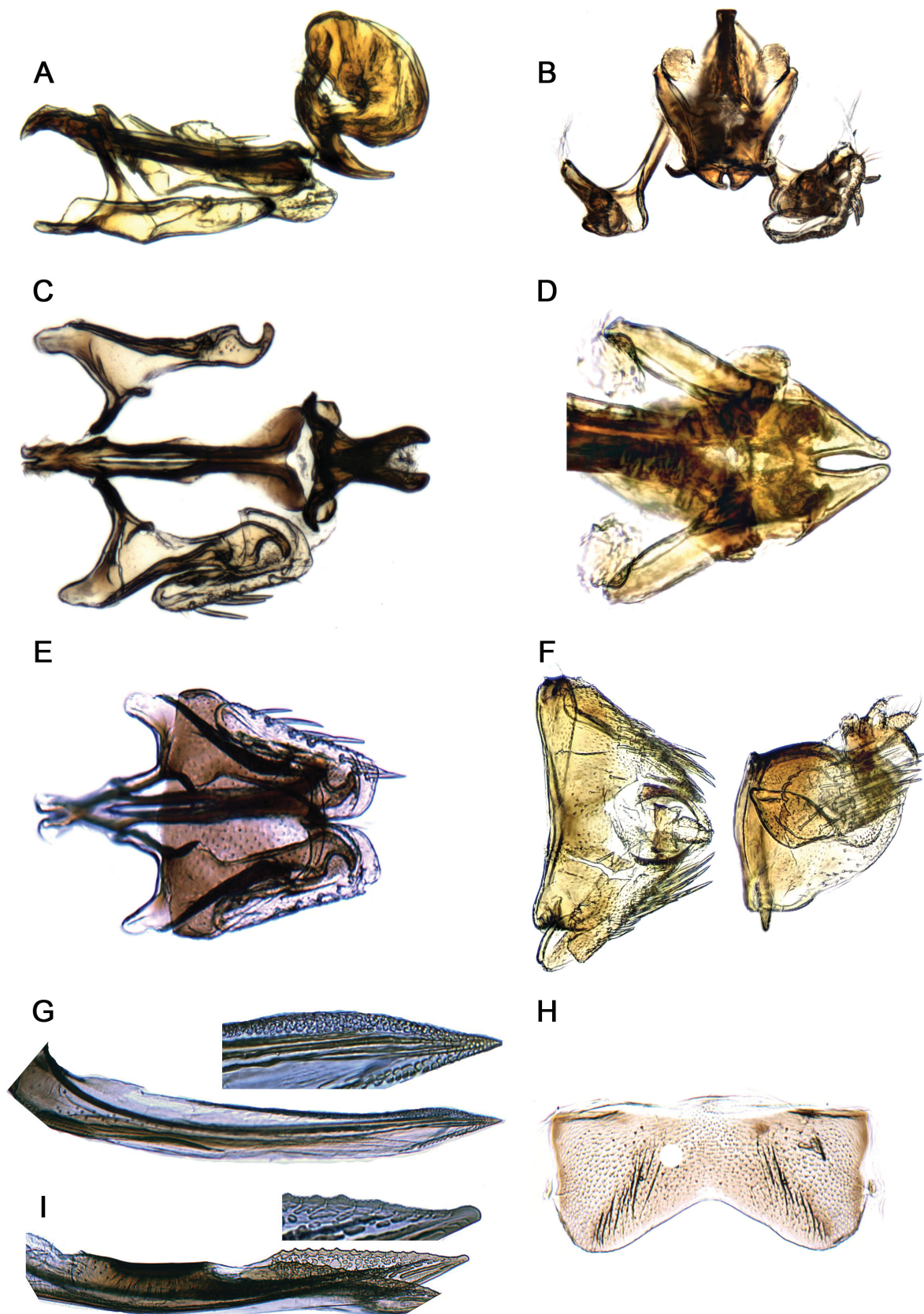


FIGURE 2. *Paraphysifer wilsoni* Sinaiko & Dietrich **sp. n.** A: male genitalia (aedeagus, paraphysis, connective, styli). Lateral view; B: male genitalia (aedeagus, paraphysis, connective, styli). posterior view; C: male genitalia (aedeagus, paraphysis, connective, styli). dorsal view; D: male paraphysis, ventral view; E: male valve and subgenital plates; F: male pygofer, dorsal and lateral views; G: female ovipositor's first valvula; H: female VII sternite; I: female ovipositor's second valvula.

***Paraphysifer wilsoni* sp. n.**

(Figs 1–3)

Length. ~3 mm (3.07 male holotype, 3.19 male paratype, 3.57 female paratype).

Color pattern. General color cream with extensive, symmetrical fuscous marks. Crown tan with white lines forming anterior triangle and also extended along coronal suture to pale posterior margin. Pronotum mottled. Forewing whitish-transparent with seven somewhat indistinct alternating (four brown, three white) irregular transverse bands, veins mostly yellow. Mesonotum with basal triangles and two submedial spots fuscous, scutellum with two fuscous spots bordering sulcus. Abdomen dark; white-cream at posterior border of each sternite.

Male genitalia. Pygofer with short, condensed posterior lobe, and numerous short, robust setae at midlength, followed by numerous macrosetae apicad. Subgenital plate with ~6 macrosetae, apex extended only slightly beyond valve and obliquely truncate with tips slightly separated from each other. Style basal arms separated widely, articulating arm long and thin (best seen at posterior view), highly sclerotized, lateral arm shorter, flat, less sclerotized, truncated apicad, preapical lobe developed, triangular with blunt, apex directed slightly distad, apophysis short, stout and unornamented. Connective twice as long as aedeagus in ventral view, widest at apex of posterior stem (near aedeagus).

Female terminalia. Sternite VII with broad, V-shaped emargination posteriorly. First valvular dorsal sculpturing irregularly imbricate to granulose, extended to dorsal margin; ventroapical sculpture same as dorsal sculpture but with only two rows of granules, merging with dorsal sculptured area near apex, Second valvula with dorsomedial tooth obsolete, distal toothed area with several more or less evenly spaced conical teeth preapically separated by small serrations.

Material examined. Holotype, male, Israel: Ma'agar Bental (Benthal water reservoir), 33.1405N, 35.7783E, 944 m, Sweep netting, 28 vi 2018, Guy Sinaiko, leg. SMNHTAU-I.300063 (SMNH). Holotype is deposited in the National Collection of Insects, the Steinhardt Museum of Natural History, National Research Center, Tel Aviv University, Israel (SMNHTAU).

Paratypes: 1 female, same data as holotype, SMNHTAU-I.300064 (SMNHTAU), 1 male, same data as holotype, INHS855,201 (INHS).

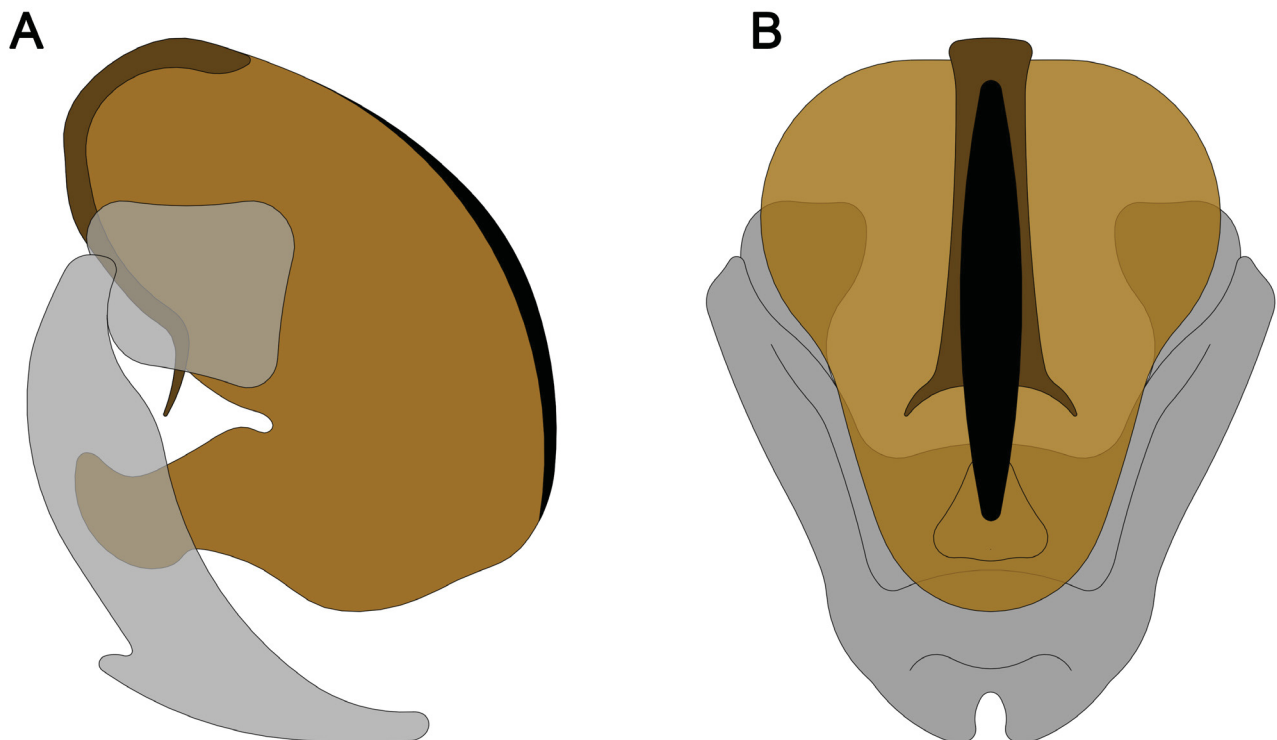


FIGURE 3. *Paraphysifer wilsoni* Sinaiko & Dietrich **sp. n.** A: male aedeagus and paraphysis, lateral view B: same, posterior view. Color code as follows: paraphysis (gray), aedeagus (light brown), gonopore (black), heavily sclerotized regions (dark brown).

Etymology. This species is named in honor of Dr Michael R. Wilson, Department of Natural Sciences, National Museum of Wales, Cardiff, Wales, United Kingdom, an expert on Auchenorrhyncha, who introduced these fascinating insects to the first author.

Acknowledgements

We thank the subject editor and two anonymous referees for constructive criticism of the manuscript. This research was supported in part by U.S. National Science Foundation grant DEB-1639601. GS is grateful for a Shalom Adesman travel grant.

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