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TWO NEW *ZAMMARA* SPECIES FROM SOUTH AMERICA (HEMIPTERA: CICADOMORPHA: CICADIDAE)

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ABSTRACT

Two new members of the widespread Neotropical genus *Zammara* Amyot & Serville, *Zammara olivacea* n.sp. from Columbia and *Zammara medialinea* n.sp. from Venezuela are described.

Key Words: new species, taxonomy, cicada, *Zammara*, Columbia, Venezuela.

RESUMEN

Se describe a dos nuevos miembros del género Neotropical *Zammara* Amyot & Seville: *Zammara olivacea* n. sp. de Colombia y *Zammara medialinea* n. sp. de Venezuela.

Translation provided by author.

The genus *Zammara* was erected by Amyot & Serville (1843) to include New World species with expanded lateral pronotal lobes and "cavités sonores" that exposed a large portion of the timbal dorsally. The type species is *Zammara tympanum* [F.] originally described from Brazil (Fabricius 1803). There are currently 16 species assigned to the genus. This cicada group is generally found within the shaded understory of tropical forests (e.g., Young 1977, 1980, personal observation) in which the cryptic wing coloration may account for the infuscated wing patterns typical of *Zammara* species except *Z. luculenta* Distant (1883) and the new species from Venezuela. *Odopoea* Stål, *Miranha* Distant, *Zammaralna* Boulard & Sueur, *Juanaria* Distant, *Borencona* Davis, *Chinaria* Davis, *Orellana* Distant, and *Uhleroides* Distant are other genera of the tribe Zammarini, which share similar morphological characteristics. The two new species here described were found among unidentified material in museum collections. It should be noted that the coloration patterns, especially of the wings, of *Zammara* females may vary from the patterns observed in the males of the same species. The descriptions provided are for males as no female specimens were available for the descriptions. The terminology used to describe the species follows Duffels (1977).

Zammara olivacea, New Species

Type material.—Type male: "Providencia, Colombia, S.A., 17-V-70, sang while being held", deposited in the Insect Research Collection, University of Wisconsin, Madison. Paratype male: "Providencia, Colombia, 3-5-71, J.M. Thompson" deposited in the author's collection.

Etymology. The species is named for its olive green color similar to that of *Z. smaragdina* Walker, 1850 and *Z. smaragdula* Walker, 1858.

Description (Fig. 1).—Head: about as broad as mesonotum; greenish ground color (faded to tawny in the paratype) with ochraceous area between eyes. Ocelli surrounded by black with a wavy fuscous line extending from between the lateral and central ocelli to the supraantennal plates and continued medially across the postclypeus. A thinner irregular mark appears at about one fourth the distance from the ocelli and arches cephalad to the line between the ocelli and supraantennal plate and caudad of where it joins the mark surrounding the lateral ocellus before terminating caudad to the lateral ocellus. This mark consists of two ovoid spots between the lateral ocellus and the antennae. There is a long testaceous spot between the fuscous line and the eye. There are four black spots along the hind part of the head, two mediad of the posterior lateral curvature of the eye and two smaller spots caudad of the terminus of the irregular marks by the lateral ocelli. A thin black line extends posteriorly along the central sulcus and continues laterally as a thin line at the base of the head laterally to the distance of the small spots. A few long hairs extend from the region posterior to the eye. Antennae testaceous except for the distal aspect of the pedicel and the first flagellar segment, which are black. Postclypeus greenish with the lateral surfaces and the junction of the anteclypeus ochraceous. Its dorsal surface is marked with fuscous and a central fuscous stripe. Anteclypeus greenish and ochraceous. Genae greenish with a fuscous line at the junction with the anteclypeus and along a second parallel line at about half the genal length. Rostrum tawny with the tip black, extending to the opercula.

Thorax: pronotum greenish with a central black fascia broadening anteriorly along the base of the head. The mark broadens slightly caudad before the pronotal collar where it terminates.

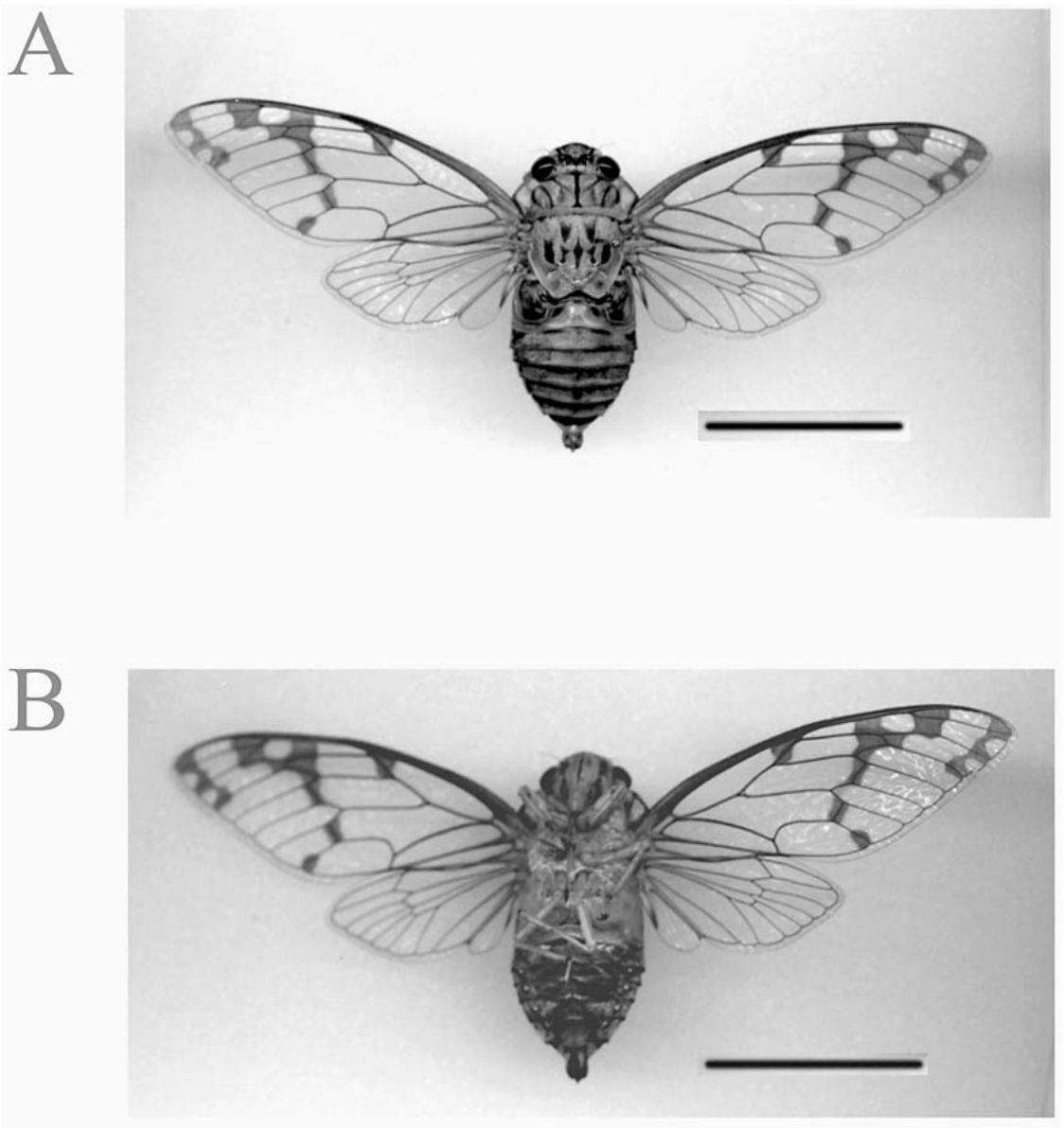

Fig. 1. *Zammara olivacea* n.sp. type male. A. Dorsal view. Bar = 2 cm. B. Ventral view. Bar = 2 cm.

The ambient and posterior oblique fissures are marked with tawny. There is a testaceous spot in the lateral sulcus. Lateral margins of the suprahumeral plates edged in black. Mesonotum with a central median kite-shaped fascia on the posterior half. A pair of discontinuous paramedial fascia which appear to be two separate spots, the first anterior and lateral to the kite-shaped central mark, and which do not reach the pronotum anteriorly; and an irregular mark anterior to the cruciform elevation and lateral to the kite-shaped central mark are present. A thick lateral fascia is found on the posterior half of the mesonotum and extends medially to form a small spot on the anterior arm of the cruciform elevation. There are some irregular marks on the anterior mesonotum extending posteriorly from under the pronotal collar. There are short golden hairs along the lateral and posterior borders of the mesonotum and between the arms of the cruciform elevation. Exposed metanotum and metasternum greenish and tawny. Operculum greenish (darker along posterior and medial borders) with white pruinose wax and a testaceous mark at the base surrounding the meracanthus. Opercula rounded, almost meeting medially.

Wings: fore wings hyaline with eight apical cells; costal area testaceous to just past the node where the coloration becomes fuscous. The basal cell is clouded with green. Crossveins testaceous becoming fuscous in the distal two thirds of the wing. Infuscations at the distal end of the radial cell extending into the proximal portion of ulnar cell 2, a long irregular mark starting in the proximal third of apical cell 1 continuing across the proximal quarter of apical cell 2 and distal portion of the ulnar cell 1, constricting along the vein between apical cell 3 and ulnar cell 1 then expanding across the center of the first ulnar cell to the costal margin and across the proximal portion of apical cell 3 and ulnar cell 2. The mark continues across the proximal portion of apical cell 4 and along the basal veins of the fifth and seventh apical cells. There is a faint mark across the proximal portion of apical cell 6. There are infuscations along the base of the longitudinal veins 1, 2, 3, and 7 (also on the longitudinal veins 5 and 6 in the paratype) continuous to the apex of the tegmina. The marks on longitudinal veins 1, 2, and 3 are connected medially through the apical cells and continue to fill the terminal end of apical cell 1. The spots on longitudinal vein 7 and basal vein 7 are continuous in the paratype. Hind wings with six apical cells; venation testaceous marked with fuscous.

Legs: greenish and ochraceous with the distal tips of the coxa, tibia, tarsi and claws fuscous except the forelegs where the distal part of the femur and the proximal part of the tarsi are also marked with fuscous. Fore femora armed with two distal spines, the proximal one longer and more robust than the other. Hind tibia armed with three fuscous spines along shaft and 13 of these spines around the distal terminus of the segment.

Abdomen: tergites ochraceous, edges of anterior margins of segments 3-8 fuscous, the markings becoming thicker toward segment 8. Medial anterior and lateral anterior fuscous spots next to the timbals on segment 2. Abdominal segments three through seven have a lateral fuscous spot, that is incorporated into the anterior marking on segment 8. Sparse, fine golden hairs cover the central portion of segment 2 and the lateral surfaces of segments 3 and 4. Timbal cover incomplete, exposing the timbal dorsally. The timbal cover folds over itself laterally and posteriorly forming an L-shaped opening. Sternal segments transparent green with a dark green stripe along the midline with some white pruinose wax on the lateral surfaces. Fuscous markings ventrally both at the junction with the metathorax and at the junction of segments 6 and 7. Sternite 8 fuscous except for lateral green bands. Pygofer fuscous with green on lateral surfaces and the dorsal extension very small. Uncus folded at approximate right angle, bulbous laterally at the fold. The terminal medial uncus lobe has an open semicircular shape into which the aedeagus fits.

Measurements (mm): n = 2 males, range given for available specimens. Length of body: 30.4-31.3; length of fore wing: 39.6-41.1; width of fore wing: 13.9; length of head: 4.0-4.1; width of head including eyes: 9.7; width of pronotum including suprahumeral plates: 13.7-14.5; width of mesonotum: 9.4-9.8.

Zammara medialinea, New Species

Type material.—Type male: "VENEZUELA, Aragua Ranch Grande, Rio Res. St. nr Maracay, alt. 3508 ft., 10.15n × 67.36w, 19 Sept 1980" deposited in the collection of the Buffalo Museum of Science. Paratype male: "VENEZUELA, Aragua Ranch Grande, Rio Res. St. nr Maracay, alt. 3508 ft., 10.15n × 67.36w, 24 April 1981" deposited in the author's collection.

Etymology. The species is named for the marks on the head, prothorax and mesonotum which appear to form a stripe along the midline of the dorsal surface of the head and prothorax.

Description (Fig 2).—Head: about as broad as the mesonotum; greenish ground color with an ochraceous band around the eye. A black and fuscous band crosses the anterior part of the head encompassing the median ocellus but not reaching the edge of the supraantennal plates. There is a small caudolateral extension of the band to the eye, a small anterior extension of the band along the midline to the suture with the postclypeus, and a posterior extension of the band encompassing the lateral ocelli except for the caudolateral quarter. This mark continues to narrow posteriorly and terminates anterior to the junction of the prothorax. Some short silver hairs extend from the region posterior to the eye. Antennae fuscous except for the scape and proximal part of the pedicel, which are greenish ochraceous. Postclypeus greenish with some posterior tawny marks which appear to be continuous with the central marking of the head. There is some ochraceous coloration on the transverse postclypeal ridges of the paratype. Anteclypeus greenish but with a central ochraceous mark in the paratype. Genae green. Some white pruinose wax found on the gena, anteclypeus and postclypeus. Rostrum greenish with the tip black, extending to the abdomen.

Thorax: pronotum greenish with a central testaceous fascia broadening anteriorly along the base of the head to about half the distance to the eye. The fascia narrows medially where it terminates anterior of the pronotal collar. Testaceous spot in the anterior portion of the ambient fissure near the junction with the head. An ochraceous mark surrounds the posterior portion of the central fascia and extends into the medial half of the ambient fissure. Pronotal collar green. Mesonotum greenish with a central median testaceous

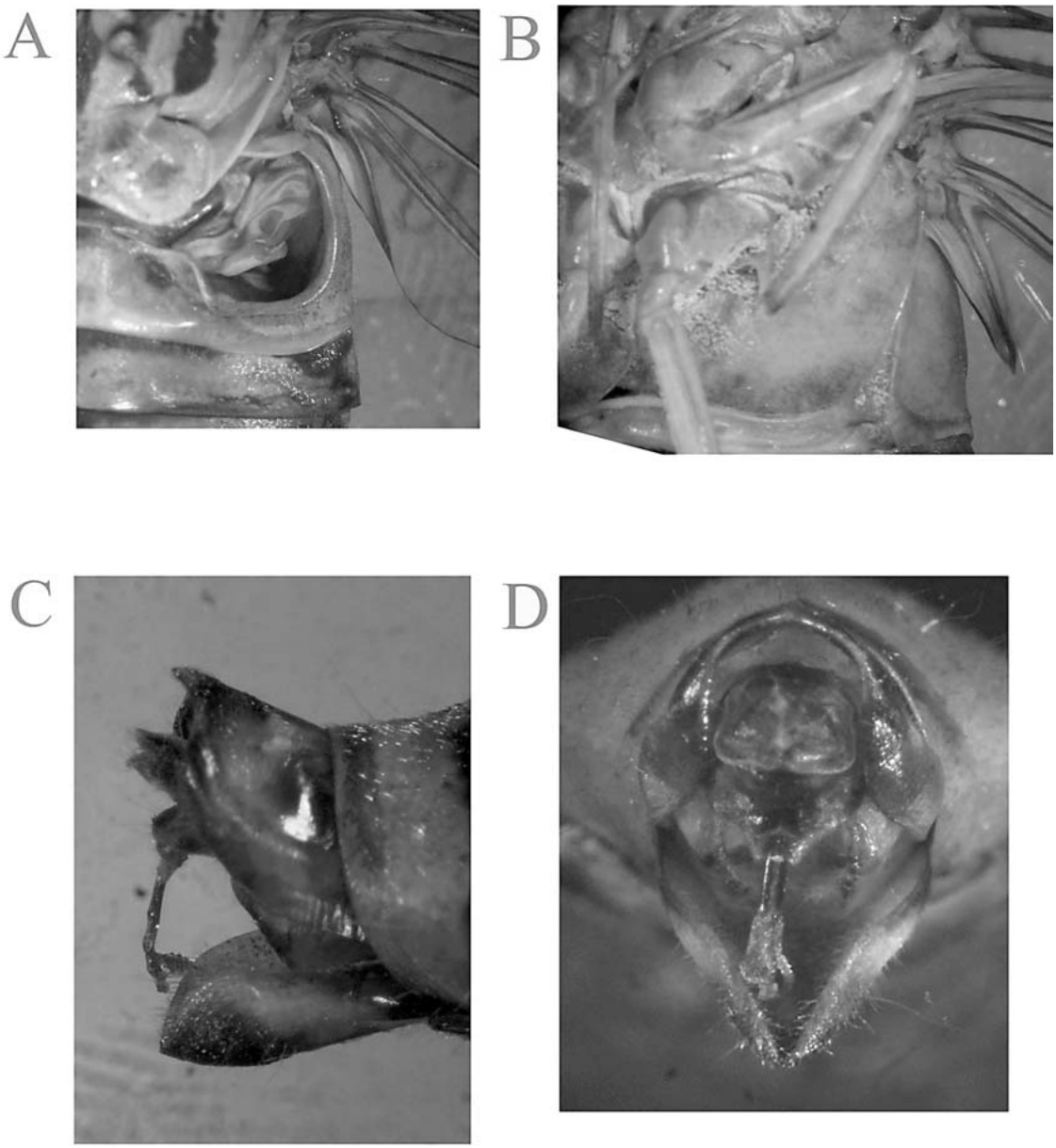

Fig. 2. *Zammara olivacea* n.sp. type male. A. Dorsal opening to the timbal. B. Male operculum. C. Lateral view of the type male genitalia. D. Posterior view of male genitalia.

fascia that expands laterally to the arms of the cruciform elevation. A testaceous spot lateral to the anterior arm of the cruciform elevation. Lateral edges of the wing grooves ochraceous. There are silvery hairs along the posterior borders of the mesonotum and between the arms of the cruciform elevation. Metanotum and metasternum greenish. Operculum and mercanthus greenish flecked with white pruinose wax. Opercula expand laterally before curving toward the midline. Opercula approach one another but do not meet medially.

Wings: fore wings hyaline with eight apical cells; costal area greenish to just past the node where the coloration becomes testaceous. The basal cell is clouded with green. There is a testaceous mark on the vein between the basal and radial cells. Crossveins greenish at base becoming ochraceous and finally testaceous in the distal portion of the wing. Very slight infuscations at the

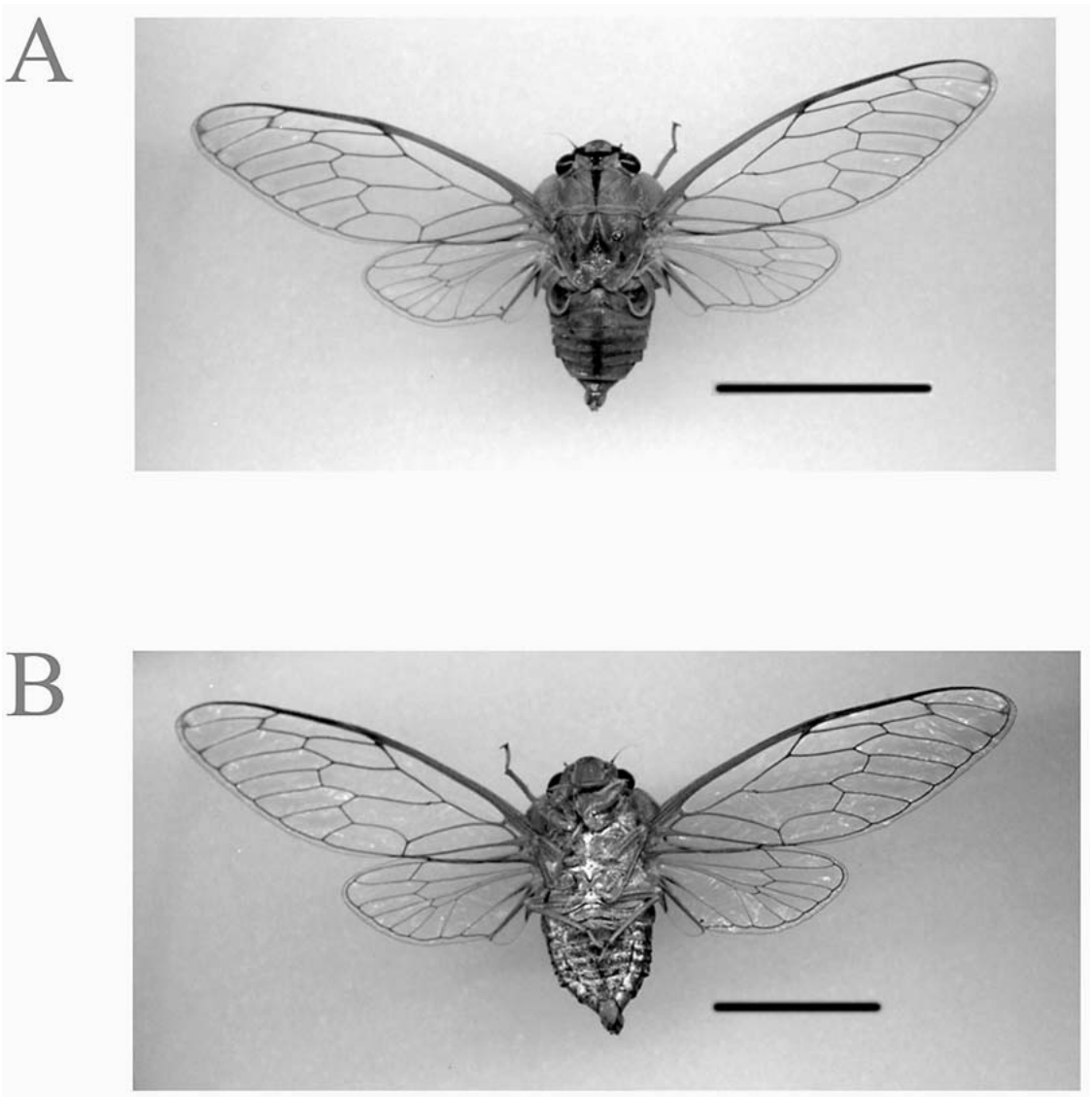

Fig. 3. *Zammara medialinea* n.sp. type male. A. Dorsal view. Bar = 2 cm. B. Ventral view. Bar = 2 cm.

basal vein of the second apical cell and at the distal portion of the longitudinal veins 1, 2, and 3. The infuscations on the first longitudinal veins extends into the apex of the first apical cell. There is a slight bronze tint to the apical cells of the wing. Hind wings with six apical cells; venation ochraceous and testaceous except the cubital vein which is greenish and ochraceous.

Legs: greenish, distal part of the tibia and tarsi ochraceous and claws fuscous. Small testaceous marks on proximal parts of tarsi. Fore femora armed with two greenish distal spines, the proximal one larger, with a testaceous tip, the distal one very small. Hind tibia armed with five testaceous spines with fuscous tips along shaft and 13 of these spines around the distal terminus of the segment.

Abdomen: tergites greenish ochraceous. Small fuscous lateral spots on the anterior portion of segments 7 and 8 partially covered by the anterior segments. Thin medial fuscous band along anterior border of segment 8 not continuous with lateral spots. Sparse silver hairs cover the abdomen, particularly the lateral surfaces and segment 8. Timbal cover incomplete, expanding laterally beyond the edge of the abdomen. Timbal exposed dorsally. The timbal cover folds posteriorly where the coloration is ochraceous. Sternal

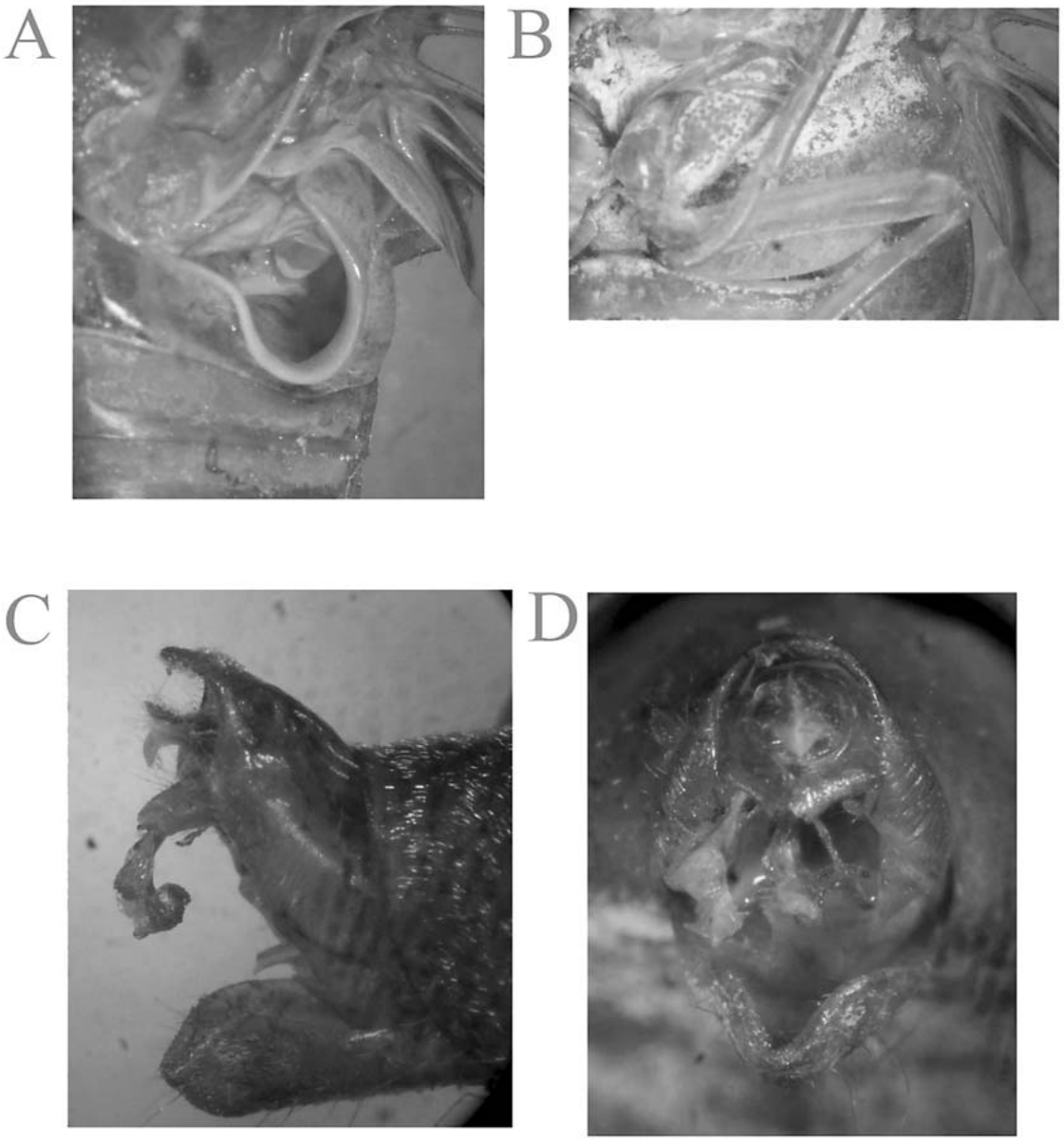

Fig. 4. *Zammara medialinea* n.sp. type male. A. Dorsal opening to the timbal. B. Male operculum. C. Lateral view of the type male genitalia. D. Posterior view of male genitalia.

segments greenish ochraceous with white pruinose wax on the surfaces. Pygofer greenish, ochraceous lateral dorsally with the dorsal extension small. Uncus short. The lateral lobes fold under the medial lobe which is arched distally.

Measurements (mm). N = 2 males, range given for available specimens. Length of body: 26.2; length of fore wing: 36.9-37.7; width of fore wing: 12.1-12.2; length of head: 4.0-4.4; width of head including eyes: 8.9-9.2; width of pronotum including suprahumeral plates: 13.4-13.8; width of mesonotum: 8.8-9.0.

Discussion

The exact locality of the type location for *Zammara olivacea* is unclear. Providencia is the capital and name of an island approximately 233 km off the eastern coast of Nicaragua (13°19'N 81°23'W) that forms part of the Intendency of San Andrés y

Providencia of Colombia (Cohen 1998). This is the location that is identified in most atlases and gazetteers. However, several small towns with the name Providencia can be found on the mainland as well. The origin of the specimens in the University of Wisconsin Collection is uncertain, so assigning a type location is uncertain except for Providencia, Colombia. The recommendations of the International Code of Zoological Nomenclature (1999) concerning a type locality cannot be applied in as much as any Providencia location in Colombia is well within the range of the genus *Zammara*, which extends from Argentina in the south to Mexico in the north (Metcalf 1963).

Zammara olivacea is larger than but morphologically close to *Z. smaradula*. The wing infuscation patterns are similar in the two species but more complete in *Z. olivacea*, particularly the marks that extend across the ulnar cells and longitudinal veins. Body coloration differs in that the prothorax is more highly marked and the markings of the mesothorax and abdomen are much larger than in *Z. smaragdula*. The genitalia differ in that the terminal extension of the medial lobe of the uncus is broader and does not bend over as great an angle as in *Z. smaragdula*. The dorsal opening to the timbal approximates two right angles posteriorly in *Z. olivacea*, while in *Z. smaragdula* the dorsal opening to the timbal is rounded.

Zammara medialinea is the second *Zammara* species not to have obvious infuscations in the tegmina. Although teneral specimens can have faint wing patterns, there are no indications of markings and both specimens appear to be fully pigmented. The faint markings found in *Z. medialinea* make the species more like *Z. luculenta* (known only from the type specimen from an unknown locality) than like any other species of *Zammara*. The new species differs from *Z. luculenta* (Distant 1883) in the markings on the prothorax and mesothorax, the coloration of the abdomen, and the slight bronze tint to the wings.

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