

## NEW EUPTERYGINE LEAFHOPPERS FROM PUERTO RICO

(Homoptera—Cicadellidae)

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Included in this paper are descriptions of five apparently new Eupteryginae for which names have been requested. Two of the species, *Dikraneura cedrelae* and *Empoasca papayae*, are reported to be of considerable economic importance. Thanks are due Dr. L. F. Martorell and Dr. J. H. Jensen for furnishing additional specimens of these two species upon request.

### *Protalebra brunnea*, n sp.

#### FIGURE 1

In size and general form resembling *Protalebra octolineata* Baker, but darker brown in color and with the color pattern somewhat like that of *Protalebra omega* Van D. Length 2.6–2.75 mm.

General ground color brown; face, legs, disk of crown, and portions of pronotum and scutellum paler. Fore wing with a broad, fuscous-bordered, cream to ivory vitta curving from near apex of scutellum to middle of costal margin and then back to commissural line near apex of clavus, the vittae on the two fore wings thus forming an irregular ovate mark; a small, irregular, ivory spot at apex of clavus and a larger one opposite this on the costal margin, both partly bordered with fuscous; apical cells smoky subhyaline.

Head slightly narrower than pronotum; crown short and bluntly rounded. Lateral margins of pronotum diverging posteriorly, posterior margin shallowly concave. Fore wings relatively short and broad. Seventh sternite of female much longer than preceding sternite, posterior margin with a short, triangular projection medially. Male plates smaller than those of *octolineata* but relatively broad basally and tapering gradually to blunt tips.

Aedeagus very broad and rather short, distal portion curved abruptly upward, apex with a pair of short, finger-like processes which extend laterad and slightly cephalad. Connective very short. Style stout, slightly curved, notched on outer margin distally and with tip bent outward.

Holotype male, allotype female, and 1 male and 1 female paratype from Villalba, Puerto Rico, June 28, 1934, R. G. Oakley. Types in collection of the United States National Museum (Cat. No. 52086).

*Joruma neascripta*, n. sp.

## FIGURE 2

Related to *Joruma ascripta* McAtee, with which it agrees in general habitus and wing venation, but slightly smaller and with the male plates broader, shorter, and bent upward posteriorly. Length 2.5 mm.

Anterior margin of head between eyes bright red; eyes dull red to brown above, sordid yellow below. Face and legs pale yellow. Crown, pronotum, and scutellum sordid brownish-yellow, the scutellum with a pair of triangular fuscous marks basally. Fore wing sordid yellow on basal one-half, with an extension of this color along costal margin to first cross-vein; remainder of fore wing smoky fuscous subhyaline. Hind wing smoky subhyaline. Abdomen brown to yellowish-brown.

Crown bluntly rounded, median length less than basal width. Pronotum short and broad, scutellum relatively large. Wings shorter than in *ascripta*. Posterior margin of seventh sternite of female triangularly produced. Male valve very small; plates rather broad, not slender and finger-like as in *ascripta*, and with the distal one-third bent abruptly upward.

Aedeagus relatively short; middle portion broadened for muscular attachment and bearing a pair of slender, blunt-tipped processes which extend caudally; terminal portion carrying ejaculatory duct short and curved upward. Style broad medially, with a slender, hair-like seta arising on outer margin beyond middle and extending backward and outward. Distal portion of style long, slender, and sharply pointed.

Holotype male, allotype female, and 1 male paratype from Manatí, Puerto Rico, May 2, 1933, on "hicaco", *Chrysobalanus icaco* L. One male paratype from D'Abadie, Trinidad, Oct. 15, 1918, H. Morrison (A 761). Types in collection of the United States National Museum (Cat. No. 52087).

*Dikraneura lentrosemae*, n. sp.

## FIGURES 3, 4

Related to *Dikraneura debilis* McAtee but slightly larger and with a much longer head. A small, slender species without distinct color markings. Length 2.75 mm.

General color pale yellowish-white, sides of thorax and portions of face below antennae pale yellow. Fore wing hyaline with an iridescent golden tinge; apical region with indefinite smoky marks in the form of an oblique dash in the outer apical cell, a spot at the base of the second apical cell, and a faint submarginal stripe.

Crown distinctly longer medially than basal width, disk nearly flat, anterior margin broadly rounded to the face. Pronotum about as long as crown; lateral margins nearly straight, diverging slightly posteriorly; posterior margin shallowly concave. Lateral margins of seventh sternite of female short, posterior margin bluntly, triangularly produced. Male valve small, plates broad basally, tapering to slender upturned tips, length greater than combined basal width.

Sternal apodemes of male unusually long, reaching nearly to middle of sixth segment, apices bluntly rounded. Dorsal spine directed caudad, tip curved downward. Aedeagus with its two slender accessory processes curved upward posteriorly. Style relatively stout, tip curved downward and bluntly pointed. Anal tube with several long, filamentous setae distally.

Holotype male, allotype female, and 1 male and 1 female paratype from Mayagüez, Puerto Rico, Jan. 17, 1936, swept from *Centrosema* (*Bradburya* auct.) by F. M. Wadley. One female paratype from Pueblo Viejo, Puerto Rico, Dec. 18, 1935, collected at light by W. A. Hoffman. Types in collection of the United States National Museum (Cat. No. 52088).

### *Dikraneura cedrelae*, n. sp.

FIGURES 5, 6, 7, 8

Related to *Dikraneura fulva* Osborn but slenderer, not so distinctly flattened, and without the distinctly fulvous ground color. Length 3-3.25 mm.

General ground color pale stramineus above, yellowish-white below. Eyes dull reddish-brown. Fore wing with a pair of smoky-fuscous spots distally, one each in the outer and inner apical cells. Tip of ovipositor sheath black.

Crown only slightly convex, anterior margin bluntly angled medially, median length about twice length next to eye. Pronotum broad, lateral margins nearly straight, posterior margin shallowly concave. Posterior margin of seventh sternite of female irregularly rounded, with a faint notch medially. Male valve unusually large, about one-half as long as its basal width, posterior margin rounded, with a very faint median notch. Male plates rather slender, not contiguous on basal one-half.

Sternal apodemes of male relatively short, reaching to base of fifth segment, apices bluntly rounded. Dorsal spines of male pygofer directly obliquely inward and backward, curving first ventrad and then dorsad. Aedeagus slender, the portion carrying the ejaculatory duct short and curved upward, distal portion of aedeagus consisting of a pair of slender, spine-like processes directed backward and slightly upward. Style broad at middle, distal portion slender, apex slightly broadened.

Fifth-instar nymph broad and distinctly flattened, length 2.75 mm. Crown nearly quadrangular, slightly broader anteriorly, anterior margin with five pairs of short, blunt, tooth-like projections, lateral margins each with a small projection just in front of antenna. Ground color pale stramineus with fuscous to black marks as follows: Narrow anterior border of crown; a transverse row of four spots on crown between antennae, another on base of crown, and one on each of the three thoracic segments; elongate spots on wing pads of fore wings; a basal spot on each wing pad of hind wings; a spot on the lateral margin of each tergite from the third to the eighth inclusive; a pair of small spots near the median line on the eighth tergite; a pair of large spots near the median line on the ninth tergite; a spot covering the tip of the abdomen; small irregular basal spots on both fore and middle tibiae; and a stripe on posterior tibia along base of spines.

Holotype male, allotype female, and numerous paratype including specimens of both sexes from Doña Juana Plantation at Villalba, Puerto Rico, March 2, 1937. Other paratypes from Aibonito, Puerto Rico, March 2, 1937, and Maricao Insular Forest, Maricao, Puerto Rico, Dec. 15, 1937. All specimens collected by L. F. Martorell from *Cedrela odorata* L. Types in collection of the United States National Museum Cat. No. 52089.

***Empoasca papayae*, n. sp.**

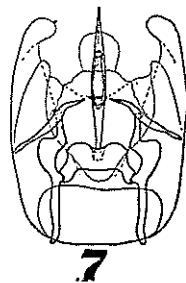
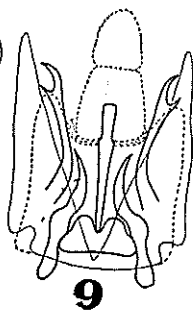
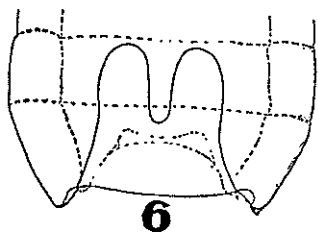
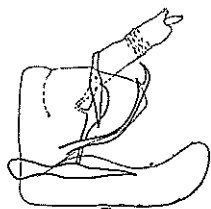
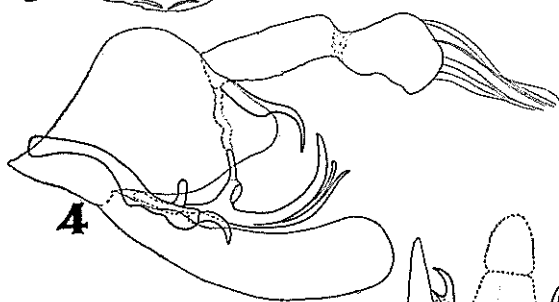
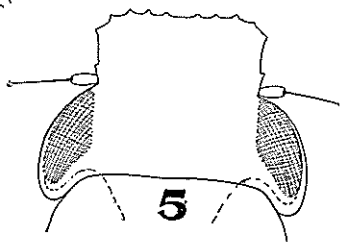
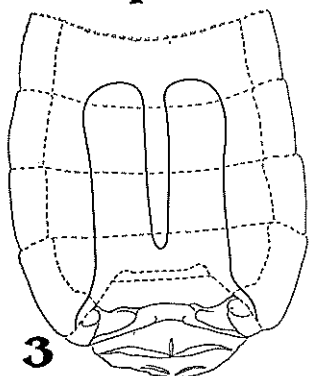
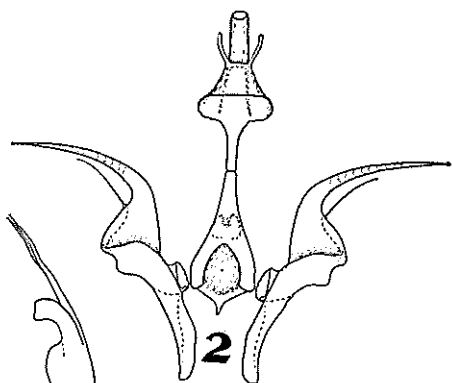
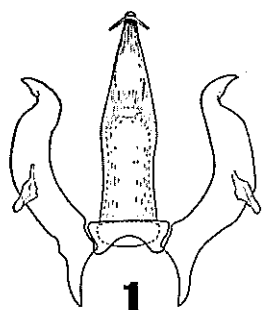
FIGURES 9, 10

Size and general form of *Empoasca fabae* (Harr.) but with well developed dorsal spines and with each lateral process having a short, sharp projection just basad of the curved, pointed apex. Length 3-3.25 mm.

General color pale iridescent green with irregular greenish-white areas on head and thorax. Crown slightly less produced anteriorly than in *fabae*. Male plates typical for the genus. The female of what appears to be this species has the posterior margin of the seventh sternite produced and evenly rounded.

Sternal apodemes of male small and inconspicuous. Tergal apodemes irregularly quadrangular in outline, curved ventrad laterally. Dorsal spine straight or nearly so, tapering gradually to a blunt point. Lateral process curving upward in lateral view, with a spine-like projection in a dorso-lateral position just before apex, and apex pointed and strongly recurved. Apex of style sharply pointed, curved laterad distally.

Holotype male and 6 male paratype from Mayagüez, Puerto Rico, March 25, 1937. (P. R. No. 2010). Also 2 male paratype from the same locality, Feb. 5, 1937 (P. R. No. 1789). Nymphs and females associated with the males appear to be the same species. All material collected by J. H. Jensen on *Carica papaya* L., and reported to be associated with the "bunchy-top disease" of papaya. Type in collection of the United States National Museum (Cat. No. 52090).



## EXPLANATION OF PLATES

- Fig. 1.—Aedeagus, connective, and styles of *Protalebra brunnea*.  
Fig. 2.—Aedeagus, connective, and tyles of *Joruma neascripta*.  
Fig. 3.—Sternal apodemes of male of *Dikraneura centrosemae*.  
Fig. 4.—Lateral view of male genital capsule of *Dikraneura centrosemae*.  
Fig. 5.—Head of fifth instar nymph of *Dikraneura cedrelae*.  
Fig. 6.—Sternal apodemes of male of *Dikraneura cedrelae*.  
Fig. 7. Dorsal view of male genital capsule of *Dikraneura cedrelae*.  
Fig. 8.—Lateral view of aedeagus of *Dikraneura cedrelae*.  
Fig. 9.—Ventral view of male genital capsules of *Empoasca papayae*.  
Fig. 10.—Lateral view of male genital capsule of *Empoasca papayae*.