

STUDIES OF THE GENUS EMPOASCA

(HOMOPTERA, CICADELLIDAE)

PART IX¹

SOME NEW SPECIES OF EMPOASCA FROM SOUTHWESTERN UNITED STATES AND MEXICO

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Empoasca chromata n. sp.

Resembling *smaragdula* in coloration but smaller in size and with characteristic internal male genitalia. Length 3 mm.

External characters.—Vertex produced and blunt at apex, about two-thirds as long at middle as basal width between eyes. Color green with a broad black band extending from apex of vertex to tip of clavus. This longitudinal band appears bisected by a pale line on vertex and pronotum in some specimens. On pronotum the band is widened to include two-thirds of the median portion and continues posteriorly including the entire scutellum; the apices of elytra are smoky and the portion between clavus and costa is a darker green. Female last ventral segment roundedly produced on posterior margin.

Internal male genitalia.—Lateral processes rather short, concavely notched on dorsal surface near base, then narrowed to a tapered, pointed apex. Aedeagus with apical third broadened with a blunt process produced forward at base of enlarged portion and apex rounded. Spine of ninth segment long, broad at base, curved sharply ventrally, narrowed to form a long slender tip which is sharp at apex and directed ventrally and slightly anteriorly.

Holotype male, allotype female and one male and five female paratypes collected by Professor and Mrs. J. N. Knull in the Chiracahua Mountains, Arizona, on August 28, 1940. Types in the collections of the authors.

Empoasca omani, n. sp.

Resembling *bidens* and *rubida* in size and coloration, but with characteristic dorsal spine and lateral processes. Length 3 mm.

External characters.—Vertex bluntly produced, about three-fourths as long at middle as basal width between the eyes. Color pale green marked with spots of pale brown. Vertex with a whitish median line, and a whitish spot on each side at front margin, and an oblique white spot near eye on each side at base. Pronotum dull brown with a pale green spot on each humeral angle. Elytra spotted with pale brown. Veins pale, apices smoky. Female last ventral segment roundedly produced.

Internal male genitalia.—Lateral processes long, narrow, and gradually tapered to pointed tips which are directed caudally and dorsally. Aedeagus enlarged at about three-fourths the distance from base, the enlarged portion bent caudally and appearing transverse. A small stubby spine on each side of enlarged portion shows in ventral view. Spine of ninth segment broad at base, narrowed to a rather long slender apical half which extends ventrally and is bifid at apex bearing a posterior tooth and a longer anterior tooth which curves slightly anteriorly.

¹Previous parts of this study have appeared as follows: Ohio Jour. Sci. 32: 393-401; 35: 29-39; 36: 225-230; 38: 90-96; 39: 110-118; and Ann. Ent. Soc., 27: 604-609; 33: 608-611; 35: 105-109.

Holotype male and two male paratypes from Tumacacori Mountains, Arizona, (5-15-41) collected by Professor and Mrs. J. N. Knull and deposited in the authors' collections. Allotype female and a series of male and female paratypes from Sabino Canyon, Arizona, (4-23-40) collected by Mr. P. W. Oman and deposited in the U. S. National Museum.

***Empoasca omani*, var. *iguala*, n. var.**

This form is very similar to *omani* in the internal male genital characters but distinctly different in coloration. It is therefore given varietal ranking. Length 3-3.5 mm.

External characters.—Vertex bluntly produced, a little less than two-thirds as long at middle as basal width between the eyes. Color, whitish marked with bright orange-yellow spots. Vertex tinted orange-yellow, with a median line and a spot on each side of front margin and an oblique spot on each side at base, all whitish in color. Pronotum with three whitish anterior spots, and a longitudinal orange-yellow stripe on each side of median line extending across basal angles of scutellum. Elytra pale, subhyaline, marked with orange-yellow spots, apices smoky. Female last ventral segment roundedly produced.

Internal male genitalia.—The lateral processes, aedeagus and spine of ninth segment are similar to those described for *omani*.

Holotype male, allotype female and male and female paratypes from Santa Engracia, Mexico, 11-9-38 (Caldwell); Acapulco Road, Mexico, 11-22-38 (Caldwell); and Iguala, Mexico, 9-11-39 (DeLong); all deposited in the collection of the authors.

***Empoasca crocostigmata* n. sp.**

A spotted species which resembles *amara* in shape of lateral processes. Length 2.5-3 mm.

External characters.—Vertex bluntly produced, lemon-yellow colored, with a median white line and two white spots on each side at front margin and a white spot on each side at base near each eye. Pronotum whitish with two broad longitudinal yellow to reddish stripes which extend across basal angles of scutellum. Scutellum also has a white narrow longitudinal median line and a broader cross-stripe of white. Wings subhyaline, with many spots of orange-red and yellow, apices smoky spotted. Female last ventral segment roundedly produced.

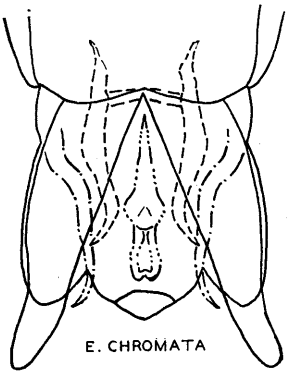
Internal male genitalia.—Lateral processes very narrow, tapered inwardly and upwardly to form pointed tips which are curved outward. Aedeagus enlarged at apical third with a gently rounded apex. Spine of ninth segment rather broad at base, then narrowed abruptly to form a long process tapered to a sharp point which is directed ventrally and slightly anteriorly.

Holotype male, allotype female and male and female paratypes from Monterey, Mexico, November 1, 1938 (Caldwell); also a male paratype from Tamazunchale, Mexico, November 15, 1938 (Caldwell); and a female paratype from Santa Rita Mountains, Arizona, May 14, 1941 (Knull); all deposited in the collections of the authors.

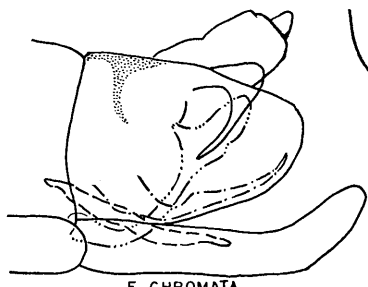
***Empoasca crocovittata*, n. sp.**

The shape of the head and internal male genitalia seem to place this species in the *alboneura* group. It can be easily identified by the shape of the lateral processes, dorsal spine and coloration. Length 3 mm.

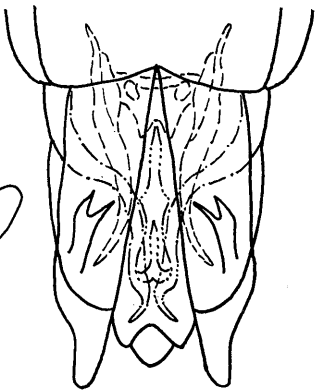
External characters.—Vertex bluntly produced, about one-half as long at middle as basal width between the eyes. Color pale green striped with bright orange. Vertex with a whitish median line; a whitish spot on each side at front margin and a white spot near base next to each eye. Pronotum pale green with three whitish spots along anterior margin and two longitudinal



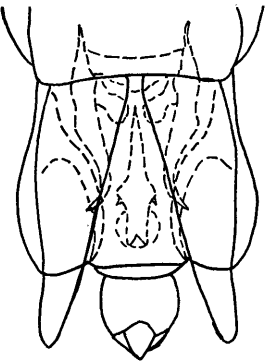
E. CHROMATA



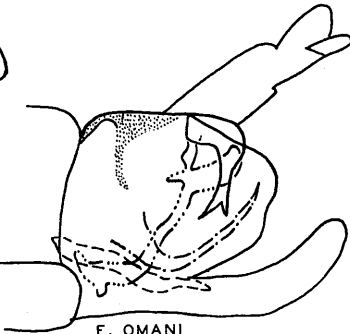
E. CHROMATA



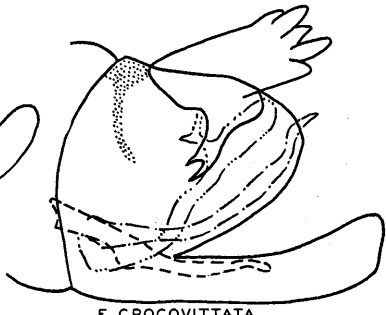
E. CROCOVITTATA



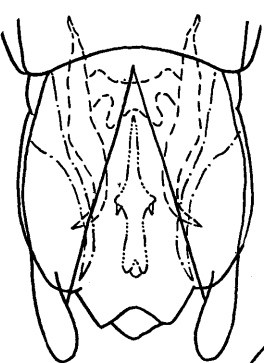
E. OMANI



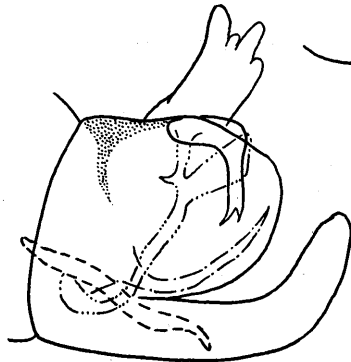
E. OMANI



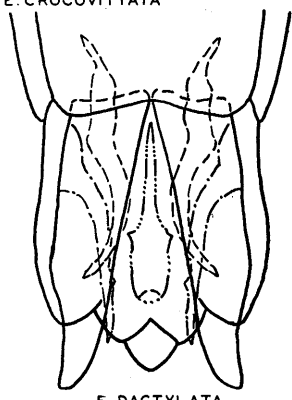
E. CROCOVITTATA



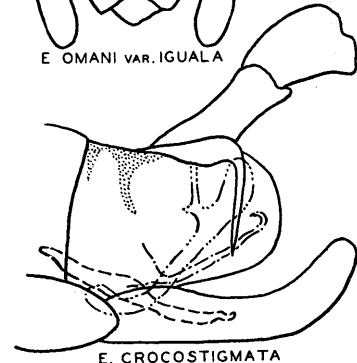
E OMANI VAR. IGUALA



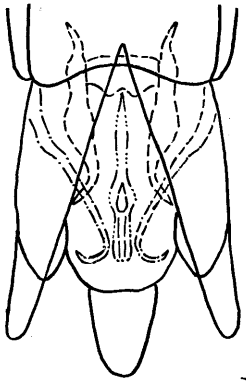
E. OMANI VAR. IGUALA



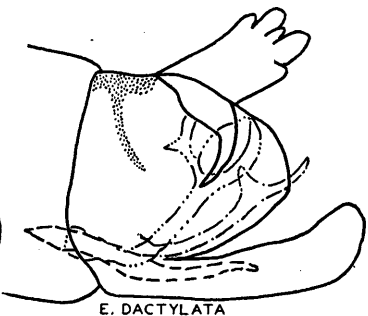
E. DACTYLATA



E. CROCOSTIGMATA



E. CROCOSTIGMATA



E. DACTYLATA

stripes which extend across basal angles of scutellum. Median part of scutellum very pale green. Wings pale green, subhyaline, with a median dorsal orange stripe and two other similar stripes on each side which are broader, apices smoky. Female last ventral segment roundedly produced.

Internal male genitalia.—Lateral processes long, curving inwardly and upwardly to a slightly enlarged portion near the apex where they bend abruptly outward and taper to pointed tips. Aedeagus with an enlarged apical third and a rounded apex. Spine of ninth segment is broad at base then narrowed at half its length to a bifid apex which is directed slightly anteriorly, the dorsal spine being short and broad and the ventral one long and narrow.

Holotype male from Jiutepec, Morelos, Mexico, September 6, 1939 (DeLong); allotype female from Valles, Mexico, December 1, 1938 (Caldwell); and male and female paratypes from Coatepec, Mexico, August 14, 1934 (Dampf), Acapulco Road, Mexico, November 22, 1938 (Caldwell), and Iguala, Mexico, September 11, 1939 (DeLong) all deposited in the collections of the authors.

***Emposca dactylata*, n. sp.**

Resembling *alboneura* in size and appearance but with characteristic shape of lateral processes by which the separation can be made. Length 3 mm.

External characters.—Vertex rather broad, produced and rounded, a little more than one-half as long at middle as median width between the eyes at base. Color pale green marked with darker green, wing tips smoky. Vertex with a pair of darker green spots on disc. Pronotum with apical half darker green. Elytra greenish, subhyaline, apices smoky. Female last ventral segment roundedly produced.

Internal male genitalia.—Lateral processes long, enlarged at two-thirds their length, then deeply concave on upper margin to form an anteriorly projecting process and a long slender apical finger process. Aedeagus with an enlarged apical third and a rounded apex. Spine of ninth segment narrowed at more than half its length, apical portion curved ventrally and anteriorly, apex narrow and pointed.

Holotype male, allotype female, and three female paratypes from El Paso County, Texas, collected by Professor and Mrs. J. N. Knull on August 30, 1940, and deposited in the authors collections.
