

STUDIES OF THE GENUS EMPOASCA

Part II. Nine New Species of Empoasca

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REPRINTED FROM  
ANNALS OF THE ENTOMOLOGICAL SOCIETY OF AMERICA  
Vol. XXVII, No. 4

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December, 1934

**493**

## STUDIES OF THE GENUS EMPOASCA

### Part II. Nine New Species of *Empoasca*<sup>1</sup>

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As field studies continue many new species of this genus are found. The nine species described in this paper were all taken while making hibernation studies of the leafhoppers during the past season. All belong to the Subgenus *Empoasca*.

#### *Empoasca bicorna* n. sp.

In general appearance resembling *birdii*, but with distinct genitalia. Length, 3.7 mm.

Vertex bluntly angled, one-third wider between eyes than length at middle. Elytra long.

*Color*—Yellow, subhyaline. Three longitudinal dashes on vertex and three large spots on anterior margin of pronotum, pale. Elytra pale yellowish, showing faint dark banding and bright orange yellow stripes along the veins.

*Genitalia*—Male genital pieces. In ventral view the lateral processes of the pygofer are convergent with curved divergent apices. Apical portion rather broad and with blunt tips. In lateral view these processes are rather long, narrow and with apices curving upwardly. Oedagus with a pair of long spines arising about one-third the distance from the base and extending dorsally and caudally. Dorsal spine of pygofer long, straight, ventrally directed with apical spine bent slightly anteriorly.

Described from two male specimens collected at Cedar Swamp, Ohio, April 17 and 24, respectively, and two females collected in Hocking County, Ohio, April 28, 1934, by the junior author. Holotype male, allotype female and paratype male and female in the DeLong collection.

<sup>1</sup>Part I. Nine new species of *Empoasca*. Ohio Jour. of Sci. 32: 393-401; 1 pl. 1932.

***Empoasca spira* n. sp.**

Resembling *birdii* in general appearance and coloration, but with unique genitalia. Length, 3.7 mm.

Vertex bluntly angled, a little more than one-half as long on middle as width between eyes.

*Color*—Yellow, marked with pale and brown coloration. Vertex with median and two oblique dashes and pronotum with three large spots on anterior margin, pale. Elytra with basal fourth, an oblique band across middle and apical third smoky brown.

*Genitalia*—Male lateral processes of the pygofer in ventral view appearing broad, and concavely curved on outer margins, broadened just before apex to form a rounded tooth on outer margin then narrowed to blunt apex. In lateral view narrowed to form a pointed apex. Dorsal spine broad, rather long, convexly rounded on posterior margin; anterior margin concave. Spine on ventral anterior margin strongly recurved downward and inwardly.

Described from one male specimen collected at Old Man's Cave, Ohio, April 15, 1934, and one female specimen collected in Hocking County, Ohio, April 15, 1934, by the junior author. Holotype male and allotype female in the DeLong collection.

***Empoasca hama* n. sp.**

Resembling *birdii* in form and general appearance, but with distinct genitalia. Length, 3.7 mm.

Vertex bluntly angled about two-thirds as long on middle as width between the eyes. Elytra long and narrow.

*Color*—Yellow to green with irregular markings. Well marked specimens with a pale median line on vertex, a spot above either ocellus and a pair of oblique dashes on basal portion white. Three white spots on anterior margin of pronotum. Elytra subhyaline with basal half tinged with pale smoky.

*Genitalia*—Male lateral processes long, curving inwardly in ventral view and produced to near apex where they are strongly concavely curved on outer margins forming tapering divergent tips. In lateral view the tip of the lateral process appears to be bent ventrally. Dorsal spine of pygofer rather long, broad on basal half, convexly curved posteriorly, apical portion narrowed, forming a long ventrally directed spine which is curved slightly anteriorly at the apex.

Described from seven male specimens collected at Cedar Swamp, Ohio, April 24, 1934; Chesapeake, Ohio, April 8 and 29, 1934; Old Man's Cave, Ohio, April 28, 1934; and Hocking County, Ohio, June 7 and July 20, 1934, by the junior author. Holotype male and paratype males in the DeLong collection.

***Empoasca lata* n. sp.**

In general appearance resembling *hama*, but with distinct genitalia. Length, 3.5 mm.

Vertex bluntly angled, more than two-thirds as long on middle as width between the eyes.

*Color*—Dark green, vertex with pale lines and spots on anterior margin of pronotum, white. Elytra greenish subhyaline with smoky areas on inner margins along commissural line.

*Genitalia*—Male lateral processes of the pygofer broad in ventral view, wider near apex, then rapidly narrowed to blunt tips. In lateral view tapering to pointed apex. Dorsal spine of pygofer broad at base, directed ventrally and narrowed to pointed spinelike apex.

Described from one male specimen from Chesapeake, Ohio, collected April 8, 1934, and five females collected at Chesapeake, Ohio, April 29, and one female collected in Hocking County, Ohio, April 15, 1934, by the junior author. Holotype male, allotype female, and paratype female in the DeLong collection.

***Empoasca recta* n. sp.**

Resembling *infusca* in size and form, but with distinct genital characters. Length, 3 mm.

Vertex bluntly angled, more than one-half longer on middle than width between eyes.

*Color*—Green, washed with yellow, three longitudinal dashes on vertex, three spots on anterior margin of pronotum and median spot on scutellum pale; wings yellow, subhyaline.

*Genitalia*—Lateral processes of male rather long in ventral view. Converging toward apex and with tips narrowed and pointed. Rather abruptly broadened for a short distance at about half their length. Dorsal spine of pygofer rather broad, directed caudally and ventrally with a rather long fingerlike spine arising from the ventral portion and extending ventrally and anteriorly, giving the impression of a large notch on the anterior margin.

Described from a single male specimen taken at Old Man's Cave, Ohio, April 28, 1934, by the junior author. Holotype in the DeLong collection.

***Empoasca ditata* n. sp.**

Resembling *recta* in general appearance, green with pale black markings and with distinct genitalia. Length, 3 mm. Vertex bluntly angled more than one-half longer on middle than width between eyes.

*Color*—Green with white longitudinal markings on the head and three large white spots on anterior margin of the pronotum. Wings hyaline with pale and irregular dark banding.

*Genitalia*—Male lateral processes of the pygofer in ventral view converging toward apices but abruptly bent outwardly so as to form divergent tips which are tapered and pointed. In lateral view broad with pointed apex. Dorsal spine of the pygofer long, broad, sickle-shaped, concavely curved on anterior margin with apex forming a long spine and directed ventrally and anteriorly.

Described from two male specimens collected at Cedar Swamp, Ohio, April 17 and 24, 1934, by the junior author. Holotype male and paratype male in the DeLong collection.

***Empoasca vergena* n. sp.**

Resembling *infusca* in size and coloration, but with distinct genitalia. Length, 3.5 mm.

Vertex bluntly angled, a little more than one-half longer on middle than width between the eyes.

*Color*—Green, vertex with median line and four oblique dashes, two above ocelli and two on base of vertex, white. Pronotum brown with three white spots on anterior margin. Elytra white, marked with brown. Clavus to almost tip, a broad stripe along inner sector to middle of wing merging with oblique band which extends from clavus to costal margin and apical portion, brown.

*Genitalia*—Male lateral processes in ventral view appearing broad at base, strongly sloping inwardly to about their middle where they are bent outwardly and produced to form pointed forceplike apices which are proximal. In lateral view narrowed to pointed apices. Dorsal spine broad and rather short, strongly convexly rounded on posterior margin, anterior margin with a concave notch on ventral half forming an apical spine on anterior ventral margin directed ventrally and curved posteriorly.

Described from five male specimens collected at Cedar Swamp, Ohio, April 17, 24 and 28 by the junior author. All of these are strikingly marked. And from one female and two male specimens collected at Volo, Illinois, July 27, 1934, by Dr. H. H. Ross and the senior author. Holotype male in the DeLong collection; paratypes in the DeLong collection and in Illinois Natural History Survey collection.

***Empoasca distracta* n. sp.**

Resembling *erigeron* in form and general appearance, but with distinct genitalia. Length, 3 mm.

Vertex bluntly angled, more than two-thirds as long on middle as width between the eyes.

*Color*—Green tinged with yellow. Vertex mottled with white and pronotum with three large white spots on anterior margin.

*Genitalia*—Male lateral processes long and rather slender as seen in ventral view. Concavely curved outwardly just before apex with tips bluntly pointed and divergent. In lateral view with apices abruptly narrowed to pointed tips. Dorsal spine broad and long, directed ventrally and posteriorly with long apical spine on anterior ventral portion which extends anteriorly and ventrally. Spine deeply concave on anterior margin of ventral half.

Described from two specimens, one male and one female, collected at Attica, Ohio, May 4, 1934, by the junior author. Holotype male and allotype female in the DeLong collection.

***Empoasca pyramidata* n. sp.**

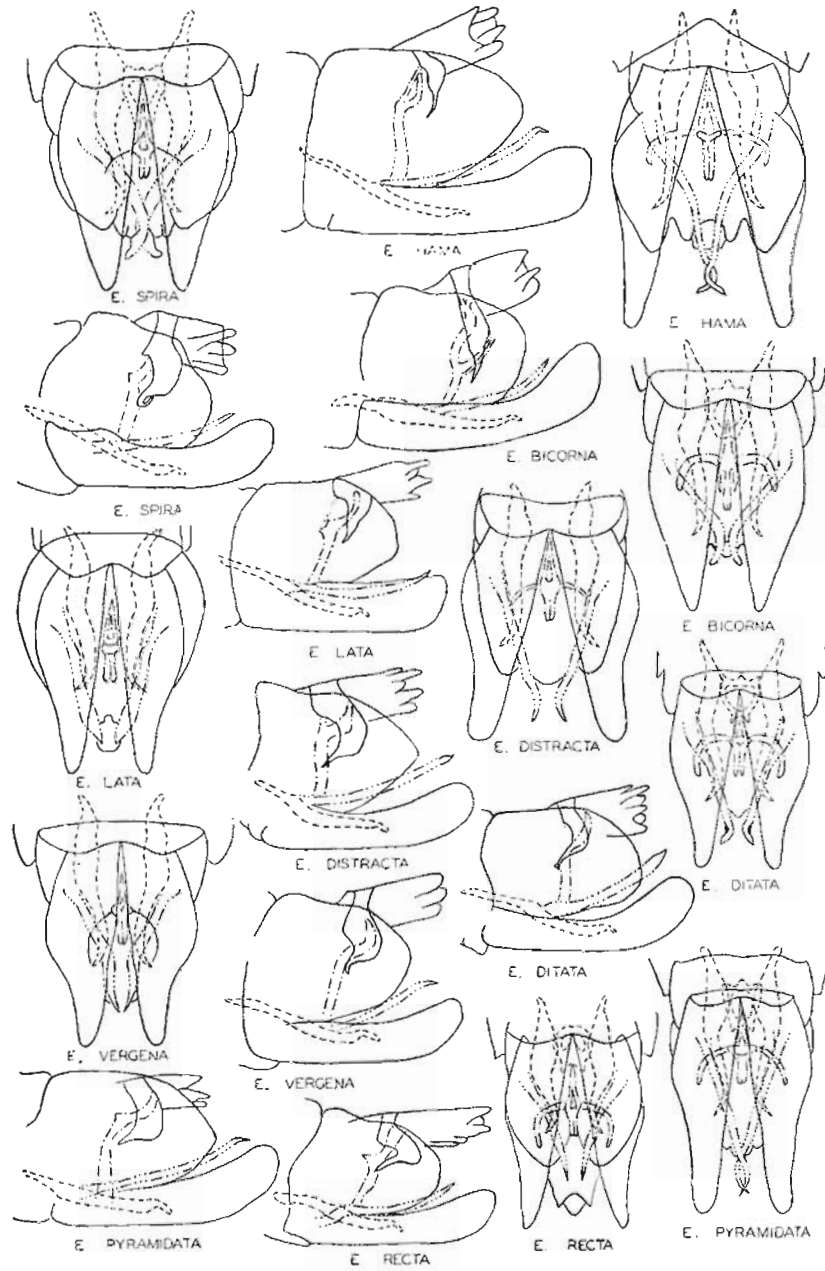
Resembling *erigeron* in general appearance, but with distinct genitalia. Length, 3.5 mm.

Vertex bluntly angled, not quite two-thirds as long on middle as width between the eyes.

*Color*—Green with white markings. Vertex mottled with white and pronotum with three large white spots on anterior margin. Basal half of elytra tinged with brown.

*Genitalia*—Male lateral processes of the pygofers in ventral view appearing long and slender, narrowed near apex and sharply pointed. In lateral view slender with apex bent slightly ventrally. Dorsal spine broad, directed ventrally with apical spine on anterior ventral portion extending anteriorly and ventrally.

Described from a single male specimen taken at Cedar Swamp, Ohio, April 24, 1934, by the junior author. Holotype male in the DeLong collection.



Ventral and lateral views of male genitalia of species of *Empoasca*