ONE OLD AND FIVE NEW SPECIES OF DELPHACINE FULGORIDS (Homoptera: Fulgoridae) [1, 2]

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1. *Sogata furcifera* (Horv.)

Delphax furcifera Horvath, Termes Futzetek, p. 372, 1899.

Macropterous form: Two longwinged males from Matzuyama, Japan are quite different from specimens from America determined by Muir and Giffard as this species. *Sogata furcifera* (Horv.) is here redescribed from these Japanese specimens.

Color: General ground color dark. Vertex, carinae of front, pronotum except large spot back of each eye and broad median band on meta and mesonotum light. Elytra whitish semi-hyaline except black mesal spot above apex of abdomen and portion of crossveins and apical veins infuscated.

Genitalia: In lateral view pygofer more or less rectangular, anterior ventral corner narrowed; style with caudal margin excavated, with caudodorsal corner extended sharply; aedeagus with sides almost parallel, gently curving dorso-caudally, apex sharp; anal segment with a pair of short heavy processes. In caudal view styles about twice as wide basally as at bifid apices, broadly excavated on outer margin, sharply and deeply excavated on outer third on inner margin, apices bifid with inner corner sharp and outer corner much broader; aedeagal brace quadrangularly excavated about half as deep as basal width, ventral margin of opening for styles with a knob-shaped projection.

Type in the Hungarian National Museum.

2. *Sogata meridiana* n. sp.

Macropterous form:

Resembling *Sogata furcifera* (Horv.) but usually lacking mesal black spot on clavus; bifid apices of styles almost as wide as base and processes on anal segment longer than segment and quite slender and sharp. Length, male 3.8 mm.; female 4.2 mm.

Color: General ground color stramineous to orange (orange portion often more or less infuscated) vertex pronotum and broad median longitudinal band of meso and metanotum almost white. Elytra, especially of males, on inner margin from crossveins to apices often infuscated.

Genitalia: In lateral view pygofer almost rectangular; styles with outer margin broadly excavated, and deeply bifid apices with outer point sharpest; aedeagus about as in *S. furcifera* with apex somewhat blunter; anal segment with a pair of long almost straight, sharp processes. In caudal view styles almost as wide across bifid apices as bases, inner point sharp and narrow, outer point about as broad as length of inner and twice as long; aedeagal brace U-

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shaped, more than twice as wide as deep, process lacking in base of style opening.

Holotype male, allotype female, Hibernia, Florida, August 7, 1939, R. H. Beamer; Paratypes: 1 male Hibernia, Florida, August 7, 1939, A. T. Hardy; 1 female same place and date D. E. Hardy; 39 males and 35 females Sanford, Florida, September 19, 1939, C. O. Bare; 9 males and 12 females, Brownsville, Texas, December 1945, R. H. Beamer; 2 males and 3 females McAllen, Texas, December 1945, R. H. Beamer; 6 males and 1 female Okefenokee Swamp, Georgia, July 1939, R. H. Beamer.

Types and paratypes in The Snow Entomological Collections; paratypes in United States National Museum.

3. *Sogata dorsolineata* n. sp.

Macropterous form:

Resembling *Sogata furcifera* (Horv.) but aedeagal brace projected dorsally one half as high as length of styles. Length, male 4 mm.; female 4.5 mm.

Color: General ground color brownish; vertex, pronotum except large spot back of each eye and broad median longitudinal stripe on meso and metanotum white; carinae of front, large area below each eye and legs also white; elytra blackish except basal half and apical third of clavus and costal area from base to slightly beyond crossveins semi-hyaline. Females much lighter in color than males.

Genitalia: In lateral view pygofer semi-quadrangular; styles slightly enlarged on apices; aedeagal brace projecting caudally; aedeagus with sides almost parallel, apex rounded, covered with serrations; anal segment elongate with a pair of long, slender almost straight processes; in caudal view styles slightly enlarged at apices; aedeagal brace produced dorsally more than half length of styles, broadly rounded.

Holotype male, allotype female, 9 males and 8 female paratypes Brownsville, Texas, June 29, 1938, R. H. Beamer; other paratypes; 2 males and 2 females same place and collector July 3, 1938; 1 male Brownsville, Texas, January 4, 1932, E. D. Ball; 1 male and 1 female Southmost, Cameron County, Texas, April 13, 1950; 4 males and 1 female, Progresso, Texas, April 12, 1950.

Types and paratypes in Snow Entomological Collections, paratypes in United States National Museum.

4. *Pissonotus minutus* n. sp.

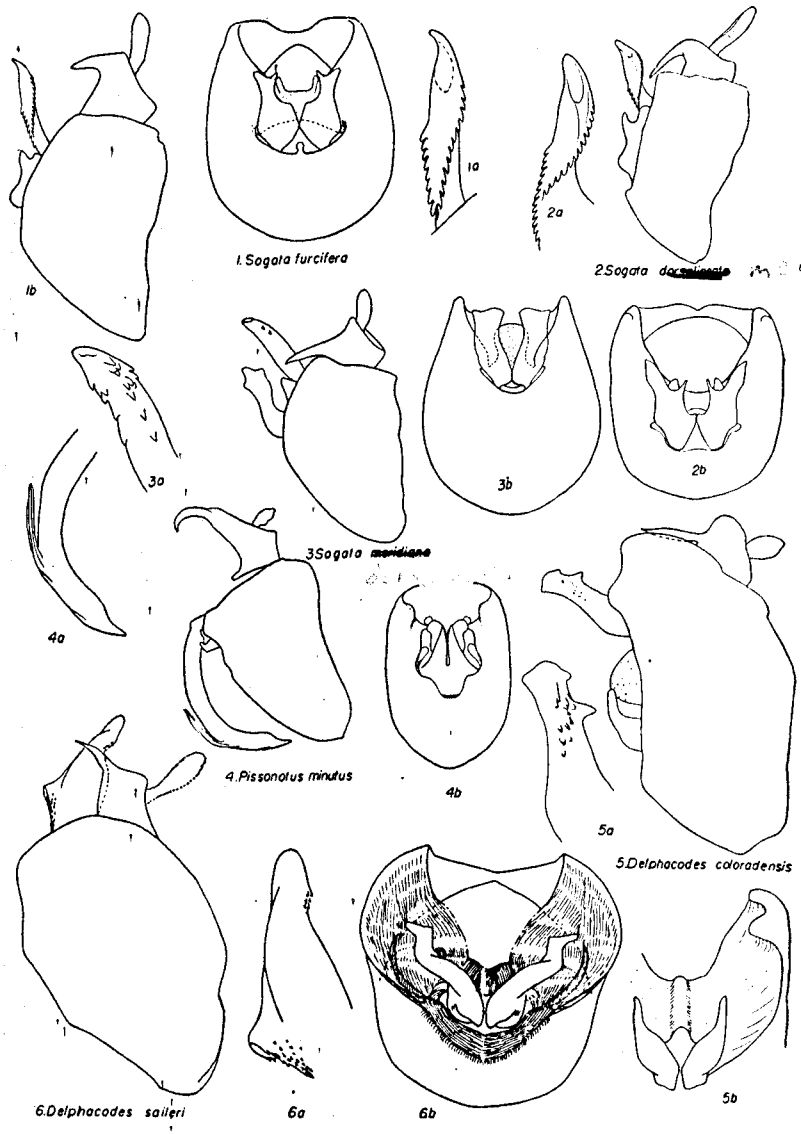
Brachypterous form:

Resembling *Pissonotus binotatus* Spooner but smaller, aedeagus with three dorsal processes of about same length and median processes of pygofer with sides converging to sharp apices and of about same length as styles. Length, male 1.8 mm.; female 2 mm.

Elytra almost rectangular, hind margin truncate, covering first segment of abdomen.

Color: General ground color shining black, apices of elytra with white band; legs on outer portions somewhat lighter.

Genitalia: In lateral view pygofer more or less triangular, caudal angle flat; aedeagus, parallel-sided almost as long as width of genital capsule, curved



EXPLANATION OF PLATE:

1. *Sogata furcifera* (Horv.): caudal view of pygofer with styles and aedeagal brace; 1a, lateral view of aedeagus much enlarged; 1b, lateral view of genital capsule.

2. *Sogata dorsolineata*: lateral view of genital capsule, 2a, lateral view of eadagus greatly enlarged, 2b, caudal view of styles and aedeagal brace.

3. *Sogata meridiana*: lateral view of genital capsule 3a, lateral view of aedeagus much enlarged, 3b, caudal view of styles and aedeagal brace.

4. *Pissonotus minutus*: lateral view of genital capsule; 4a, lateral view of aedeagus much enlarged, 4b, caudal view of pygofer with styles and processes.

5. *Delphacodes coloradensis*: lateral view of genital capsule; 5a, lateral view of aedeagus much enlarged; 5b, caudal view of pygofer with styles and aedeagal brace.

6. *Delphacodes saileri*: lateral view of genital capsule; 6a, lateral view of aedeagus much enlarged; 6b, caudal view of pygofer with styles and aedeagal brace.

ventrally, three long slender retrorse parallel processes on dorsal margin near outer third; anal segment short with a pair of long, curved, caudoventrally directed processes. In caudal view median processes as long as styles, converging to sharp apices; styles with sides more or less parallel, outer third of apices bent sharply outward, broadly rounded.

Holotype male, allotype female, 23 males and 33 female paratypes, San Francisco Mountains, Arizona, June 25; 1950, R. H. Beamer; other paratypes; 14 males and 13 females same place and time, L. D. Beamer.

Types and paratypes in The Snow Entomological Collections.

5. *Delphacodes coloradensis* n. sp.

Brachypterous form:

Resembling *Delphacodes campestris* (Van D.) externally but may be separated from it by the large pair of processes on anal segment, by the tapered apices of styles and by the large tooth on dorsal margin of apical third of aedeagus. Length, male 2.6 mm.

Structure: Elytra with apices rounded, extending to about middle of abdomen.

Color: General ground color stramineous with dark spot back of each eye and larger lateral one one each side of mesonotum, genae, lateroapical portions of front, meso and meta pleura, dark.

Genitalia: In lateral view pygofer more or less rectangular; styles pediform; aedeagal brace roundly protruding; aedeagus widest at base, narrowed to blunt apex with two heavy teeth on dorsal margin of outer third with numerous smaller teeth on outer third; anal segment with pair of long sharp processes. In caudal view styles widest at base gradually narrowed to slender apices; aedeagal brace highly arched, dorsal corner of pygofer inrolled, bifid.

Holotype male Colorado, 2024, C. F. Baker; paratypes: 3 males Little Beaver, Colorado, July 14, 1898.

Types and paratypes in United States National Museum; one paratype in Snow Entomological Collections.

6. *Delphacodes saileri* n. sp.

Brachypterous form:

Resembling *D. arcanostyla* Beamer but apices of styles pediform. Length, male 2 mm.; female 2.6 mm.

Structure: First segment of antennae not quite twice as long as wide; median carinae of front divided slightly below margin of crown; crown slightly longer than basal width, strongly carinate; elytra extending almost to genital capsule.

Color: Ground color of male black, carinae stramineous; narrow band of white on posterior margin of pronotum, dorsum of first abdominal segment of abdomen orange; elytra semihyaline; female generally much lighter than male, only dorsum of abdomen black.

Genitalia: In lateral view genital capsule more or less oval, narrowest on ventral margin, anal segment with a pair of slender, sharp, slightly curving processes; aedeagus with gonapore basad of middle on ventral margin, pediform in general shape; styles hidden; in caudal view styles leg-like, apices pediform, aedeagal brace U-shaped.

Holotype male June 28, 1951, Allotype female June 24, 1951, Katzebue, Alaska, R. I. Sailer; 2 male and 3 female paratypes June, same place and collector, other paratypes: 1 male, Tanana, Alaska, June 6, 1951, R. I. Sailer; 1 male, Teller, Alaska, July 10, 1951, R. I. Sailer.

Types and paratypes in United States National Museum; one pair of paratypes in Snow Entomological Collections.

A NOTE ON THE LARVAE OF SPHECID WASPS

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The larvae of sphecid wasps have been made rather well known during the last twenty-five years by the admirable works of Grandi, Micheli, Soika, and Maneval. Grandi's publications in particular are magnificently done and contain a wealth of illustrations of larvae of aculeate Hymenoptera, their nests, prey, inquiline associates, and the like.

The investigation upon which this note is based was undertaken in the hope of learning which group of sphecid wasps might be ancestral to the bees. The conclusion seems to be, like that based upon adult morphology, that no living group is ancestral to the bees.

The most striking characteristic of the larvae of sphecid wasps is the form of the salivary opening. In vespids (including eumenids), pompilids, scoliids, chrysidids, and many apoids, this opening is a broad transverse slit provided above and beneath by thin, weakly sclerotic lips. Considering its wide occurence, this must be the primitive form of salivary opening in the aculeate Hymenoptera. Among sphecids, however, it occurs only in the Sphecinae (e.g. *Ammophila, Sceliphron, Sphex*), wasps so specialized in adult structure that they could not be ancestral to bees. The Astatinae also have a slit-like undivided salivary opening, with the margins of the lips, however convex instead of straight as in the Sphecinae and most other aculeate Hymenoptera. All other sphecids (representatives of virtually all subfamilies and tribes are known) have the salivary opening divided. Sometimes (e.g. *Philanthus* and *Bembex*) the openings are on short broad projections, in others (e. g. *Cerceris*), the projections are slender and very widely separated, while in still others (e.g. the Larrinae) the projections are long and exceedingly slender with the openings apparently at their tips. Paired salivary openings are, thus, a distinctive feature of most sphecids, not found elsewhere in the Hymenoptera. It seems important that characters such as this be considered when a reclassification of the sphecid wasps is undertaken.

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