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A SURVEY OF THE NORTH AMERICAN SPECIES OF MERRAGATA.

By CARL J. DRAKE.

The genus *Merragata* (family Hebridae), based on *M. hebroides* from the Hawaiian Islands, was established by F. B. White in "Annals and Magazine of Natural History" (London), Vol. XX, page 113, 1877. The genus is closely allied to the genus *Hebrus* Curtis (*Næogeus* Laporte), but differs from it in having the fourth and fifth segments of the antennæ conjoined without a trace of a suture between them. In the "Biologia Centrali-Americana," Rhynchota, Vol. II, page 121, 1898, Dr. G. C. Champion slightly amplifies the generic description of the antennæ as given by White so as to include two new species from Mexico and Central America. In the same volume Dr. Champion also describes the male of *M. hebroides* White from a single specimen that was taken at Chapultepec, Mexico, and states, "It is probable that the species has been introduced into the Hawaiian Islands."

The new Nearctic forms described herein agree with the tropical and semi-tropical species in having the tarsi composed of two segments and the antennæ of four, the minute segment at the base of the third segment of the antenna not being counted as a true segment, but as a part of the third. The heads of the Mexican and Central American species have either a fine

or a distinct median, longitudinal groove while the Nearctic forms have the head with two longitudinal grooves, converging anteriorly, and a median ridge between these grooves. The members of the genus are all very small insects, being two millimeters or less in length. Dimorphism seems to be characteristic of the genus—macropterous and brachypterous forms occurring in the same species, the latter form having only short wing-pads that vary somewhat in size in the same species and in different species.

The habits of those species of *Merragata* White that I have observed indicate that they are dwellers in still and stagnant waters. Their favorite haunts are secluded coves of lakes, ponds, and swampy pools, where the water is shallow, and where there is an abundant growth of aquatic plants. I have rarely seen them on the damp ground near the water's edge. The *Merragatas* are aquatic pedestrians, capable of standing, walking, and running upon the surface of the water, their entire body being covered with a velvety pile which effectively sheds the water and prevents them from becoming wet. They can move forward or backward, but the usual mode of progression is a steady forward movement, all three pairs of legs being used in locomotion. I have often found them on *Lemna*, *Nymphaea*, and various other aquatic plants. It is not uncommon to find them on the underside of floating leaves, or even among the roots of floating water plants. When submerged in the water, the insects are surrounded by a film of air which enables them to stay beneath the surface film for a considerable period of time. In an aquarium I have often watched them standing or walking for a period of a half hour or a little longer on pieces of cork or plants that were beneath the water. Occasionally, they will walk down the sides of the glass aquarium beneath the surface of the water, and when the water is shallow, they will walk across the bottom and come up on the opposite side. Nothing seems to be known of their food habits and life history.

KEY TO THE GENERA OF AMERICAN HEBRIDAE (NAEOGEIDAE).

Antennæ consisting of four segments, the minute segment at the base of the third being counted as a part of the third segment

Genus *Merragata* White.

Antennæ consisting of five segments, the minute segment at the base of the third being counted as a part of the third segment

Genus *Hebrus* Laporte.

The known species of *Merragata* White (*Lipogomphus* Berg) may be differentiated by the following synopsis, the characters of the Mexican, Central American and South American species being based on the keys of Champion ("Biologia Centrali-Americana," Vol. II, page 121) and Bueno ("Canadian Entomologist," Vol. XLIV, page 32):

1. Apex of scutellum bifid, antennal segments two to four subequal, the basal segment shortest and stoutest. *M. lacunifera* Berg.
Apex of scutellum blunt, not bifid. 2.
2. Head with either a faint or a distinct median, longitudinal groove. . . 3.
Head with two longitudinal grooves converging anteriorly and with a median ridge between these grooves. 5.
3. Antennæ short, less than twice the length of the head; segments from one to three subequal, the fourth rather stout and fusiform.
M. hebroides White.
Antennæ longer; third segment slender and very much longer than the second; fourth segment slender and subfusiform. 4.
4. Pronotum moderately constricted at the sides. . . *M. brevis* Champion.
Pronotum deeply constricted at the sides. . . *M. leucostricta* Champion.
5. Pronotum moderately constricted at the sides, the disc with a broad, deep, longitudinal furrow; color blackish, the hemelytra white with distinct dusky patches. *M. foveata* spec. nov.
Pronotum more abruptly constricted, the disc with a shallower groove; color reddish-brown or dark reddish-brown, the dusky patches of the hemelytra evanescent. . . . *M. brunnea* spec. nov.

***Merragata foveata* spec. nov. (Fig. 1a).**

Very like *M. hebroides* Champion in size, color, and antennal characters, but readily separated from it and the other Mexican and Central American species by having the head bisulcate longitudinally and with a distinct median ridge between these furrows. From its only Nearctic congener, *M. brunnea* n. sp., it is easily recognizable by the less abruptly constricted sides of the pronotum, the larger size, the angular nervure on the inner margin of the corium, and blackish color.

Moderately large and robust. Head long, hairy, strongly deflected, with two distinct, longitudinal furrows (the furrows converging anteriorly) and a distinct median ridge between these furrows, the sides very strongly depressed above the eyes, and a longitudinal furrow just beneath the eyes and antennæ. Eyes prominent, the facets few and large. Antenniferous tubercles large, prominent. Antennæ very short, a little longer than the head; first, second, and third segments sub-equal, the fourth stoutest, longest, and fusiform. Bucculæ large, with a longitudinal furrow on each side at the base. Pronotum rugulose, very

coarsely punctate or pitted, beset with a few hairs, moderately constricted at the sides, with a broad, median, longitudinal furrow in which are two rather regular rows of foveæ, with a rather broad, transverse, punctate depression on each side just back of the collar. Collar prominent, ornated with foveæ. Humeri well defined by a sulcus in which is a row of six or seven foveæ; posterior margin of pronotum also with a transverse row of foveæ. Sides of thorax with quite regular rows of foveæ. Scutellum distinctly carinate. Rostral sulcus broad; rostrum extending a little beyond the thorax. Acetabuli very far apart, especially the intermediate and posterior pairs. Legs rather stout, hairy; claws very long, almost half the length of the terminal tarsal segment. Entire body velutinous. Abdomen densely hairy beneath; connexivum narrow. Venter longitudinally depressed in the male, concave in the female. Hemelytra with large, hairy nervures. Length 1.6 mm.; width .75 mm.

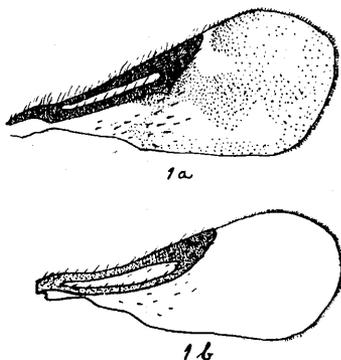


Fig. 1a. Wing of *Merragata foveata* n. sp.

Fig. 1b. Wing of *M. brunnea* n. sp.

Color: General color blackish. Antennæ dark-yellow, the terminal segment infuscated. Prothorax blackish, the disc more or less reddish-brown. Legs testaceous, the tips of tarsi infuscated (the claws excepted). Body beneath blackish, the thorax and abdomen covered with a grayish pubescence. Hemelytra white, with dusky patches; nervures brownish-black. Wings white, opaque.

Numerous macropterous examples, taken in a stagnant pond at Ira (Summit Co.), Ohio, August 31, 1916, by Prof. Hine and the writer. I have received a specimen from Prof. C. P. Gillette labeled, Fort Collins, Colorado, August 8, 1898. Type in the author's collection; paratypes in the collections of Prof. Osborn, Prof. Gillette, Prof. Van Duzee, Ohio State University, and the National Museum.

Merragata brunnea spec. nov. (Fig. 1b).

Shorter than *M. foveata* n. sp., the pronotum more abruptly constricted on the sides, the inner margin of the corium rounded, the head and the pronotum reddish-brown or dark reddish-brown, and the dusky patches on the hemelytra evanescent.

Macropterous form. Head hairy, strongly deflected, the sides strongly depressed above the eyes, with two longitudinal furrows converging anteriorly (a median narrow ridge between the longitudinal furrows), a longitudinal furrow on each side of the head just beneath the eyes and antennæ. Antenniferous tubercles large and prominent. Antennæ short, a little longer than the head; first, second, and third segments subequal; fourth segment longest, stoutest, fusiform. Rostrum reaching a little beyond the posterior coxæ. Pronotum rugulose, coarsely punctate, sparsely hairy, the sides more abruptly constricted than in *foveata*, with a transverse, punctate depression on each side just back of the collar. Collar prominent, ornated with foveæ. Scutellum with a narrow median carina. Sides of thorax with somewhat regular, transverse rows of foveæ. Abdomen hairy beneath; venter in ♂ slightly depressed longitudinally and convex in the female. Hemelytra with large, prominent nervures; the inner nervure of corium broadly rounded. Wings about as long as the hemelytra. Length (♂ and ♀) 1.45 to 1.5 mm.; width about .65 mm.

Color. General color reddish-brown or dark reddish brown. Antennæ testaceous, the apical segment infuscated. Legs testaceous, the apical segment infuscated (claws excepted). Abdomen beneath blackish, border with reddish-brown. Hemelytra white, the dusky patches evanescent.

Brachypterous form. Head and antennal characters agree with the macropterous form. Prothorax less constricted on the sides, the humeri less prominent, the disc with a shallower median, longitudinal groove. Scutellum broader. Connexivum very broad. Wing pads vary in size, but usually very small.

Color: General color reddish-brown. Wing pads white. Legs and antennæ agree with long winged form.

Numerous examples, taken at various times during the summer at Hebron (Licking Co.), Sugar Grove and Rockbridge (Hocking Co.), Delaware (Delaware Co.), Columbus (Franklin Co.), and Ira (Summit Co., one specimen only). Type in the author's collection. Paratypes in the collections of Prof. Herbert Osborn, Prof. Van Duzee, and Ohio State University.