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NEW NEOTROPICAL WATER-STRIDERS (Hemiptera-Veliidae)

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This paper is based upon material in the U. S. National Museum and the private collection of the author. It includes the description of one new species from Costa Rica and three from the West Indies. Notes are also given on some new synonymy, and a new name is proposed for a preoccupied one. Unless otherwise stated under the description, the types are in the collection of the author. The units of measure may be converted into millimeters by dividing by 80.

MICROVELIA SIGNATA Uhler

Microvelia signata Uhler, Proc. Cal. Acad. Sci., Ser. 2,4:288. 1894.

Microvelia setipes Champion, Biol. Centr. Amer., Rhynch., 2:130, Pl. 8, fig. 19. 1898 (N. sym.)

Microvelia oreades Drake and Harris, Ohio Jr. Sci., 28(5):274. 1928 (N. syn.).

M. setipes champion and *M. oreades* Drake and Harris are both apterous forms of *M. signata* Uhler, and are here suppressed as synonyms of the latter. Several hundred specimens (apterous and macropterous) have been examined from United States (Calif., Ariz., N. Mex. and Utah) and Mexico. The type of *M. signata* was taken in Lower California. The apterous form vary considerable in size.

MICROVELIA INTONSA, new name

Microvelia crinata Drake, Proc. Biol. Soc., Wash., 64:76. 1951.

As a result of a typographical error, which I failed to correct in manuscript and proof, the name "*crinata*" was wrongly used for "*crinita*." As *M. crinita* (Hoberlandt, DIAMANTER DE ANGOLA, MUSEU DO DUNDO, p. 36. figs. 103-113, 1950) is preoccupied, the name *intonsa* is here proposed for *M. crinata* Drake. The extremely long hairs on the legs separate *intonsa* from all of the described species of American *Microvelia* Westwood.

MICROVELIA OAXACANA Drake, n. sp.

APTEROUS FORMS: Elongate, moderately broad, dark brown-fuscous with a few small bluish spots on abdomen; body beneath dark fuscous-brown with bluish tinge, the venter sometimes mostly brownish.

SIZE: Length, 2.00-2.20 mm.; width, 0.75 mm.

HEAD: Width across eyes, 0.62 mm. Convex with media line distinct, a small patch of long brown hairs behind each eye; rostrum

yellowish brown with terminal segment dark fuscous. Antennae long, slender, dark brown with basal segment paler, shortly pilose with a few slightly longer hairs on last three segments; segment I moderately stout, a little bowed, stouter than two; III and IV long, slender, equal in thickness; formula—I, 22; II, 15; III, 32; IV, 32.

THORAX: Pronotum very large, covering rest of thorax, pitted, wider than long (55:34), slowly broadly rounded behind, moderately clothed with very short yellowish pubescence. Legs long, slender, clothed with short hairs, the basal part of femora above, entire coxae and trochanters and all of femora beneath pale. Hind femora scarcely thicker than middle pair, without spines.

ABDOMEN: Length, 1.28 mm. Pubescence slightly longer than on pronotum. Posterior part of each connexival segment and last tergite testaceous; connexiva beneath testaceous. Female with last tergite scarcely longer than preceding segment, with moderately long hairs on hind margin; last ventrite distinctly longer than the preceding segment.

MALE: Last tergite nearly one-half longer than the preceding segment; last ventrite also longer than the preceding segment. Genital segments very large, above densely clothed with rather short brown hairs, with lateral sides rounded; first genital segment beneath deeply widely roundly excavated leaving only a short base; second segment large, wide, without lateral spines. Venter without tubercle.

TYPE: (male), Oaxaca, Mex., intercepted on Bromeliaceous plant, by federal quarantine plant inspectors, New York City, New York, March 27, 1937. *Allotype* (female), and 3 *paratypes*. Ciudad Victoria, Mexico, intercepted on long moss (*Tillandsia*), by federal plant inspectors at Laredo, Texas, March 20, 1945. Winged form unknown. *Type* in U.S. National Museum.

This species is about the same size as *M. albonotata* Champ., but lacks the large ventrite spine and has much larger and longer pronotum, which conceals the entire thorax in the apterous form as in *M. austrina* Bueno, *M. hidalgoi* McKinstry and *M. costaiana* Drake.

MICROVELIA TATEIANA Drake, n. sp.

APTEROUS FORM: Moderately large, elongate, testaceous or brownish with second to sixth visible tergites dark fuscous. Head testaceous or brownish with two broad testaceous stripes on each side of media line uniting posteriorly. Tergites with some bluish

areas. Sides of head and pronotum behind eyes with silvery pubescence.

SIZE: Length, 1.90-2.10 mm.; width, 0.75 mm.

HEAD: Width across eyes, 0.56 mm. Median line distinct, but not conspicuous, sometimes indistinct posteriorly. Rostum pale testaceous with apical segment black-fuscous. Antennae long, slender, brown-fuscous with base testaceous, shortly pilose with very few slightly longer hairs; segment I moderately stout, a little bowed, mostly testaceous; II much slenderer, a little thicker than next two; III and IV slender: formula—I. 20; II. 14; III. 27; IV, 30.

THORAX: Pronotum rather large, covering most of mesonotum, more than twice as wide as long (50:19), pitted with pits arranged largely in two transverse rows; mesonotum pale testaceous, with exposed part approximately one-half as long as pronotum. Legs long, slender, clothed with short pale hairs, testaceous with apical half of femora and entire dorsal surface of tibiae brown to dark brown; tarsi fuscous. segment one and two of both middle and hind legs practically equal in length. Hind femora unarmed in male, slightly stouter than middle pair.

ABDOMEN: Length, 1.15 mm. Dorsal surface of both abdomen and pronotum with a few scattered long fine hairs, not nearly as hairy as in *M. portoricensis*. Connexiva testaceous with the outer margin and sutures between segments fuscous, wider in male than in female, strongly reflexed apically in female. Last three tergites flavous with slight bluish bloom. Abdomen beneath testaceous to dark fuscous with some bluish plumbeous, clothed with pubescence and some short hairs; last ventrite in female narrowed posteriorly, long, less than twice the length of preceding segment.

MALE: Last ventrite about one-fourth longer than preceding segment, not as strongly narrowed posteriorly as in female; first genital segment very large, beneath very widely deeply roundly excavated behind leaving only a short smooth base; second segment very wide, distinctly asymmetrical, strongly widely produced laterally on left side, and on other side behind with a transverse, somewhat cylindrical protuberance. Venter without tubercle. Femora unarmed. Second genital segment without lateral spines.

MACROPTEROUS FORM: Pronotum brownish with a narrow transverse band near front margin and a broad stripe extending on median line from anterior margin posteriorly to beyond the disc, wider than long, deeply pitted with pits arranged largely in two transverse rows,

transversely convex on disc: humeral angles prominent. Hemelytra covering apex of abdomen, brown with small basal area and two or three indistinct spots beyond the middle pale, without silvery white spots in cells; veins distinct, not prominent. Length, 2.15 mm., 0.90 mm.

TYPE: (apterous male), *allotype* (*apterous female*) and 17 apterous and one macropterous paratypes, Maricao, Porto Rico, H. D. Tate. Named in honor of Dr. Tate, who has collected numerous water-striders for me in Porto Rico.

The asymmetrical male genitalia is very striking and peculiar to this species. The hairs on the antennae are not nearly as long nor as numerous and the vesture on dorsal surface not as shaggy as in *M. portoricensis*. The male genital segments of the latter species are small. The lack of silvery white markings in the cells of the hemelytra also serve to separate *M. tateiana* from other species of similar size and appearance in Insular and Central America.

MICROVELIA PORTORICENSIS Drake, n. sp.

APTEROUS FORM: Moderately large, testaceous to brownish with silvery hairs on side of head and fore part of pronotum behind eyes. Abdomen above largely fuscous with last three tergites flavous or bluish flavous and a quadrate spot on each side of second and third visible tergites; beneath dark fuscous with a bluish bloom, the venter becoming brownish testaceous apically; sometimes venter largely testaceous; underside of connexiva testaceous. Length, 1.90-2.10 mm. width, 0.75 mm.

HEAD: Width across eyes, 0.51 mm. Testaceous or dark brown with two broad testaceous stripes on each side of median line coalescing behind eyes. Median line not very distinct posteriorly. Rostrum testaceous with last segment piceous. Antennae moderately long, slender, brown with basal part of first segment testaceous, shortly pilose with long hairs on last three segments; segment I stout, slightly bowed; II slender, quite slender at base; III and IV slender; formula—I, 14; II, 12; III, 20; IV, 23. Head testaceous beneath.

THORAX: Pronotum large, produced posteriorly, covering a little more than half of mesonotum, more than twice as wide as long (55:21), the hind margin feebly concave. Entire dorsal surface of thorax and abdomen sparsely covered with long brownish hairs. Legs moderately long, dark brown or fuscous, clothed with short hairs, the coxae, trochanters, base of femora above and most of femora beneath testaceous. Hind femora a little stouter than middle pair, un-

armed. Tibiae of middle and hind legs with rather long dark hairs on outer surface. First tarsal segment of middle and hind legs feebly longer than second.

ABDOMEN: Length, 1.35 mm. Connexiva a little wider and more arched in female, not reflexed posteriorly. Last tergite of female with several long hairs on hind margin. Male genital segments moderately large, brownish, hairy above; first segment beneath rather broad, smooth, widely deeply roundly excavated behind leaving only a short smooth base; second segment small, without lateral spines. Venter without tubercle.

MACROPTEROUS FORM: Length, 1.9 mm.; width, 0.92 mm. Pronotum dark velvety rufo-fuscous with a transverse band near anterior margin and a median basal stripe orange-yellow, clothed with short, yellowish pubescence; humeral angles prominent. Abdomen distinctly narrowed posteriorly. Hemelytra covering apex of abdomen, dark brown-fuscous with silvery white markings in cells (two long basal stripes, three or four median spots and median subapical spot silvery white). Other characters as in wingless form.

TYPE: (macropterous male) and *allotype* (macropterous, female). Mayaguez, Porto Rico. April 4, 1936, H. D. Tate. Paratypes: 26 specimens, taken with type: 1 specimen, Laiza, P.R., March 31, 1930; 1 specimen, Maricao, P.R., May 10, 1936, H. D. Tate; 2 specimens, Mayaguez, P.R., May 28, 1937, Pedro Lopez.

Distinguishable from *M. albonotata* Champion by the long hairs on antennae and shorter last antennal segment; male genital segments much smaller, the venter without tubercle. The long antennal hairs and abdomen (narrowed posteriorly) also separate it from *M. peruviansis* McKinstry. *M. tateiana* n. sp. has very different second genital segment in the male. All four of the above species have similar markings on the pronotum. *M. tateiana* is the only one of the four without silvery white marks on the hemelytra.

MICROVELIA CUBANA Drake, n. sp.

APTEROUS FORM: Moderately large, testaceous or brownish testaceous with some fuscous areas and a few bluish patches on abdomen; sided of head behind eyes and pronotum in front with silvery pubescence or short silvery hairs; a quadrate spot on each side of second, third and fourth visible tergites and usually last three tergites bluish; body beneath testaceous or brownish with bluish bloom, the sides of abdomen darker.

SIZE: Length, 1.80-2.10 mm., width, 0.80-0.90 mm.

HEAD: Width across eyes, 0.50 mm. Dark brown with a broad or brownish stripe on each side of median line coalescing behind eyes. Rostrum testaceous with last segment piceous. Antennae long, slender, brown or fuscous brown, shortly pilose, without long hairs; formula—I, 14; II, 11; III, 16; IV, 26.

THORAX: Pronotum testaceous, with a narrow part in front of transverse row of pits raised and usually darkened towards the sides, produced posteriorly covering more than half of mesonotum, twice as wide as long (50:22), the posterior margin feebly concave; mesonotum testaceous, the exposed part nearly half as long as pronotum. Legs rather long, slender, dark brown or fuscous with coxae, trochanters, base of femora above (most of dorsal surface on anterior femora) and entire ventral surface of femora testaceous. Hind femora scarcely thicker than middle pair, unarmed in both sexes.

ABDOMEN: Length, 1.25 mm. Color somewhat variable, often with a few basal segments darkened; connexiva testaceous with outer margin and sutures between segment fuscous, wider in female than male, not reflexed behind middle. Dorsal surface of both thorax and abdomen without long hairs.

MALE: Venter without tubercle. Last tergite and ventrite distinctly longer than the preceding segment. Femora without spines. Genital segments moderately broad, brown, with short hairs on dorsal surface, beneath testaceous; first segment beneath broadly deeply widely excavated so as to leave only a small smooth basal part.

MACROPTEROUS FORM: Length, 1.90-2.20 mm.; width, 0.88 mm. Pronotum dark rufo-fuscous with a transverse band near front margin and a short median stripe in front orange-yellow, clothed with short yellowish pubescence and some silvery pubescence, the median ridge fairly distinct; humeral angles moderately prominent. Hemelytra brown-fuscous with silvery white spots in the cells (two longitudinal basal stripes, three spots nearly middle and a subapical ovate spot silvery white; veins distinct, not conspicuous.

TYPE: (apterous male). *allotype* (apterous female) and 22 *paratypes* (winged and wingless specimens). Havana, Cuba, Feb. 24, 1941, S. C. Bruner. PARATYPES: 5 specimens, Baracoa, Cuba, Sept., 1901. U.S. Nat. Museum.

This pretty little species is closely allied to *M. portoricensis* Drake, but lacks the extremely long hairs on the last three antennal segments and the dorsal surface is also without long hairs. The broad asymmetrical second genital of male segment of *M. tateiana* Drake distinguishes it at once from both of the above species.