CONCERNING SOME NORTH AMERICAN WATER-STRIDERS WITH DESCRIPTIONS OF THREE NEW SPECIES

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Recent publications on North American water-striders have resulted in a need for revised distributional data. This is especially true for certain species of the family Gerridae. To illustrate, eight or nine different species have been placed under the name of *Gerris marginatus* Say in the literature. The following notes are based on the water-striders in the collections of Iowa State College, the University of Minnesota, the University of Illinois, the Montana State College, Professor H. E. Summers, Mr. Wm. J. Gerhardt, and the authors.

*Gerris remigis* Say. (Fig. 1, a).
Say, Thomas, Heter. N. Harm., p. 35, 1832.
Uhler, P. R., Am. Jl. Sci., ser 3, I, p. 105, 1871 (*Hygrotrechus robusta*).

This is the most common and widespread gerrid in North America. It frequents the wider portions of small streams but is not uncommon in creeks, rivers, ponds and lakes. Both winged and wingless forms occur throughout its entire range. The color and size, even in specimens taken from the same colony, show marked variations. The spines at the ends of the connexiva vary in length. A cotype of *Gerris orba* Stal kindly sent to us by Dr. Yngve Sjostedt, Intendent of the Naturhistoriska Riksmuseet at Stockholm, is before us; it is a typical *G. remigis*. This specimen and the type series at Stockholm bear labels "= remigis Say, teste Kirkaldy." The male genitalia of the cotype of *G. orba* Stal (syn. of *G. remigis* Say) is figured.

A long series of specimens taken at the type locality of *Gerris robusta* Uhler by Mr. E. P. Van Duzee of the California Academy of Science are also typical examples of *G. remigis*. Furthermore, specimens determined by Uhler himself as *G. robusta* are identical with *G. remigis*. The type of *G. robusta* (a damaged female, according to the original description) cannot be found in Uhler's collection, the National Museum, or the Museum of the California Academy of Science. After having studied several hundred specimens of *G. remigis*, some of which have come from every state in the union (with the exception of one or two), Canada and Mexico, the writers feel that both *G. orba* Stal and *G. robusta* Uhler must stand as synonyms of *Gerris remigis* Say.

*Gerris nyctalis* Drake and Hottes. (Fig 1, b).
Gerris nebularis Drake and Hottes. (Fig. 1, c).


Gerris insperatus Drake and Hottes.


Gerris incurvatus Drake and Hottes.


Gerris incognitus Drake & Hottes.

OREGON—Corvallis, June 26, 1926, C. J. Drake. CALIFORNIA—Fresno, June 20, 1920, C. J. Drake. IDAHO—Moscow, April 1913; Caldwell, July 9, 1926, C. J. Drake. MONTANA—Gallatin Mtns., August 25, 1925, and Big Fork, August 20, 1912, R. A. Cooley. This is one of the most common gerrids in the northwest. It has been frequently confused in collections with both G. marginatus and G. gillettei.

Gerris comatus Drake and Hottes.

NEW YORK—Ithaca, August 26, 1890, H. E. Summers; Buffalo, E. P. Van Duzee. ILLINOIS—Algonquin, November 2, 1908. MINNESOTA—North Branch, June 17, 1922, C. E. Mickel; Mora, June 16, 1922, and Detroit, July 2, 1922, W. E. Hoffman. IOWA—Albia, Ames, Atlantic, Cedar Falls, Clear Lake, Elkader, Lovilia, Ft. Dodge, McGregor, Mason City, Oelwein, Red Oak, and Webster City, June-August, 1927, Harris and Johnston. SOUTH DAKOTA—Brookings, April 28, 1921, H. C. Severin. NEBRASKA—Big Springs, August 26, 1925, C. J. Drake. COLORADO—Dolores. Garrison, Hudson, Mesa Verde National Park, Pagosa Springs, South Fork, Wray and Veta Pass, August, 1925, C. J. Drake. MONTANA—Bozeman, August, 1913, R. A. Cooley. G. comatus has been confused in practically every collection and in the literature with G. marginatus Say. It is one of the most common species in eastern Canada and United States, occurring from Colorado to the Atlantic Coast.

Gerris comatus var. mickeli Drake and Hottes.

A female was taken in a swamp at Corvallis, Oregon, June 26, 1926, and another at Wray, Colorado, August 4, 1925, by C. J. Drake. These two specimens and the types from Minnesota are brachypterous. The male is unknown. This variety differs from typical G. comatus in having longer and more numerous hairs on the connexival spines and a stripe along each side of the pronotum in front. Male specimens may prove it to be a distinct species.
Gerris marginatus Say.


Gerris pingreensis Drake and Hottes.

COLORADO—Pingree Park and Estes Park, August 20-24, 1925, C. J. Drake.

IDAHO—T. D. A. Cockerell. This species is common in the ponds and lakes in the high altitudes of the Rocky Mountains.

Gerris alacris Hussey.


Gerris gillettei Lethierry and Severin.


MONTANA—Bozeman, June 1, 1924, R. A. Cooley. CALIFORNIA—Fresno, June 20, 1926, C. J. Drake.

TEXAS—Rock Island, July 10, 1922, Grace O. Wiley.

UTAH—Saltair, July 5. This is a western species and is found in the Rocky Mountain states and along the Pacific slope.

Gerris buenoi Kirkaldy.


SOUTH DAKOTA—Brookings, April 28, 1921, H. C. Severin.


BRITISH COLUMBIA—Victoria, July 4-7, 1926, C. J. Drake. G. buenoi is a transcontinental species and is very common in southern Canada and northern United States.

Gerris notabilis Drake and Hottes. (Fig. 1, d).

CALIFORNIA—Fresno, June 20, 1926, C. J. Drake.

WASHINGTON—San Juan Island, July 2, 1926, C. J. Drake.

IDAHO—Moscow, 1913.

MONTANA—Shields River, July 17, 1925. COLORADO—Dolores, Garrison. Mesa Verde National Park, South Fork, August, 1925, C. J. Drake.

IOWA—Ames, July, 1925, C. J. Drake. This is a very common species in the Rocky Mountains and along the Pacific coast. It ranges as far east as central Iowa. The much longer legs and the different genital characters separate it from G. rufoscutellatus.

Gerris canaliculatus Uhler.

FLORIDA—Gainesville, July 14, 1918, C. J. Drake.

MISSISSIPPI—Charleston, September 9, 1925, H. M. Harris; Natchez, September 8, 1924, H. M. Harris; Vicksburg, Port Gibson, Woodville, McComb and Agr. College, July, 1921, C. J. Drake.

ARKANSAS—Little Rock, August 30, 1926, H. M. Harris.


NEW YORK—Ithaca, August, 1890, H. E. Summers; Syracuse, 1917-21, C. J. Drake.

ILLINOIS—Oaktown, August 15, 1905; Pulaski, July 10, 1907; Dubois, August, 1913.

Gerris argenticollis Parshley.


Gerris mexicanus Champion.

Two specimens, Cuernavaca, Mexico, May 15, 1898.

Gerris cariniventris Champion.

Tegucigalpa, Honduras. Four specimens, which agree with two of Champion's cotypes before us.
**Tenagononus hesione** Kirkaldy.

OHIO—Columbus, Rockbridge, and Buckeye Lake, 1916, C. J. Drake. MISSISSIPPI—Summit, September 4, 1926, and Charleston, September 8, 1926, H. M. Harris; McComb, Fayette, and Vicksburg, July, 1921, C. J. Drake. FLORIDA—Gainesville, May-July, 1921, C. J. Drake. TEXAS—Bryan, October 25, 1927, H. G. Johnston. ILLINOIS—Havana, October 4, 1910; Dubois, August 13, 1917. The long-winged form is common in Mississippi and Florida but uncommon in the northern states. One winged example from Columbus, Ohio, is at hand.

**Tenagononus hyalinus** Fabricius.

MEXICO—Minatitlan, February 1, 1892, H. Osborn. WEST INDIES—Grenada, September 25, 1891, H. E. Summers.

**Tenagononus quadrilineatus** Champion.


**Trepobatopsis denticornis** Champion.

TEXAS—Clifton, May 30, 1907. This is the first known record of this insect occurring in the United States. Another specimen from Cantarina, Monterey, Mexico, April 10, 1910, is before us. It has the wings broken off.

**Trepobates floridensis**, n. sp.

Distinctly smaller than any other known species of the genus. Body above black, an elongate spot on either side and an interrupted line on posterior margin of mesonotum, a small spot on each side and more or less of basal margin of pronotum, a line on each side of head above the eyes and the posterior margin between these lines yellowish brown. Body beneath and a broad stripe on each side of mesonotum yellowish. Rostrum reaching a little beyond anterior coxae, dark brown, the basal segment yellowish. Antennae dark brown, yellowish at base segment I long, slightly curved, subequal to II and III conjoined; II very slightly shorter than III.

Pronotum practically twice as broad as long, impressed on each side of the disc. Mesonotum broadly and rather uniformly impressed along the median line, the posterior margin truncate. Legs much shorter and slenderer than in *T. pictus* Uhl, dark brown; the anterior tibiae strongly curved, slenderer at base and apex. Connexivum moderately broad, concolorous. Abdomen above without spots. Length 2.5 mm.; width 1.0 mm.

**Holotype**, apterous male, East Florida, collection of authors. The much smaller size and the shorter and slenderer legs and antennae separate this species from any of its congeners. The intermediate legs and the second antennal segment, as in *T. pictus*, are without long hairs. The proportional lengths of the antennal segments in these two species are: *pictus*, I:II:III:IV—80:43:49:47; *floridensis*, 50:24:26: (missing).

**Rheumatobates tenuipes** Meinert.

Rheumatobates trulliger Bergroth.

TENNESSEE—Knoxville, June 15, 1890, H. E. Summers. MISSISSIPPI—Charleston, September 7, 1925, H. M. Harris; Shipman, August 2, 1921, C. J. Drake. A wingless male and female from Shipman, Miss., have been compared with the type of *R. trulliger* for the authors by the late Dr. E. Bergroth.

Rheumatobates hungerfordi Wiley.

TEXAS—Weslaco, July 17, 1927, M. McPhail; Bryan, October 25, 1927, H. G. Johnston.

Rheumatobates rileyi Bergroth.


Mesovelia cryptophila Hungerford.

IOWA—Wapello, August 5, 1926, H. M. Harris. MISSISSIPPI—McComb, September 8, 1924, H. M. Harris.

Microvelia oreadis, n. sp.

Elongate, narrow, fusiform; dark fuscous black, the sides of connexiva a little lighter. Pronotum with a broad transverse rufoufulvous band in front, the abdominal tergites each with a pale brownish spot. Head with the usual, shiny, impressed median line and blackish spots above the eyes. Antennae about one-half as long as body, pilose, with a few scattered setæ, dark brownish black; segment I paler and tinged at base with testaceous, stoutest, slightly curved; the proportional lengths of segments:—I:II:III:IV = (male) 17:14:19:25, (female) 17:18:25:30. Rostrum stout, brownish testaceous, the terminal segment blackish, reaching a little beyond the middle of mesonotum.

Pronotum short, coarsely pitted behind, the basal margin slightly emarginate. Mesonotum about half as long as pronotum. Legs brownish, the coxae, trochanters, and tibiae beneath lighter; tibiae clothed with numerous long setæ. Connexivum very broad, broader in female than in male. Abdomen with the last tergite truncate at apex in male, rounded in female. Body beneath flattened, yellowish to dark brown. Length (male) 2.21 mm.; (female) 2.78 mm.; width (male) .79, (female) .93 mm.


In many of the specimens some of the dorsal segments of abdomen and connexiva bear flattened silvery hairs which are grouped in patches. This species is perhaps most closely related to *M. setipes* Champion. However, it is slightly smaller and the setae like hairs on the tibiae are
more numerous. The proportional lengths of the antennal segments of the males of *M. oreadis* are also much different.

*Microvelia irtasa*, n. sp.

Oblong, rather densely clothed with very long erect hairs; black, the pronotum with a broad transverse orange band. Head with an impressed median black line, the vertex with a prominent pit on each side above the eyes. Antennae long, slender, dark fuscous, the basal portion of segment I and all of II and III lighter, the proportional length of the segments:—I:II:III:IV = 45:38:42:39; segment I moderately stout, distinctly curved, III slenderer than II, IV fusiform. Rostrum stout, apical segment black, surpassing intermediate coxae.

Pronotum transverse, shallowly and broadly emarginate behind, slightly shorter than metanotum and about two-fifths the length of mesonotum. Mesonotum strongly narrowed posteriorly, truncate behind. Legs yellowish, somewhat tinged with brown, the tarsi black; clothed with dense whitish pile with numerous extremely long yellowish hairs. Connexivum broad. First genital segment deeply emarginate behind, strongly and roundly excavated beneath. Length, 4.14 mm.; width, 1.5 mm.

*Holotype*, apterous male, Orizaba, Mexico, January 17, in Drake collection. *Paratypes*, 2 males, taken with type. The female and the winged form are unknown.

Aside from the other structures, the larger size, extremely long hairs clothing body and legs, and the structure of antennae and thorax separate this species from its congeners. It has somewhat the general aspect of a *Rhagovelia*, but belongs to the group of species of *Microvelia* containing *M. americana* Uhler. The hind femora of the male bears along the distal half of the inner surface several spines two or three of which are strongly curved. In the holotype the hind femora are slightly stouter and the spines are shorter than in the paratypes; also in the holotype the spines on the right femora are slightly more developed than those on the left.

*Microvelia fontinalis* Bueno.

Specimens are at hand from the following localities: OHIO—Berea, July 16, 1914, C. J. Drake. TENNESSEE—Knoxville, June 27, 1891, H. E. Summers. VIRGINIA—near Plummer's Island, Maryland, October 30, 1921, H. S. Barber. IOWA—Burlington, August 4, 1926, H. M. Harris. COLORADO—Wray, August 4, 1925, C. J. Drake.

This species has heretofore been recorded in literature from Ohio, New York, New Jersey, Indiana and Michigan. One of the Tennessee specimens is winged, this form previously being unknown. (*Morphotype*, in the collection of H. E. Summers at Iowa State College.)

*Macropterous form*: Brownish fuscous with two elongate white spots at base of elytra, the pronotum with a transverse orange or fulvous stripe in front. Pronotum strongly developed, coarsely pitted, carinate down the middle, the apex broad and sub-truncate; humeri large and prominent. Hemelytra extending to tip of abdomen, dark brown with two of the cells beyond the basal spots tending to become more or less whitish. Length 2.5 mm.; width, .93 mm.
Microvelia hinei Drake.

Originally described from Ohio, M. hinei has since been recorded from New York, Massachusetts, Michigan, and Florida. The authors possess specimens from the following additional localities: ARKANSAS—Little Rock, August 30, 1926, H. M. Harris. MISSISSIPPI—Charleston, Crowder, Fayette, McComb, Ocean Springs and Woodville, various dates (C. J. Drake and H. M. Harris). DISTRICT COLUMBIA—Washington, August 13, 1889, O. Heidemann, and December 30, 1915, W. L. McTee. IOWA—Wapello, August 16, 1926, H. M. Harris.

Microvelia borealis Bueno.


Microvelia australina Bueno.

Described from Raleigh, N. C, and heretofore known only from there. Specimens are at hand from: MISSISSIPPI—Charleston, September 7, 1925, H. M. Harris; and TENNESSEE—Knoxville, June-July, 1891, H. E. Summers. Many of the Tennessee specimens are winged. (Morphotypes in the Summers' collection at Iowa State College).

Macropterous form: Pronotum strongly developed, dark brown with a large transverse fulvous spot in front, coarsely pitted, the humeri very prominent. Hemelytra extending to tip of abdomen, dark brown, the veins fairly distinct. Length, 1.92-2.14 mm.; width, .61-.64 mm.

Hydrometra martini Kirkaldy.


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