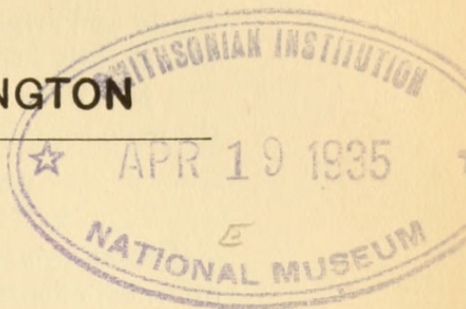


PROCEEDINGS
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CONCERNING NEOTROPICAL SPECIES OF
RHAGOVELIA (VELIIDAE : HEMIPTERA).

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Further work with collections of Neotropical water-striders belonging to the genus *Rhagovelia* Mayr necessitates several synonymical changes and the recognition of three species and a variety as new to science. Types of the new forms are in the collection of the authors, paratypes have been deposited in the U. S. National Museum.

1. *Rhagovelia amazonensis* Gould.

Rhagovelia amazonensis Gould, Sci. Bull., Univ. Kan., 20 : 15, 1931.
Rhagovelia williamsi Gould, Sci. Bull., Univ. Kan., 20 : 47, 1931.

A careful study of paratypes (male and female) of *R. williamsi* Gould shows them to be inseparable from *R. amazonensis*. The posterior tibia is armed at the apex with a distinct spur. The hind trochanters are spinose in the male. The "carina" mentioned in the original description as occurring on the first genital segment of the female is in reality a suture separating the two genital flaps. In the females of *amazonensis* the apex of each connexivum is thickly beset with bristly hairs; in the paratype of *williamsi* these hairs are present but are so matted together as to appear like spines and were erroneously described as such in the original description. The patch of long hairs on the second connexival segment is quite characteristic.

2. *Rhagovelia armata* Burmeister.

Specimens, apterous and winged, are at hand from Guatemala. In addition examples have been seen from Guadeloupe, West Indies, and Colima, Mexico. As in several other members of the genus the incrassation of the hind femora varies greatly in a series of specimens. Coupled with this there is considerable diversity in the character of the armature of both femora and tibiae. In specimens with greatly enlarged femora the tibiae are strongly sinuately bowed and are somewhat flattened and widened

within and armed with stouter teeth along the distal third. In specimens with slightly swollen femora the hind tibiae frequently are perfectly straight. The pronotum of apterous individuals is more sharply rounded behind in the male than in the female.

3. *Rhagovelia callida*, n. sp.

Apterous form: Moderately large, grayish black, clothed with short brownish pile, the long bristly hairs darker, very sparse above, longer and not numerous on the sides. Body beneath with a bluish lustre. Connexiva with black and somewhat shiny margins. Anterior and posterior coxae and margins of acetabula, trochanters and basal fourth of antennae flavous to stramineous. Legs black, somewhat shiny, the tibiae and tarsi brownish black.

Pronotum short, transverse, not produced behind. Mesonotum similar to *R. velocis*, n. sp. Head with usual markings, eyes brownish black. Antennae moderately large; proportions, 28 : 16 : 17 : 15.

Male: Hind femora moderately incrassated, sharply reduced a little before apex, armed within with a single row of short stout blunt teeth on the distal two-fifths; tibiae slightly curved, indistinctly denticulate within, with a spur at apex. Intermediate legs, 58 : 37 : 23 : 20. Metasternum and venter ridged along the median line, the ridge very broad on the metasternum, narrowing posteriorly and becoming very narrow on last two segments and clothed with long hairs. Last genital segments beneath and a spot on last two to four tergites black, slightly shiny, the spots on tergites becoming larger posteriorly.

Female: Connexiva broad and rounded at the apex, there clothed with long brown hairs; the last three or four tergites with black spots, the first two of which are smaller. Hind femora faintly enlarged, with short, stout black spines on apical third, the first tooth considerably more prominent than others. Abdomen tumid beneath, the last venter slightly shorter than the two preceding, roundly produced at the middle behind.

Length, 3.80–4.10 mm., width, 1.50–1.60 mm.

Holotype, male, *allotype*, female, Rio Rimac, Lima, Peru, Sept. 1933. *Paratypes*, males and females, taken with type and at La Merced, Junin, Peru, Nov. 1933. This insect is not easily confused with any described species. The ventral ridge and the nature of the posterior femora and their armature are distinguishing characters. Winged forms are unknown.

4. *Rhagovelia calopa* D. & H.

Calopa often occurs in great abundance in Honduras. The type is from Guatemala. In the female there is a conspicuous brownish spot along the upper margin of each connexival segment, occasionally absent on first two segments. The incrassation of the femora varies greatly in different specimens. In the winged form (male and female) the pronotum marked as in apterous, triangular behind, more strongly arched across the disc, with a faint median longitudinal carina, and with a few scattered punctures on the triangular portion.

5. *Rhagovelia gregalis* D. & H.

Rhagovelia gregalis D. & H., Proc. Biol. Soc. Wash., 40 : 136, 1927.

Rhagovelia obscura Gould, Science Bull., Univ. of Kan., 20 : 38, 1931.

In addition to the types, from Honduras, specimens are at hand from Guatemala and Peru. The hind tibia is armed at the tip with a small spur and in the male is minutely serrate within. The tibial spur is somewhat variable in size and often is quite inconspicuous. A reexamination of the types of *gregalis*, after they were relaxed and cleaned, shows that they also possess these characters and that the original description in regard to this was in error. A comparison of the types of *gregalis* D. & H. and *obscura* Gould proves that the two names apply to the same species.

6. *Rhagovelia longipes* Gould.

Apterous form: Grayish black, clothed with numerous long hairs. Pronotum very short, not produced over mesonotum, about three times as wide as long, with a transverse brownish spot near the front margin. Mesonotum very large, considerably arched. Metanotum mostly concealed above. Abdomen above with a bluish tinge. Hairs on abdomen longer in male than in female, the former with conspicuous long hairs on genital segments. Base of antennae, coxae and trochanters of anterior and posterior legs, margins of all acetabula, and small basal portion of front and sometimes hind femora flavous to flavo-testaceous. Proportional measurements of the appendages agree with those given in the original description.

Several hundred specimens, apterous and winged males and females, Rio Paucartambo, Quiroz, Peru, Dec. 1933. In the winged form the pronotum is conspicuously punctured in front of the hind margin.

7. *Rhagovelia plumbea* Uhler.

Rhagovelia plumbea Uhler, Proc. Zool. Soc. Lond., 1894, p. 217.

Trochopus maritimus Carpenter, Ent. Mo. Mag., 24 : 78, 1898.

Rhagovelia salina Gould (*nec* Champ.), Sci. Bull., Univ. Kan., 20 : 41, 1931.

A common species in brackish waters along the southern-most points of Florida and nearby islands, West Indies and Central America. Specimens from the type series have been examined. The winged form is not known. Long series exhibit some variation in color. The specimens in the University of Kansas collection, labelled by Gould as *salina* Champion, are referable to this species.

8. *Rhagovelia regalis*, D. & H.

Rhagovelia regalis Drake & Harris, Proc. Biol. Soc. Wash., 40 : 137, 1927.

Rhagovelia confusa Gould, Sci. Bull., Univ. Kan., 20 : 23, 1931.

In addition to the type series from Honduras numerous specimens from Punta Gorda, Br. Honduras, are at hand. This insect is most closely allied to *gregalis* D. & H. from which it may be separated by the less arched mesonotum and the slightly shorter legs. The connexivum of the female

is wider at the apex than in *gregalis*. An examination of the types of *R. confusa* Gould in the collections of the University of Kansas discloses that they are inseparable from *R. regalis* D. & H.

9. *Rhagovelia relictæ* Gould.

Several apterous males and females, Rio Branco, Minas Geraes, Brazil. The series exhibits considerable variation in color, some specimens being brown with paler markings and agree well with the original description; others range in general color from dark brown to black with light markings. The species is very close to if not identical with *R. robusta* Gould as represented by a paratype before us.

10. *Rhagovelia sinuata* var. *calcaris*, n. var.

Size, form and color very similar to typical *sinuata*. Hind femora of males varying in size, frequently enormously incrassate; hind tibiae moderately to strongly bowed, denticulate within and armed with a moderate to enormous spur a little in front of the apex. Short spines of femora and tibiae blunt. Hind trochanter also with short spines.

Holotype, apterous male, *allotype*, apterous female and *paratypes*, numerous apterous males and females, Rio Paucartambo, Quiroz, Peru, Dec. 1933; in authors' collection.

As the claspers are very similar to those of *R. sinuata*, it seems best to treat this form as a variety. The males may be recognized at a glance by the presence of the spur on the tibia.

11. *Rhagovelia spinigera* Champion.

Apterous form: Pronotum coarsely, deeply punctured, indistinctly carinate down the middle, rounded behind in the male, in the female very broadly rounded, almost subtruncate; practically covering mesonotum. Connexiva in the male moderately broad, margined with brown, blackish at base and apex; in the female strongly reflexed over the posterior part of abdomen, its apex broadly rounded, sometimes smooth, sometimes conspicuously clothed with long hairs, basal three-fifths of margin yellowish brown, the reflexed portion mostly brownish black.

One of the commonest species in Central America and Mexico. The intermediate femora are constricted only in female individuals.

12. *Rhagovelia tenuipes* Champion.

Specimens are at hand from Honduras, Guatemala and Mexico. The shorter and stouter legs and the armed hind femora separate this species at once from *longipes* Gould.

13. *Rhagovelia velocis*, n. sp.

Apterous form: Moderately large, grayish black, clothed with short grayish-brown pile and numerous long dark hairs. Body beneath and sides with a bluish luster. The narrow margin of connexiva, a spot on last tergite, a rectangular spot on last venter, and genital segments jet-black and somewhat shiny. Pronotum short, transverse, not extending back on

mesonotum; with a prominent, transverse, yellowish brown spot near the front margin. Mesonotum large, moderately arched, narrowed posteriorly, subtruncate behind. Head with the usual black spots and line-impressions. Eyes moderately large, dark brown. Antennae moderately long, blackish, the basal two-fifths of first segment flavous, segments I and II with a few long seta-like hairs; proportions, 20 : 11 : 11 : 10.

Rostrum short, shiny, brownish black, the sides of the basal segment, the second segment and the bucculae brownish. Legs black, the basal half of anterior femora and the front and hind coxae and trochanters flavous to stramineous; intermediate coxae and trochanters black. Margins of acetabula more or less embrowned. Tarsi brownish black, legs clothed with numerous long black hairs and with grayish pile. Abdomen beneath clothed with numerous whitish hairs.

Macropterous form: Pronotum very large, indistinctly carinate down the middle, strongly convex above, distinctly punctate, the punctures conspicuous on posterior portion; humeri moderately prominent; color similar but the long hairs not as numerous as in apterous form. Hemelytra dark brown, the nervures darker, moderately prominent, clothed with coarse hairs; extending beyond apex of abdomen.

Male.—Hind femora moderately incrassate, only slightly thicker than the intermediate, armed within near the middle with a conspicuous spine and from there to apex with several minute spines in a row. Genital segments moderately hairy (long and short); the clasper short, thicker at base, slightly bent. Intermediate legs, 42 : 29 : 17 : 17.

Female.—Larger than male, connexiva considerably broader, widest near the middle, narrowed toward apex and there clothed with numerous long, brown hairs. Posterior femora with a short spine beyond the middle and a few inconspicuous spines between there and apex.

Length, 3.25–3.55 mm.; width, 1.25–1.75 mm.

Holotype, apterous male, *allotype*, female, *morphotype*, winged male, and *paratypes*, males and females, La Merced, Junin, Peru, November, 1933. This species is most closely allied to *R. versuta*.

14. *Rhagovelia versuta*, n. sp.

General aspect very similar to *velocis*, n. sp., but larger and with the legs entirely black. Antennae, 23 : 13 : 14 : 14. Body clothed with long hairs, beneath with a bluish luster. Hind tibia with apical spur. Posterior femora of male faintly incrassate, with a prominent, sharp spine near the middle and a row of short spines from there to apex. Intermediate legs, 48 : 35 : 21 : 20. Male clasper small, dark brown, curved toward the apex.

Length, 3.65–4.00 mm.; width, 1.60–1.80 mm.

Holotype, male, and *allotype*, female, Rio Paucartambo, Quiroz, Peru, Dec. 1933. *Paratypes*, several specimens taken with types.

On account of the uniformly larger size and the color of the fore femora it seems desirable to treat this form as a distinct species rather than as a variety of *R. velocis*, n. sp. Four somewhat mutilated females from Pampas Grande, Prov. Salta, Argentina, and belonging to the Vienna Museum, apparently are referable to this species.



Drake, Carl J. and Harris, H M. 1935. "Concerning neotropical species of Rhagovelia (Veliidae: Hemiptera)." *Proceedings of the Biological Society of Washington* 48, 33–37.

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