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# A remarkable new species of *Hemiosus* SHARP from Amazonian Peru (Coleoptera: Hydrophilidae)

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**Abstract**

A remarkable new species, *Hemiosus tarsalis* sp.n. (Coleoptera: Hydrophilidae) from Amazonian Peru, is described and illustrated. It is unique among members of the genus in possessing a narrow, laminar carina of the mesoventrite and enlarged male protarsal segments. The generic limits of *Hemiosus* with respect to *Berosus* are discussed and expanded to incorporate this new species.

**Key words:** Coleoptera, Hydrophilidae, Berosini, Peru, new species, taxonomy.

## Introduction

During our review of some newly collected Berosini from Amazonian Peru, two specimens stood apart as having a very unusual suite of characters, initially making us uncertain of their generic placement. While a more detailed review of characters, including those of the male genitalia, support a placement within the Neotropical genus *Hemiosus* SHARP, several of the character states observed are more commonly associated with the genus *Berosus* LEACH. Here this species is described as new and the generic limits of *Hemiosus* are broadened to accommodate it.

## Material and methods

Terminology largely follows HANSEN (1991), except that meso- and metasternum have been replaced by meso- and metaventrite, respectively.

### *Hemiosus tarsalis* sp.n.
(Figs. 1–2)

TYPE LOCALITY: PERU: Madre de Dios: Tambopata Research Center, 13°08.305'S, 69°36.502'W, 622 ft. elevation.

TYPE MATERIAL: **Holotype** ♂: "PERU: Madre De Dios: Tambopata/ Res. Zone; Tambopata Res. Centr./ on Rio Tambopata; 622' elev./ C.R.Bartlett; (3-7).x.2004/ 13°08.305'S; 69°36.502'W" (deposited in the Snow Entomological Collection, University of Kansas: SEMC). **Paratype** ♂: Same data as holotype (SEMC).

DIAGNOSIS: This species is easily separated from all other species in the genus by the enlarged male protarsal segments, the thin lamina of the mesoventrite, and the spinose and prolonged elytral apices (the latter character shared only with *H. monstrosus* OLIVA, 1994).

DESCRIPTION: Form & Color. Size moderate. Total body length: 3.47 mm; humeral width: 0.95 mm; maximum width: 1.10 mm; interocular distance: 0.30 mm. Head melanic, dorsum

including labrum with strong metallic luster, green in the typical specimens. Pronotum testaceous, with apparent melanic spots (reddish in the typical specimens) as follows: a pair of small round spots near the anterior edge in a paramedial position; three large spots on the posterior 2/3 of the pronotum, roughly quadrangular, less strongly melanic, the two lateral ones not reaching the lateral edges of the pronotum. Scutellum testaceous. Elytra testaceous with small black spots, without metallic sheen. Venter reddish. Femora bicolorous, in the typical specimens with the pubescent part reddish. Maxillary palps with the apical segment strongly melanic in apical 1/4–1/3.

Head: Profile of head weakly convex, clypeus not swollen. Clypeus finely and densely punctate, punctures about the size of an ommatidion. Frons with coarser punctures. Pronotum bearing irregular punctures, 1–2 times the size of the frontal ones, rather polygonal than round, disposed in curved lines of contiguous punctures, spaces between lines irregular, about one diameter in width, distinctly punctulate.

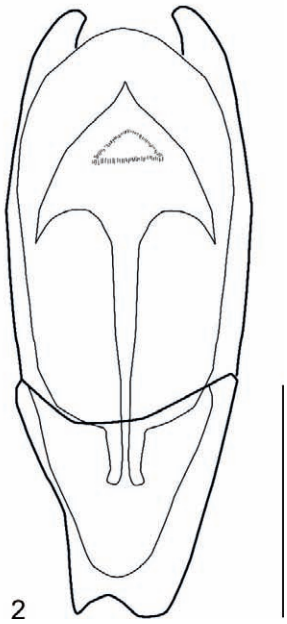
Thorax: Lateral edges of the pronotum smooth with a distinct fringe of long pale hairs. Elytra with deep striae, however striae 1–4 (and scutellar one) reduced to rows of punctures at base. Punctures about as large as the pronotal ones, round. Inner interstriae flat, not step-shaped. Eight and $9^{th}$ convex, $10^{th}$ strongly convex, $11^{th}$ costate except at under humeral hump and on apical $1/8^{th}$ of elytron, overhanging elytral edge. Inner interstriae with distinct punctures about 1/2 of the serial ones, uniseriated except on the wider part of interstriae 3 and 4; interstriae 8–11 not punctured. All odd-numbered interstriae bearing trichobothria; on $11^{th}$ the latter form a high fine carinate crest. Elytral apices strongly produced, acute. No spine-like hairs. Process of the mesoventrite laminar, which is exceptional in this genus; anterior tooth curved, weakly produced, behind the ventral edge very weakly concave. Process of the metaventrite wide, with posterolateral angles rounded. Basal pubescence extended and with diagonal limit, as in all the species of *Hemiosus*; on mesofemora the limit goes from about 1/2 of the femoral length to 7/8, on the metafemora from 2/3–7/8. Male protarsus pentamerous, with the second segment strongly swollen, a little longer than $3^{rd}$ + $4^{th}$ segments. Tarsal segments 1 and 2 with soles of adhesive hairs. Fifth tarsal segment short, about as long as $1^{st}$ + $2^{nd}$. Claws slender, weakly arched, angular at base.

Abdomen: First ventrite with a fine carina, lowered in the posterior half, not quite reaching the posterior edge of the sternite. No lateral carinae were observed. Fifth ventrite with shallow apical notch, the bottom of which is straight. Aedeagus (Fig. 2) depressed. Basal piece short, about 2/5 of total length, very weakly asymmetrical at base. Parameres gradually acuminate, apices narrowly rounded, weakly but abruptly turned inwards. Median lobe a little shorter than the parameres, very wide, apex broadly acuminate. Appendices in a distinctly sternal position, strongly sclerotized, a little more than half of the length of median lobe, rounded at apex.

DISTRIBUTION: At present known only from the type locality in Peru.

ETYMOLOGY: The name refers to the dilated protarsi of the males, a character quite unusual in this genus.

REMARKS: This species is remarkable for the dilated second segment of the male protarsus and for the laminar mesoventral process. Both are exceptional in species of *Hemiosus*. The new species shares with *H. monstrosus*, the strongly produced elytral apices; it differs by the genitalia, which are moderately long with a much broader median lobe which is only a little shorter than the parameres, by the rather more convex profile of the head and by the mesoventral process which is entirely laminar. The absence of spine-like hairs is not conclusive, for in *H. monstrosus* the latter are found only in the females. The profile of the head is not quite flat as in *H. monstrosus*.


Figs. 1–2: *Hemiosus tarsalis* (holotype): a) dorsal habitus, b) male protarsus (scale bar = 1.0 mm); 2) aedeagus (scale bar = 0.25 mm).

## Discussion

The large cosmopolitan genus *Berosus* and the relatively small Neotropical genus *Hemiosus* have been strongly supported as sister taxa based on both adult and larval morphological characters (ARCHANGELSKY 2008). Characters traditionally used to separate these two genera include the morphology of the male protarsus (reduced from five to four segments and usually enlarged in *Berosus*), the process of the mesoventrite (usually broadly expanded in *Hemiosus*) and characters of the male genitalia (an asymmetrical basal piece and accessory lobes of the median lobe in *Hemiosus*; a more cylindrical form in *Berosus*). All these characters are presently treated as either diagnostic characters (HANSEN 1991) or generic synapomorphies (ARCHANGELSKY 2008).

The new species described here combines diagnostic characters of both genera, in that the male protarsus is distinctly pentamerous (as in typical *Hemiosus*) but the first two segments are greatly enlarged (as in *Berosus*). The process of the mesoventrite is also in the form a narrow lamina, which is not known among any described *Hemiosus*. The strongly prolonged elytral apices are only known from one other species of *Hemiosus*, but common within *Berosus*. Finally, the basal piece of the aedeagus is strongly asymmetrical and dorsoventrally depressed as in typical *Hemiosus*, although it does not have clear lateral components of the median lobe found in other

species in the genus. We base our placement within *Hemiosus* on the pentamerous male protarsi and the characteristic asymmetry of the basal piece. However, the suite of characters exhibited by this species significantly reduces the morphological space that existed between the genera *Berosus* and *Hemiosus*.

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