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Article


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A new subfamily of the water mite family Limnesiidae, with the description of *Spinilimnesia insolitipes* n. gen. n. sp. from Brazil (Acari: Hydrachnidia)

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Abstract

A water mite species new to science is described after a male very unusual in shape, collected in the state of Mato Grosso, Brazil. The specimen is obviously a representative of the family Limnesiidae, but differs from all other limnesiids in the fourth leg very unusual in shape, and from most members of the family also in the absence of Cxgl-4 and in a male genital field with movable genital flaps. In view of these particular character states, a new genus, *Spinilimnesia* n. gen., subfamily, Spinilimnesiinae nov. subfam. are proposed in the system of water mites.

Key words Spinilimnesiinae, new genus, new species, South America.

Introduction

The family Limnesiidae Thor consists of 13 subfamilies (in brackets the distribution, after Smit 2020), i.e. Epallagopodinae K. Viets (Neotropics), Kawamuracarinae K. Viets (all bioregions except Australasia), Limnesiinae Thor (worldwide), Mixdeinae Orghidan & Gruia (Neotropics), Mixolimnesiinae Cook (South America), Neomamersinae Lundblad (Nearctic, Neotropics), Neotorrenticolinae Lundblad (Neotropics), Nicalimnesiinae Cook (Oriental), Protolimnesiinae K. Viets (with one exception Nearctic, Neotropics), Psammolimnesiinae Cook (Neotropics), Raptorhydracarinae Pešić & Gerecke (Oriental), Rheolimnesiinae Goldschmidt (Neotropics) and Tyrrelliinae Koenike (Nearctic, Neotropics)(Smit 2020). So far, from South America representatives of seven of these subfamilies are known (Rosso de Ferradás & Fernández 2005), from Brazil only Limnesiinae, Neotorrenticolinae, Protolimnesiinae and Tyrrelliinae.

For the species described below from Brazil we erect a monotypic genus and a subfamily new to science.

Material and methods

The material was collected by Matthias Wantzen, a former student of Jürgen Schwoerbel, in the course of a project on floodplain and wetland management at the Federal University of Mato Grosso, Brazil. All his material, along with material collected in that area by other specialists, is lodged as part of the collection Schwoerbel in the Senckenberg Naturmuseum, Frankfurt am Main.

The following abbreviations are used: Cx-I –Cx-IV – coxae I to coxae IV; Cxgl-1-4 – coxoglandularia 1 to 4; I- to IV-leg-1-6 – first to sixth segments of first to fourth leg; P1-5 – first to fifth palp segment; Vgl-4 – ventroglandularia 4. Measurements of leg and palp segments are of the dorsal margin. The specimen described here was probably fixed in ethanol. Before mounting, it was cleared with Proteinase K and ATL-buffer fluid, then slide-mounted in gelatine-glycerine.

Systematics

Family Limnesiidae Thor

Spinilimnesiinae n. subfam.

<https://zoobank.org/urn:lsid:zoobank.org:act:E6BFE738-B8A0-478E-8D60-294370421FF1>

Diagnosis. Male (female unknown): Integument soft. Dorsum with a pair of platelets bearing the postocularia and a larger posterodorsal platelet, lateral eyes small, lying below the integument. Coxae in four groups, Cxgl-4 absent. Posterior to the genital field a large plate with the excretory pore and Vgl-2 and Vgl-4. Genital field with a small pregenital sclerite and paired genital flaps bearing five pairs of acetabula. Palp five-segmented, P-2 without a ventral projection, distoventrally a seta normal in shape., P-4 nearly equal in H from base to tip, with a blunt projection bearing a long seta in distal half and a further longer seta near P-5 insertion. Legs without swimming setae. IV-leg-1 strongly thickened, with rounded dorsal margin, IV-leg-5 with four extremely enlarged, stout ventral setae at regular distance, IV-leg-6 without claws inserted subdistally, short and narrow, with a short subterminal seta.

Type genus: *Spinilimnesia* n. gen.

Remarks. Based on the acetabula lying on the genital flaps, and IV-leg-6 without a claw, we assigned the new subfamily to Limnesiidae, a family embracing a wide variety of taxa with diverging adaptations, and thus difficult to define. The presence of movable genital flaps in males is rarely found in this family, as general feature in members of the subfamilies Epallagopodinae, Tyrrelliinae and Rheolimnesiinae (Smit 2020), but as an exceptional case also in a subspecies of *Limnesia* (Limnesiinae, Gerecke 1991). Absence of Cxgl-4 is reported for the Rheolimnesiinae which differ from the new taxon described here in the male sex in acetabula located not on, but between the genital flaps. In Tyrrelliinae, Cxgl-4 are present and the acetabula are lying on the genital flaps in both sexes (see Goldschmidt 2004). In Epallagopodinae the acetabula are also on movable flaps in the male, but differ in the presence of Cxgl-4 and a very long P5. Males of all species of these three subfamilies do not have the unusual fourth leg as described below.

***Spinilimnesia* n. gen.**

<https://zoobank.org/urn:lsid:zoobank.org:act:BEF223E6-BA77-4C67-85C6-8963B18337BD>

Diagnosis. As for subfamily.

Type species: *Spinilimnesia insolitipes* n. sp.

Etymology. Named after the thorny setae of the fourth leg.

Spinilimnesia insolitipes n. sp.

<https://zoobank.org/urn:lsid:zoobank.org:act:B53F4221-E7EC-40E7-A07D-F881FBD5BE4F>

Figs 1-2

Material examined. Holotype male, Rio Cuiabá, Córrego Ajuricaba, in marshy forest, 15°49'16" S 55°13'3" W, Mato Grosso State, Brazil, November 22, 1994, leg. M. Wantzen (Senckenberg Naturmuseum, Frankfurt am Main).

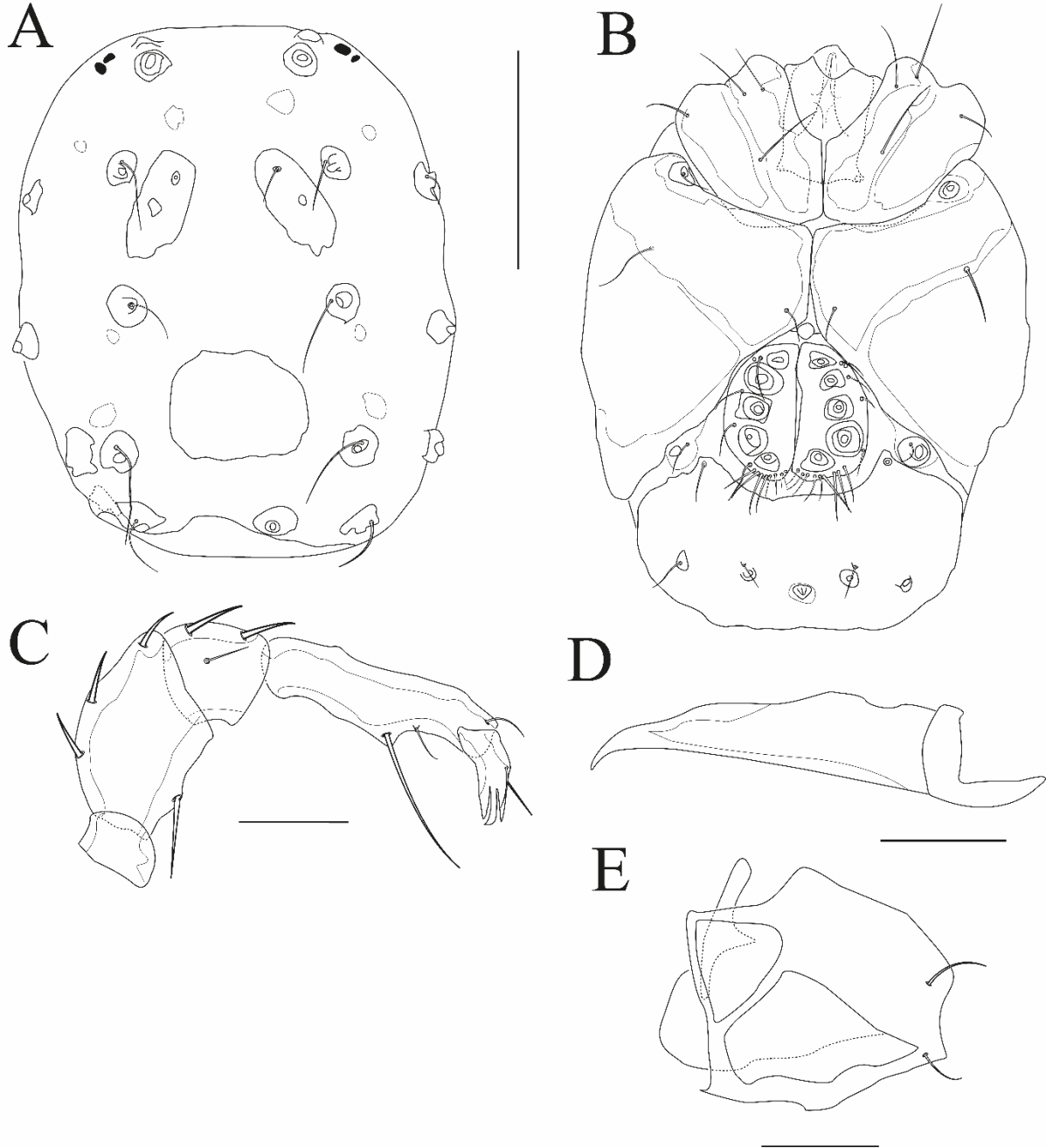


Figure 1. *Spinilimnesia insolitipes* n. sp., A – dorsum; B – venter; C – palp (medial view); D – chelicera; E – gnathosoma. Scale bars: A-B = 200 μ m, C-E = 50 μ m.

Description. Male: Idiosoma colour reddish, dorsally 486 long and 405 wide, ventrally 519 long. Integument soft. Idiosoma anterodorsally with a pair of postocularia platelets, 104-108 long and 52-54 wide. Posterodorsally a relatively large platelet, 96 long and 130 wide (Fig. 1A). Besides the aforementioned platelets, four more pairs of small dorsal platelets present. Gnathosoma 110 long (Fig.

1E). Coxae in four groups, Cx-I separated medially, Cxgl-4 absent (Fig. 1B). Genital field 124 long and 128 wide, with five pairs of acetabula of different size, ranging in shape from rounded to rectangular. Genital flaps bearing at outer margin 10-15 fine setae of moderate length, 4 in anterior and central part, the remaining posteriorly. Anterior to the genital flaps a small rounded pregenital sclerite. Vgl-1 and-3 between genital field and Cx-IV. Ejaculatory complex not well visible but very likely small. Posterior to the genital field a large plate with the excretory pore and Vgl-2 and Vgl-4, which extends onto the dorsum.. Length of P1-5: 18, 84, 46, 108, 34. P1 without setae; P2 with three dorsal setae and one distoventral seta (short and not thickened, not on a tubercle); P3 with three setae, two dorsally and one medially; P4 with a small dorsal hump in proximal part, one long ventral seta associated with a pointed tubercle; P5 with three large claws (Fig. 1C). Shape and setation of legs as given in Figs 2 A-D, all without swimming setae. Length of I-leg-1-6 (Fig. 2A): 54, 56, 68, 88, 114, 110; length of II-leg-1-6: 52, 68, 82, 110, 136, 130; length of III-leg-2-6 (Fig. 2B, lost during mounting): 62, 85, 162, 154, 163. Length of IV-leg-1-6: 102, 76, 90, 90, 140, 96. IV-leg-1 enlarged, much larger than other segments of the leg; IV-leg-5 ventrally with four large, stout blunt setae arranged at regular distances, the distal one more slender and more curved (Fig. 2C-D). IV-leg-6 short and slender, inserted sub-distally, with three setae, two fine ventrally, a slightly longer one sub-distally, the latter 34 long.

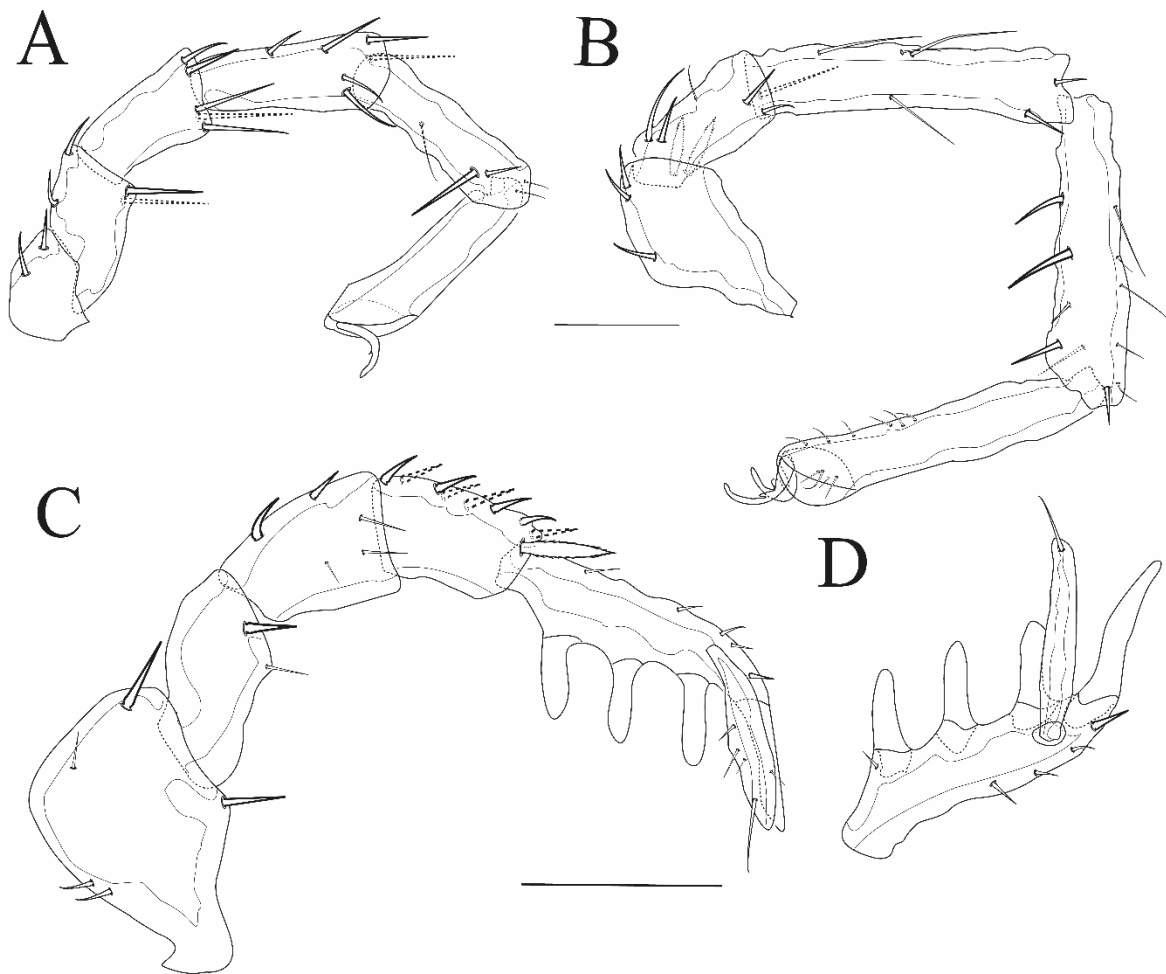


Figure 2. *Spinilimnesia insolitipes* n. sp. A – I-leg-1-6; B – III-leg-1-6; C – IV-leg-1-6; D – IV-leg-5-6. Scale bars: A-B (upper bar), C-D (lower bar) = 100 μ m.

Female: Unknown.

Etymology. Named for the unusual fourth leg: *insolitus* (Latin) – unusual, strange, *pes* – foot (Latin).

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References

- Gerecke, R. (1991) Taxonomische, faunistische und ökologische Untersuchungen an Wassermilben (Acari, Actinedida) aus Sizilien unter Berücksichtigung anderer aquatischer Invertebraten. *Lauterbornia*, 7, 1–304.
- Goldschmidt, T. (2004) Studies on Neotropical Limnesiidae Thor, 1900. Part II: Tyrrellinae Koenike, 1910 (Acari, Actinedida, Hydrachnidia). *Archiv für Hydrobiologie, Supplement*, 151(1-2), 25–68.
- Rosso de Ferradás, B. & Fernández, H.R. (2005) Elenco biogeografía de los Ácaros acuáticos (Acari, Parasitengona, Hydrachnidia) de Sudamérica. *Graellsia*, 61(2), 181–224.
- Smit, H. (2020) Water mites of the world with keys to the families, subfamilies, genera and subgenera (Acari: Hydrachnidia). *Monografieën van de Nederlandse Entomologische Vereniging*, 12, 1–774.