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## First report of geophilid centipedes of the genus *Ribautia* (Myriapoda: Chilopoda: Geophilomorpha) from the Atlantic Forest biome, with description of a new miniature species from Misiones Province, Northeastern Argentina

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### Abstract

*Ribautia paranaensis* sp. nov. a new miniature species of geophilid centipede from the Upper Paraná Atlantic Forest (the westernmost of the fifteen ecoregions comprising the Atlantic Forest biome *sensu* Di Bitetti *et al.* 2003), is herein described and illustrated. The new species is characterized by having the coxal organs grouped in clusters (one of these in each coxopleuron of the ultimate leg-bearing segment) and a claw-like pretarsus in the ultimate legs; these traits being shared by three other Neotropical members of the genus, *i.e.*, *R. combinata* Pereira, Uliana & Minelli, 2006 (from the Amazonian rainforest of Peru), *R. jakulicai* Pereira, 2007 (from the Yungas rainforest of Northwestern Argentina), and *R. lewisi* Pereira, 2013 (collected in a gallery forest in the Mesopotamian region, Northeastern Argentina). *R. paranaensis* sp. nov. represents the first report of *Ribautia* Brölemann, 1909 in the entire Atlantic Forest biome, and the third confirmed record of the taxon from Argentina.

**Key words:** Chilopoda, Geophilomorpha, Geophilidae, *Ribautia*, miniature new species, Atlantic Forest biome, Neotropical Region

### Introduction

The geophilomorph centipede genus *Ribautia* Brölemann, 1909 is the most species-rich and widespread of the geophilid genera in the Neotropical Region, in which it is currently known from South American mainland. Thirteen species have been recorded from Peru, one from Colombia and Guyana, one from Brazil and Colombia, one from Brazil and French Guiana, five from Brazil only, one from Ecuador, two from Venezuela, one from Bolivia, and two from Argentina (in addition to the new species described below). The taxon also occurs in the Arabian Peninsula, mainland Africa, Madagascar, Australia, New Caledonia, Loyalty Islands and New Zealand (Pereira *et al.* 1997; Minelli 2006; Pereira 2007, 2008, 2010, 2013b; Bonato *et al.* 2009).

Of the Neotropical species included in *Ribautia*, 11 are characterized by having all the coxal organs opening separately; of the 16 remaining taxa, one is distinguished from the others by having an independent, freely opening coxal organ and a cluster of coxal organs in each coxopleuron of the ultimate leg-bearing segment; in the other 15 (in addition to the new species proposed herein) all coxal organs are grouped in clusters (having either, one, two or three of these in each coxopleuron).

The Neotropical members of *Ribautia* can be found in a wide variety of environments, at elevations ranging from low altitudes above sea level (*e.g.*, species inhabiting the Amazonian rainforest), up to *ca.* 4000 m a.s.l. (high altitude species living in the Andes).

The purpose of the present contribution is to describe a new miniature species of *Ribautia* from Misiones Province (Mesopotamian region), Northeastern Argentina, which represents the first report of the genus in the Atlantic Forest biome. The Atlantic Forest is one of the most diverse and threatened ecosystems on the Earth, with

rain forest environment (Yungas biogeographical province) and *R. lewisi* from Northeastern region, collected in a gallery forest in the Mesopotamia (within the Pampean biogeographical province). A further very poorly known nominal species from this country, originally described by Filippo Silvestri in the genus *Orinophilus* Cook, 1896 (i.e., *O. platensis* Silvestri, 1898, from Buenos Aires Province), could possibly belong to *Ribautia*, but no definite generic allocation is possible without the examination of the type material (Foddai *et al.* 2000; Pereira 2007, 2013b).

As is the case for *Ribautia paranaensis* **sp. nov.** (with 12 mm body length), a few other Neotropical species of *Ribautia* have a similar small body size: *R. combinata* Pereira, Uliana & Minelli 2006 (9 mm long); *R. onychophaena* Pereira, Foddai & Minelli, 2000 (13 mm long); *R. ducalis* Pereira, Minelli & Barbieri, 1995; *R. tropica* (Brölemann, 1898); and *R. silvana* Kraus, 1954 (all 14 mm long). Several other occurrences of species with reduced body size are known for the Geophilomorpha; besides the Geophilidae, this is known to occur in some genera of the Aphilodontidae, Ballophilidae, Linotaeniidae, Macronocophilidae, Mecistocephalidae, and Schendylidae (see Foddai & Minelli 1999; Foddai *et al.* 2003; Minelli 2003; Minelli *et al.* 2000; Pereira 2009, 2011, 2012, 2013a, 2013c, 2013d; Pereira *et al.* 2000; Uliana *et al.* 2007).

The spermathecae of *R. paranaensis* **sp. nov.** are conspicuously elongated (Fig. 70), while those of two other miniature geophilomorph species, e.g. *Ityphilus bonatoi* Pereira, 2013 (Ballophilidae) (Fig. 71) and *Schendylops ramirezi* Pereira, 2013 (Schendylidae) (Fig. 72), are subovoidal in shape and proportionally much smaller. Relative accumulation of spermatozoa and their arrangement are also different in *R. paranaensis* (Fig. 70) in respect to *I. bonatoi* (Fig. 71) and *S. ramirezi* (Fig. 72). Possible significance of these aspects in sperm transfer and fertilization process remains to be investigated.

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