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## Three new species of *Thrasychiroides* Soares & Soares, 1947 from Brazilian Mountains (Opiliones, Eupnoi, Neopilionidae)

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### Abstract

Three new species of the genus *Thrasychiroides* are described from the Brazilian Atlantic Rain Forest mountains: *Thrasychiroides moporanga* sp. nov. (type locality: Reserva Biológica de Alto da Serra de Paranapiacaba, State of São Paulo), *T. toryba* sp. nov. (type locality: São Francisco de Paula, State of Rio Grande do Sul) and *T. ybytyra* sp. nov. (type locality: Parque Nacional do Itatiaia, State of Minas Gerais). The male genital of *Thrasychiroides brasiliensis* Soares & Soares, 1947 is illustrated for the first time. A remarkable structure on the penis of *Thrasychiroides* species is described and defined as pair of “arms”, also considered a putative synapomorphy of the genus.

**Key words:** Atlantic Rain Forest, Enantiobuninae, taxonomy, harvestmen, penis morphology, phylogeny

### Introduction

The family Neopilionidae has more than 60 described species (Kury 2014; Taylor 2011, 2013) of southern Hemispheric-Gondwanan distribution (see map on Šilhavý 1970), and is divided into three subfamilies: Neopilioninae (2 spp., South Africa); Enantiobuninae (49 spp., Australia, New Zealand, Chile, Argentina and Brazil) and Ballarrinae (10 spp., Australia, South Africa and Chile). A morphological revision of the family was conducted by Hunt & Cokendolpher (1991) and Cokendolpher (2007). Taylor (2011) conducted a morphological cladistic analysis of the family, including 13 of the 18 included genera, which resulted in the synonymy of Monoscutidae under Neopilionidae. Regarding the taxonomy of Enantiobuninae, Taylor (2011) concluded that the southern Neotropical genus *Thrasychirus* Simon, 1884 is sister group to *Australiscutum* Taylor, 2009 from Australia because they share a synapomorphic mobile junction between the leg basitarsus and distitarsus, and distoventral spines on that junction. The latter feature reversals to the plesiomorphic condition outside Enantiobuninae (Taylor 2011). However, he did not include a representative of the single Neotropical genus, *Thrasychiroides* Soares & Soares, 1947a, in the analysis.

The genus *Thrasychiroides* was described by Soares & Soares (1947a) in Leiobuninae (Phalangiidae) based on a male named *T. brasiliensis* Soares & Soares, 1947a, from Banhado, in the Atlantic Rain Forest within the State of Paraná, Southeastern Brazil. The authors did not provide a description of the penis. In the same work, they indicated a possible relationship of this genus with the Chilean/Argentinean genus *Thrasychirus* and diagnosed it by lack of a median apical apophysis in the pedipalpal patella (Soares & Soares 1947a). The same authors later described the female of *Thrasychiroides brasiliensis* and stated that it was similar to the male, differing only in cheliceral size (Soares & Soares 1947b). These specimens were the only two members of *Thrasychiroides* recorded from Brazil.

Šilhavý (1970) transferred both *Thrasychiroides* and *Thrasychirus* to the Neopilionidae Enantiobuninae; he did not explicitly include the former in this family, although the transfer was mentioned in his figure 14 and references (see Cokendolpher 1984).

characters and phylogeny of enantiobunines, and, together with Axel Schönhofer, Prashant Sharma and James C. Cokendolpher, provided helpful comments on an earlier version of this manuscript. This study was supported by International Postdoctoral Grant (CNPq #200972/2013-8), the Fundação Lemman for a Lemman Additional International Fellowship and Science Without Borders (CAPES/PVE #003/2012) to ALT, CNPq (RPR), FAPESP (#2009/17206-5, #2012/02969-6, #2009/07063-2; BIOTA, #2013/50297-0), NSF (DOB #1343578), and NASA.

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