



New familial assignment for two harvestmen species of the infraorder Grassatores (Arachnida: Opiliones: Laniatores)

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Incorporating masculine genitalic characters into Opiliones taxonomy has produced important revisions in the systematics of this group of arachnids. Currently, the inclusion of penis morphology in the description of any taxon of Phalangida (harvestmen with penis: Eupnoi + Dyspnoi + Laniatores, as used in Pinto-da-Rocha *et al.* 2007) has become an almost “mandatory” standard (*e.g.* Acosta *et al.* 2007), and opilionologists have been working to establish the masculine genital pattern for each family (*e.g.*, Martens 1986; subchapters in Pinto-da-Rocha & Giribet 2007). Still, in the infraorder Grassatores the diversity in penis morphology is enormous and much structure and functionality remains poorly understood. Unfortunately, for many of the described Grassatores, the genitalia are entirely unknown, and this constitutes an important impediment to reliable familial assignment (*e.g.*, in Kury 2003, 41 genera were considered as *incertae sedis*). This problem is quite relevant to “phalangodid-like” genera, considering their rather homogeneous external appearance but highly diverse genitalia (Martens 1988). One of the most illustrative examples is the subfamily Tricommatinae Roewer, 1912, that has been originally described under Phalangodidae, but which has a male genitalia groundplan matching the Gonyleptoidea, a very distant superfamily (Giribet *et al.* 2010). Consequently it was raised to a separate family, closer to the Gonyleptidae than to the Phalangodidae (Kury 1992), and finally regarded as a member of Gonyleptidae (Kury 2003).

While revising the members of Samoidae and the Brazilian Grassatores *incertae sedis* in the Naturmuseum Senckenberg, Sektion Arachnologie (SMF) in Frankfurt am Main, Germany, I had the possibility to study two harvestmen species whose male genitalia were previously unknown and whose systematic placement remained obscure even after the comprehensive systematic overview offered in Pinto-da-Rocha & Giribet (2007). The male genitalia of both species exhibit characters to support their new familial assignments.

The penial morphology nomenclature follows the recent taxonomical works: In Zalmoxidae the *stragulum* refers to a glans rigid sclerite articulated to the truncus like a jackknife (Kury & Pérez-González 2007; Macias-Ordoñez *et al.* 2010). The truncus *lamina ventralis* is divided into two tagmata: the distal *rutrum* which is hammer or spade shaped, usually bearing two pairs of paramedian setae, and the basal *pergula* which is a girdle bearing two to four pairs of erect setae (Kury & Pérez-González 2007). In Podoctidae the definition of *follis* follow Macias-Ordoñez *et al.* (2010), synonymies: “lamellar sac” in Martens (1986) and Kury & Machado (2009); “inflatable sac” in Kury (2007); for further details of Podoctidae male genitalia see the same bibliography. The method of male genitalia preparation and illustration follows Acosta *et al.* (2007).

Taxonomic account

Zalmoxidae Sørensen, 1886

***Pirassunungoleptes* H.E.M.Soaes, 1966**

***Pirassunungoleptes analis* (Roewer, 1949) new combination, new familial assignment**

(Figs 1 a–e)

Phalangodinus analis Roewer, 1949: 14, pl. 2, figs 9 a–f [Phalangodidae: Phalangodinae]; Kury 2003: 27. [Grassatores *incertae sedis*]