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Systematic review of *Promitobates* Roewer, 1913 and cladistic analysis of Mitobatinae Simon, 1879 (Arachnida: Opiliones: Gonyleptidae)

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Abstract

A cladistic analysis of the genera of Mitobatinae and species of *Promitobates* Roewer, is presented. Only one equally most parsimonious tree was obtained (L=273, CI=0.36; RI=0.73) from a data matrix of 77 equally weighted characters. Mitobatinae is recovered as a monophyletic group, with low Bremer support, sister to ("Pachylinae" + Bourguyiinae). *Despirus parvulus*, Roewer is sister to the remaining mitobatines, which are divided into two major clades: [1] one that possesses a roughly rectangular body, and males and females with coxa and trochanter IV without large apophyses, including the genera *Ischnotherus* Kury, *Encheiridium* Kury, *Metamitobates* Roewer, *Ruschia* Mello-Leitão, *Mitobatula* Roewer, and *Mitobates* Sundevall; and [2] one that possesses the body roughly pyriform, with evident sexual dimorphism of coxa and trochanter IV, in which males have a large apophysis on coxa IV and tubercles on trochanter IV, including the genera *Discocyrtoides* Mello-Leitão, *Longiperna* Roewer, *Neoancistrotus* Mello-Leitão, and *Promitobates*. A taxonomic review of *Promitobates* and a new classification of its species, supported by results of the cladistic analysis, are presented. Based on these results *P. intermedius* (Mello-Leitão) **comb. n.**, and *P. nigripes* (Mello-Leitão) **comb. n.**, are revalidated

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and removed from the synonymy of *P. ornatus* (Mello-Leitão). The following synonymies are proposed: *Leonardosia nitida* Mello-Leitão = *P. nigripes* (Mello-Leitão), *Ancistrotellus hauseri* Šilhavý = *P. viridigranulatus* (Soares & Soares), *P. margaritatus* Roewer, 1931 = *P. ornatus* (Mello-Leitão, 1922) and *P. mendax* H. Soares, 1945 = *P. hatschbachi* H. Soares. *Promitobates granulosissimus* Mello-Leitão and *P. hexacanthus* Koch are considered *species inquirendae*. Four new species from Brazil are described: *P. ale* **sp. n**. (type locality: Ano Bom, Santa Catarina); *P. trapista* **sp. n.** (type locality: Reserva Morro Grande, São Paulo); *P. weissbier* **sp. n.** (type locality: Ribeirão Pires, São Paulo), and *P. lager* **sp. n.** (type locality: Jacarepaguá, Rio de Janeiro).

Key words: Atlantic Rain Forest, intraspecific variation, Neotropical Region, polymorphism

Introduction

The family Gonyleptidae, the largest of the suborder Laniatores, includes to date 16 subfamilies and 823 described species (Kury 2003), all Neotropical and mostly from the Brazilian Atlantic Rain Forest. Nine subfamilies are exclusive and two occur mainly in this region (Pinto-da-Rocha *et al.* 2005), including Mitobatinae.

Mitobatinae was described by Simon (1879), and characterized by the following combination of characters: pedipalps robust and longer than body, with thick, compressed and slightly dorsally curved femur; and dorsal scutum always longer than wide, slightly pyriform or almost rectangular. Simon included in the subfamily the following six genera: *Mitobates* Sundervall, *Goniosoma* Perty, *Asarcus* Koch, *Phalangodus* Gervais, *Ampycus* Simon, and *Cranaus* Simon. Roewer (1913) removed *Goniosoma, Asarcus, Phalangodus, Cranaus* and *Ampycus* from the subfamily, transferred *Ancistrotus* Koch and *Leptocnema* Koch to Mitobatinae, and proposed four new genera: *Promitobates* Roewer, *Metamitobates* Roewer, *Metasarcus* Roewer, and *Neomitobates* Roewer. In the same monograph, Roewer (1913) stated that the most distinctive feature for this subfamily was the unarmed and very long male femur IV. However, this same feature was also used to define Bourguyiinae, described a few years later (Mello-Leitão 1923). Both subfamilies were distinguished only by the number of transverse grooves on dorsal scutum: five for Bourguyiinae and four (fusion of areas III and IV) for Mitobatinae. Nevertheless, this feature is variable and several taxa were placed in both subfamilies. Roewer included *Bugabitia* Roewer and in 1931, included more four genera: *Mitoperna* Roewer, *Mitobatoides* Roewer, *Roeweria* Roewer and *Mitobatula* Roewer. Only a few species were described between Roewer's work and the revisionary studies of Kury (1989a; 1989b, 1990a; 1990b, 1991a; 1991b; 1991c, 1992a, 2003), in which many synonymies, new species, and transfers to other subfamilies were established. Kury (2003) proposed the genera *Ischnotherus* Kury and *Encheiridium* Kury, redescribed *Longiperna* Roewer (placed before in Bourguyiinae and recently revised by Pinto-da-Rocha & Bragagnolo 2010) , transferred *Iporangaia* Mello-Leitão and *Leptocnema* Koch to Progogyleptoidellinae (Kury & Pinto-da-Rocha 1997 and Kury 1994a, respectively), *Asarcus* and *Cnemoleptes* Mello-Leitão to Bourguyiinae (Kury 1994b and Kury 2000—the latter synonymized with *Asarcus* by Yamaguti & Pinto-da-Rocha, 2009), *Bugabitia* to Manaosbiidae (Kury 1997), *Metasarcus* to Metasarcinae (Kury 1994b), *Mitobatulina* Mello-Leitão to Cranaidae (Kury 2003), *Mitoperna* to Gonyleptinae (Kury 1995) and *Roeweria* to Pachylinae (Kury 2003). Thus, in the catalogue of New World Laniatores (Kury 2003), Mitobatinae was comprised by 11 genera and 45 species. After this publication, the only paper dealing with Mitobatinae systematics was the review of genus *Longiperna*, in which two new species were described and five new synonymies were proposed (Pinto-da-Rocha & Bragagnolo 2010).

The only cladistic hypothesis for genera of Mitobatinae is that of unpublished Adriano B. Kury's M.Sc. dissertation (Kury 1991d). He proposed generic-level relationships with 16 species as terminal taxa, representing 10 genera of the subfamily, and polarized characters employing one unidentified species of *Discocyrtus* Holmberg (Pachylinae) + *Despirus* (called "Discocyrtinae" by Kury 1991d; group not published), and a hypothetical all-zero ancestor constructed based on the two above-mentioned out-groups plus Bourguyiinae. His analyses were performed using 26 qualitative and 31 quantitative characters and resulted in five equally most parsimonious trees (with equally weighted characters), and one tree with successive weighting. According to the latter hypothesis the phylogeny of the group was a pectinate tree with *Discocyrtoides* Mello-Leitão as the basal-most genus (Fig. 1).

The genus *Promitobates* was proposed by Roewer (1913) to include *Ancistrotus hexacanthus* Koch, 1839, based on a single specimen deposited in the Imperial Collection of the Habsburgs, in Vienna. The monotypic genus *Promitobatoides* (Mello-Leitão, 1927) was established for *Neomitobates ornatus*. The same author established the genus *Batomites* (Mello-Leitão, 1934) for *B. spitzi* and *B. difficilis*. A year later, Mello-Leitão (1935a) described *B.*