Notes on *Geraecormobius clavifemur* (Mello-Leitão, 1927) and description of *Geraecormobius reitzi* n. sp. (Arachnida: Opiliones: Gonyleptidae)

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Abstract

Four nominal southern Brazilian species of Gonyleptinae are studied: *Geraecormobius clavifemur* (Mello-Leitão, 1927), *Mischonyx meridionalis* (Mello-Leitão, 1927), *Ariaeus tuberculatus* Sørensen, 1932 and a new species of *Geraecormobius* Holmberg, 1887. *Mischonyx meridionalis* and *Ariaeus tuberculatus* are herein considered junior subjective synonyms of *Geraecormobius clavifemur*. *Ariaeus* Sørensen, 1932 is herein considered a junior subjective synonym of *Geraecormobius*. New records are recorded for *G. clavifemur*, hitherto known only from the type locality, Blumenau, Santa Catarina state, Brazil. *Geraecormobius reitzi* n. sp., is described from Santa Catarina state, Brazil and considered closest to *G. clavifemur*, based upon general aspects of external morphology. The two species occur at different altitudes. *G. clavifemur* inhabits the lower part of the Atlantic Plateau of Santa Catarina at 0 to 300 m, whereas *Geraecormobius reitzi* n. sp. occurs at higher elevations.

Key words: Laniatores, *Mischonyx*, taxonomy, synonymy, Brazil, Santa Catarina state

Introduction

Gonyleptidae is the largest family of Laniatores and is endemic to South and Central America. The subfamily Gonyleptinae, with 142 species in 39 genera, occurs only in South America and is a group typical of Atlantic forests (Kury, 2003).

The very heterogeneous gonyleptine genus *Geraecormobius* Holmberg, 1887, has sixteen nominal species distributed from Argentina and Paraguay to southern and southeastern Brazil.
Mello-Leitão (1927) described two species from Blumenau, in Santa Catarina state, southern Brazil: *Geraecormobius clavifemur* (Mello-Leitão, 1927) and *Mischonyx meridionalis* (Mello-Leitão, 1927). *G. clavifemur* was described in the genus *Weyhia* Roewer, 1913, later synonymized with *Geraecormobius* Holmberg, 1887 (Mello-Leitão 1940). This species is known only from the male holotype. *Ilhaia meridionalis* Mello-Leitão, 1927 (transferred to *Mischonyx* Bertkau, 1880 by Kury, 2003), was described on the basis of a single female. Hermann Luederwaldt collected both individuals in the same expedition to Blumenau.

The types of the two species were compared with specimens from Blumenau and other localities of the Santa Catarina state. The comparison of this material offered evidence to identify *M. meridionalis* with *G. clavifemur*. Therefore, the synonymy of these species is here proposed. As both were published in the same paper, *G. clavifemur* is here considered as the senior synonym by the principle of the first reviser. *Ariaeus tuberculatus* Sørensen, 1932, the only species of *Ariaeus* Sørensen, 1932, is here also considered a synonym of *G. clavifemur* and, consequently, *Ariaeus* is recognized as synonym of *Geraecormobius*.

In the end, the analysis of specimens from localities of Santa Catarina has shown the existence of a new species that is here described and included in *Geraecormobius*. The new species presents some features which do relate it more closely to *G. clavifemur* than to any other species of Gonyleptinae.

**Material and methods**

Material examined and the types of new species are deposited in the following Brazilian collections: Museu Nacional (MNRJ), Rio de Janeiro; Museu de Zoologia de São Paulo (MZSP), São Paulo.

All measurements are in millimeters. The following abbreviations are used: TL: total length (total length of the body in dorsal view); CL: carapace length; CW: carapace width; AW: abdomen width; LACx: length of the prolateral apophysis of coxa IV; FL: femur length; FW: maximal width of femur; DBAd: distance of the dorsobasal apophysis to base of the femur IV; RLAd: distance of the retrolateral apophysis to base of the femur IV.

**Taxonomy**

*Geraecormobius* Holmberg, 1887

*Weyhia* Roewer, 1913; Kury 2003: 124 (see synonymy therein).
*Ariaeus* Sørensen, 1932 (type species *A. tuberculatus* by monotypy). NEW SYNONYMY (see synonymy of *A. tuberculatus* below).
Geraecormobius clavifemur (Mello-Leitão, 1927)
Figs. 1–9

Weyhia clavifemur Mello-Leitão, 1927 (♂ holotype MNRJ 1496, examined); Kury, 2003: 124 (see synonymy therein).
Ilhaia meridionalis Mello-Leitão, 1927 (♀ holotype MNRJ 1474, examined). NEW SYNONYMY.
Ariaeus tuberculatus Sørensen, 1932 (♀ holotype, Natural History Museum London, not examined). NEW SYNONYMY.

Type locality: Brazil: Santa Catarina state: Blumenau.
New records: Brazil: Santa Catarina state: Itajaí and Florianópolis.

Diagnosis: Anterolateral margin of the carapace with tiny spines. Frontal hump high with two strong paramedian spines. Abdominal scute densely granulated. Free tergites unarmed in males and mostly armed in females. Coxae IV of the male with short prolateral apical apophysis. Femur IV of the male with strong dorsobasal apophyses and dorsal row of three to four robust spines.

Measurements (n=10, ♂♂): Average (± standard deviation). TL: 7.1 (± 0.69); CL: 2.3 (± 0.13); CW: 3.0 (± 0.11); AW: 5.7 (± 0.53); LACx: 1.5 (± 0.18); FL: 5.4 (± 0.24); FW: 0.8 (± 0.18); DBAd: 1.4 (0.26); RLAd: 2.9 (± 0.23).

Tarsal formula (n=10, ♂♂): 6(3)/10–12(3)/7/8.

Species description:
Body: As in Geraecormobius reitzi n. sp (see below).
Pedipalp: Trochanter with one ventral tubercle. Femur and patella smooth. Tibia with four setae (IiIi) at each ventro-ectal and ventro-mesal borders. Tarsus with three setae (IiI) at each ventro-ectal and ventro-mesal borders.


Color (in 70% ethanol): Body background brown. Abdominal scutum lighter than carapace. Venter lighter than dorsal.
♀: The female lacks most diagnostic characters present in males, as do most female Gonyleptinae. Free tergites with unpaired small spines.

Measurements (n=10, ♀♀): Average (± standard deviation). TL: 6.9 (0.54); CL: 2.2 (± 0.10); CW: 3.0 (± 0.10); AW: 5.1 (± 0.20).
FIGURES 1–4. *G. clavifemur* (MZUSP 18345). 1. male, dorsal view. 2. male lateral view. 3. female dorsal view. 4. pedipalpus of the male, ventral. Scale bars: 1 mm.
FIGURES 5–9. *G. clavifemur* (MZUSP 18345), male. 5. leg IV, dorsal view. 6. leg IV, ventral view. 7. penis, dorsal view. 8. penis, lateral view. 9. chelicera, dorsal. Scale bars 5–6, 9: 1 mm; 7–8: 0.1 mm.
Comments: The synonymy of *Ariaeus tuberculatus* with *Geraecormobius claviferum* was based in the examination of some photographs (taken by J.P. Guadanucci in the ZMUC) of the female holotype of *A. tuberculatus*, which match exactly with a female of *G. claviferum*. The holotype of *A. tuberculatus* is clearly a female of Gonyleptinae. Additionally, the spines in the anterolateral margin of the carapace and free tergites and coxa IV lacking apophyses (some females of Gonyleptinae possess a reduced apophysis on coxa IV) serve as evidence for the present synonymy. Also, both species were described from the same locality.

*Geraecormobius reitzi* n. sp.  
Figs. 10–19


**Etymology:** The name is in honor to the late priest and naturalist Dr. Raulino Reitz (1918–1990), founder of the Parque Botânico do Morro do Baú.

**Diagnosis:** The new species closely resembles *G. claviferum*, from which it is easily separated by the shape of dorsobasal apophysis of the femur IV. In *G. claviferum* the dorsobasal apophysis is simple, whereas in the new species it is branched.

**Measurements (n=10, ♂♂):** Average (± standard deviation). TL: 7.3 (± 0.67); CL: 2.5 (± 0.18); CW: 3.3 (± 0.22); AW: 6.3 (± 0.60); LACx: 1.5 (± 0.22); FL: 5.3 (± 0.28); FW: 0.8 (± 0.13); DBAd: 1.7 (0.34); RLAd: 2.7 (± 0.26).

Description of holotype ♂:

**Measurements:** TL: 7.4; CL: 2.6; CW: 3.5; AW: 6.5. Pedipalp: Trochanter: 0.6; Femur: 1.7; Patella: 0.9; Tibia: 1.1; Tarsus: 1.1. Leg I: Trochanter: 0.6; Femur: 2.7; Patella: 0.9; Tibia: 2.0; Metatarsus: 3.1; Tarsus: 1.9. Leg II: Trochanter: 0.8; Femur: 5.9; Patella: 1.3; Tibia: 4.3; Metatarsus: 5.7; Tarsus: 4.3. Leg III: Trochanter: 0.9; Femur: 4.3; Patella: 1.3; Tibia: 2.7; Metatarsus: 4.7; Tarsus: 2.1. Leg IV: Trochanter: 1.1; Femur: 5.3; Patella: 1.6; Tibia: 4.1; Metatarsus: 7.3; Tarsus: 2.4.

**Tarsal formula:** 6(3)/10(3)/7/8.

**Carapace:** Anterolateral margin with small spines. Frontal hump with 1 pair of spines. Eye mound with two spines. Posterior region of the carapace with 1 pair of tubercles.
FIGURES 14–19. *G. reitzi* n. sp. (MNRJ 6949) male. 14. leg IV, dorsal view. 15. leg IV, ventral view. 16. dorsobasal apophysis of the femur IV, lateral view. 17. chelicera, dorsal. 18. penis, lateral view. 19. penis, dorsal view. Scale bars 14–17: 1 mm; 18–19: 0.1 mm.
Abdominal scutum: Scutum densely granulous. Scutal areas with two tubercles each. Tubercles of the area III stronger than others. Granules of the area III larger around the tubercles. Lateral areas with conspicuous tubercles. Posterior margin with row of conspicuous tubercles. Free tergites unarmed.

Pedipalp: Trochanter with two small ventral tubercles. Femur and patella unarmed. Tibia with three setae (III) at ventro-mesal border and three setae (IiI) at ventro-ectal border. Tarsus with two setae (II) at each ventro-ectal and ventro-mesal borders.

Leg IV: Coxa with fine granulation, with lateral apophysis short, posteriorly projecting, with two branches, the inner shorter. Trochanter with strong prolateral apophysis, and three small retrolateral apophyses. Femur sigmoid with robust dorsobasal apophysis forming two branches, retrolateral apophysis approximately in middle of the femur, with prolateral and retrolateral rows of spines.

Venter: Coxa I with three rows of small tubercles. Anal operculum smooth.

Color (in 70% ethanol): Same as in G. clavifemur.

♂ genitalia: Differ from those of G. clavifemur in having only 1 pair, rather than 2, of short dorsodistal setae on the ventral plate.

♀: Very similar to the female of G. clavifemur, but differs in having more robust spines on the free tergites.

Measurements (n=10, ♀ ♂): Average (± standard deviation). TL: 7.8 (±0.80); CL: 2.4 (± 0.12); CW: 3.2 (± 0.18); AW: 5.6 (± 0.29).

Geographical distribution: Brazil: Santa Catarina state: Ilhota (Morro do Baú), Rio dos Cedros (Alto Palmeiras), and São Bento do Sul.

Discussion

According to the roewerian paradigm (Roewer, 1923), G. clavifemur should be included in Geraecormobius due to presence of unarmed free tergites, two tubercles on opisthosomatic area III, two spines in eye mound and pedipalpal femur lacking meso-distal spine. Males of G. clavifemur do not have spines on the free tergites, which are generally present in females. Ilhaia Roewer, 1913 (synonymized with Mischonyx by Kury, 2003), by traditional definition, includes species with armed free tergites. Thus, Mello-Leitão (1927) considered his two specimens (male and female) as two species of two different genera: the male, with unarmed free tergites, as Geraecormobius and the female, with armed free tergites, as Ilhaia.

In practice, females of G. clavifemur and G. reitzi n. sp. cannot be separated. That allows the possibility of the type of I. meridionalis or A. tuberculatus to be a female of G reitzi n. sp. However, the sample available indicates an allopatric occurrence of these species, clearly separated by its distinctive males. Both species have a restricted distribution along a short strip of Atlantic forest in Santa Catarina state. The topography of the coast of Santa Catarina shows high altitudinal variation, with peaks reaching more than 1200 m.
The localities where *G. clavifemur* occurs are at lower altitudes of the coast, with *G. reitzi* n. sp. occurring from middle to top of the Atlantic Plateau.

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**References**

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