

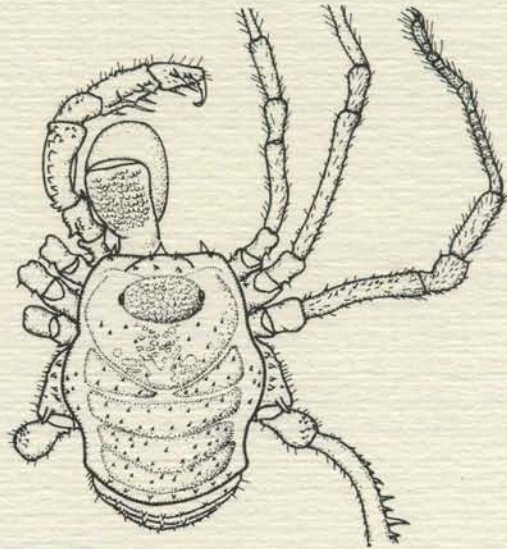
# REVUE ARACHNOLOGIQUE

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TIRÉ À PART

Adriano B. KURY — The genus *Yania* Røewer, 1919, and other presumed Tricommatidae from South American highlands (Opiliones, Cranidae, Prostyginae).



# The genus *Yania* Røewer, 1919, and other presumed Tricommatidae from South American highlands (Opiliones, Cranaidae, Prostyginae)

by Adriano B. KURY\*

## Résumé

Une nouvelle espèce d'opilions Laniatores, *Yania metatarsalis*, est décrite d'Equateur. La position systématique de quelques genres de Tricommatidae et Gonyleptidae est discutée, et nous proposons de placer les genres *Yania* Røewer, 1919, *Zamora* Røewer, 1927, *Ramonus* Røewer, 1956, *Cutervolus* Røewer, 1957 et *Globibunus* Røewer, 1912, anciennement dans les Tricommatidae, dans la sous-famille des Prostyginae. Une nouvelle diagnose est donnée pour cette sous-famille. Quatre sous-familles de Gonyleptidae, à savoir Cranainae, Prostyginae, Heterocranainae et Stygnicranainae, sont placées dans les Cranaidae, élevée au rang de famille et dont nous donnons une nouvelle diagnose.

## Abstract

*Yania metatarsalis*, new species of laniatorid harvestmen, is described from Equador. The familial assignation of some Tricommatidae and Gonyleptidae is discussed. The former Tricommatidae *Yania* Røewer, 1919, *Zamora* Røewer, 1927, *Ramonus* Røewer, 1956, *Cutervolus* Røewer, 1957, and *Globibunus* Røewer, 1912, are newly referred to the Prostyginae, and a new diagnosis is given for this subfamily. Four gonyleptid subfamilies, namely Cranainae, Prostyginae, Heterocranainae, and Stygnicranainae, are placed in Cranaidae, which is newly diagnosed and raised to familial rank.

## Introduction

A review of the Gonyleptidae (KURY, in prep.), the major laniatorid harvestmen group of the Neotropics, is gradually causing deep changes in the systematic of this family. The consequences of the study of a single male collected by Dr. C. Brandão

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(M.Z.U.S.P.) in the Ecuadorian Andes raised, as a snowball, the opportunity for a reappraisal of some problems in gonyleptoid systematics, which are discussed below:

1. At least five genera of South American Gonyleptoidea described as Tricommatidae (recently raised to familial status, KURY, 1992a) on base of superficial similarity, should be reallocated to the Prostyginae.

2. Growing evidence (KURY, 1992a; 1992b) supports the union of four formerly gonyleptid subfamilies, including the Prostyginae, into a newly defined Cranidae.

3. The current definition of Prostyginae (e.g., SOARES et al., 1992) lists only symplesiomorphic traits, so making this taxon a repository for precocious lineages of Cranidae and (not always) related families, e.g., the Agoristenidae *Leptostygnus* Mello-Leitão and *Sabanilla* Røewer (KURY, 1993), and the incertae sedis *Galanomma* Juberthie, unsatisfactorily included in the Prostyginae by JUBERTHIE (1970). A more restrictive diagnosis is suggested below.

The Ecuadorian specimen above cited, is here described as a new species of the Prostyginae, where according to the traditional views (e.g., SOARES et al., 1992), it would form a new genus. Aiming to a more natural classification, I made a comparison with some other Gonyleptoidea. By a phylogenetic reasoning, evidence could be found of a closer relationship with some "Tricommatidae" described from the highlands of Ecuador, specially *Yania flavolimbata* Røewer, 1919. So, the new species is assigned to the genus *Yania* Røewer, and this one, along with four other genera, is included in the subfamily Prostyginae.

Finally, following the trend delineated before (KURY, 1992a; 1992b) and based on the preliminary study of material from the Andes and from the Amazonian lowland forest, I propose here the recognition of Cranidae as a distinct family, including four nominal subfamilies.

Systematic changes are formalized below. The Museu de Zoologia da Universidade de São Paulo is herein abbreviated as M.Z.U.S.P.

## Systematic accounts

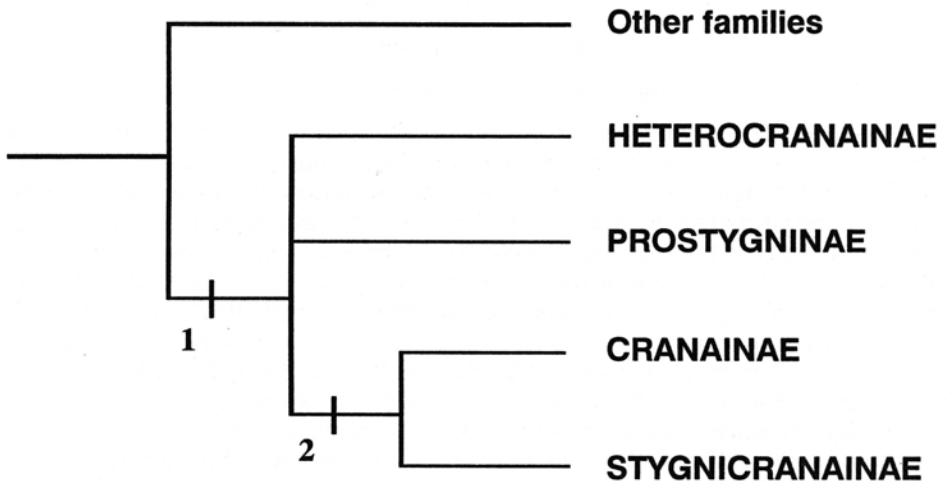
### Cranidae Røewer, 1913: new status

**Diagnosis.** Gonyleptoidea with common eye mound always present, well separated from frontal margin of carapace, either armed with a pair of high sharp spines, or low tubercles. Chelicerae and pedipalps may show sexual dimorphism. Pedipalpal femur not spoon-shaped, with varied armature, sometimes strongly keeled and serrate, sometimes much elongate and smooth only in male; pedipalpal patella and tibia densely covered with dorsal setiferous granules. Well developed tarsal process between posterior claws, coxa IV not surpassing dorsal scute in dorsal view, with weak spination in both sexes. Stylus long and slender, straight with apex slightly swollen, glans without dorsal or ventral processes, ventral plate rectangular, not cleft, without remarkable features.

**Distribution.** Central America, "páramos" of Northern Andes, lowland rain forest of Amazonian Basin, open formation areas at Mato Grosso do Sul, Brazil. The records of Craninae and Stygnicraninae from the Eastern Brazilian forests (Mata Atlântica) are due to mistaken systematic procedures by ROEWER and followers (KURY, 1992b).

**Included nominal subfamilies.** Cranainae Røewer, 1913, Heterocranainae Røewer, 1913, Prostyginae Røewer, 1913, and Stygnicranainae Røewer, 1913.

**Remarks.** As a result of a previous cladistic analysis (KURY, 1992a), the Gonyleptidae, as conceived by the Røewerian school (e.g., MELLO-LEITÃO, 1932 and SOARES & SOARES, 1948), are not a natural group, forming only a paraphyletic assemblage. The Cosmetidae were found to be closer to the typical Gonyleptidae than five nominal subfamilies of northern South America. But at that time, no synapomorphic evidence was proposed to unite these subfamilies. With continued research, it is now possible to suggest at least one synapomorphic condition supporting the monophyly of four nominal subfamilies, which should be referred to the Cranainae: the dorsal surface of pedipalpal patella and tibia is covered with coarse granulation (fig. 1, character 1). This condition is evident at least in *Prostygnus* Røewer, 1913, *Heterocranus* Røewer, 1913, *Cranus* Simon, 1879, and *Tryferos* Røewer, 1931 (while not obvious in *Stygnicranus* Røewer, 1913), and it occurs convergently only in a small group of Gonyleptidae: *Tumbesia* Loman, 1899 (RØEWER, 1930), *Corralia* Røewer, 1930, and *Spinivunus* Røewer, 1943 (MAURY, 1992). The traditional subfamilial division of the Cranainae is unsatisfactory, and should be regarded as provisional while hypotheses of phylogeny are not available, but a closer relationship between Cranainae and Stygnicranainae may be suggested based on the projecting area II and the eye mound armature (fig. 1, character 2). The fifth subfamily, Manaosbiinae, may be either closest to the Cranainae or to the Cosmetidae and Gonyleptidae clade.



**Figure 1.** — Cladogram illustrating proposed sister group relationships among the Neotropical pseudonychiate families of Gonyleptoidea. Modified from Kury, 1992a. “Other families” are Cosmetidae, Stygnidae and Gonyleptidae. The black squares represent synapomorphies here proposed to support, 1, the monophyly of Cranainae, and 2, the closer relationship between Cranainae and Stygnicranainae (see text for details).



### Prostygninae Røwer, 1913

**Diagnosis.** Cranidae with: 1, basitarsus I of male not swollen; 2, chelicerae of male hypertelic; 3, mesotergum composed of five discrete areas; 4, area I divided by a median groove and not invaded by area II; 5, glans penis without well developed dorsal or ventral processes; 6, ventral plate rectangular elongate; 7, eye mound very wide, convex, with armature much reduced; 8, armature of area III much reduced.

**Included nominal genera.** \**Cutervolus* Røwer, 1957 (Tricommatinae), \**Globibunus* Røwer, 1912 (Tricommatinae), *Peladoius* Røwer, 1919, *Prostygnus* Røwer, 1913, \**Ramonus* Røwer, 1956 (Tricommatinae), *Troya* Røwer, 1919, \**Yania* Røwer, 1919 (Tricommatinae), and *Zamora* Røwer, 1927. Genera marked with an asterisk are being for the first time assigned to this family or subfamily; the names between parentheses refer to the former subfamilial assignation. There are other suspected Prostygninae scattered among varied taxa, and which will be gradually discovered and correctly placed.

**Remarks.** The limits of this subfamily, as currently treated (e.g., SOARES et al., 1992), are ill defined, since the diagnostic character states hitherto used are symplesiomorphic at this universality level. The useless Røwerian distinction states that genera with 4 mesotergal areas are to be classed among Prostygninae, while those with 3 mesotergal areas are Craninae. The diagnostic characters squeezed from Røwerian papers and those added with my knowledge of a few genitalia (1 to 6 in the diagnosis above) consist only of symplesiomorphies, that is, they were already present somewhere else before the immediate common ancestor of Prostygninae. Nevertheless, a monophyletic group, including the type genus *Prostygnus*, may be well defined on basis of the characters 7-8, however, which seem to be synapomorphic at this level.

### *Yania* Røwer, 1919

*Yania* Røwer, 1919: 129; 1923: 126 (type species *Y. flavolimbata* Røwer, 1919).

**Diagnosis.** Prostygninae with: 1, outline of dorsal scute widened at groove II, with a constriction at groove IV and again widened at posterior margin; 2, cephalothorax almost as long as abdomen; 3, eye mound large, unarmed, well separated from the anterior margin of scute; 4, chelicerae immensely swollen in male; 5, pedipalpal femur heavily built, probably sexually dimorphic, armed with dorsal and ventral rows of stout spines, and without apical inner spine; 6, frontal median hump of cephalothorax high, armed with pointed tubercles; 7, pedipalpal patella and tibia covered with coarse granules. *Yania* shares character states 1-3 with *Ramonus* Røwer, 1956, *Globibunus* Røwer, 1912, *Zamora* Røwer, 1927, *Troya* Røwer, 1919, and *Peladoius* Røwer, 1919, character states 4-5 with *Ramonus*, *Globibunus*, and *Zamora* (but the heavy dorsal crest of spines in pedipalpal femur is unique for *Yania*). Character state 6 is shared with *Ramonus*, while 7 is the single character state uniting both species of *Yania*. The primitive 5-segmented tarsi I and III occur in *Yania metatarsalis* and *Ramonus*, but not in *Yania flavolimbata* (see discussion).

It is still early for conclusions on interrelationships among genera of the Prostygninae. The most hopeful candidates to closest relatives of *Yania* are three monotypic genera described in Tricommatinae (*Zamora*, *Ramonus*, and *Globibunus*). Other Prostygninae apparently akin to *Yania* and these other false Tricommatinae are *Troya* and *Peladoius*. Sexual dimorphism plays an important role in the external mor-

phology of Prostygnae and Cranainae, and many taxa are known by one sex. I think that ROEWER misinterpreted the sex of the syntypes of *Y. flavolimbata* as males, and some of the characters shown by the new species may also be present in that species.

*Yania metatarsalis* new species

**Etymology.** From Latin, referring to the swollen calcaneus of metatarsus I.

**Diagnosis.** Distinguished from *Y. flavolimbata* by: 1, the lower tarsal segmentation in all legs; 2, absence of white stripes on the lateral margin of scute; 3, free tergites II-III each with a row of subequal tubercles, instead of bearing a paramedian pair of spines; 4, astragali of metatarsi I-IV conspicuously ringed. It appears to me that the type series of *Yania flavolimbata* consists of two females (although ROEWER's opposite statement, see discussion), so the further differences with *Y. metatarsalis*, regarding the pedipalpal armature and swollen calcaneus, may be due to sexual dimorphism and as such are excluded from the specific diagnosis.

**Material examined.** Male holotype (M.Z.U.S.P. 11.868) on the road from Ambato to Chimborazo, Ecuador, at about 4,400 m high, 17.XI.1987, C.R.F. Brandão leg.

**Locality and biotope.** The so called Arenal del Chimborazo is situated about 150 km south from Yanaurcu, type locality of *Yania flavolimbata*. The Northern Andean highlands between 4,000 and 5,000 meters high ("páramos") are scarcely covered with low shrubs. The type locality of *Y. metatarsalis* is a sandy environment, which supports only a few scanty clumps of grass. The holotype has been collected under a stone.

**Description of the male holotype.**

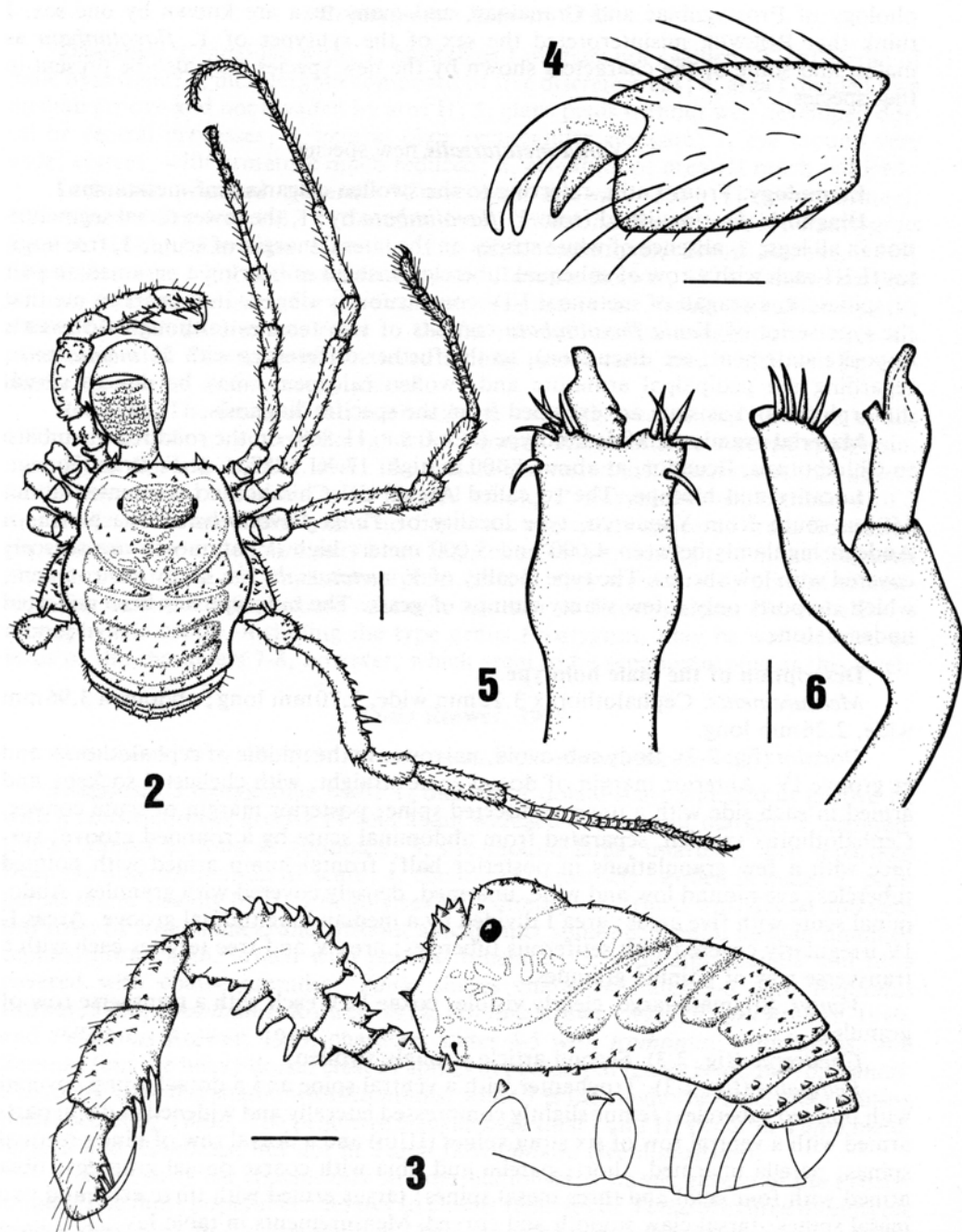
**Measurements.** Cephalothorax 3.22 mm wide, 2.70 mm long; abdomen 3.96 mm wide, 2.26 mm long.

**Dorsum** (fig. 2-3). Body sub-ovoid, narrower in the middle of cephalothorax and at groove IV. Anterior margin of dorsal scute straight, with cheliceral sockets, and armed in each side with a upward directed spine; posterior margin of scute convex. Cephalothorax swollen, separated from abdominal scute by a rounded groove; surface with a few granulations in posterior half; frontal hump armed with pointed tubercles; eye mound low and wide, unarmed, densely covered with granules. Abdominal scute with five areas; area I divided by a median longitudinal groove. Areas I-IV irregularly covered with setiferous tubercles; area V and free tergites each with a transverse row of pointed granules.

**Venter.** Stigmata large, clearly visible; coxae I-IV each with a transverse row of granules.

**Chelicerae** (fig. 2-3). Second article strongly swollen.

**Pedipalps** (fig. 2-3). Trochanter with a ventral spine and a dorsal hump covered with pointed tubercles; femur slightly compressed laterally and widened at distal part, armed with a ventral row of six stout spines (IIIiii) and a dorsal row of nine subequal spines; patella unarmed, short; patella and tibia with coarse dorsal granules; tibia armed with four ectal and three mesal spines; tarsus armed with three ectal and two mesal spines; tarsal claw smooth and curved. Measurements in table I.



**Figure 2-6.** — *Yania metatarsalis* new species, male holotype. — 2, habitus, dorsal view. — 3, habitus, lateral view. — 4, distal part of tarsus IV, showing tarsal process. — 5-6, distal part of penis. 5, dorsal view; 6, lateral view. — Scales bar: 1 mm (fig. 2-4) and 0.1 mm (fig. 5-6).

	Tr	Fe	Pa	Ti	Mt	Ta
Pedipalpus	0.63	1.77	0.93	1.40	—	1.93
Leg I	0.65	1.74	0.83	1.22	1.96	1.30
Leg II	0.61	3.04	0.96	2.04	2.91	2.13
Leg III	0.62	2.39	0.85	1.43	2.22	1.87
Leg IV	0.87	2.87	1.09	1.91	3.09	1.91

Table I. — Appendage measurements of the male holotype of *Yania metatarsalis* n. sp.

*Legs* (fig. 2). Podomeres short, densely covered with setiferous granules. Femora I-III straight. Coxa IV surpassing the margin of dorsal scute only by its apical portion, armed with coarse granules and external spiniform apical apophysis; femur IV curved, armed with an external row of spines larger at distal part; patella and tibia IV with outer and inner rows of pointed tubercles. Tarsal segmentation: 5/6/5/6; astragali of metatarsi I-IV with well marked rings, calcaneus I swollen; ratio calcaneus/astragalus of metatarsi I-IV: 0.30; 0.11; 0.22; 0.12. Measurements of podomeres in table I.

*Coloration*. Body background brown, densely shaded in black. Pedipalpus, coxae I-IV and trochanters I-IV light tan, tarsi I-IV sulfur yellow. Cephalothorax and chelicerae light brown with a spotted pattern. Sternum and coxae ventrally light tan, stigmatic area bicolor (anterior half light tan, region around the stigmata black), free sternites black.

*Genitalia* (fig. 5-6). Truncus penis slender, recurved distally. Ventral plate rectangular, much longer than wide, narrowed in the middle, with distal margin slightly concave, without projections, armed with a single group of 5 distal setae. Stylus short, thicker at base, without dorsal process; ventral process very short and truncated.

*Remarks*. The evidence to associate the new species with *Yania flavolimbata* is meager. Tarsal segmentation indicates an alternative closer relationship of *Yania flavolimbata* with the other four genera which have tarsi I and III six-segmented, while *Ramonus* and *Yania metatarsalis* show tarsi I and III 5-segmented. Perhaps future investigation based also on genital morphology may change the generic assignation of the new species.

#### Discussion: the tarsal process

The single character traditionally used to separate the "Phalangodidae" Tricommatinae from the "Gonyleptidae" Prostygyninae or Pachylinae, is the absence or presence of a distal tarsal process in legs III-IV, widely called *pseudonychium* (which is a wrong term, MUÑOZ-CUEVAS, 1971). The usefulness of this character has been already shaken (CANALS, 1933; RAMBLA, 1976; GONZALEZ-SPONGA, 1987), and there are two problems in simply uniting all "pseudonychiate" groups: 1, congruence of character analysis indicates that the secondary reduction or loss of this structure in some Gonyleptidae is the most parsimonious interpretation of the data; 2, the condition of posterior tarsi is not accurately observed by many authors. In the same way as the presumed Argentinean tricommatine *Bacigalupo* Mello-Leitão, 1933, has been found to be already described as a pachyline (RINGUELET, 1959), I have noticed many cases of species described twice as Phalangodidae and Gonyleptidae (unpub. data).



Certainly there are many examples of overlapping between the Tricommatidae and pachyline Gonyleptidae or prostygnine Cranaidae, since Tricommatidae as conceived by ROEWER was supported only by symplesiomorphies, and the interpretation of absence or presence of tarsal process in some cases is as fanciful as useless.

### Conclusions

The presence of the tarsal process is a reliable character for diagnosing families of Gonyleptoidea, but it should not be taken isolated, and always in a frame of congruence with other characters. Two problems occur in the appreciation of the alternative conditions of this state, namely, the possible reversal to the ancestral condition, as appears to happen in some Pachylinae (KURY, unpub. data), and careless observation of specimens (KURY, 1992a). The apparent parapatry of Andean versus Atlantic Gonyleptidae is not enough to suggest the monophyly of this family. In fact, there are some genera of "true" Gonyleptidae in the "cranaid domain" (KURY, in prep.). The raising of Cranaidae to familial status is desirable because: 1, its monophyly is supported by at least one synapomorphy, and 2, they do not form a monophyletic group with the other Gonyleptidae. The Prostyginae sensu ROEWER or SOARES is an unacceptable group, lumping disparate taxa. The more restrictive diagnosis given here account better for possible phylogenetic relationships.

### Acknowledgements

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