

Synonymic notes on *Mitobates* Sundevall, with redescription of the type species, *M. conspersus* (Perty) (Opiliones: Gonyleptidae: Mitobatinae)

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Summary

Mitobates stygnoides Mello-Leitão, 1923, *Neoancistrotus nigromaculatus* Mello-Leitão, 1931, *Despiroides xanthophthalmus* Mello-Leitão, 1932 and *Metaroeweria insignis* Mello-Leitão, 1936 are here synonymised with *Mitobates conspersus* (Perty, 1833). *Despiroides* Mello-Leitão, 1932 and *Metaroeweria* Mello-Leitão, 1936 are here synonymised with *Mitobates* Sundevall, 1833. The type species of *Mitobates*, *M. conspersus*, is redescribed based on the type material and on newly collected specimens. Some comments are made on some characters currently used for defining genera in the subfamily Mitobatinae, and new characters are suggested.

Introduction

Any attempt to trace the phylogeny of the neotropical laniatorid family Gonyleptidae is hindered by a large number of species cited only once in the literature and never "rediscovered" by subsequent workers. Most of these "ghost" species were only briefly described, and their diagnoses are very unsatisfactory by modern standards. Likewise, many of the characters chosen have been found to be of doubtful value and are subject to individual variation. This has led to an astonishing number of synonymies established by later revisers. This is the case for *Mitobates conspersus* (Perty, 1833), by far the commonest mitobatine species ever recorded both in the literature and in collections — it has rarely been recognised by its senior synonym, and its junior synonyms have been described under four different genera.

The genus *Mitobates* Sundevall, 1833 is currently distinguished from *Ancistrotellus* Roewer, 1923 only by the paired armature of areas I and II of the dorsal scute (unarmed in *Ancistrotellus*) (see Figs. 1-2). This character was reported by B. Soares (e.g. 1944b:172 and 1945:89) to show variation in some Gonyleptinae, and it is shown below (see Discussion) to be completely useless for separating genera in the Mitobatinae. Nevertheless, *Mitobates* can be defined by other characters (see Diagnosis below).

The recently described *Mitobates inermis* Kury agrees in all respects with the generic diagnosis, although according to the Roewerian system it should be placed elsewhere, owing to the unarmed area III of the mesotergum (see Kury, 1989).

A redescription of *M. conspersus* is given below, based mainly on the type series of *Goniosoma conspersum* and *Mitobates stygnoides*.

Abbreviations of institutions from which specimens

were borrowed are: Museu de Zoologia da Universidade de São Paulo (MZUSP), Museu Nacional do Rio de Janeiro (MNRJ), Departamento de Zoologia da Universidade Federal do Rio de Janeiro (DZUFRJ), personal collection of H. Soares, Botucatū, São Paulo (HS), and Zoological Museum of Berlin (ZMB). Abbreviations of the Brazilian states cited below are: Rio de Janeiro (RJ) and São Paulo (SP).

All measurements are in millimetres.

Genus *Mitobates* Sundevall

Mitobates Sundevall, 1833: 34 (type species *M. triangulus* Sundevall, by original designation); Gervais, 1844: 113; Simon, 1879: 233; Roewer, 1913: 283; 1923: 509; Mello-Leitão, 1923: 162; 1926: 34; Roewer, 1931: 167; Mello-Leitão, 1932: 405; 1935: 109; Soares & Soares, 1949: 234.

Goniosoma (part) Perty, 1833: 202; Gervais, 1844: 108.

Dolichoscelis Hope, 1837: 397 (type species *D. haworthii* Hope, by monotypy); Gervais, 1844: 113.

Ancistrotus (part) C. L. Koch, 1839: 50.

Despiroides Mello-Leitão, 1932: 221, 477 (type species *D. xanthophthalmus* Mello-Leitão, by original designation); B. Soares, 1944b: 168; Soares & Soares, 1988: 230. NEW SYNONYMY.

Metaroeweria Mello-Leitão, 1936: 38 (type species *M. insignis* Mello-Leitão, by original designation); Soares & Soares, 1949: 233. NEW SYNONYMY.

Diagnosis

Mitobatines with area III either armed with a pair of high spines or unarmed, eye mound armed with a pair of spines; other areas, free tergites and anal opercle unarmed; sexual dimorphism expressed in legs of male much longer, especially femur and metatarsus IV; femur of pedipalpus armed with distal mesal spine; tarsus I with 7 or 8 segments in male, 6-7 in female, others with more than 6 segments; fusion of scutal areas III and IV incomplete. *Mitobates* is here considered closest to *Metamitobates* Roewer and to a few species placed in *Discocyrtoides* Mello-Leitão (namely *D. vellutinus* (Mello-Leitão), *D. ruschii* (Mello-Leitão), *D. rosai* (Mello-Leitão), *D. maculatus* H. Soares and *D. pardus* Kury) owing to (1) unarmed coxa IV in both sexes, (2) ratio abdomen/cephalothorax width less than 1.35, giving the body a rectangular outline. *Mitobates* is distinguished from all other taxa by (3) ventral plate of penis with a deep cleft, (4) ventral branch ("fan") of glans penis uniquely-shaped, (5) pedipalpal tibia armed ectally with 5 spines (IiiIi) instead of 4 (IiIi), (6) pedipalpal tibia armed mesally with 5 or 6 spines (IiiiIi-IiiiiIi) instead of 4 (IiIi), (7) tarsus I of male at least 7-segmented, instead of 6-segmented, (8) ratio calcaneus/astragalus of metatarsus II 0.4-0.7 (less than 0.3 in others). Characters (6)-(7) are shared with *D. pardus*. Character (2) is shared with all taxa cited above except *Metamitobates*, *D. rosai* and *D. ruschii*. Character (7) is shared with *Metamitobates* and *D. rosai*.

Etymology: From Greek *mitos* = thread + *baíno* = I walk.

Included species: *M. conspersus* (Perty, 1833) and *M. inermis* Kury, 1989.

Distribution: State of Rio de Janeiro, southeastern Brazil.

Mitobates conspersus (Perty) (Figs. 5-12)

Goniosoma conspersum Perty, 1833: 202; Gervais, 1844: 108.

Mitobates triangulus Sundevall, 1833: 34; Gervais, 1844: 113.

Dolichoscelis haworthii Hope, 1837: 397; Gervais, 1844: 113.

Ancistrotus conspersus: C. L. Koch, 1839: 50, fig. 561.

Mitobates conspersus: Simon, 1879: 234; Roewer, 1913: 283, fig. 113; 1923: 509, fig. 636; Mello-Leitão, 1923: 162 (misidentification); Roewer, 1931: 107; Mello-Leitão, 1932: 405, fig. 269; Soares & Soares, 1949: 234.

Mitobates stygnoides Mello-Leitão, 1923: 163; 1932: 406, fig. 270; Roewer, 1931: 107, fig. 1; B. Soares, 1945b: 367; Soares & Soares, 1949: 235. NEW SYNONYMY.

Neoancistrotus nigromaculatus Mello-Leitão, 1931: 143, fig. 19; 1935: 109; B. Soares, 1945b: 368; Soares & Soares, 1948a: 7, fig. 6. NEW SYNONYMY.

Ancistrotiellus nigromaculatus: Soares & Soares, 1949: 228; B. Soares, 1972: 55.

Despiroides xanthophthalmus Mello-Leitão, 1932: 225; B. Soares, 1945b: 347. NEW SYNONYMY.

Discocyrtoides xanthophthalmus: Soares & Soares, 1948b: 563.

Metaroeweria insignis Mello-Leitão, 1936: 39, fig. 34; B. Soares, 1945b: 367; Soares & Soares, 1949: 233. NEW SYNONYMY.

Etymology

Latin adjective *conspersus* = dotted, from the distinct sulphur-yellow granules on the black background.

Diagnosis

Distinguished from *M. inermis* by area III armed with a pair of high spines, by the dorsal branch ("stylus") of the glans penis provided with large triangular sclerites (smooth in *inermis*), and by tarsus I 7-segmented in male (8-segmented in *inermis*).

Description

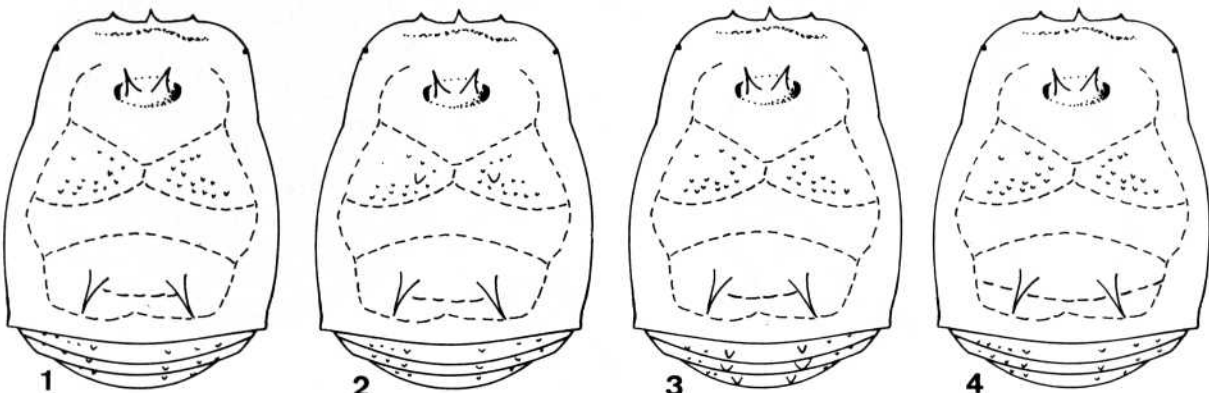
Male: Dorsum (Figs. 5-6): Dorsal scute 5.08 (4.62-5.38) long. Cephalothorax 2.30 (1.96-2.50) long, 3.81 (3.34-3.90) wide. Abdominal scute 2.78 (2.66-3.10) long, 4.58 (4.13-4.70) wide (measurements based on specimen ZMB 943a, range of 12 specimens in brackets). Dorsal scute nearly rectangular, longer than wide, broadest at area II, sides widened at coxae IV, abdomen straight posteriorly, apical angles straight. Anterior margin of cephalothorax thickened, straight, smooth, except for three anteriorly-directed teeth. Smooth median elevation in front of eye mound. Eye

mound transversely ovate, low, situated at mid-length of carapace, armed with a pair of long spines. Carapace smooth, except for a few large granules forming a semi-circle behind eye mound. First scutal groove very deep, as an obtuse angle pointed posteriorly. Abdominal portion of dorsal scute divided into three distinct areas (mesotergum) and a posterior margin by three transverse grooves. (Area III also often completely or partially divided by a shallow median transverse groove; in most other specimens this groove is restricted to median third of area width). Area I divided by longitudinal median line; area II projecting a little into first; third groove bowed anteriorly, fourth groove roughly parallel to posterior margin of abdominal scute. All areas unarmed, except area III armed with a pair of long spines. Very large sulphur-yellow granules with lighter base cover area I (except in anterior apical fourth), all area II where they form at least three transverse rows, area III between and around the spines, and in transverse row behind them (in the place of area IV). Posterior margin and free tergites each with an ill-defined row of a few granules, of which the larger central pair are more prominent. Lateral margin with a longitudinal row of granules, doubled at scutal groove and area III. A small, bare, median space present in middle of area II. Dorsal anal plate unarmed, with a row of granules.

Venter: Coxae I-IV with sparse black reticulations, especially on coxa IV, and covered with a row of minute setiferous granules which become larger from coxa IV to I. Stigmatic area smooth. Stigmata clearly visible. Free sternites and ventral anal plate smooth.

Chelicera (Fig. 7): Well developed, not swollen. Proximal segment 1.38 long, unarmed; distal segment 2.04 long, unarmed, except for several hairs on all surfaces, but concentrated at base of fingers; fingers toothed.

Pedipalpus (Fig. 8): Robust and strongly spined. Coxa with few setiferous tubercles. Trochanter armed ventrally with a small tubercle and a larger setiferous ventro-medial one. Femur with a ventro-basal setiferous tubercle and a medio-lateral sub-apical spine. Patella robust, unarmed, widened distally. Tibia with a row of five ventro-lateral spines (first and fourth largest) and a row of six ventro-medial spines (first and



Figs. 1-4: Schematic view of the interpretation of the four Roewerian genera in which *M. conspersus* has been described (see text for explanation).
1 *Ancistrotiellus*; 2 *Mitobates*; 3 *Metaroeweria*; 4 *Despiroides*.

fifth largest). Tarsus with a row of four ventro-lateral and three ventro-medial spines (first longest). Tarsal claw curved slightly, smooth.

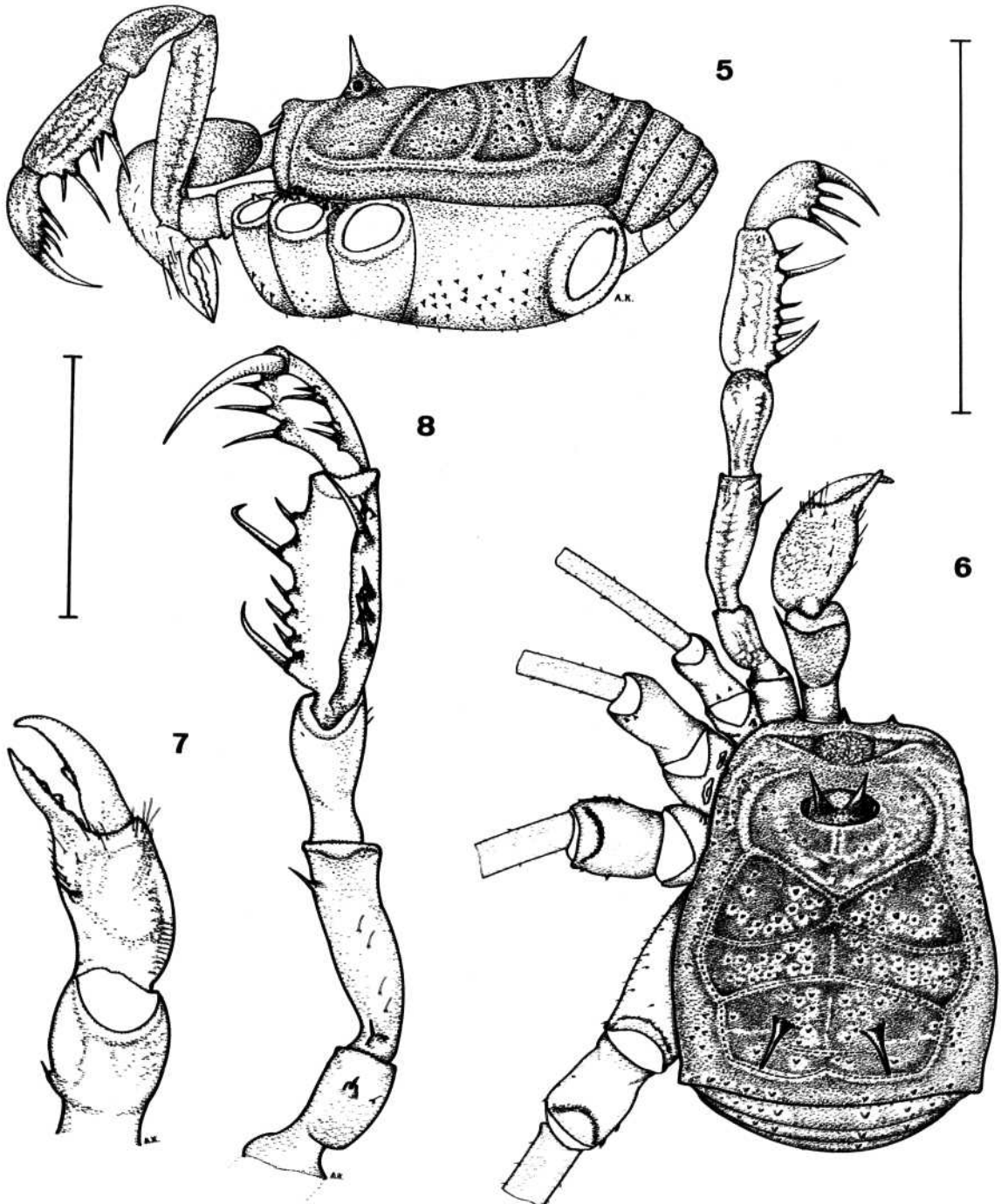
Legs: Coxa IV robust, unarmed, larger than others, visible in dorsal view beyond lateral margin of scute. Femur IV straight, unarmed. Femur and metatarsus IV extremely elongate. Ratio of calcaneus/astragalus of metatarsi I to IV: 0.6:0.4:0.4:0.3. Double claws of tarsi III and IV untoothed, with tarsal process, no scopulae. Tarsal formula: 7:15-17:9:10-11; distitarsi I and II with three segments each. Measurements of specimen MNRJ 1.519, see Table 1. Tarsal segmentation ($n=10$): I 7, II 15-18, III 8-10, IV 9-12.

Coloration: Background colour of mesotergum dark

yellow with dense black pigmentation, interrupted along grooves. Cephalothorax, eye mound, lateral and posterior margins, free tergites and dorsal anal plate with same colour pattern as mesotergum. Spines of

| | Tr | Fe | Pa | Ti | Mt | Ta | Total |
|-------------------|------|-------|------|-------|-------|-------|-------|
| Pedipalpus | 0.80 | 2.22 | 1.39 | 1.78 | — | 2.48 | 8.67 |
| Leg I | 0.98 | 8.04 | 1.15 | 5.43 | 10.00 | 3.15 | 28.75 |
| Leg II | 1.15 | 20.00 | 2.43 | 16.52 | 17.07 | 6.41 | 63.58 |
| Leg III | 1.23 | 16.52 | 2.45 | 9.67 | 17.28 | 5.54 | 52.69 |
| Leg IV | 1.39 | 33.91 | 2.70 | 22.70 | 21.20 | 12.72 | 94.64 |

Table 1: *M. conspersus* male (MNRJ 1.519), appendage measurements.



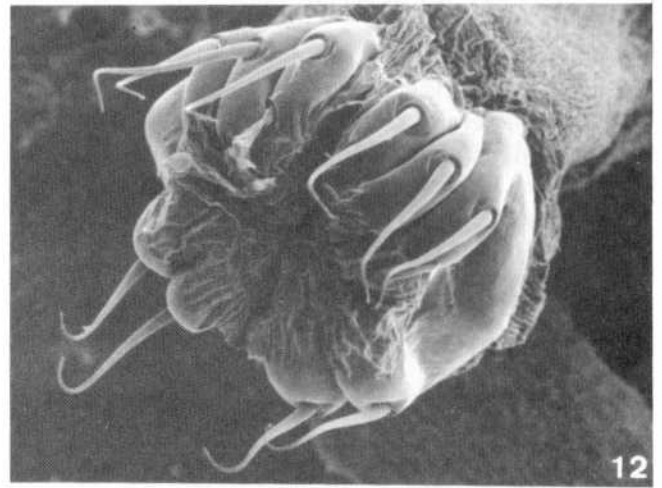
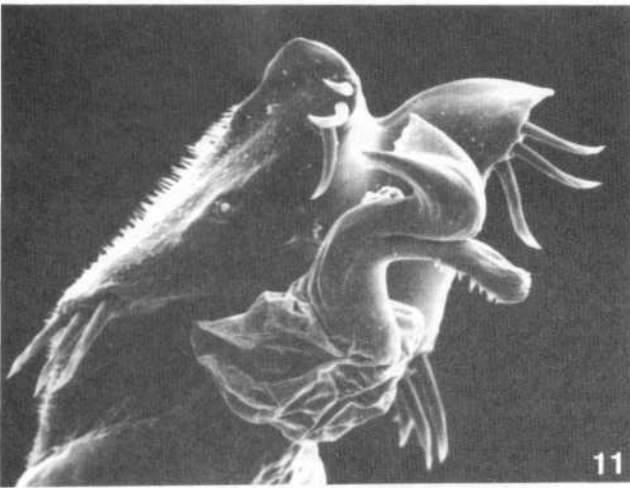
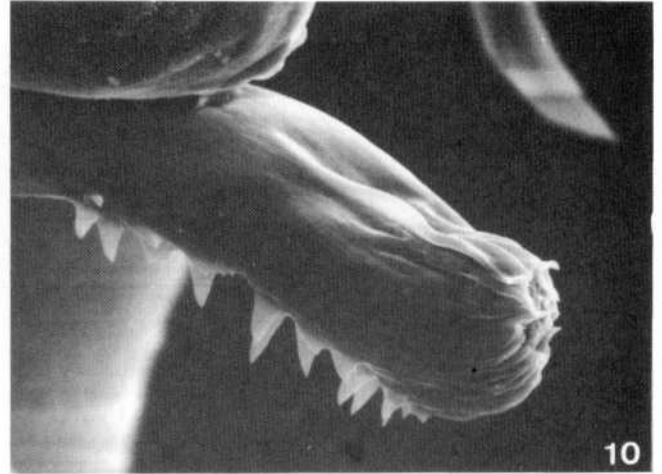
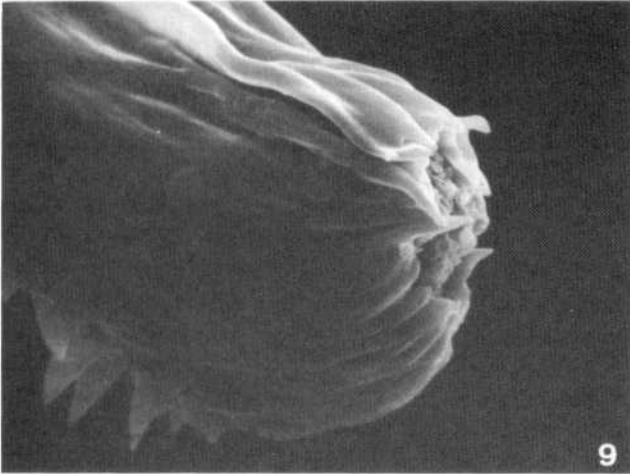
Figs. 5-8: *M. conspersus* male, MNRJ 1.519. **5** Habitus, lateral view; **6** Habitus, dorsal view; **7** Left chelicera, mesal view; **8** Left pedipalpus, mesal view. Scale lines = 5.0mm (5-6), 2.0mm (7-8).

area III brown, those of eye mound dark yellow. Venter: coxae and stigmatic area light brown, free sternites and ventral anal plate dark brown. Chelicera and pedipalpus dark yellow, covered with black reticulations. Legs tan-brown, patella, apical portion of femur and metatarsus with dense black reticulations.

Penis (Figs. 9-11): Length 3.40. Truncus slender, cylindrical. Basal portion of glans soft and rugose, giving rise to a more chitinised bifid structure, the glans proper, of which the dorsal branch (terminal portion of

ejaculatory duct) is cylindrical with rounded apex, and bordered by a row of triangular sclerites; ventral branch curved downwards, fan-like at apex. Ventral plate rectangular, its frontal margin deeply concave, lateral margins armed with two groups of long curved setae, three apical and three basal. A very small fourth apical seta present in some specimens.

Female: Very similar to male; legs much shorter, especially fourth pair (length femur IV: ♀ ($n=11$) 13.92-17.36, ♂ ($n=12$) 25.76-50.75). Measurements



Figs. 9-14: *M. conspersus*. **9** Male, DZUFJR 0199, glans penis, apex of dorsal branch, $\times 1900$; **10** Ditto, glans penis, dorsal branch, $\times 900$; **11** Ditto, glans penis $\times 190$; **12** Female, DZUFJR 0199, ovipositor, frontal view, $\times 150$; **13** Male crawling upside-down into a rock crevice; **14** Rock inlets by waterfall (typical habitat of the species: Horto Botânico, Rio de Janeiro, RJ, Brazil).

($n=11$): Dorsal scute 4.99-6.31 long. Cephalothorax 2.08- 2.66 long, 3.52-4.10 wide. Abdominal scute 2.91-3.65 long, 4.48-5.31 wide. Tarsal segmentation ($n=11$): I 6, II 12-17, III 6-8, IV 8-10. No strong sexual dimorphism in basitarsus of leg I, but basitarsus of male slightly more robust. Ovipositor as in Fig. 12.

Material examined

Originally determined as *Mitobates conspersus*: 1♂ syntype (ZMB 943a); 1♀ syntype (ZMB 943b); 2♂, 2♀ syntypes (ZMB 943c). Originally determined as *Mitobates stygnoides*: 4♂ syntypes (MNRJ 1.519); 2♂ syntypes (MNRJ 1.522); 4♂, 2♀ syntypes (MNRJ 1.528), Tijuca, Rio de Janeiro-RJ (E. Morais Mello); 1♂ (MNRJ 1.524), Rio de Janeiro; 1♂, 2♀ (MNRJ 1.525), Rio de Janeiro. Originally determined as *Neoancistratus* (or *Ancistratellus*) *nigromaculatus*: ♂ holotype (MNRJ 18.208), Jacarepaguá, Rio de Janeiro (O. Berla); 1♂, 1♀ (MNRJ 41.833), Bico do Papagaio, Rio de Janeiro (R. Arlé); 6♂, 1♀ (MZUSP E807 C1.144), Represa do Cabeça, Corcovado, Rio de Janeiro, August 1947 (P. Wygodzinsky); 1♂ (MZUSP 118 C1.690), Alto da Boa Vista, Rio de Janeiro, 31 December 1944 (P. Wygodzinsky); 2♀ (MZUSP 1.692); 1♀ (MZUSP 1.704); 127 individuals (MZUSP 1.823), Tijuca, Rio de Janeiro, February 1944 (M. Valle); 1♂, 1♀ (MZUSP 1.691); 43 individuals (MZUSP 1.701), Rio de Janeiro, 1944/45 (M. Eugenio). Originally determined as *D. xanthophthalmus*: ♂ holotype (MNRJ 42.225), Jacarepaguá, Rio de Janeiro, May 1935 (O. Berla); 1♂ (HS), Tijuca (O. Schubart). Originally determined as *Metaroeweria insignis*: ♀ holotype (MNRJ 42.331), Jacarepaguá, Rio de Janeiro, March 1925 (J. Couceiro).

New records: 1♀ (MZUSP 10.006), Grajaú, Rio de Janeiro, RJ, 22 March 1943 (H. S. Lopes/P. Wygodzinsky); 1♂, 1♀ (DZUFRJ 0150), Tijuca, 27 August 1987 (C. A. Caetano); 4♂ (DZUFRJ 0135), Tijuca, 26 August 1987 (A. Kury); 1♂ (DZUFRJ 0122), Tijuca, 1 July 1985 (R. L. C. Baptista); 5♂, 4♀ (DZUFRJ 0199), Tijuca, 7 February 1988 (A. Kury); 1♂ (DZUFRJ 0109), Horto, 17 October 1986 (R. L. C. Baptista); 1♂ (DZUFRJ 0176), Parque Lage, 1 November 1987 (A. Kury); 3♂, 4♀, 1 immature (DZUFRJ 0228), Corcovado, 1 May 1988 (A. Kury); 1♂ (DZUFRJ 0276), Santa Teresa, 7 August 1988 (A. Kury); 1♂ (DZUFRJ 0420), Encosta do Corcovado, 17 February 1989 (Leila A. Souza).

Distribution

Known from Rio de Janeiro, capital of the state of that name: Tijuca forest and Jacarepaguá. There is a false record from Alto da Serra, São Paulo state by Mello-Leitão (1923: 162), followed by Roewer (1931: 107), based on a misidentification of *Discocyrtoides areolatus* B. Soares, 1944 (corrected by B. Soares, 1944a: 278).

Habitat

Hitherto, there have been no reports on the habitat of the Mitobatinae. *Mitobates conspersus* is very

common in the capital of the State of Rio de Janeiro, in the woods of Tijuca and Jacarepaguá, but it has never been recorded with certainty outside the city. Individuals of this species have been found throughout the year in very moist places, always near streams (Fig. 14), and never under fallen logs or on the ground as are most mitobatines. They are somewhat gregarious and stay clinging to mossy surfaces or concealed in rock overhangs by brooklets, where they rest upside-down (Fig. 13), frequently associated with some large *Goniosoma*. They are active by night when they venture out to feed. The remarkable length of the legs of the males should be noted, as Simon (1879: 226) pointed out: "en effet le *Mitobates conspersus* offre les pattes les plus longues qui aient été observées dans l'ordre entier des Opiliones . . .".

Discussion

On the heavily sclerotised cuticle of the laniatorids, besides the setae and solenidia, three kinds of elevations can usually be distinguished: spines, tubercles and granules. The presence of either of the first two is sufficient in the Roewerian system to consider the area in question as being armed, and if there are only granules, the area is called unarmed, this distinction being fundamental to the establishment of the genera. But how is this distinction accomplished?

Currently, an elevation can only be judged to be a tubercle or not by comparison with the others in the same area, if present. There is thus no size limit for separating them; a smooth area provided solely with a pair of small granules is regarded as armed, while an area covered with similar granules is so called only if a pair of them (in the position of the virtual armature) are larger than the others. There are species of Mitobatinae that have a transverse granule row in areas I and II, with each granule standing on a lighter spot of scute. In some cases, the median granules are accentuated by their larger spots, and so are considered tubercles (armed area).

Another instance: if there are two sizes of granules in an area already provided with two tubercles, the larger ones are still considered as granules, since each area can bear at most one pair of tubercles. Furthermore, as in *M. conspersus*, there are sometimes two large elevations in the place of the armature in area I, but there are also other such elevations scattered over the area, leading us to consider it unarmed. In most cases this character has been difficult to define, even by authors well acquainted with the group — an author might even regard an area as armed or unarmed for individuals of the same species (see below).

In view of this, I consider the dichotomy of area I (or II) as "armed" versus "unarmed" as useless for defining groups of Mitobatinae, as it creates confusion and is purely subjective.

The spination of the posterior margin of the scute and of the free tergites represents another problematical feature, as both B. Soares (1945a: 91) and Mello-Leitão (1949: 10) have pointed out. The latter stated that "it is very common to find species of Gonyleptidae bearing a transverse row of large

granules on the posterior margin of the scute and/or free tergites. If only small series are available, a pair of stouter granules is enough to carry the species to another genus." This is the case for *Metaroeweria insignis* Mello-Leitão, the description of which is based on a female of *M. conspersus* with irregularly sized granulations forming rows on the posterior margin and free tergites. This led Mello-Leitão to erect a new genus, *Metaroeweria*, defined by the paired armed margin and tergites (see Fig. 3).

As has been noted elsewhere (Soares & Soares, 1984: 303), the presence of three or four mesotergal areas can vary intraspecifically in the Gonyleptidae. Therefore, this cannot be used as a clear-cut character to distinguish genera and subfamilies such as the Bourguyinae. In *Mitobates*, the fusion of areas III and IV is always incomplete, as happens sometimes in a few other mitobatines (see the comments of H. Soares (1945: 224) on *Promitobates*). This could lead some specimens to be described under Bourguyinae, as in the case of *Despiroides xanthophthalmus* Mello-Leitão, a name proposed for *M. conspersus* individuals with a well-marked fourth groove delimiting area IV (see Fig. 4). The fourth groove has been observed to show degrees of obliteration in a large series of specimens of *M. conspersus*. Since *D. xanthophthalmus* is the type species of *Despiroides*, this genus is here considered as a junior synonym of *Mitobates*.

Roewer redescribed and gave illustrations of *M. conspersus* (1923: 509) and *M. stygnoides* Mello-Leitão, 1923 (1931: 108), the former based on the type material of Perty which he examined in 1916, and the latter on paratypes sent to him by Mello-Leitão. In both cases he illustrated areas I and II each with a pair of tubercles, clearly distinct from the surrounding granules. In his key to the species of *Mitobates* (1931: 107), he distinguished *conspersus* from *stygnoides* by the number of rows of granules (one or two) on the lateral margins and by the armature of the anterior margin of the carapace. The first of these characters cannot be regarded as diagnostic owing to the wide variation in size and distribution of granules in all scutal areas, lateral and posterior margins, and free tergites, and to the undefined number of rows of lateral granules observed in more than two hundred specimens I have examined. The second character can be used successfully to separate some mitobatine species, but not in this case: the type specimens of both *G. conspersum* and *M. stygnoides* show the anterior margin of the carapace smooth. Furthermore, the body and appendicular measurements, spination of the pedipalps, tarsal segmentation, colour pattern and geographic distribution agree well for the two supposed species, leaving no doubt about the identity of *conspersus* and *stygnoides*.

Mello-Leitão (1923) included *M. stygnoides* in *Mitobates*, regarding the large granulations of the scutal areas I and II as paired sculptures. This proved to be misleading because eight years later, Mello-Leitão himself described the same species as *Neoancistrotus nigromaculatus* in the genus *Neoancistrotus* Mello-Leitão, 1927, with areas I and II unarmed. No one else assigned the later collected *conspersus* material to

Mitobates. All material originating from Rio de Janeiro (except for one male determined as *Discocyrtoides xanthophthalmus*) was determined as *Ancistrotellus nigromaculatus* by B. and H. Soares, who regarded areas I and II as unarmed. Thus, the genus *Mitobates*, as perceived by Roewer, has never been cited by subsequent authors (except for the type series of *M. stygnoides* and two other vials from the same period in MNRJ, determined by Mello-Leitão), simply because of this unreliable character, which is often used incorrectly in keys and therefore suggests false affinities, as in the case of *Mitobates albipunctatus* Roewer, 1943, a species which surely belongs in *Discocyrtoides* (sensu stricto).

The characters cited in this paper have been surveyed for a phylogenetic analysis of the Mitobatinae (Kury, in prep.), and polarised by outgroup comparison.

The cleft in the ventral plate of the glans penis (Fig. 11) is superficially similar to the structure present in the Progonyleptoidellinae and in related subfamilies. In both cases the plate is divided into two valves by a median cleft, but they differ by: (1) in *Mitobates* the cleft is V-shaped with a narrow apex, while in the Progonyleptoidellinae it is parabolic and much deeper; (2) in *Mitobates* the tips of the valves are not convergent; (3) in *Mitobates* there is a flange (or crest) at the outer distal margin of each valve, absent elsewhere.

The count of tarsomeres was used unrestrictedly by Roewer to distinguish genera in the Laniatores. Subsequent authors, noticing some variation, abandoned this character. In most cases, however, it works perfectly, because much of the alleged variation is due to sexual dimorphism: Why should one discard a feature like "tarsus I with 6 or 7 segments" as useless if all males possess 7 and all females 6? It can be expressed as "tarsus I 7-segmented in male, 6-segmented in female", constituting a reliable character state, distinct from "tarsus I 6-segmented in both sexes".

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