



Taxonomy/Taxonomie

A new species of *Discocyrtoides* from southern Brazilian pine forest (Opiliones, Gonyleptidae, Mitobatinae)

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ABSTRACT

Discocyrtoides pinorum sp. nov. is described from the conifers forest in Paraná State, Southern Brazil. This is the second species of *Discocyrtoides* Mello-Leitão, 1923, the other being known from São Paulo State. It is remarkable for having greenish/yellowish spots in the dorsal scutum highly contrasting with the brown background, a feature rare in Mitobatinae, hitherto known only for *Ruschia* Mello-Leitão, 1940. It is the first record of this genus for Paraná State (WWF Ecoregion NT0101, Araucaria moist forests). Terminology for the male genitalia of the Mitobatinae is defined and illustrated.

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1. Introduction

The Neotropical family Gonyleptidae is the most diverse of Laniatores, with more than 800 valid species [1]. Among them, the Mitobatinae is a subfamily endemic from Brazil, with remarkably long legs (for Laniatores). *Discocyrtoides* is a monotypic genus the sister-group of *Longiperna* [13] (or an early-branching Mitobatinae [2]) and its species, *Discocyrtoides nigricans*, with extended synonymy, typically occurs in the eastern slope of the Mantiqueira mountain chain in Brazil [3]. A new species with unusual profuse coloration in shades of green, as described below, extends the genus distribution far to the south.

2. Material and methods

Descriptions of colors use the standard names followed by the centroid code in parenthesis of the 267 Color Centroids of the NBS/IBCC Color System [4] as described in Kury & Orrico [5]. The formula for the tarsomeres count, in which the distitarsi of legs I and II are indicated between

parentheses, was created by Roewer [6]. The formula for megaspines of pedipalpus in which I=large spine and i=small spine is used here following the format established by Kury [7]; here, the same formula is used to discriminate the sizes of spines on the different surfaces of Femur IV. Terminology for scutum outline follows Kury & Medrano [8]. Terminology for chaetotaxy of penis ventral plate follows Kury & Villarreal [9] for the macrosetae and Kury [10] for the microsetae. The term mesotergum [11] refers to the roughly subrectangular region of dorsal scutum formed by areas I to IV and circumscribed anteriorly by the carapace, laterally by the lateral margins and posteriorly by the area V (posterior margin of scutum). Biogeographical units used here are from the WWF Terrestrial Ecoregions of the World (names starting with “NT” [12]).

Scanning Electron Microscopy was carried out with a JEOL JSM-6390LV at the Center for Scanning Electron Microscopy of Museu Nacional/UFRJ. All measurements are in mm.

Abbreviation of the repository cited is MNRJ (Museu Nacional, Rio de Janeiro: collection of Arachnology destroyed by a fire in September 2, 2018). Other abbreviations used: AS: abdominal scutum, CL: carapace length, CW: carapace width, AL: abdominal scutum length,

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AW: abdominal scutum width (body); Tr: trochanter, Fe: femur, (appendages); VP: ventral plate.

The nomenclature of genital parts in Mitobatinae is given herein as in Fig. 1.

3. Systematic accounts

Genus *Discocyrtoides* Mello-Leitão, 1923

Discocyrtoides Mello-Leitão 1923c: 128, 196bis. Type-species by original designation: *Discocyrtoides violaceus* Mello-Leitão, 1923 (which is a junior synonym of *Ancistrotus nigricans* Mello-Leitão, 1922).

Diagnosis. Outline of dorsal scutum type gamma (same as in *Longiperna*, *Neoancistrotus*, contrasting with alpha in *Despirus*, beta in *Ischnotherus*, *Mitobates*, *Mitobatula*, *Promitobates*, *Ruschia*). Spines of ocularium subparallel (unique trait in Mitobatinae, which possess the spines divergent in different degrees, or even fused at the base), and not joined to each other by a bridge (same as in *Longiperna*). Mesotergal areas completely independent (same as in *Despirus*, *Encheiridium* and *Longiperna*; other mitobatines such as *Metamitobates* *Mitobates*, *Mitobatula*,

Promitobates and *Ruschia* possess varied degrees of fusion and in *Neoancistrotus* the areas are notably entirely fused). Cx IV of male armed with prolateral (external) apical apophysis (same as in *Despirus*, *Longiperna*, *Neoancistrotus*). Cx IV of male armed with retrolateral (internal) apical bifid apophysis (same as in *Longiperna*). Outline of VP rectangular, with basal lobes underdeveloped (same as in *Neoancistrotus*). Podium overlaps little with VP, reaching MS A in lateral view (as opposed to *Promitobates* where podium overlaps with VP a great deal, reaching mid-length of VP). Flabellum very short, restricted to the distal third of the ventral process of glans (same as in *Longiperna*).

Discocyrtoides pinorum sp. nov.

(Figs. 1–4)

Etymology. Plural genitive of Latin noun *pīnus* (pine tree, pine forest).

Type data. ♂ holotype, 1 ♂ 2 ♀ paratypes (MNRJ 11588, destroyed in the 2018 fire) Brazil, Paraná state, São José dos Pinhais, 08.i.2002, Chagas Junior, A. leg.

Distribution. Known only from the type locality. WWW Ecoregion NT0101 (Araucaria moist forests) in the biome Tropical & Subtropical Moist Broadleaf Forests (Fig. 4).

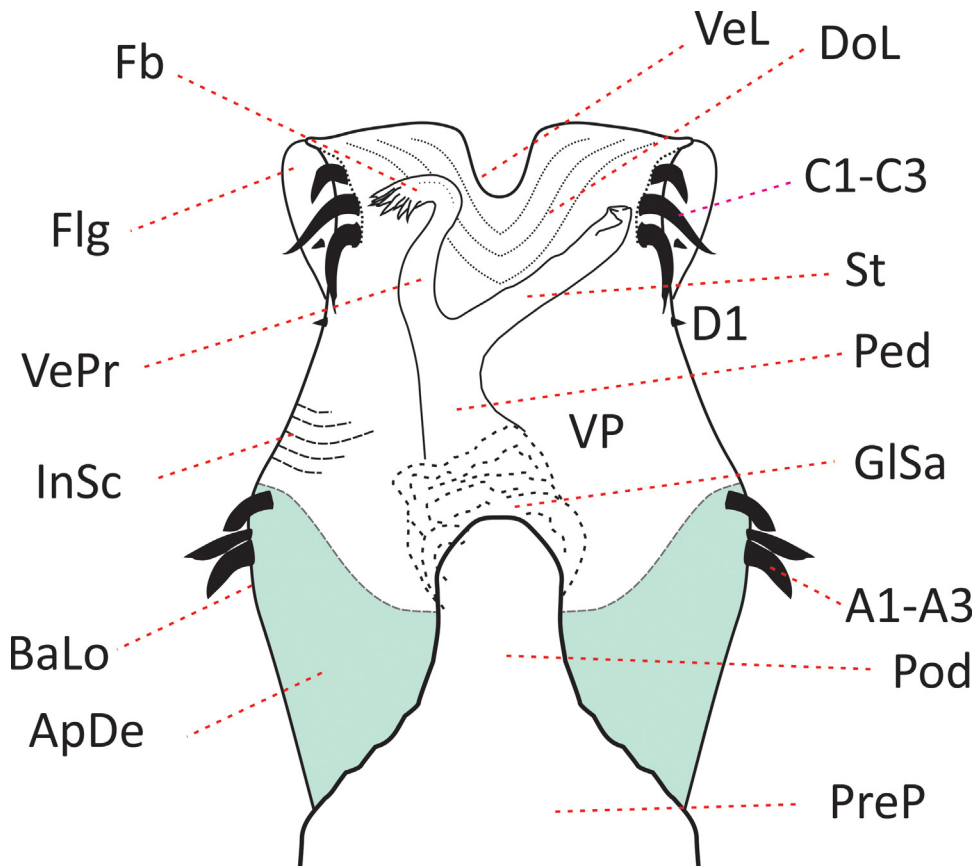


Fig. 1. Schematic Mitobatinae penis, a composite of different species, to illustrate the terminology used in this paper. A1–A3: Macrosetae A1–A3; ApDe: antipodial depression (concave region of VP, opposite to podium; in green); BaLo: Basal lobe of ventral plate; C1–C3: macrosetae C1–C3; D1: macroseta D1; DoL: Dorsal layer of VP distal border, here V-shaped excavated; Flg: flange (hyaline “ear” of the lateral margin of VP); Fb: flabellum (multi serrate foliaceous structure); GlSa: Glans sac (multi-folded haematodocha); InSc: indian scars (ridges in the dorsal mid-portion of VP); Ped: pedestal (trapezoid sclerite forming the base of the stylus, arising from glans sac, clearly harder than it); Pod: podium (mid-apical portion of truncus which supports directly the glans sac); PreP: prepodium (distal part of truncus, making the transition to VP/glans); St: stylus (tube containing the ejaculatory duct and its opening); VePr: Ventral process of stylus; VeL: Ventral layer of VP distal border, here with small U-shaped cleft; VP: Ventral plate of penis.

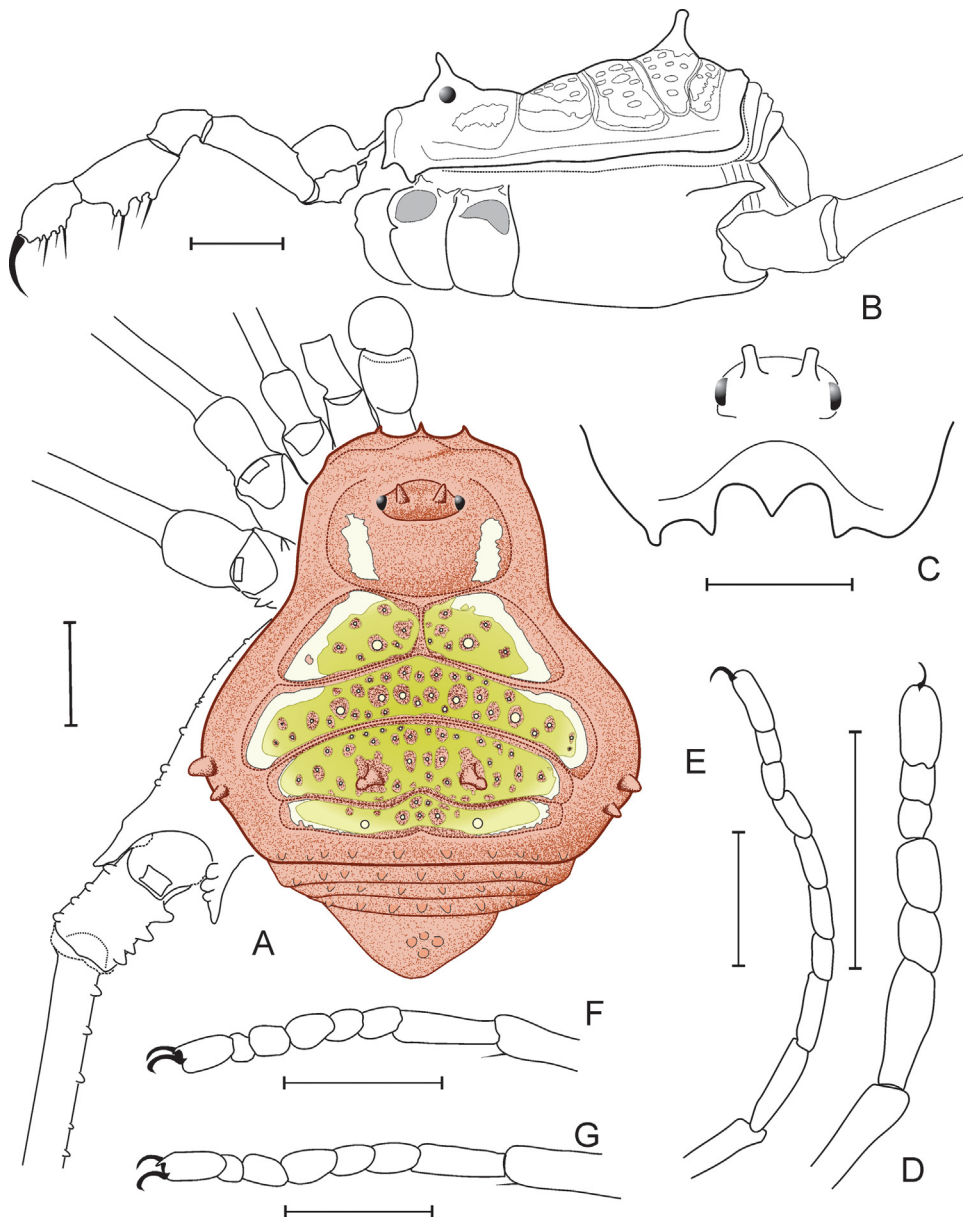


Fig. 2. *Discocyrtoides pinorum* sp. nov., ♂ holotype (MNRJ 11588). A. Habitus, dorsal view. B. Habitus, sinistrolateral view. C. Ocularium, frontal view. D to G. Tarsi I to IV, lateral view. Scale bars = 1 mm.

Diagnosis. Easily separated from *D. nigricans* by the vivid color pattern on dorsal scutum and by the latero-posterior tubercles at the lateral border of the scutum. Also, by the retrolateral apical (inner) apophysis of male Cx IV smaller than the outer apophysis and weaker armature of male Tr IV.

Description of male holotype. Measurements: CL: 1.7, CW: 2.6; AL: 2.6, AW: 4.3.

Dorsum (Fig. 2A–C): dorsal scutum outline type gamma (pyriform, lateral margins of carapace diverging slightly posteriorly; abdominal scutum widening abruptly forming a curve, widest at area II, then narrowing again until the posterior border, which is straight). Frontal hump moderately high and unarmed. Eye mound elliptical, low, armed

with a pair of divergent acuminate spines. Mesotergum divided into 4 areas, area I divided into left and right halves, area IV much shorter than each of the others. Scutum finely granular, with a pair of more prominent hemispherical tubercles at each area I and IV, also rows of small hemispherical granules in area II and a pair of capitate spines in area III. Lateral margin of scutum with two pairs of stout tubercles. Area V and free tergites I–III each with a transverse row of small acuminate tubercles.

Venter: coxae I–IV finely granular, II–IV connected by tubercular bridges, growing in size posteriorly. Stigmatic area Y-shaped, stigmata elliptical, exposed.

Pedipalpus (Fig. 2B): sturdy, Tr with 2 small setiferous tubercles, Fe with 1 ventro-basal and 1 meso-distal

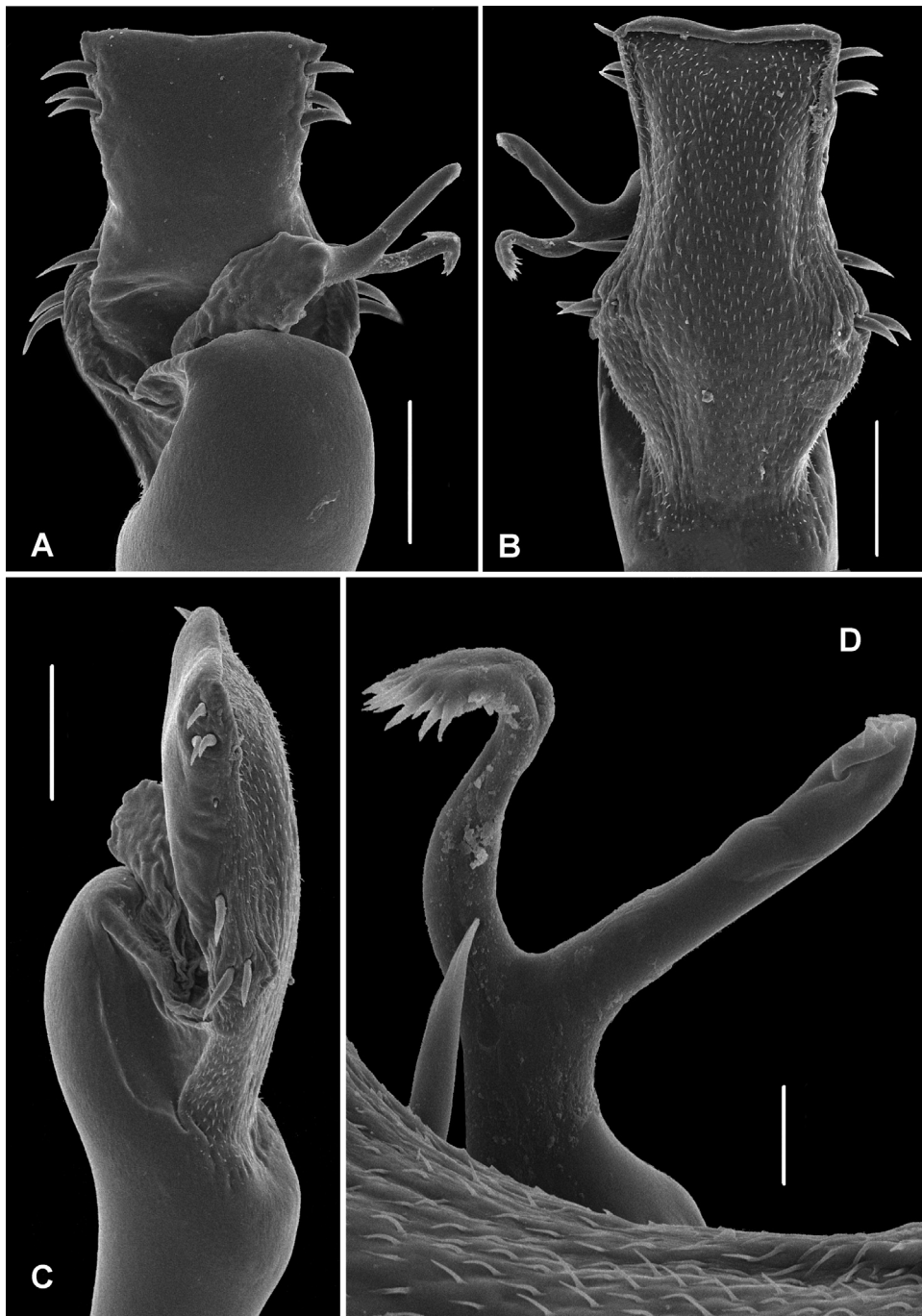


Fig. 3. *Discocyrtoides pinorum* sp. nov., ♂ holotype (MNRJ 11588), penis, distal part. A. Dorsal view. B. Ventral view. C. Dextralateral view. D. Glans, sinistrolateral view. Scale bars: 100 mm (A–C), 20 mm (D).

setiferous tubercles; Pa entirely unarmed. Ti and Ta armed with strong socketed spines on ventro-mesal and ventro-ectal surfaces. Tibia ventro-mesal with 4 (Iili), ventro-ectal with 4 (Iili) spines, tarsus ventro-mesal with 3 (Ili) and ventro-ectal with 4 (Iili) spines.

Legs (Figs 2A–B, D–G): All “long” legs segments straight, elongate slender (Fe I–IV: 2.9/7.0/5.4/9.5). Cx IV robust, projected well beyond dorsal scutum, with gently sinuous prodorso-apical spiniform apophysis and ventro-apical

apophysis with outer margin crenulate. Tr IV with 3 retrolateral apophyses. Basitarsal articles slightly thickened. Tarsal counts: 3(3)/9(3)/7/7.

Color: Background of dorsal scutum, free tergites and leg IV vivid orange with loose deep orange reticule. Spines of area III, both apophyses of coxa IV, trochanter IV and basal part of femur of leg IV much darker, deep brown. Background of legs I–III, chelicerae and pedipalps a little lighter than scutum, brilliant orange with deep orange

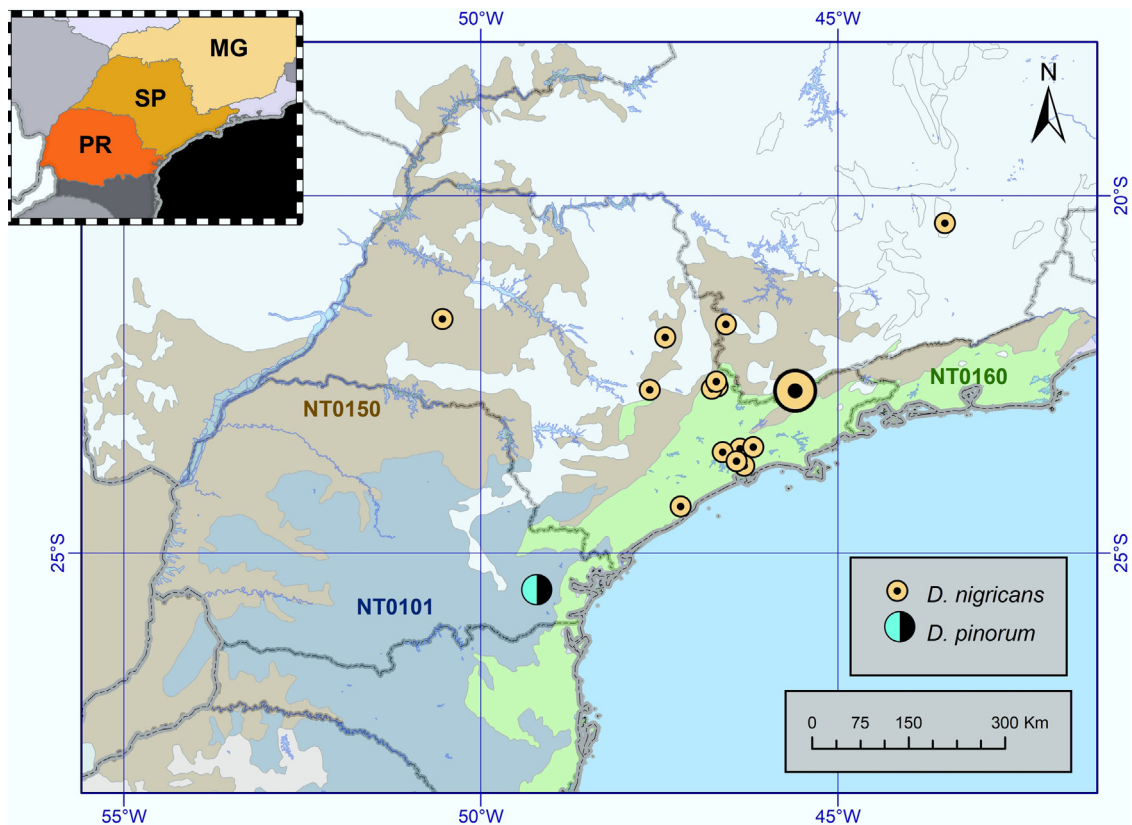


Fig. 4. Southern-southeastern Brazil, showing distribution of the two species of *Discocyrtoides*. WWF ecoregions of relevance are shaded in color and identified by their standard abbreviations. Abbreviations of Brazilian states are shown in the miniature map at top left. The type locality of *Discocyrtoides nigricans* is shown in double size.

reticule. Highly contrasting colored areas present cover most of areas I–IV and also posterior laterals of carapace; these areas are basically pale greenish yellow, but on the four areas only this color is mostly replaced in the middle portion by a darker shade, brilliant yellow green. Hemispherical tubercles of mesotergal areas pale greenish yellow. Ventral surface background same as DS with similar reticule. Leg IV darker than the others, especially Cx, Tr and basal Fe.

Genitalia (Figs 3A–D): ventral plate (VP) gradually arising from truncus by means of a neck, which widens steeply up to the basal lobe (BaLo), thus basal half of VP diamond-shaped (Fig. 3B). Entirely covered with type-1 microsetae, which extend into distal truncus a little beyond VP. Distal half of VP rectangular. Podium (Pod) well-developed, very wide, overlapping VP up to its half length (Figs 3A and C). Macrosetae (MS) of VP short and straight, A1–A3 inserted on lateral surface of VP, forming a triangle; B1 minuscule, fully ventral, aligned horizontally with the two basal A2–A3; C1–C3 also lateral, roughly in a row with a small gap between C1 and the others (Figs 3A–C); D1 minuscule, fully lateral, closer to C cluster than to A1; E1–E2 stunted, latero-distal, inserted close to cluster C. Distal border of VP uncleft and lateral border without any flange (Figs 3A–C). Ventral process (VePr) inserted in glans pedestal at a 10°–20° angle, initially pointing away from stylus and gradually bending away from it (Fig. 3D). Flabellum restricted to distal third of VePr, composed of

one main axis, [leave- or] mop-shaped with serrate margins (Fig. 3D). Stylus straight and smooth, without clearly defined head (Fig. 3D).

Female: abdominal scutum in lateral view much convex, spines of area III higher than in males and acuminate (instead of capitate). As typical in Mitobatinae, there is no inner apical apophysis in coxa IV and the outer apophysis is reduced to a simple short spine. Femur IV is short, comparable to femur III. Color pattern as in male.

Variation: Tarsal counts and color spots are remarkably uniform among the four specimens examined.

4. Discussion

I herein use as working phylogenetic hypothesis for the relationship among the genera of Mitobatinae the one put forward in a recent MP morphological cladistic analysis [13]. But, even after this exploration, the resolution of Mitobatinae genera is unsatisfactory. The mentioned work obtained reasonable bootstrap values only for *Ischnotherus*, *Promitobates*, and the clade *Mitobates* + *Mitobatula*. The then monotypic *Discocyrtoides* appeared as a sister-group to *Longiperna*. The assignment of the *D. pinorum* sp. nov. to *Discocyrtoides* is reasonably safe, as shown in my diagnosis given above, but it still has to be tested under a phylogenetic framework. As there is a number of undescribed mitobatines, it is better to wait until we have

a denser taxonomic sampling and additional characters to enhance the current landscape.

Disclosure of interest

The author declares that he has no competing interest.

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