

# New species and notes on *Dissomphalus* (Hymenoptera, Bethyridae) from Estação Biológica de Santa Lúcia, Santa Teresa, ES, Brazil

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**ABSTRACT.** Five new species of *Dissomphalus* Ashmead, 1893 are described and illustrated, all from Espírito Santo, Brazil: *D. h-ramus*, *D. verrucosus*, *D. laminaris*, *D. cristatus* and *D. scopatus*. New geographic records and variation data of *D. scamatus* Azevedo, 1999, *D. concavatus* Azevedo, 1999, *D. rectilineus* Azevedo, 1999, *D. vallensis* Evans, 1979, *D. gilvipes* Evans, 1979, *D. plaumanni* Evans, 1964, *D. napo* Evans, 1979, *D. truncatus* Azevedo, 2003 and *D. cornutus* Evans, 1964 are included.

**KEYWORDS.** Bethyridae, *Dissomphalus*, Brazil, Espírito Santo, systematics.

## INTRODUCTION

*Dissomphalus* Ashmead, 1893 is the largest bethyrid genus in the Neotropical region, with 153 species (AZEVEDO, 2003), but there are only nine species recorded from the State of Espírito Santo. In this study, five new species are described and six are recorded for the first time from Espírito Santo.

The material examined is deposited in the Entomological Collection of Universidade Federal do Espírito Santo (UFES). It was collected through sweeping of vegetation, in a trail of primary Atlantic rain forest at the Estação Biológica de Santa Lúcia, Santa Teresa, Espírito Santo (19°58'S, 40°32'W), Brazil.

The nomenclature followed AZEVEDO (1999a, 2003) and the main measurements and indices were: length of head (LH), width of head (WH), width of frons (WF), height of eye (HE), ocello-ocular line (OOL), width of the ocellar triangle (WOT), vertex-ocular line (VOL), diameter of anterior ocellus (DAO) and length of fore wing (LFW).

### *longiclypeus* species group

#### *Dissomphalus scamatus* Azevedo, 1999

*Dissomphalus scamatus* AZEVEDO, 1999a:343, figs. 88-92, 186, type locality: Paraná, Brazil, holotype in Universidade Federal do Paraná, Curitiba, Brazil (DZUP).

Distribution. Paraná; it is recorded for the first time in the State of Espírito Santo, Brazil.

Variation. In the newly recorded series, males have the genitalia with the apex of the outer lobe of dorsal body of aedeagus bidentate and the teeth of the ventral ramus larger than in the type series.

Material examined. BRAZIL, **Espírito Santo**: Santa Teresa (Estação Biológica de Santa Lúcia), 3 ♂, 27.IX.2001, sweeping, C.O. Azevedo & R. Kawada col. (UFES).

### *ulceratus* species group

#### *Dissomphalus concavatus* Azevedo, 1999

*Dissomphalus concavatus* AZEVEDO, 1999a:346, figs. 98-101, 188-189, type locality: Paraná, Brazil, holotype in DZUP.

Distribution. Paraná and Distrito Federal; it is now recorded from Espírito Santo, Brazil.

Material examined. BRAZIL, **Espírito Santo**: Santa Teresa (Estação Biológica de Santa Lúcia), 12 ♂, 30.I-10.XII.2001, sweeping, C.O. Azevedo & R. Kawada col. (UFES).

#### *Dissomphalus rectilineus* Azevedo, 1999

*Dissomphalus rectilineus* AZEVEDO, 1999a:347, figs. 102-108, 190, type locality: Paraná, Brazil, holotype in DZUP.

Distribution. Espírito Santo, Rio de Janeiro, São Paulo and Paraná, Brazil.

Variation. The present series shows the same variation pattern on the tergal process as the type series.

Material examined. BRAZIL, **Espírito Santo**: Santa Teresa (Estação Biológica de Santa Lúcia), 158 ♂, 30.I-10.XII.2001, sweeping, C.O. Azevedo & R. Kawada col. (UFES).

### *vallensis* species group

#### *Dissomphalus vallensis* Evans, 1979

*Dissomphalus vallensis* EVANS, 1979:281, fig. 4, type locality: Valle, Colombia, holotype in Florida State Collection of Arthropods, Gainesville, U.S.A. (FSCA).

Distribution. Valle, Colombia; recorded for the first time in Espírito Santo, Brazil.

Variation. In the present series, the males can have the apical third of the ventral ramus of the aedeagus wider

than in the type series.

Material examined. BRAZIL, **Espírito Santo**: Santa Teresa (Estação Biológica de Santa Lúcia), 2 ♂, 28.III-10.XII.2001, sweeping, C.O. Azevedo & R. Kawada col. (UFES).

*politus* species group

***Dissomphalus gilvipes* Evans, 1979**

*Dissomphalus gilvipes* EVANS, 1979:283, fig. 7, type locality: Valle, Colombia, holotype in FSCA.

Distribution. The species is widely distributed in the Neotropical region, now recorded for the first time in Espírito Santo, Brazil.

Material examined. BRAZIL, **Espírito Santo**: Santa Teresa (Estação Biológica de Santa Lúcia), 6 ♂, 30.I-23.VIII.2001, sweeping, C.O. Azevedo & R. Kawada col. (UFES).

*tuberculatus* species group

***Dissomphalus plaumanni* Evans, 1964**

*Dissomphalus plaumanni* EVANS, 1964:58, figs. 19, 27, 32, 35, type locality: Santa Catarina, Brazil, holotype in The Natural History Museum, London, U.K. (BMNH).

Distribution. This is the Neotropical species of *Dissomphalus* with the widest distribution (AZEVEDO, 1999b). It was recorded for the first time from Espírito Santo at the Reserva Biológica de Duas Bocas (AZEVEDO, 2003) and here one specimen is reported for the Estação Biológica de Santa Lúcia.

Material examined. BRAZIL, **Espírito Santo**: Santa Teresa (Estação Biológica de Santa Lúcia), ♂, 23.IV.2001, sweeping, C.O. Azevedo & R. Kawada col. (UFES).

*punctatus* species group

***Dissomphalus napo* Evans, 1979**

*Dissomphalus napo* EVANS, 1979:282, fig. 5, type locality: Napo, Ecuador, holotype in FSCA.

Distribution. Ecuador, Peru, Paraguay, Brazil (Amazonas) and it is now recorded for the first time in Espírito Santo, Brazil.

Material examined. BRAZIL, **Espírito Santo**: Santa Teresa (Estação Biológica de Santa Lúcia), 5 ♂, 23.IV-26.X.2001, sweeping, C.O. Azevedo & R. Kawada col. (UFES).

*conicus* species group

***Dissomphalus truncatus* Azevedo, 2003**

*Dissomphalus truncatus* AZEVEDO, 2003:37, figs. 50-52, type locality: Paraná, Brazil, holotype in DZUP.

Distribution. Paraná; recorded for the first time in Espírito Santo, Brazil.

Material examined. BRAZIL, **Espírito Santo**: Santa Teresa (Estação Biológica de Santa Lúcia), 23 ♂, 30.I-10.XII.2001, sweeping, C.O. Azevedo & R. Kawada col. (UFES).

*conicus* species group

***Dissomphalus h-ramus* sp. nov.**

(Figs. 1-3)

Description. Holotype ♂, length 4.2 mm; LFW 3.2 mm.

Color. Head black; mesosoma and metasoma dark castaneous; mandible castaneous; clypeus dark castaneous; palpi castaneous; antenna dark castaneous with scape lighter; wings subhyaline.

Head: mandibles bidentate. Clypeus with trapezoidal median lobe. First four antennal segments ratio 18:6:5:6, segment IX 1.5x as long as wide. Front strongly coriaceous, with shallow, large and dense punctures. LH 1.01x WH; WF 0.6x WH; WF 1.2x HE; OOL 0.95x WOT; DAO 0.35x WOT; posterior ocelli distant from the vertex crest 2.14x DAO. Vertex straight, corner broadly rounded; occipital carina visible in dorsal view; VOL 0.56 HE. Mesosoma: thorax coriaceous as frons; pronotal disc 0.72x as long as wide, propodeal disc with median carina nearly complete, with strong striae. Metasoma: tergite II with a pair of small, elliptical sublateral depressions, closer to lateral margin than each other and close to anterior margin of the tergite I, wider than long, deeper around the tubercle, each depression with a prominent and flat-topped tubercle, with a pit on the top, bearing a tuft of hairs directed slightly downwards and inwards. Hypopygium with posterior margin concave.

Genitalia (figs. 1-3). Paramere with acute apex, slightly arched inwards, ventral and dorsal margin straight; ventral ramus as long as dorsal body, laminar, surface horizontal, with two pairs of apical arms, the outer one with rounded apex and an acute inner projection below the apex, the inner one short; dorsal body with two pairs of apical lobes, the outer pair tubular and sinuous, joined by a calyx-shaped connection below, dorsal margin serrated apically, apex strongly arched downwards, ventral margin with two sharpened teeth, the apical one longer (fig. 3); the inner pair stout, membranous and hairy.

Type material. BRAZIL, **Espírito Santo**: Santa Teresa (Estação Biológica de Santa Lúcia), holotype ♂, 27.IX.2001, sweeping, C.O. Azevedo & R. Kawada col. (UFES). Paratypes: same locality of holotype, 5 ♂, 23.II-10.XII.2001, sweeping, C.O. Azevedo & R. Kawada col. (UFES).

Variations. Dorsal body of the aedeagus with the two teeth acute and apex not directed downwards.

Diagnosis. This species belongs to the *conicus* species group. It differs from the other species of the group by the aedeagus with h-shaped ventral ramus and tubular dorsal body.

Etymology. The specific epithet refers to the h-shaped ventral ramus.

***Dissomphalus verrucosus* sp. nov.**

(Figs. 4-5)

Description. Holotype ♂, length 3.7 mm; LFW 2.6 mm.

Color: head black; mesosoma and metasoma dark castaneous; mandible castaneous; clypeus dark castaneous; palpi and antenna castaneous; wings subhyaline.

Head: mandible bidentate. Clypeus with trapezoidal median lobe. First four antennal segments ratio 20:9:7:7. Front strongly coriaceous, with shallow, large and dense punctures. LH 1.02x WH; WF 0.63x WH; WF 1.19x HE; OOL 1.0x WOT; DAO 0.41x WOT; posterior ocelli distant from the vertex crest 1.2x DAO. Vertex straight, corners broadly rounded. VOL 0.52x HE. Mesosoma: thorax coriaceous as frons. Pronotal disc 0.75x as long as wide, propodeal disc with median carina incomplete, with strong striae. Metasoma: tergite II with a pair of shallow and elliptical lateral depressions, close to the margin of the tergite I, each depression with a prominent flat-topped tubercle, with a pit on the top, bearing a tuft of hairs inclined outwards. Hypopygium with posterior margin straight.

Genitalia (figs. 4-5). Paramere with apex rounded, slightly arched inwards, very wide, specially basally; ventral ramus of the aedeagus shorter than dorsal body, laminar, surface horizontal, basal half wider, apex thin and rounded, barely arched outwards; dorsal body with two pairs of apical lobes, the outer pair wide, laminar, surface horizontal, with apex rounded and arched upwards, apical half of the outer side with a laminar projection directed upwards and with numerous warts in the basal surface; inner pair stout, membranous and hairy.

Type material. BRAZIL, **Espírito Santo**: Santa Teresa (Estação Biológica de Santa Lúcia), holotype ♂, 23.III.2001, sweeping, C.O. Azevedo & R. Kawada col. (UFES).

Diagnosis. This species belongs to the *conicus* species group. It is easily distinguishable from the other species by having the dorsal body with many small warts. The tergal processes are very close to the lateral areas of the tergite II.

Etymology. The specific epithet refers to the presence of the small warts in the dorsal body of the aedeagus.

***Dissomphalus laminaris* sp. nov.**

(Figs. 6-9)

Description. Holotype ♂, length 4.0 mm; LFW 3.2 mm.

Color. Head and mesosoma black; metasoma and clypeus dark castaneous; palpi castaneous; antenna castaneous with apex dark castaneous; wings subhyaline.

Head: mandible bidentate. Clypeus with trapezoidal median lobe, with a strong median carina. First four antennal segments ratio 18:6:5:6, segment XI 1.25x longer than wide. Front strongly coriaceous, with shallow, large and dense punctures. LH 1.06x WH; WF 0.69x WH; WF 1.17x HE; OOL 1.07x WOT; DAO 0.35x WOT; posterior ocelli distant from the vertex crest 1.4x DAO. Vertex barely convex, corner subangulate; occipital carina visible in dorsal view; VOL 0.51x HE. Mesosoma: thorax coriaceous as frons, propodeal disc 0.71x as long as wide, with median carina complete and strong striae. Metasoma: tergite II with a pair of shallow and rounded depressions, each one with a tubercle, flat-topped, with a pit on the top, placed sublaterally in the depression, closer to the lateral margin than to each other, closer to the anterior margin of the tergite II, with small tuft of hairs.

Genitalia (figs. 6-9). Paramere with apex rounded,

barely arched inwards, with a series of small rounded teeth in the ventral side, base wider than apex in dorsal view, apical half with a concavity, basivolsella with conspicuous setae in the inner face; ventral ramus of aedeagus longer than dorsal body, straight, laminar, surface horizontal, with apical half divided in two arms, the outer one with the apex rounded and the inner one short and connected to dorsal body; dorsal body of aedeagus with two pairs of apical lobes, the outer pair laminar, straight, with apex with two sharpened teeth, one directed upwards and the other directed downwards (fig. 8), and several small teeth around them; the inner pair stout and membranous; basal process laminar, slightly arched upwards (fig. 9).

Type material. BRAZIL, **Espírito Santo**: Santa Teresa (Estação Biológica de Santa Lúcia), holotype ♂, 23.II.2001, sweeping, C.O. Azevedo & R. Kawada col. (UFES). Paratypes: same locality of holotype, 7 ♂, 23.II-10.XII.2001, sweeping, C.O. Azevedo & R. Kawada col. (UFES).

Diagnosis. This species belongs to the *conicus* species group. It is similar to *D. filus* Azevedo, 2003, but *D. laminaris* has aedeagus with apex of the ventral ramus divided in two arms, one rounded and the other acute, and dorsal body divided in three blades. The tubercles of processes are small compared with those of other species in the group.

Etymology. The specific epithet refers to the dorsal body of the aedeagus that is divided in many blades.

*laticephalus* species group

***Dissomphalus cristatus* sp. nov.**

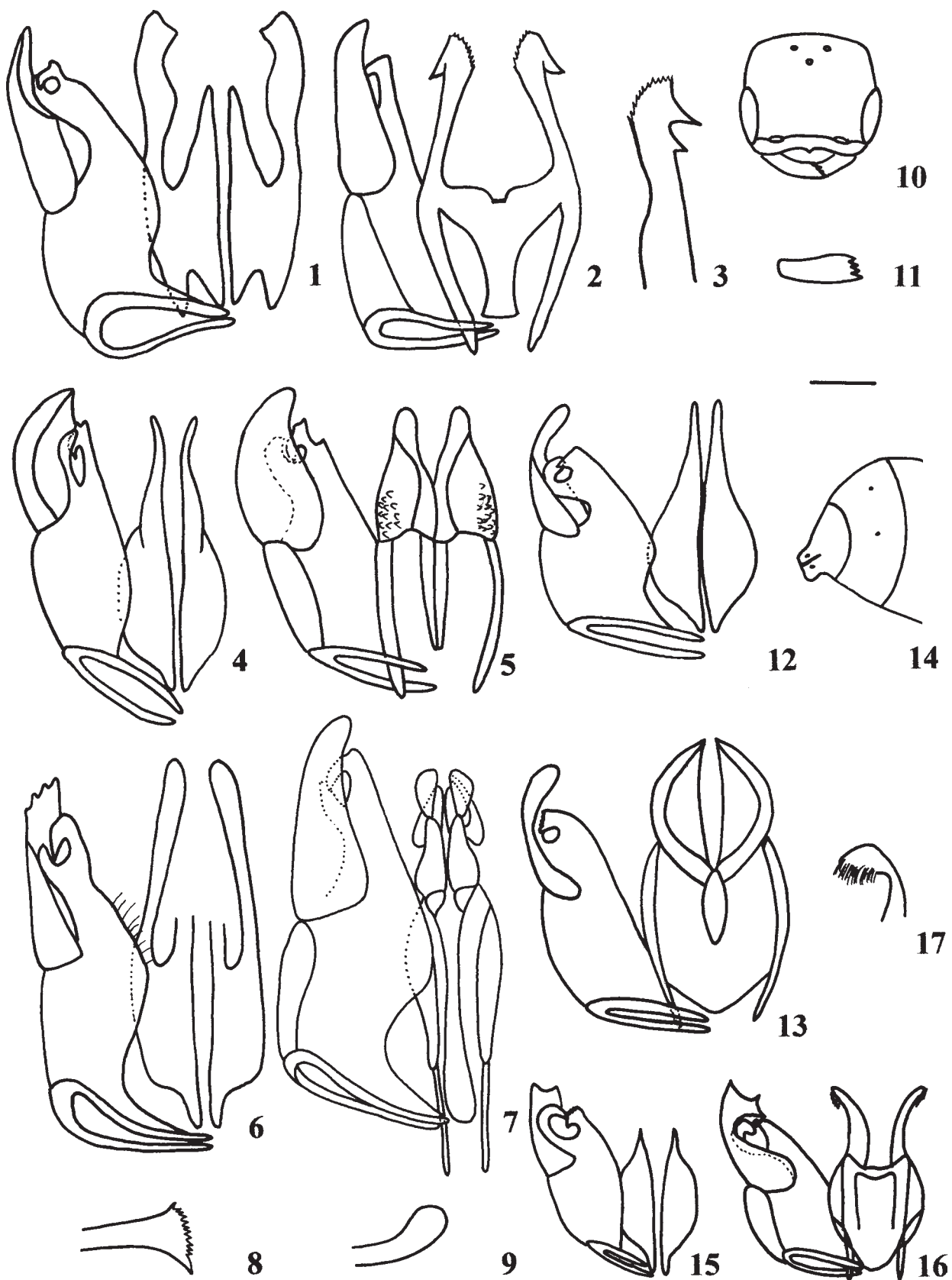
(Figs. 10-13)

Description. Holotype ♂, length 1.4 mm; LFW 1.0 mm.

Color. Head black; mesosoma and metasoma dark castaneous; mandible castaneous; clypeus dark castaneous; palpi castaneous; wings subhyaline.

Head (fig. 10): mandible tetradentate with basal tooth larger than the others (fig. 11). Clypeus broad, slightly projected, with a median conspicuous tooth, median carina high in lateral view. First four antennal segments ratio 15:6:3:3, segment XI 1.0x as long as wide. Front slightly shiny, weakly coriaceous, with small and sparse punctures. LH 0.93x WH; WF 0.74x WH; WF 1.88x HE; OOL 1.45x WOT; DAO 0.45x WOT; posterior ocelli distant from the vertex crest 1.6x DAO. Vertex barely convex, corner subangulate; occipital carina visible in dorsal view; VOL 0.94x HE. Mesosoma: thorax coriaceous and shiny as frons. Propodeal disc 0.97x as long as wide, with median carina incomplete, slightly striate. Metasoma: tergite II without tergal process. Hypopygium with posterior margin straight.

Genitalia (figs. 12-13). Paramere with base as wide as apex; margin concave and apex rounded and directed inwards in ventral view; dorsal margin with small projection basally; ventral ramus slightly shorter than dorsal body, basal half wide and apical half thin, long and slightly arched outwards; dorsal body laminar, surface vertical basally, with apical half laminar, outer face strongly convex.



Figs. 1-17. *Dissomphalus h-ramus* sp. nov., genitalia: 1, ventral; 2, dorsal; 3, outer lobe of aedeagus, lateral. *Dissomphalus verrucosus* sp. nov., genitalia: 4, ventral; 5, dorsal. *Dissomphalus laminaris* sp. nov., genitalia: 6, ventral; 7, dorsal; aedeagus: 8, outer lobe, lateral; 9, basal process, lateral. *Dissomphalus cristatus* sp. nov., 10, head, dorsal; 11, mandible, frontal; genitalia: 12, ventral; 13, dorsal. *Dissomphalus scopatus* sp. nov., 14, metasoma, dorsal; genitalia: 15, ventral; 16, dorsal; 17, aedeagus, lateral. Scale bar: 250  $\mu$ m.

Type material. BRAZIL, **Espírito Santo**: Santa Teresa (Estação Biológica de Santa Lúcia), holotype ♂, 23.II.2001, sweeping, C.O. Azevedo & R. Kawada col. (UFES).

Diagnosis. This species is similar to *D. laticephalus* Azevedo, 2003, but it has the head not so wide, mandible with lower margin straight, ocellar triangle wider, metasoma without tergal process and aedeagus with apex of the ventral ramus thin.

Etymology. The specific epithet refers to the high median carina of the clypeus.

Species not inserted in any species group

### *Dissomphalus cornutus* Evans, 1964

*Dissomphalus cornutus* EVANS, 1964:56, figs. 25, 31, 36, type locality: Santa Catarina, Brazil, holotype in BMNH.

Distribution. Tucumán, Argentina, Ecuador and São Paulo, Paraná and Santa Catarina, Brazil, now recorded for the first time in Espírito Santo, Brazil.

Variation. In the Espírito Santo series, the males have the clypeus with median carina less prominent, forming a shallow concavity, the horn shorter and the tergal process closer to each other in comparison to the type series.

Material examined. BRAZIL, **Espírito Santo**: Santa Teresa (Estação Biológica de Santa Lúcia), 31 ♂, 23.IV-27.IX.2001, sweeping, C.O. Azevedo & R. Kawada col. (UFES).

### *Dissomphalus scopatus* sp. nov.

(Figs. 14-17)

Description. Holotype ♂, length 3.25 mm; LFW 2.6mm.

Color. Head and mesosoma black; pronotum and metasoma dark castaneous; mandible castaneous; clypeus dark castaneous; palpi castaneous; antenna dark castaneous with light base; wings subhyaline.

Head: mandible bidentate. Clypeus with a very long median tooth. First four antennal segments ratio 18:6:5:6, segment XI 1.5x longer than wide. Front strongly coriaceous, with shallow, large and dense punctures. LH 1.01x WH; WF 0.69x WH; WF 1.46x HE; OOL 1.06x WOT; DAO 0.4x WOT; posterior ocelli distant from the vertex crest 0.83x DAO. Vertex straight, corner somewhat rounded, occipital carina visible in dorsal view; VOL 0.61x HE. Mesosoma: thorax coriaceous as frons. Propodeal disc 1.08x as long as wide, with median carina incomplete, with polished callus in the postero-lateral region, declivity

strongly striate. Metasoma (fig. 14): tergite II with a pair of tiny tufts, submedian, closer to median line than to the lateral margin of tergite, each tuft with few short hairs directed backwards. Hypopygium with posterior margin straight.

Genitalia (figs. 15-17). Paramere longer than wide, with apical margins biconcave and with three sharpened projections; dorsal margin produced basally; ventral ramus of the aedeagus laminar, surface horizontal, with wide base and acute apex, outer margin convex and inner margin nearly straight; dorsal body with a pair of vertical laminae, arched apically downwards, ventral margin with a dense tuft of hairs apically.

Type material. BRAZIL, **Espírito Santo**: Santa Teresa (Estação Biológica de Santa Lúcia), holotype ♂, 23.II.2001, sweeping, C. O. Azevedo & R. Kawada col. (UFES).

Diagnosis. This species runs to couplet 15 in the key by AZEVEDO (2003) along with *D. rettenmeyer* Evans, 1969 and *D. bispinulatus* Evans, 1979, because they all have clypeus with a large median tooth, though their tergal processes are quite different. *Dissomphalus scopatus* is similar to *D. microstictus* Evans, 1969 by having tergal processes minute, but the genitalia of the former is unique within *Dissomphalus*, with an apical lobe of aedeagus brush-shaped.

Etymology. The specific epithet refers to the dense apical tuft of hairs at the ventral margin of the dorsal body of the aedeagus.

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