

A new species of *Sycorax* Curtis, 1839 (Diptera, Psychodidae) from the Atlantic Forest in southeastern Brazil

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ABSTRACT. A new species of *Sycorax* Curtis, 1839 (Diptera, Psychodidae) from the Atlantic Forest in southeastern Brazil. *Sycorax bravo* Santos, Ferreira & Falqueto **sp. nov.** is described and illustrated based on samples collected with a Mörcke trap installed on the ground at the Biological Station of Santa Lúcia, municipality of Santa Teresa, in the Brazilian state of Espírito Santo. Males have a paramere with a spiniform prolongation on the distal surface and an aedeagus with a long posterior membranous dorsal prolongation. Females have a racket-shaped genital furca and tubular spermatheca, tapered on the apical third. This finding raises the number of *Sycorax* species known from Brazil to seven.

KEYWORDS. Moth fly; Neotropics; Sycoracinae; taxonomy.

RESUMO. Espécie nova de *Sycorax* Curtis, 1839 (Diptera, Psychodidae) da Mata Atlântica, sudeste do Brasil. *Sycorax bravo* Santos, Ferreira & Falqueto **sp. nov.** é descrita e ilustrada a partir de exemplares coletados com armadilha Mörcke instalada sobre o solo, na Estação Biológica de Santa Lúcia, município de Santa Teresa, estado do Espírito Santo, Brasil. Machos apresentam parâmetro com prolongamento espiniforme na superfície distal e edeago com longo prolongamento posterior membranoso e dorsal. Fêmeas com forquilha genital em forma de raquete e espermateca tubular, afilada no terço apical. Eleva-se para sete o número de espécies de *Sycorax* para o Brasil.

PALAVRAS-CHAVE. Psychodidae; região Neotropical; Sycoracinae; taxonomia.

The subfamily Sycoracinae Jung, 1954 of the family Psychodidae Newman, 1834 is notable in having females with mouthparts adapted to suck blood (Duckhouse 1972; Young 1979). The species *Sycorax silacea* Curtis, 1839 is proved to be haemotaphagous, and *S. wampukrum* Bravo & Salazar-Valenzuela, 2009 probably feeds of blood as well (Bravo & Salazar-Valenzuela 2009). According to Jezek's revision (1999), there were 30 species of Sycoracinae described worldwide. After that, eight new species were published in Neotropics (Bravo 2003, 2007; Bejarano *et al.* 2008; Bravo & Salazar-Valenzuela 2009; Santos & Bravo 2009; Santos *et al.* 2009; Bravo *et al.* 2010), taking to 38 species of Sycoracinae described to date, 14 of which occur in the Neotropics.

Jezek (1999) included all the current species of Sycoracinae in *Sycorax* Curtis, 1839, although for Duckhouse (1972) and Santos *et al.* (2009) this subfamily possesses three genera: *Aposycorax* Duckhouse, 1972, with one species; *Parasycorax* Duckhouse, 1972, with four species; and *Sycorax*, with 33. Six species of *Sycorax sensu* Duckhouse (1972) have been described from Brazil: one species from the Amazon Basin, *S. longispinosa* Bravo, 2007; and other five from the Atlantic Forest, *S. assimilis* Barreto, 1956; *S. bahiensis* Bravo, 2003; *S. cariacicaensis* Santos & Bravo, 2009; *S. espiritosantensis* Santos & Bravo, 2009 and *S. confusa* Bravo, Rocha & Santos, 2010 (Barreto 1956, Bravo 2003, 2007, Santos & Bravo 2009, Bravo *et al.* 2010). In this paper, the male and female of *Sycorax bravo* **sp. nov.** are

described and illustrated from the Atlantic Forest in southeastern Brazil.

MATERIAL AND METHODS

Specimens of a new species were collected during a field trip to the Biological Station of Santa Lúcia, a fragment of Atlantic forest in the Serra da Mantiqueira, southeast Brazil. This area is abundantly well-watered, with one or two dry months and the remainder humid or partially humid, the mean annual temperature varies between 14.3 and 26.2°C (Thomaz & Monteiro 1997). The vegetation is typical of dense rain forest, the terrain is mountainous, elevation varying from 550 to 900 m with steep slopes and small valleys between the mountains, and the predominant soil type is red-yellow dystrophic latossolic (Mendes & Padovam 2000). The biodiversity is high, even greater than other areas of Atlantic forest (Thomaz & Monteiro 1997; Passamani *et al.* 2000).

All specimens were collected with a Mörcke trap installed on the ground. Forty specimens (19 males and 21 females) were mounted in Canada balsam and Berlese medium, using the method of Barretto & Coutinho (1940), but without clearing in 10% KOH, the species being naturally very pale. These specimens were deposited in the Entomological Collection Prof. Johann Becker of the Museu de Zoologia of the Universidade Estadual de Feira de Santana, Brazil (MZUEFS). Other material examined, corresponding to 22 males and 12 females from other Mörcke trap, preserved in 70% alcohol,

was too deposited in MZUEFS. Morphological terminology for Diptera follows that of Cumming & Wood (2009) and for Psychodidae that of Quate & Vockeroth (1981), Duckhouse (1990) and Bravo (2007).

RESULTS

Sycorax bravo Santos, Ferreira & Falqueto sp. nov.

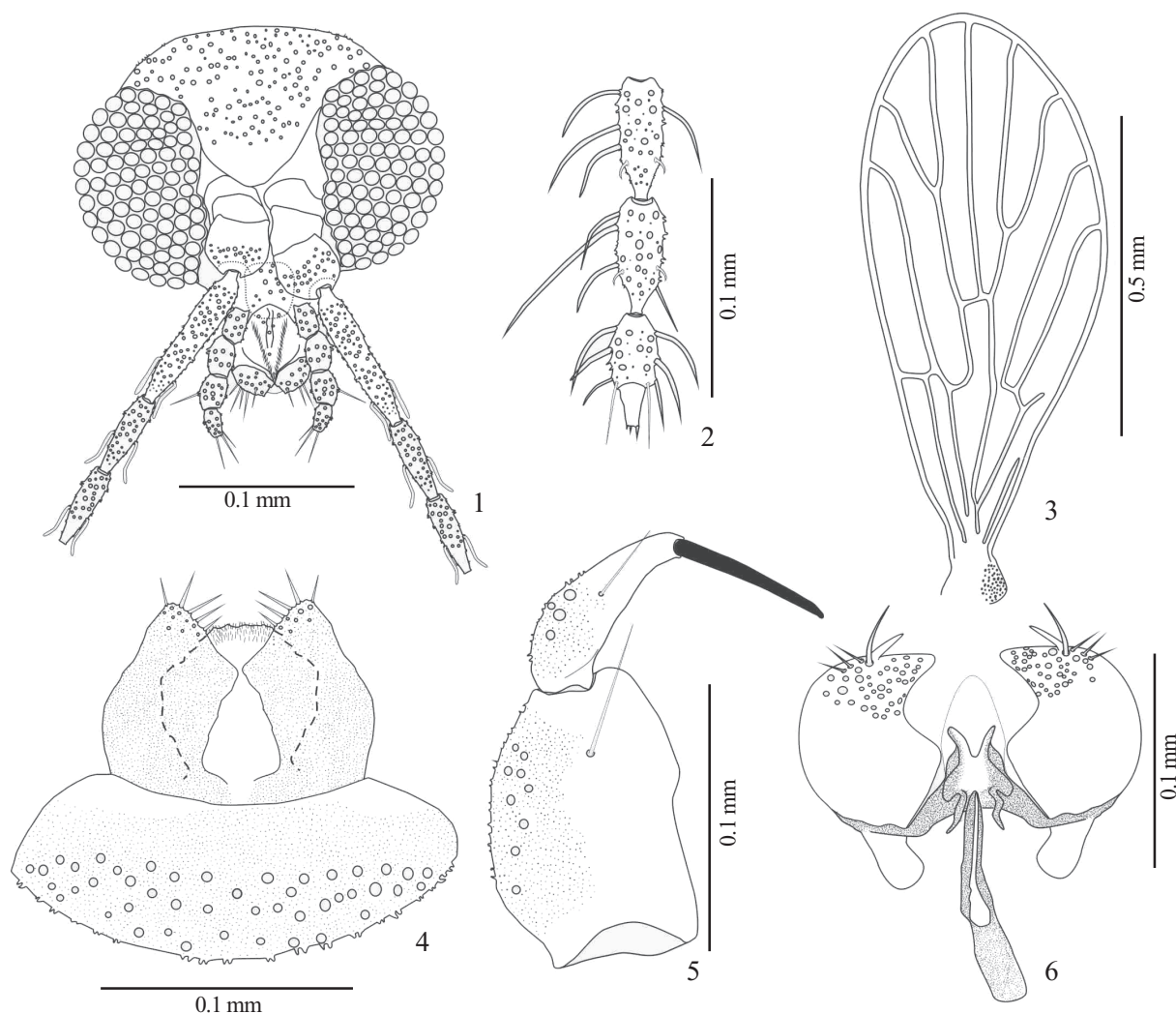
(Figs. 1–11)

Diagnosis. Eyes rounded in lateral view, without interocular bridge and with discrete groove at insertion of the antenna, which has 15 segments and apicule. Palpus with four small segments. Wings broad, apex rounded. Single longitudinal vein between radial and median forks; Sc and CuA₂ short, latter not reaching a margin of wing; m-m absent. Male terminalia not inverted; paramere with a spiniform prolongation on the distal surface; aedeagus with a long posterior membranous dorsal prolongation. Females with sclerites of eighth abdomi-

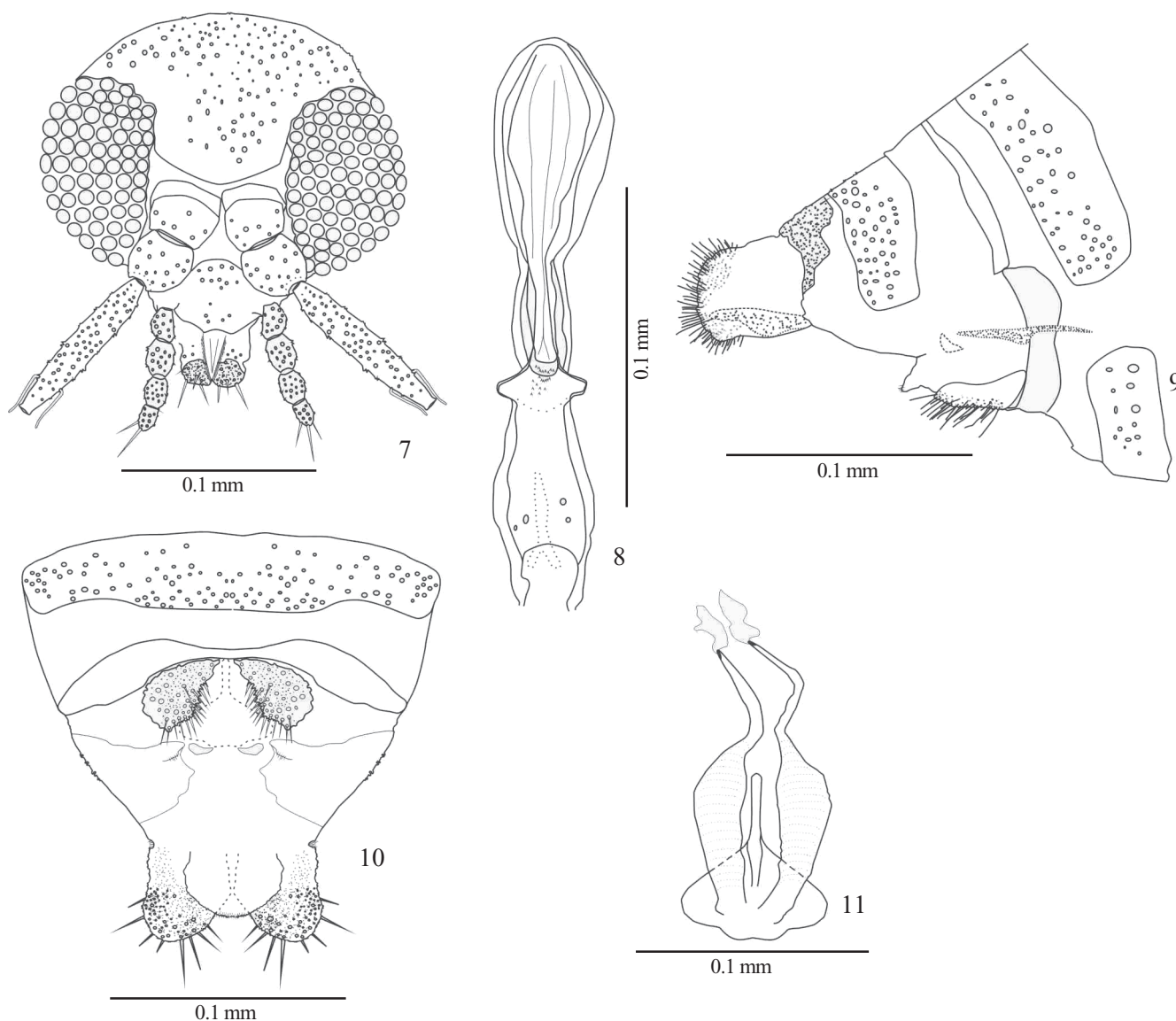
nal segment fine and hairless. Spermathecae tubular, tapered on apical third, terminating in sclerotized apical button. Genital furca racket-shaped.

Description. Holotype male. Length total 1.1 mm, very pale brown.

Head (Fig. 1) subcircular in frontal view, slightly flattened dorsoventrally, 1.4 times broader than long; eyes rounded in lateral view, discrete groove close to insertion of the antenna, interocular distance 7.8 times diameter of ommatidium; antenna with 15 segments; scape irregular in the form, broader than long, pyramid-shaped in the paratypes; pedicel sub-spherical, 1.2 times larger than scape; flagellomeres cylindrical, tapered on distal fourth, XIII not tapered, flagellomere I 1.8 times longer than flagellomere II, other flagellomeres progressively shorter, V and VI equivalent in length; ascoids paired, unidigitiforms, inserted on each side of flagellomeres I–III only, extending beyond apex of flagellomeres; conical apicule ornamented with apical spines located on flagellomere XIII, around 0.5 times smaller than flagellomere; distal extremity



Figs. 1–6. *Sycorax bravo* sp. nov., male: 1, head; 2, flagellomeres XI–XIII, apicule; 3, wing; 4, epandrium, cerci and sternite 10; 5, gonocoxite and gonostyle; 6, aedeagal apodeme, aedeagus and paramere.



Figs. 7–11. *Sycorax bravoii* sp. nov., female: 7, head; 8 cibarium; 9–10, terminal sclerites in lateral and ventral views; 11, spermathecae, spermathecal ducts and genital furca.

of flagellomere XIII bearing pair of transparent bristles longer than apicule; palpus 0.7 times length of flagellomere I, four short palpomeres, last of these finer than the others, palpal formula 1.0, 1.2, 1.0, 0.8; labrum triangular; clypeus rectangular, 0.5 times length of labrum (Figs. 1–2). Wing length 0.9 mm, 2.3 times longer than width. Apex rounded; Sc reaching C; R_{4+5} terminating beyond apex; vein r-m short; m-m absent; CuA_2 short, not reaching margin of wing (Fig. 3). Epandrium with proximal margin convex and distal margin concave; cercus longer than broad in ventral view, with bristles inserted on posterior extremity; sternite 10 shorter than cercus, extremity truncated micropilose (Fig. 4). Gonocoxite cylindrical, robust, 1.6 times longer than broad, patches of cell-like bristles on external convex surface, long bristle inserted on internal surface, at the base of apical third; gonostyle slender, 0.7 times the length of gonocoxite, supra-median seta, apical spine 0.8

times the length of gonostyle (Fig. 5). Paramere robust, narrowing at base, 1.7 times longer than broad, concave internally, with spiniform prolongation on distal surface; distal third of paramere pilose, longer bristle inserted at base of spiniform prolongation; aedeagus bifid, sclerotized, base expanded laterally; aedeagus presenting posterior membranous prolongation dorsally, with rounded extremity, almost as long as the paramere; aedeagal apodeme 1.2 times longer than paramere, base rounded and little sclerotized (Fig. 6).

Paratype female. Similar to male. Total length 1.1 mm, very pale brown. Head shorter than that of male. Head 1.4 times broader than long; interocular distance 7.8 times diameter of ommatidium (Fig. 7). Cibarium with inconspicuous spines (Fig. 8). Wing similar to that of male, length 1.0 mm, 2.5 times larger than width. Tergite 8 fine and without bristles, inserted on to sternite 8; sternite 8 sub-rectangular in lateral view, without

bristles, with two pilose lobes; tergite 9 sub-rectangular and pilose; tergite 10 little sclerotized and lacking bristles; cercus sub-rectangular, longer than broad in ventral view; sternite 10 short, apex rounded and micropilose (Figs. 9–10). Genital furca racket-shaped in ventral view, proximal extremity digitiform and distal base expanded; greatest width at base 0.9 times length of furca; spermathecal duct short and smooth; spermatheca tubular, little sclerotized, lightly striated, tapered on apical third, terminating in sclerotized button, which gives way to an amorphous tenuous sac (Fig. 11). Spermathecal duct opening at base of genital furca. Total length of spermatheca and spermathecal duct 1.8 times larger than genital furca.

Type material. Holotype: Male slide mounted, BRAZIL, Espírito Santo state, municipality of Santa Teresa, 19°57'56"S and 40°32'23"W, 09.IX.2009, C.B. Santos col. Paratypes slide mounted: 18 males and 21 females, same collecting data as holotype. Entire series deposited in MZUEFS.

Additional material. 22 males and 12 females from the type-locality, preserved in 70% alcohol and deposited in MZUEFS.

Etymology. The specific name is in homage to the researcher of Psychodidae Dr. Freddy Ruben Bravo Quijano.

Comments. General characters of the *Sycorax* described by Duckhouse (1965) and Young (1979), are also present in *Sycorax bravoï* **sp. nov.** The male differs from the Neotropical species included in the key of Bravo *et al.* (2010) by the distal prolongation of the paramere, with format spiniform, and posterior membranous dorsal prolongation of the aedeagus, almost as long as the paramere. *Sycorax cariacicaensis* and *S. espiritosantensis* (Santos & Bravo 2009) also differ from *S. bravoï* **sp. nov.** by the ratio between flagellomere I and II of 1.5 times and 2.0 times respectively, which in the new species is 1.8 times. The palpal formula of these two species is 1.0:0.8:0.8:0.7 and 1.0:0.8:0.7:0.7, respectively, and in *S. bravoï* **sp. nov.** 1.0:1.2:1.0:0.8. The base of the paramere narrows in *S. bravoï* **sp. nov.** and *S. cariacicaensis* but not in *S. espiritosantensis*. The base of the aedeagus is very expanded in *S. bravoï* **sp. nov.** and *S. espiritosantensis* but not in *S. cariacicaensis*.

The female is basically similar to that of the other species described from the New World but can be distinguished based on the tapered distal third of the spermatheca and its racket-shaped genital furca, which is broadened at the base.

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