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SHORT COMMUNICATION

Description of the puparium of *Manotes plana* (Diptera: Stratiomyidae: Pachygastrinae) from the Ilha da Marambaia, Mangaratiba, state of Rio de Janeiro, Brazil

Roberto de Xerez & Ana Lúcia de Freitas Lopes

Laboratório de Biologia e Ecologia de Diptera, Instituto de Biologia, Departamento de Biologia Animal, Universidade Federal Rural do Rio de Janeiro. Rodovia BR 465, km 7, 23890-000 Seropédica, Rio de Janeiro, Brasil.
E-mail: rdexerez@ufrrj.br; anaflopes@globo.com

ABSTRACT. The puparium of *Manotes plana* Kertész, 1916 is described based on the exuviae of six larvae collected under the bark of a plant in early state of decomposition in the Ilha da Marambaia (23°04'15"S, 43°53'59", at sea level), state of Rio de Janeiro, Brazil. The external morphology and chaetotaxy is compared with the previously described puparium of *Manotes crassimanus* James, 1980. The texture and shape of the setae of *M. crassimanus* are plumose and some setae are claviform while *M. plana* are setiform. In *M. plana* the ventro-craneal furrow extends from the posterior region of the mouthparts until the median region of the head. In *M. crassimanus*, the furrow extends until the posterior third of the head. No diferrence occurs in position in the puparia of both species in relation of pupal respiratory spiracles.

KEY WORDS. Decomposition; immature; larvae; Neotropical; soldier flies; taxonomy.

Stratiomyidae occur in all zoogeographic regions (Woodley 2001), being most common in rainy to humid tropical climates (James 1973). Adults are frequently found in decaying plant material, visiting flowers, alighted in vegetation, and can be collected in grassy or boggy areas, and close to the shores of streams and lakes (James 1981). They are found also on ripe fruits and plant remains under decomposition (McFadden 1967, James 1973). Some species are brightly colored and possess a wasp-like aspect (Kovac & RozkOsný 1997). Twelve subfamilies are known in the Neotropical region.

Pachygastrinae is represented by 54 genera and 136 species in that region (Woodley 2001). Twenty-eight genera and 34 species are endemic to Brazil (Xerez *et al.* 2003). The larvae of Pachygastrinae species are adapted to the terrestrial environment and are commonly found on fallen trunks, on barks under decomposition, and sometimes in roots. Some species are necrophagic (Rozkošný 1982).

Manotes Kertész, 1916 includes five species: *Manotes crassimanus* James, 1980, *M. plana* Kertész, 1916, *M. flavipes* James, 1967, *M. hyalina* James, 1967, and *M. latimanus* James, 1967. Only the first two occur in Brazil. Only the puparium of the first one is known and was described by Lopes *et al.* (2006).

The knowledge regarding the larval stage of the South America soldier flies is scarce when compared with those from other continents (Xerez *et al.* 2003). This description contributes to the knowledge on immature Neotropical Pachygastrinae.

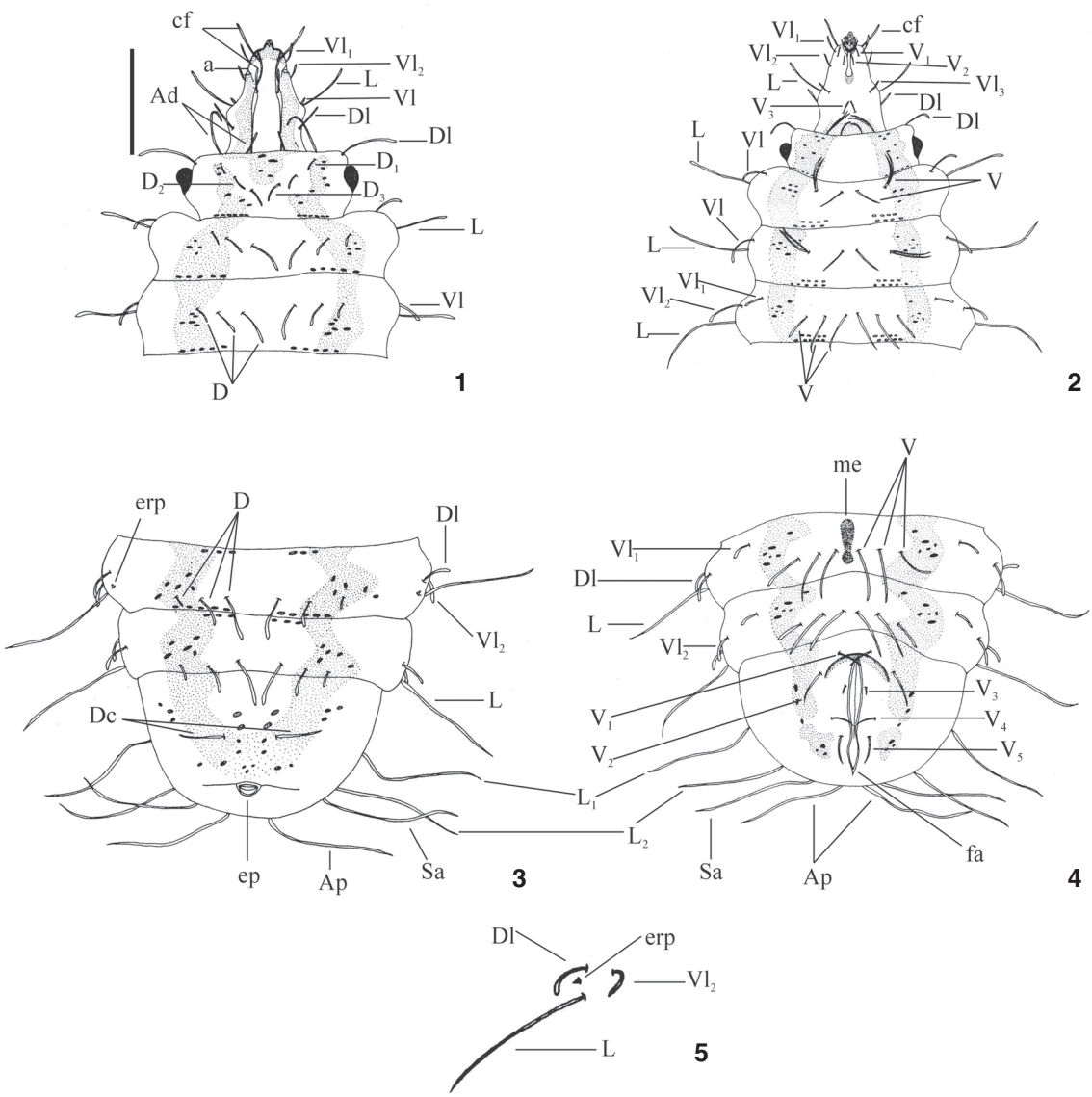
MATERIAL AND METHODS

Six larvae were sampled (four on April 19th 2002 and two on June 25th 2002) beneath a trunk in early decomposition, at Praia Grande, Ilha da Marambaia (23°04'15"S, 43°53'59"W), Mangaratiba, state of Rio de Janeiro, Brazil. The larvae were sampled using tweezers and placed in plastic vials with part of the substrate from where they were sampled (barks). They were transported to the laboratory and placed in Petri dishes with the respective substrate. The methodology for rearing and the curatorship followed Pujol-Luz & Xerez (1999), Xerez & Pujol-Luz (2001) and Xerez *et al.* (2002).

After the emergence, the adults were mounted in entomological pins and the puparia were fixed in microtubes containing a 3:1 solution of alcohol 70% and glycerol. The identification was based on the morphology using the key of James *et al.* (1980). The puparia were observed under stereoscopic microscope and drawn under Wild M-5 stereoscopic microscope equipped with camera lucida. The terminology adopted followed James (1981) and Roskošný & Kovac (1994). The specimens were incorporated to the Coleção Entomológica Costa Lima, Universidade Federal Rural do Rio de Janeiro (UFRRJ), Seropédica, state of Rio de Janeiro, Brazil.

Taxonomic summary

Material examined. Brazil, *Rio de Janeiro*: Ilha da Marambaia, Praia Grande, 19/IV/2002, R. de Xerez, A. Ururahy, G.G.



Figures 1-5. (1) Head, 1st, 2nd, and 3rd thoracic segments, dorsal view; (2) Head, 1st, 2nd, and 3rd thoracic segments and the 1st abdominal segment, ventral view; (3) 6th, 7th, and 8th, abdominal segments, dorsal view; (4) 6th, 7th, and 8th abdominal segments, ventral view; (5) chaetotaxy scheme on lateral region of the abdominal segments. (a) Antenna, (Ad) anterodorsal setae, (Ap) apical setae, (Cf) clypeofrontal setae, (D) dorsal setae, (Dc) dorsocentral setae, (Dl) dorsolateral setae, (ps) posterior spiracle, (prs) pupal respiratory spiracle, (as) anal slit, (L) lateral setae, (spa) sternal patch, (e) eyes, (Sa) subapical setae, (Sl) sublateral setae, (V) ventral setae, (Vl) ventrolateral setae.

Viana *leg*., 4 puparia, 4 specimens (emerged in 09/VIII/2002, 19/VIII/2002, 19/IX/2002); 25/VI/2002, R. de Xerez, G.G. Viana *leg*., 2 puparia, 2 specimens (emerged in 01/VIII/2002, 06/VIII/2002).

Distribution. *Manotes plana* presents known records to Argentina, Bolivia, Costa Rica, Mexico (Chiapas), and Paraguay. It is being recorded for the first time in Brazil, Rio de Janeiro, Ilha da Marambaia.

Description

Puparium: mean length 6.7 mm. Dorsoventrally flattened, with lateral margins of the segments strongly arched. Cuticle with usual appearance of mosaic, some cells forming spots and plaque in all thoracic and abdominal segments, dorsal and ventrally. Chromatic pattern: bright yellow. Head (Figs 1-2): triangular, dorsoventrally flattened, longer than wide. Short antennae, two-segmented, anterolaterally located (Fig. 1). Eyes promi-

nent, round, located at the posterior part of the head; invaginated dorsal cranial lines. At the ventral face, ventrocranial furrow extending from the posterior region of mouthparts until the median region of the head (Fig. 2). Chaetotaxy: two pairs of frontoclypeal setae; a pair of dorsolateral setae inserted above and posteriorly the eyes; a pair of lateral blisters inserted in front of the eyes; three pairs of ventral blisters. Thorax (Figs 1-2). The first segment is smaller than the second and the third ones; prominent anterior spiracle. Chaetotaxy: two pares of anterodorsal blisters, being the inner pair small; three pairs of anterodorsal blisters; a pair of dorsolateral blisters inserted in front of the anterior spiracle (Fig. 1); a pair of ventroleteral blisters; being the outer pair larger and bifurcate (Fig. 2). The second and the third segments with the same length and similar chaetotaxy, with three pairs of dorsal setae decreasing in size from the inner to the outer pair, a pair of lateral setae (Fig. 1), a pair of ventrolateral setae, two pairs of ventral setae, being the outer pair bifurcate and larger than the inner pair (Fig. 2). Abdomen (Figs 3-4): the same shape is shared from the first until the seventh segment, with three pairs of dorsal setae decreasing in size from the inner to the outer pair, a pair of dorsolateral setae, a pair of lateral setae, two pairs of ventrolateral setae and three pairs of ventral setae. Distinct sternal patch present on the sixth segment (Fig. 4), elliptical, anteriorly dilated, and narrow at the posterior third; pupal respiratory spiracle emerging from the first to the sixth segment forming a little triangle with lateral and dorsolateral setae (Fig. 5). Eighth segment is narrower and longer than the anterior ones, with a pair of dorsocentral setae, two pairs of lateral setae, a pair of subapical setae, a pair of apical setae, and five pairs of ventral setae (Figs 3 and 4).

Discussion. The texture of the setae of the puparium of *M. plana* differs from *M. crassimanus*, because the later presents plumose setae The shape of some setae also vary between these species: *M. plana* presents setiform setae while the setae of the head and the dorsal setae of the first thoracic segment of *M. crassimanus* are claviform. The ventro-cranial furrow in *M. plana* extends from the posterior region of the mouthparts until the median region of the head. In *M. crassimanus*, the furrow extends until the posterior third of the head. The puparia of both species present a pupal respiratory spiracle in the dorsolateral position from the first until the sixth abdominal segments forming a little triangle with the lateral and dorsolateral setae.

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