

## PUBLIC HEALTH

Description of the Female of *Evandromyia (Aldamyia) aldafalcaoae* (Santos, Andrade-Filho & Honer) (Diptera: Psychodidae, Phlebotominae)

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Descrição da Fêmea de *Evandromyia (Aldamyia) aldafalcaoae* (Santos, Andrade-Filho & Honer) (Diptera: Psychodidae, Phlebotominae)

RESUMO - Descreve-se, pela primeira vez, a fêmea de *Evandromyia (Aldamyia) aldafalcaoae* (Santos, Andrade-Filho & Honer) a partir de espécimes capturados na Fazenda Nhumirim, Pantanal Sul-Matogrossense. Essa fêmea, diferente das demais do subgênero *Aldamyia* Galati, 1995, apresenta o duto comum e base dos dutos individuais das espermatecas muito transparentes e de difícil observação. Chave de identificação para as fêmeas desse subgênero é apresentada.

PALAVRAS-CHAVE: Taxonomia, díptero, Psychodidae, Mato Grosso do Sul, Brasil

ABSTRACT - The female of *Evandromyia (Aldamyia) aldafalcaoae* (Santos, Andrade-Filho & Honer) is described for the first time on the basis of specimens captured on the Nhumirim Farm, in the Pantanal region of the Mato Grosso do Sul State, Brazil. The female of this species, differently from others of the *Aldamyia* Galati, 1995, presents a highly transparent common sperm duct and basal part of the individual sperm ducts, which are thus difficult to observe. An identification key for the females of this subgenus is presented.

KEY WORDS: Taxonomy, Dipterous, Psychodidae, Mato Grosso do Sul, Brazil

Several specimens of the undescribed female of a species belonging to the subgenus *Evandromyia (Aldamyia)* Galati, 1995 were captured during a study of the phlebotomine fauna undertaken from April 2001 to July 2003 on the Nhumirim farm. The area, of 4,390.6 ha (18°59' S and 56°39' W, 98 m a.s.l.), was situated in the subregion of Nhecolândia, in Corumbá county, 160 km from this latter town, in the Pantanal region of the Mato Grosso do Sul State, Brazil. The identification of the species was only possible at the end of the period of capture, by association with a single male of *E. (A.) aldafalcaoae* (Santos, Andrade-Filho & Honer, 2001) captured in April 2003, having Vila Trindade, Aquidauana county, in the same region, as type-locality (Santos *et al.* 2001).

The subgenus *Aldamyia* consists of twelve species and for nine of which the association between the two sexes is already accepted: *E. andersoni* (Le Pont & Desjeux, 1988), *E. bacula* (Martins, Falcão & Silva, 1965), *E. carmelinoi* (Ryan, Fraiha, Lainson & Shaw, 1986), *E. dubitans* (Sherlock, 1962), *E. evandroi* (Costa Lima & Antunes, 1936), *E. lenti* (Mangabeira, 1938), *E. termitophila* (Martins, Falcão & Silva, 1964), *E. walkeri* (Newstead, 1914) and *E. williamsi* (Damasceno, Causey & Arouck,

1945). For *Evandromyia* sp. de Baduel (Floch & Abonnenc, 1945) only the female was described and for *E. sericea* (Floch & Abonnenc, 1944) and *E. aldafalcaoae* only the males.

There is controversy as to whether *Evandromyia* sp. de Baduel is in fact the female of *E. sericea* as it is considered to be by Ryan (1986) (Le Pont & Desjeux 1988; Young & Duncan 1994) and Young & Duncan (1994) suspect that *E. andersoni* is co-specific with *E. sericea*.

The species of *Evandromyia (Aldamyia)* were included in the genus *Lutzomyia* França, 1924, *Evandroi* series of the *Migonei* group by Lewis *et al.* (1977) and the *Walkeri* group by Martins *et al.* (1978).

The geographical distribution of *Evandromyia (Aldamyia)* includes Central America, with two species: *E. dubitans* and *E. walkeri*, and South America, with all known species. Except for *E. andersoni*, which was reported only in Bolivia, all the other species occur in Brazil, the majority of them being present in the Amazonian region. The species *E. carmelinoi*, *E. evandroi* and *E. lenti* are present in the North, Central-West, Northeast, Southeast and South Brazilian regions and *E. termitophila* and *E. walkeri*, although widespread, have not been found in this latter region. In Mato Grosso do Sul state, there are reports of *E.*

*aldafalcaoae*, *E. lenti* and *E. termitophila* (Galati 2003a, Aguiar & Medeiros 2003).

The objective of this work is to present the description of the female of *Evandromyia (Aldamyia) aldafalcaoae*.

### Material and Methods

The specimens were captured with automatic light traps (Natal *et al.* 1991) and sent by post to the Phlebotomine Laboratory of the Faculdade de Saúde Pública (FSP) of the Universidade de São Paulo (USP) where, after clearing by the method described by Forattini (1973) they were mounted on microscope slides in NC medium (Cerqueira 1943) and identified.

The females were measured with a Zeissâ eye-piece calibrated according to a standard Zeissâ scale and drawn with an Olympusâ clear chamber. All measurements are given in micrometers. The species nomenclature follows Galati (1995, 2003a). A sample of the material was deposited in the entomological collection of the FSP/USP.

### Description of female of *Evandromyia (Aldamyia) aldafalcaoae* (Santos, Andrade-Filho & Honer) (Figs. 1-12)

Total body length  $2310 \pm 150$  ( $n = 9$ ). Insect predominantly pale, with mesonotum and metanotum slightly lighter brown.

**Head** (Fig. 1). Length  $382 \pm 14$  ( $n = 9$ ); width  $318 \pm 11$  ( $n = 8$ ). Eyes: length  $165 \pm 10$  ( $n = 8$ ); width  $90 \pm 7$  ( $n = 8$ ) (frontal view). Interocular suture separated from antennal suture. Interocular distance  $140 \pm 5$  ( $n = 8$ ). Clypeus  $138 \pm 9$  ( $n = 8$ ) long. Flagellomeres: AIII (Fig. 2)  $211 \pm 18$  ( $n = 2$ ), AIV (Fig. 3)  $105 \pm 4$  ( $n = 2$ ), AV (Fig. 4)  $107 \pm 5$  ( $n = 2$ ), AXV and AXVI missing. Ascoids simple and long, those on AIV reaching beyond the apex of the segment. Papilla present on AV. Palpomere lengths: I  $33 \pm 1$  ( $n = 8$ ), II  $112 \pm 3$  ( $n = 7$ ), III  $141 \pm 18$  ( $n = 2$ ), IV 101, V 194 (the exact value is distorted because this palpomere has shrunk). Palpal formula: 1.4.2.3.5. Newstead's spines, 2-6 on the apical third of palpomere II (Fig. 5) and 10-12 sparsely distributed on the medium third of palpomere III (Fig. 6). Labroepipharynx  $237 \pm 13$  ( $n = 9$ ) long (Fig. 9). Cibarium (Fig. 10) with many reduced anterior teeth situated laterally and four large posterior (horizontal) teeth; pigment patch and posterior bulge well developed; arch complete. Pharynx unarmed. Labial sutures united. Maxilla: lacinia with about four external teeth disposed in a longitudinal row and 25 internal teeth (Fig. 7). Hypopharynx (Fig. 8) with short and well delineated apicolateral teeth.

**Cervix.** Vento-cervical sensillae present.

**Thorax.** Mesonotum  $552 \pm 26$  ( $n = 9$ ) long. Pleurae with 2-6 ( $n = 9$ ) proepimeral setae; 9-15 ( $n = 9$ ) upper anepisternal setae. Setae present on the anterior katepisternum margin. Suture between katepimeron and metaepisternum absent. Wing (Fig. 11): length  $1804 \pm 84$

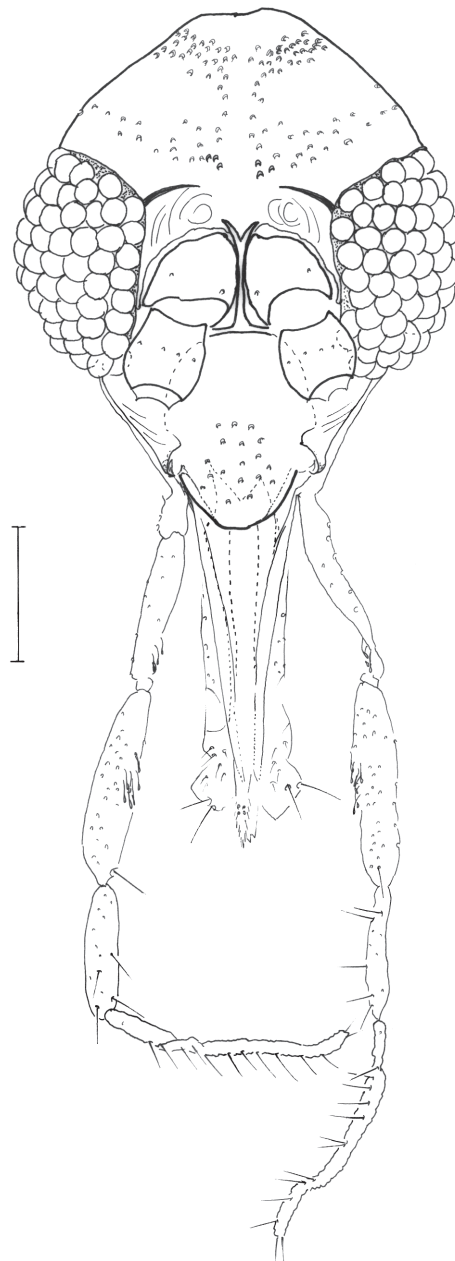
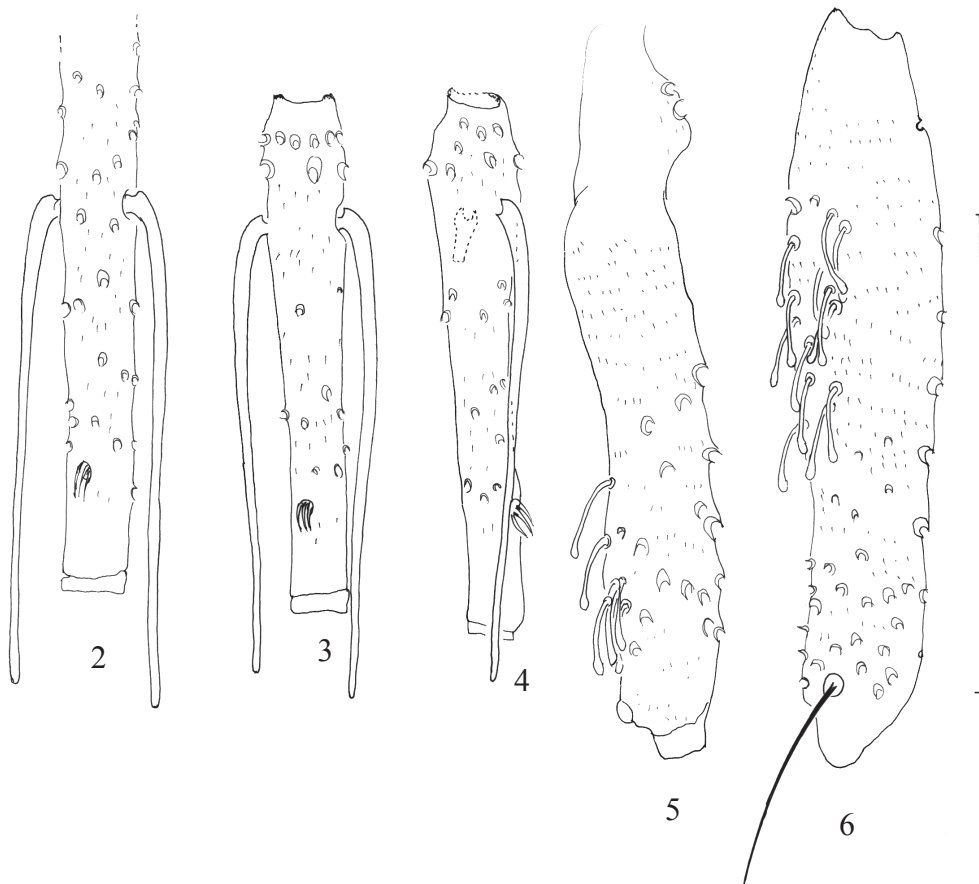


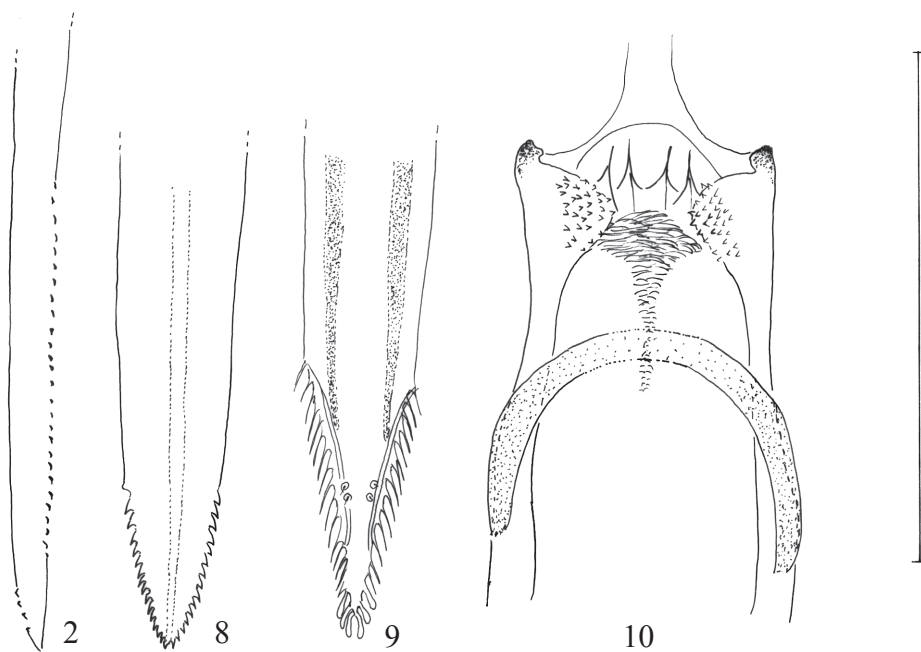
Figure 1. *Evandromyia (Aldamyia) aldafalcaoae*. Female: head. Bar = 100  $\mu$ m

( $n = 6$ ) and width  $526 \pm 34$  ( $n = 6$ ). Length of vein sections: *alpha*  $367 \pm 40$  ( $n = 6$ ), *beta*  $287 \pm 15$  ( $n = 6$ ), *gamma*  $283 \pm 19$  ( $n = 6$ ), *delta*  $100 \pm 25$  ( $n = 6$ ), *pi*  $135 \pm 23$  ( $n = 6$ ), R5  $1218 \pm 71$  ( $n = 6$ ). Length of femora, tibiae: foreleg 670, 740 ( $n = 1$ ), midleg 678, 948; hindleg missing. Tarsomeres I, II, III, IV and V of all legs missing.

**Abdomen.** Length  $1377 \pm 119$  ( $n = 9$ ). Tergite VIII without setae. Spermathecae (Fig. 12)  $13.9 \pm 1.6$  ( $n = 6$ ) long x  $13.6 \pm 0.9$  ( $n = 6$ ) wide, of an apple shape having a sclerotized cover; terminal knob arises centrally from spermathecae;



Figures 2 - 6. *Evandromyia (Aldamyia) aldafalcaoae*. Female. 2 - antennomere III; 3 - antennomere AIV; 4 - antennomere AV; 5 - palpomeres I and II; 6 - palpomere III. Bar = 100  $\mu$ m



Figures 7 - 10. *Evandromyia (Aldamyia) aldafalcaoae*. Female. 7 - lacinia of maxilla; 8 - hypopharynx; 9 - labroepipharynx; 10 - cibarium. Bar = 100  $\mu$ m



Figures 11 - 12. *Evandromyia (Aldamyia) aldafalcaoae*. Female. 11 - wing (bar = 500  $\mu$ m); 12 - genital furca and spermathecae. Bar = 100  $\mu$ m

smooth individual sperm ducts,  $50.0 \pm 2.8$  ( $n = 6$ ) long x  $7.9 \pm 2.0$  ( $n = 6$ ) wide at basal region and  $9.5 \pm 1.1$  ( $n = 6$ ) wide at apical region, this more sclerotized than the basal region; smooth common sperm duct,  $26.2 \pm 3.4$  ( $n = 6$ ) long x  $23.1 \pm 3.5$  ( $n = 6$ ) wide at basal region and  $18.3 \pm 2.9$  ( $n = 6$ ) at apical region; the basal region of individual ducts and the common duct are very transparent, so it is difficult to observe them. Cercus  $119 \pm 10$  ( $n = 9$ ) long.

**Material Examined.** BRAZIL, Mato Grosso do Sul State, Corumbá, Fazenda Nhumirim: new orchard - five females 2/02/2001, 24/07/2001, 24/10/2002, 04/12/2002, 02/03/2003, old orchard - one female 17/06/2003, one female and one male 27/04/2003, domicile - one female 24/02/2003 and biological reserve - one female 05/03/2003. All specimens were deposited in the collection of the Epidemiology Department - FSP/USP.

**Taxonomic Discussion.** In accordance with Galati (1995, 2003b), both sexes of *Evandromyia (Aldamyia)* may be characterised as follows: palpomere V longer than III; and the II palpomere equivalent to or longer than the IV; presence

of the papilla on the antennomere AV; presence of the ventro-cervical sensillae and of the setae on the anterior margin of katepisternum. The females present cibarium with four posterior horizontal teeth and numerous anterior teeth laterally situated; spermathecae generally vesicular or apple-shaped though in one species they are annulated. The common and individual sperm ducts are generally sclerotized.

In view of the above mentioned characteristics there is no doubt that the female here described belongs to *Aldamyia* and may be distinguished from the other species of this subgenus by the characteristics given in the identification key presented below.

The association between the sexes of *E. aldafalcaoae* was based on the agreement of genital and extra genital characteristics and because both sexes of the other species, *E. lenti*, of the subgenus *Aldamyia* captured in this locality are known. Further *E. aldafalcaoae* was described from males caught in the Pantanal region and one male of this species was captured on the Nhumirim farm.

With regards to *E. sericea*, the other species of *Aldamyia* described by the male, whose female has not so far been

identified with certainty (Le Pont & Desjeux 1988, Young & Duncan 1994), it was not recorded for the Brazilian Central-West region (Aguiar & Medeiros 2003).

**Key for Identification of Females of the Subgenus *Evandromyia* (*Aldamyia*)**

- 1 Spermathecae annulated .....*E. termitophila*  
Spermathecae vesicular or apple-like .....2
- 2(1) Common sperm duct and greater part of the basal region of the individual sperm ducts highly transparent, so the limits between them are difficult to discern ..... *E. aldafalcaoae*  
Common sperm duct and individual sperm ducts sclerotized with evident limits between them ..... 3
- 3(2) Common sperm duct as long as the individual sperm ducts ..... 4  
Length of common sperm duct  $\leq$  1/2 of the individual sperm ducts ..... 5
- 4(3) Individual sperm ducts of uniform width throughout; spermathecae wider than long ..... *E. dubitans*  
Individual sperm ducts wider at their apical parts (junction with the spermathecae) than at their central part; spermathecae as long as wide ..... *E. walkeri*
- 5(3) External margin of the common sperm duct with heavy sclerotized band..... 6  
External margin of the common sperm duct without sclerotized band .....7
- 6(5) Individual sperm ducts  $\geq$  4 times longer than the common sperm duct ..... *E. carmelinoi*  
Individual sperm ducts  $\leq$  2.5 times longer than the common sperm duct..... *E. lenti*
- 7(5) Spermathecae wider than the basal region of the individual sperm ducts..... 8  
Spermathecae as wide as or narrower than the basal region of the individual sperm ducts .....10
- 8(7) Apical part of the individual sperm ducts (junction with the spermathecae) sclerotized ..... *E. williamsi*  
Apical part of the individual sperm ducts (junction with the spermathecae) not sclerotized..... 9
- 9(8) Common sperm duct and basal part of the individual sperm ducts striated .....10  
Common sperm duct and individual sperm ducts without striation .....11
- 10(9) Individual sperm ducts *ca.* 7 times longer than the common sperm duct; striation of the individual sperm ducts restricted to their basal third; spermathecae *ca.* 1.5 times wider than the distal part of the individual sperm ducts (at junction with the spermathecae).....  
..... *E. andersoni*

Individual sperm ducts *ca.* 3 times longer than the common sperm duct; striation of the individual sperm ducts restricted to their basal two-thirds; spermathecae *ca.* 4.0 times wider than the distal part of the individual sperm ducts (at junction with the spermathecae)  
..... *E. sp. de Baduel*

- 11(10) Common sperm duct as long as 1/3 of the individual sperm ducts; diameter of the spermathecae *ca.* 1/2 of the common sperm duct's width .....*E. evandroi*  
Common sperm duct as long as 1/5 of the individual sperm ducts; spermathecae wider than the common sperm duct ..... *E. bacula*

**Literature Cited**

**Aguiar, G.M. & W.M. Medeiros. 2003.** Distribuição regional e habitats das espécies de flebotomíneos do Brasil, p.207-245. In E.F. Rangel & R. Lainson (eds), Flebotomíneos do Brasil. Rio de Janeiro, Fiocruz, 367p.

**Cerqueira, N.C. 1943.** Novo meio para a montagem de pequenos insetos em lâminas. Mem. Inst. Oswaldo Cruz 39: 37-41.

**Forattini, O.P. 1973.** Entomologia médica. Psychodidae. Phlebotominae. Leishmanioses. Bartonelose. São Paulo, Edgard Blücher/EDUSP, 658p.

**Galati, E.A.B. 1995.** Phylogenetic systematics of Phlebotominae (Diptera, Psychodidae) with emphasis on American groups. Proceedings of the II International Symposium on Phlebotomine Sandflies. Bol. Dir. Malariol. Saneam. Amb. 35: 133-142.

**Galati, E.A.B. 2003a.** Classificação de Phlebotominae, p.23-51, In E.F. Rangel & R. Lainson (eds.), Flebotomíneos do Brasil. Rio de Janeiro, Fiocruz, 367p.

**Galati, E.A.B. 2003b.** Morfologia, terminologia de adultos e identificação dos táxons da América, p.53-175. In E.F. Rangel. & R. Lainson (eds.), Flebotomíneos do Brasil. Rio de Janeiro, Fiocruz, 367p.

**Le Pont F. & P. Desjeux. 1988.** Phlébotomes de Bolivie – Description de *Lutzomyia andersoni* n. sp. (Diptera, Psychodidae). Mem. Inst. Oswaldo Cruz 83: 421-425.

**Lewis, D.J., D.G. Young, G.B. Fairchild & D.M. Minter. 1977.** Proposals for a stable classification of the phlebotomine sandflies (Diptera: Psychodidae) Syst. Entomol. 2: 319-332.

**Martins, A.V., P. Williams & A.L. Falcão. 1978.** American sand flies. Rio de Janeiro, Academia Brasileira de Ciências, 195p.



- Natal, D., D. Marucci, I.M. Reis & E.A.B. Galati. 1991.** Modificação da armadilha CDC com testes para coletas de flebotomíneos (Diptera). *Revta. Bras. Ent.* 35: 697-700.
- Ryan L. 1986.** Flebotomos do estado do Pará, Brasil (Diptera: Psychodidae: Phlebotominae). Belém, Doc. Tec. nº 1, Instituto Evandro Chagas, Fundação S.E.S.P., Ministério da Saúde, 154p.
- Santos, S.O, J.D. Andrade-Filho & M.R. Honer. 2001.** *Lutzomyia aldafalcaoae* sp.n. a new species of Phlebotominae (Diptera: Psychodidae) from Mato Grosso do Sul, Brazil. *Mem. Inst. Oswaldo Cruz* 96: 791-794.
- Young, D.G. & M.A. Duncan. 1994.** Guide to the identification and geographic distribution of *Lutzomyia* sand flies in Mexico, the West Indies, Central and South America (Diptera: Psychodidae). *Mem. Amer. Entomol. Inst.* 54: 1-881.

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