

A NEW GENUS AND SIX NEW SPECIES OF GALL MIDGES  
(DIPTERA, CECIDOMYIIDAE) FROM SERRA DE SÃO JOSÉ  
(MINAS GERAIS STATE, BRAZIL)<sup>1</sup>

(With 73 figures)

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**ABSTRACT:** A new genus – *Couridiplosis*, and six new species of gall inducers – *Asphondylia serrata*, *Couridiplosis vena*, *Lopesia bilobata*, *Lopesia spinosa*, *Lopesia tibouchinae* and *Myrciariamyia fernandesi*, are herein described based on material from rupestrian fields and cerrado of Serra de São José (Minas Gerais State, Brazil). Illustrations of larvae, pupae, males and females are given.

**Key words:** Diptera, Cecidomyiidae, rupestrian fields, cerrado, taxonomy.

**RESUMO:** Um novo gênero e seis espécies novas de galhadores (Diptera, Cecidomyiidae) da serra de São José (Estado de Minas Gerais, Brasil)

Um gênero novo – *Couridiplosis*, e seis espécies novas de galhadores – *Asphondylia serrata*, *Couridiplosis vena*, *Lopesia bilobata*, *Lopesia spinosa*, *Lopesia tibouchinae* e *Myrciariamyia fernandesi*, são aqui descritos com base em material de campos rupestres e cerrado da Serra de São José (Estado de Minas Gerais, Brasil). Ilustrações das larvas, pupas, machos e fêmeas são fornecidas.

**Palavras-chave:** Diptera, Cecidomyiidae, campos rupestres, cerrado, taxonomia.

#### INTRODUCTION

Serra de São José is an area of rupestrian fields and cerrado (Brazilian savanna) in the Minas Gerais State, southeastern Brazil (21°03-07'S and 44°06-13'W). It is a 15km long mountain range elevated from 900 to 1430m above sea level, running from WSW to ENE at the contact zone of two main mountain chains: Serra do Espinhaço which extends northward and Serra da Mantiqueira to south and west (ALVES, 1992).

According to FERNANDES & PRICE (1988) and LARA & FERNANDES (1996), rupestrian fields and the cerrado vegetation of southeastern Brazil comprises the hottest spot for the richness of galling insect species. But in despite of its richness, little is known about the taxonomy of these galling species.

MAIA & FERNANDES (in press) investigated the Serra de São José over a period of twelve months from August, 2001 to July, 2002 and recorded 137 morphotypes of insect galls, being 101 induced by Cecidomyiidae. The majority of the

gall midges showed only one generation per year and almost all of the galls were rare. Because of it, few material was obtained and many gall midges could not be determined. Nevertheless, six new species and a new genus were found and they are described herein. The descriptions are presented by alphabetical order.

#### MATERIAL AND METHODS

The material studied was obtained from galls collected by the author in Serra de São José (Minas Gerais State) and reared in the laboratory of Diptera (Museu Nacional - Rio de Janeiro). Data on the area of collection and the methods are outlined in MAIA & FERNANDES (in press). Larvae, pupae and adults (males and females) mounted on slides and deposited in the Diptera collection of Museu Nacional - Rio de Janeiro (MNRJ) were studied. The gall midges genera were identified based mainly on the keys of GAGNÉ (1994). The diagnostic characters were illustrated. All studied material is deposited in the Diptera collection of MNRJ.

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## RESULTS

*Asphondylia serrata* sp.nov.  
(Figs.1-15)

## ADULT

Body length – 3.7-4.5 mm (N=6).

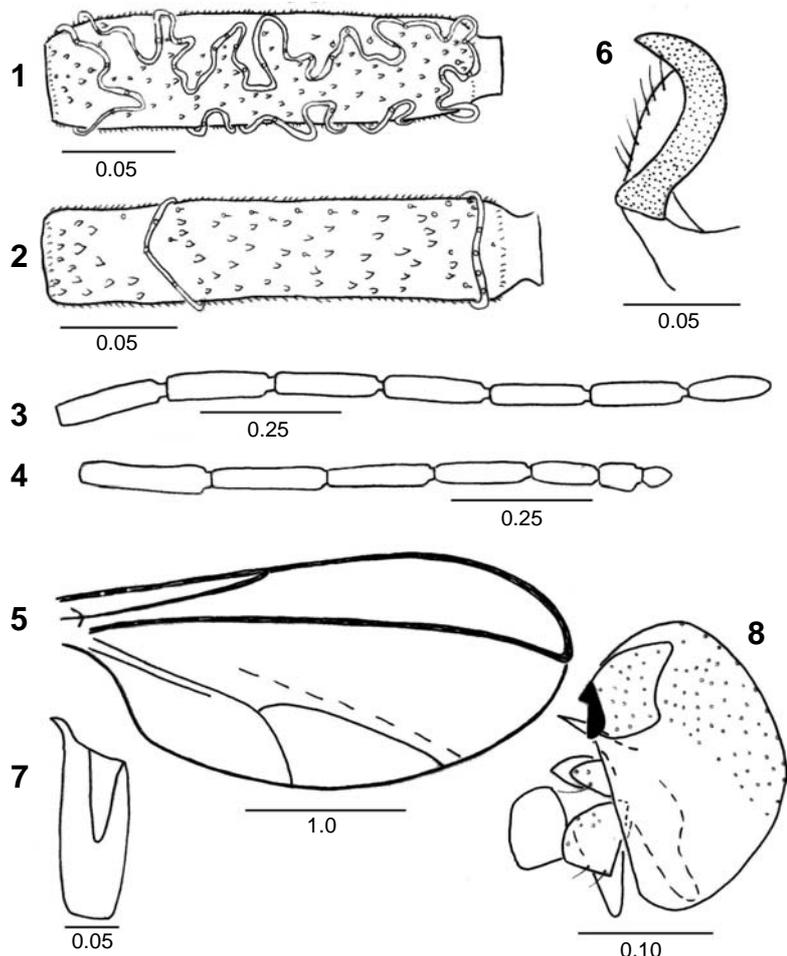
Head – eye facets hexagonal, closely approximate. Antenna with scape ca. twice longer than pedicel (in male) and ca. 3.2 times longer than pedicel (in female); pedicel about as wide as large; first flagellomere about 1.5 times (in male) and 2.5 times (in female) longer than scape; circumfila sinuous in male (Fig.1), not sinuous in female (Fig.2); proportions of antennomeres as in figures 3 and 4. Frons with many setae (more than 50); clypeus asetose dorsally, with short setae laterally; hypopharynx closed lined with setulae dorsoapically; labellae setose and setulose laterally and ventrally (with a small area of setulae and 0-1 setae mesally).

Palpus – first segment about as long as wide (length: 0.03-0.04mm); second segment about 3.3-4.2 times as long as wide (length: 0.09-0.10mm); third segment narrower than the second, about 6.0-7.5 times as long as wide (length: 0.12-0.15mm); all segments covered with setae and setulae.

Thorax – wing length: 2.7mm (in male); 3.3-3.7mm (in female); venation as in figure 5. Dorsal row of setae at midlength with two-three rows of setae intermixed with scales, the row continuing onto scutellum to posterior margin. Scutellum bare between dorsocentral rows of setae, with setae posteriorly laterad of dorsocentral rows and otherwise with sparse scales laterally. Anepisternum with setae and scales on dorsal half. Anepimeron covered with setae. Katepisternum bare. Tarsal claws strong, empodium as long as bend in claws (Fig.6). First tarsomeres with a spur 0.04mm of length (Fig.7).

Abdomen – Tergites without anterior pair of trichoid sensilla; tergites 1-7 rectangular with mostly double row of posterior setae (sparser in male than in female), several lateral setae, elsewhere covered with scales;

tergite 8 short, bandlike without vestiture. Sternites without anterior pair of trichoid sensilla. In male: width of tergite 6 about 3.6 times length; width of tergite 7 ca. 2.9 times length; width of tergite 8 ca. 9.5 times length; width of sternite 6 about twice length; sternite 7 as wide as long; width of sternite 8 ca. twice length. In female: width of tergites 6 about 3.3 times length; width of tergite 7 ca. 2.4 times length; width of sternite 6 about twice length; sternite 7 as wide as long. Male terminalia (Fig.8): gonocoxite wide, gonostylus rounded, cercus setose, hypoproct bilobed, aedeagus elongate, tapering to the apex. Ovipositor: 1.87 times as long as sternite 7.



*Asphondylia serrata* sp.nov. – adult: fig.1- flagellomere 5, ♂; fig.2- flagellomere 5, ♀; fig.3- flagellomere 7-12, ♂; fig.4- flagellomere 7-12, ♀; fig.5- wing, ♀; fig.6- tarsal claw and empodium, midleg, ♀; fig.7- tarsomere 1, midleg, ♀; fig.8- male terminalia (lateral view). Scales in mm.

## PUPA

Body length: 4.0-4.6mm (N=5). Cephalic region (Fig.9): antennal horn rectangular with margin serrated; length: 0.10-0.19mm; N=5); cervical sclerite with two pairs of papillae (one setose and one bare); cervical setae with 0.04-0.06mm of length; upper margin of cephalic region slightly thickened laterally; upper frontal horn triangular with 0.04-0.05mm of length; lower frontal horn trifold (medial horn with 0.02-0.03mm of length) (Fig. 10); two pairs of lower facial papillae (one with seta and one bare) (Fig.10); three pairs of lateral facial papillae (two bare and one setose) (Fig.11). Prothoracic spiracle setiform with 0.15-0.17mm of length (Fig.12). Fore leg sheath reaching the distal

margin of abdominal segment V; mid leg sheath the shortest one, reaching the distal limit of the basal third of abdominal segment V; hind leg sheath reaching the distal limit of the second third of abdominal segment V. Wing sheath reaching the distal limit of the second third of abdominal segment III. Abdominal tergites 2-8 with spines progressively longer and closer to each from anterior to posterior margin, irregularly distributed in the basal half of each tergite, forming a row of well-developed spines near distal margin (Fig. 13).

## LARVA

Body length: 3.0mm (N=1). Colour: yellow. General aspect: body wide anteriorly and slightly tapered at the posterior end. Spatula 4-toothed with 0.22mm of length (N=1) (Fig. 14). Three pairs of setose lateral papillae similar in size (Fig.14). Sternal papillae setose. Terminal segment reduced (Fig.15). Pupation in the gall. Number of larvae/gall: 01.

Material (MNRJ) – Holotype ♂, BRAZIL, MINAS GERAIS, Tiradentes, Serra de São José, 28/IX/2001, V.Maia col. Paratypes: 4♀, 28/IX/2001; 1♀, 29/IX/2001; 1♀, 25/X/2001; 1 pupa, 28/IX/2001; 1 pupa 24/X/2001; 3 pupal exuviae 28/IX/2001; 1 pupal exuvia 29/IX/2001; 1 pupal exuvia 25/X/2001; 1 larva 28/IX/2001 (same locality and collector as holotype).

Gall – Leaf gall, yellowish, ovoid, one-chambered (MAIA & FERNANDES, in press: fig.13).

Host-plant – *Vanilismopsis erythropappa* Schult (Asteraceae).

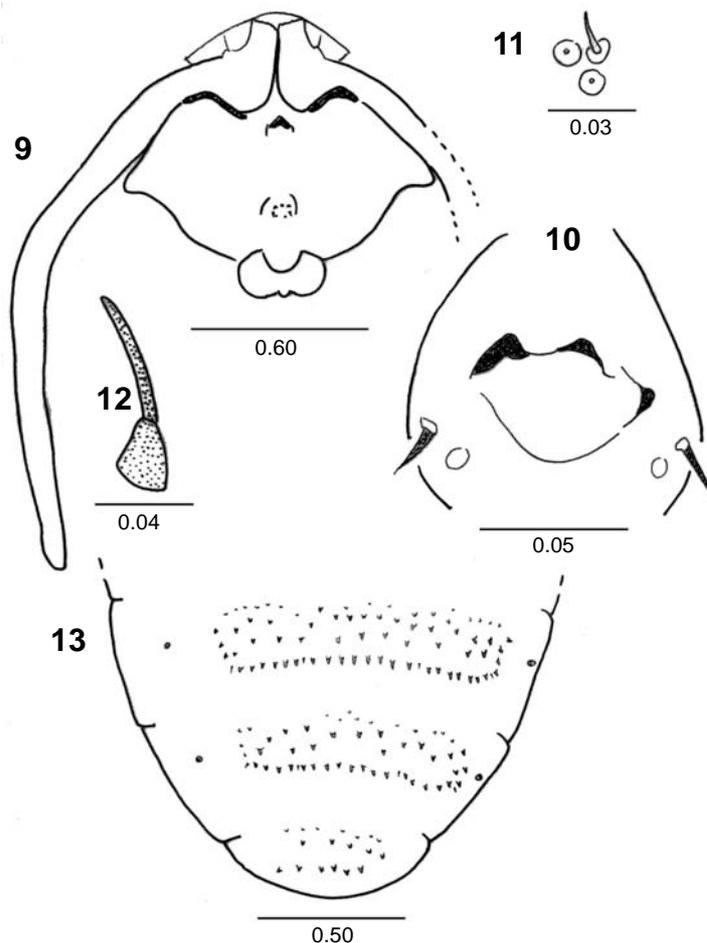
Etymology – The name *serrata* refers to the micro serrated margin of the antennal horn (pupa).

Remarks – This species differs from all other *Asphondylia* spp. in having microserrated antennal horn (pupa).

*Couridiplosis* gen.nov.  
(Figs.16-17, 19-22, 26-27)

## ADULT

Head – eyes not contiguous at vertex; antenna with 8 flagellomeres (Fig. 16), flagellomeres 1 and 2 connate; male



*Asphondylia serrata* sp.nov. – pupa: fig.9- cephalic region, frontal view; fig.10- lower frontal horn and lower facial papillae; fig.11- lateral facial papillae; fig.12- prothoracic spiracle; fig.13- abdominal segments 7-9 (dorsal view). Scales in mm.

circumfila gynecoïdy (Fig.17), flagellomere 8 without apical process; palpus one-segmented; wing venation (Fig.19): Rs lacking, R5 ca. two-thirds as long as the wing, straight and almost parallel with C; Cu simple, M3 vestigial; tarsal claws toothed beyond midlength, empodia longer than bend in claws (Fig.20); female tergite 7 with a mesally interrupted row of posterior setae (Fig.23); ovipositor protrusible and striated, striae interrupted at basal half and sclerotized processes present there (Fig.23); male terminalia (Figs.21-22): gonostylus wide; hypoproct simple; parameres reduced.

#### PUPA

Antennal horn absent, antennal sheath short; facial papillae absent, cephalic seta absent; prothoracic spiracle reduced; abdominal segments 2-8 without spines.

#### LARVA

Spatula two-toothed; four papillae lateral per side (two setose and two bare) (Fig.26); four pairs of setose terminal papillae (Fig.27).

Etymology – *Couridiplosis* is a feminine name. The genus is named in honor of Dr. Márcia Couri (MNRJ).

Remarks – The ovipositor of *Couridiplosis* gen.nov. has striae interrupted by sclerotized processes as in all Alycauline, but the entirely sclerotized abdominal tergites and the lack of mesal setae on abdominal tergites 1-7 and sternites 2-7 do not allow to include this new genus into Alycauline. Other diagnostic characteres are: eyes not contiguous at vertex, antennae with 8 flagellomeres, palpus one-segmented; abdominal tergite 8 not sclerotized with only a pair of trichoid sensilla as vestiture (in female); parameres reduced.

*Couridiplosis vena* sp.nov.  
Figs. 16-19, 21-27

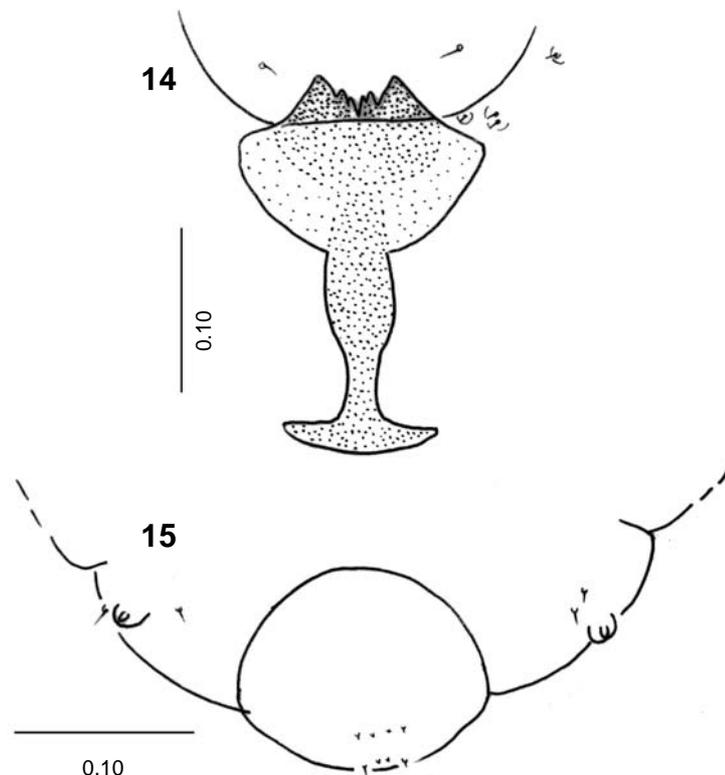
#### ADULT

Body length – 1.3mm (in male, N=1); 1.8-2.3mm (in female, N=4).

Head – eye facets circular. Antenna with scape ca. 1.4 times longer than pedicel (in male, N = 1) and ca. 1.4-1.6 times longer than pedicel (in

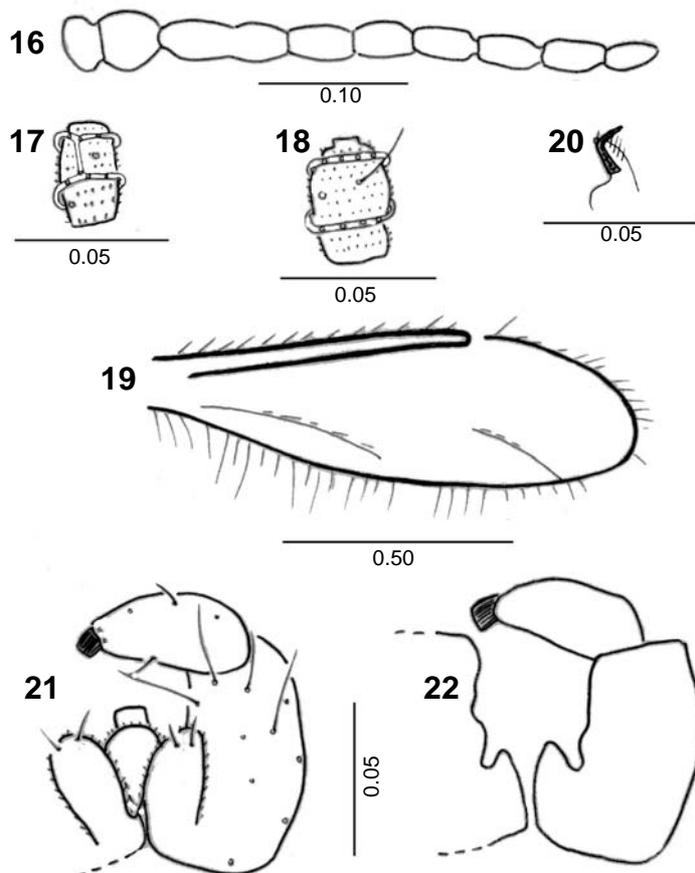
female, N = 3); pedicel about as wide as long; first flagellomere about 3.0 times (in male) and 2.5 times (in female) longer than scape; proportions of antennal segments as in Fig.1, male and female circumfila similar in shape (Figs.17-18). Frons with 3 pairs of setae; clypeus asetose dorsally, with short setae laterally; hypopharynx closed lined with setulae dorsoapically; labellae setose and setulose laterally and ventrally (with a small area of setulae and three setae mesally). Palpus with one cylindrical setose segment (length: 0.04mm).

Thorax – wing length: 1.2mm (in male); 1.4mm (in female). Dorsal setal row at midlength with two-three rows of setae intermixed with scales, the row continuing onto scutellum to posterior margin. Scutellum bare between dorsocentral rows of setae, with setae posteriorly laterad of dorsocentral rows and otherwise with sparse scales laterally. Anepisternum bare. Anepimeron with few setae. Katepisternum bare. Tarsal claws simple on all legs (Fig.19).



*Asphondylia serrata* sp.nov. – larva: fig.14- spatula and associated papillae (ventral view); fig.15- abdominal segment 8 and 9 (dorsal view). Scales in mm.

Abdomen – ♂ : tergites and sternites not clear in the preparation. ♀ : tergites 1-7 rectangular with caudal row of setae interrupted mesally; a pair of trichoid sensilla and scattered scales elsewhere. Tergite 8 unsclerotized and with a pair of trichoid sensilla. Sternites 2-6 rectangular with caudal row of setae interrupted mesally; some lateral setae; a pair of trichoid sensilla and scattered scales elsewhere. Sternite 7 with scattered setae and a pair of trichoid sensilla. Male terminalia (Figs.21-22): gonocoxite not splayed; gonostylus 0.6 times shorter than gonocoxite; cercal lobes elongate-ovoid and setose; hypoproct shorter than cercus and setose; aedeagus truncate at apex. Female cercus ovoid and setose.



*Couridiplosis vena* sp.nov. – adult: fig.16- antenna, ♂; fig.17- flagellomere 4, ♂; fig.18- flagellomere 5, ♀; fig.19- wing, ♂; fig.20- tarsal claw and empodium, fore leg, ♂; fig.21- male terminalia (dorsal view); fig.22- gonocoxite and gonostylus, ♂ (dorsal view). Scales in mm.

#### PUPA

Body length: 1.6-1.7 (N=3). Cephalic region (Fig.24): antennal sheath with 0.30-0.35mm (N=3). Antennal margin slightly thickened near base. Prothoracic spiracle as a dark spot (Fig.25). Fore leg sheath reaching the distal margin of abdominal segment 5; mid leg sheath reaching the distal margin of abdominal segment 6; hind leg sheath reaching the distal margin of abdominal segment 7. Wing sheath reaching the distal margin of abdominal segment 5. Abdominal tergites 2-8 without spines; spinules scattered elsewhere.

#### LARVA

Body length: 1.0-1.2mm (N=2). Colour: yellow. Spatula with 0.10-0.12mm of length (N=2) (Fig.26). Lateral papillae as in figure 26. Sternal papillae bare. Four pairs of setose terminal papillae similar in size (Fig.27). Pupation in the gall. Number of larvae/gall: 01.

Material (MNRJ) – Holotype ♂, BRAZIL, MINAS GERAIS, Tiradentes, Serra de São José, 28/IX/2001, V.Maia col. Paratypes: 1♂, 28/IX/2001; 1♀, 22/II/2001; 7♀, 28/IX/2001; 4♀, 24/X/2001; 22 pupal exuviae 28/IX/2001 (one of them on the same slide of holotype); 3 larvae 28/IX/2001 and 1 larva 21/XI/2001 (same locality and collector as holotype).

Other material (MNRJ) – 2♀, 28/IX/2001; 1♀, 27/V/2002 (same locality and collector as holotype).

Gall – Vein swelling, one-chambered (MAIA & FERNANDES, in press: fig.37.)

Host-plant – *Croton floribundus* Spreng (Euphorbiaceae).

Etymology – The name *vena* means vein and refers to the part plant where the gall grows.

*Lopesia bilobata* sp.nov.  
Figs.28-40

#### ADULT

Body length – 2.2-2.3mm (in male, N=2); 3.1mm (in female, N=1).

Head – occipital process present. Eye

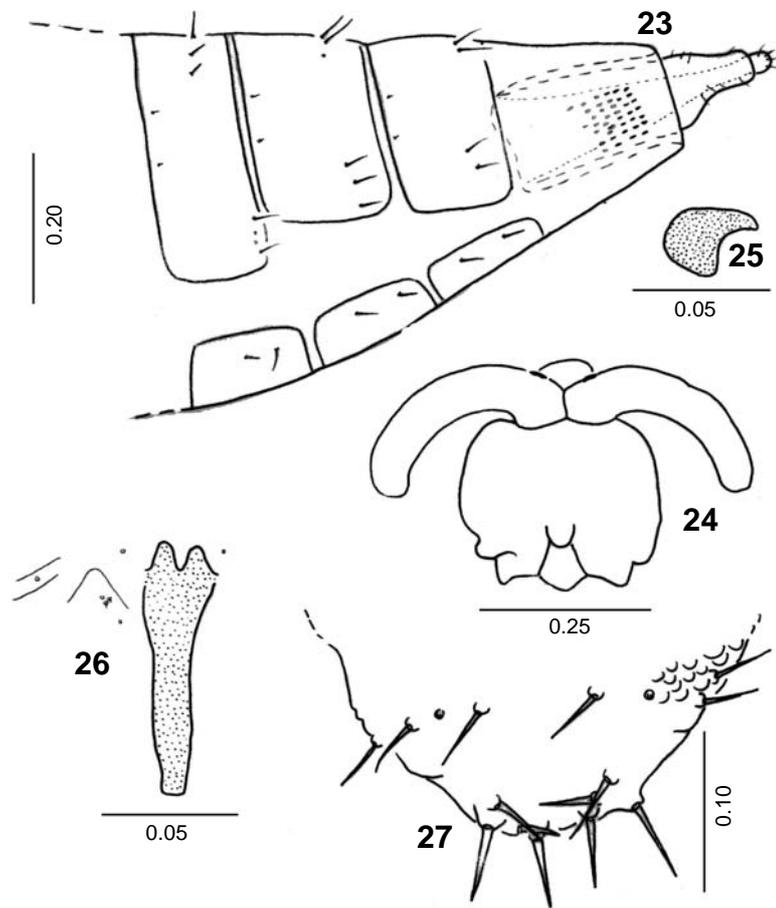
facets circular; male flagellomeres binodal and tricircumfilar, all loops short and subequal in length (Fig.28); female flagellomeres cylindrical with circumfila as in figure 29. Frontoclypeus with five long setae. Labrum triangular, long-attenuate, with three pairs of ventral sensory setae and lateral setulae. Hypopharynx of the same shape as labrum with lateral setulae. Labella elongate-convex, each with few lateral and few mesal sensory setae.

Palpus – first segment about as long as wide (length: 0.015mm); second segment the longest one about 2.7 times as long as wide (length: 0.042mm); third segment about twice as long as wide (length: 0.030mm), all covered with setulae and setae.

Thorax – wing length: 2.1mm (in male, N=1); 2.4-2.9mm (in female, N=4) (Fig.30). Anepisternum with a few scales near middle. Anepimeron with vertical row of 9 setae. Tarsal claws bent near basal third, toothed on all legs (Fig.31). Empodium not reaching beyond bend in claws (Fig.31).

Abdomen – ♂ : tergites 1-6 rectangular with single, complete row of caudal setae, several lateral setae, one pair of basal trichoid sensilla, and elsewhere with scattered scales;

tergite 7 rectangular with caudal row of setae and scales only present laterally, lateral setae and two basal trichoid sensilla present. Tergite 8 sclerotized, bandlike with only a pair of trichoid sensilla as vestiture. Sternites 2-6 rectangular and setose, setae more abundant mesally and caudally. Sternites 7-8 quadrate, each one with caudal and midlength rows of setae and basal pair of trichoid sensilla. ♀ : tergites 1-7 rectangular, setose (setae more abundant mesally and caudally, scales elsewhere; tergite 8 unsclerotized with a few scattered setae and basal pair of trichoid sensilla. Sternites 2-8 rectangular with setae mesally and caudally, scales elsewhere. Sternite 9 with scattered setae. Male terminalia (Fig.32):



*Couridiplosis vena* sp.nov. – fig.23- abdominal segments 6 to end, ♀ (dorsolateral view); fig.24- cephalic region, pupa (ventral view); fig.25- prothoracic spiracle, pupa; fig.26- spatula and associated papillae, larva (ventral view); fig.27- abdominal segments 8 and 9, larva (dorsal view). Scales in mm.

gonocoxites slightly splayed, gonostylus elongate, narrow, discreetly bent and tapered near the apex, cercus wider than hypoproct, cercus and hypoproct similar in length, aedeagus conspicuously longer than hypoproct. Ovipositor barely protrusible, female cerci not fused, elongate-ovoid and setose (two setae stronger than the others) (Figs.33-34).

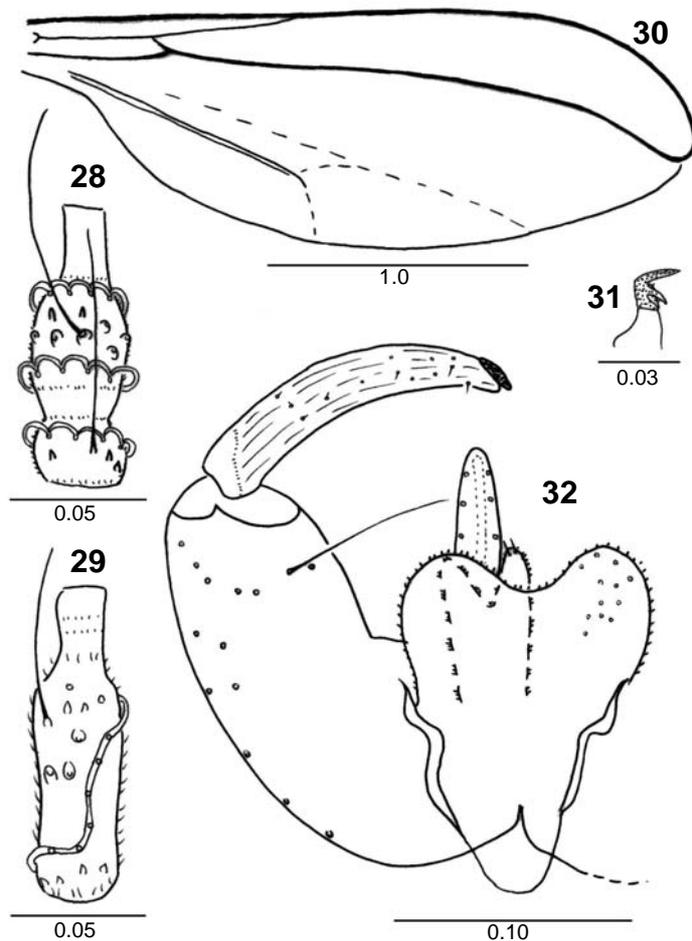
#### PUPA

Body length: 3.15-3.70mm (N=4). Cephalic region (Fig.35): antennal horn triangular with 0.015-0.031mm of length; antennal base with a small denticle; upper cephalic margin thickened laterally. Full complement of cephalic, lower and lateral papillae; cephalic setae with 0.042-0.053mm of length (N=4). Thorax: prothoracic

spiracle with 0.28-0.33mm of length (N=4) (Fig.36). Wing sheath reaching basal 1/4 of abdominal segment 3; fore leg sheath reaching distal 1/7 of abdominal segment 4; mid leg sheath reaching distal margin of segment 4 and hind leg sheath reaching basal 1/5 of segment 5. Abdominal segments 2-7 with only one row of few and conspicuous spines on the basal half of each esclerite (Fig.37).

#### LARVA (Fig.38)

Body length: 3.0mm (N=1). Colour: white. Spatula 2-toothed; full complement of lateral papillae (Fig.39). Terminal segment with two elongate caudal lobes, each one with four setose papillae (one much longer than the others)



*Lopesia bilobata* sp. nov. – adult: fig.28- flagellomere 5, ♂; fig.29- flagellomere 5, ♀; fig.30- wing, ♀; fig.31- tarsal claw and empodium, hind leg, ♀; fig.32- male terminalia (dorsal view). Scales in mm.

(Fig.40). Pupation in the gall. Number of larvae/gall: 01.

Gall – Leaf gal, circular spot, yellowish, one-chambered (MAIA & FERNANDES, in press: fig.88).

Host-plant – *Guapira* sp. (Nyctaginaceae).

Material (MNRJ) – Holotype ♂ : BRAZIL, MINAS GERAIS, Tiradentes, Serra de São José, 21/XI/2001, V.Maia col. Paratypes: 1♂, 21/XI/2001; 2♀, 28/IX/2001; 6 pupal exuviae and 1 pupa 28/IX/2001; 2 pupal exuviae 21/XI/2001; 1 pupal exuvia 30/I/2002; 1 larva 20/XI/2001 (same locality and collector as holotype).

Other material (MNRJ) – 2♀, 28/IX/2001; 2 larvae (2<sup>nd</sup> instar) 20/XI/2001; 2 larvae (2<sup>nd</sup> instar) 21/XI/2001; 7 larvae (2<sup>nd</sup> instar) 28/V/2002 (same locality and collector as holotype).

Etymology – The name *bilobata* refers to the presence of two caudal lobes on the terminal segment of larva.

Remarks – The larva of *L. bilobata* sp. nov. resembles that of *L. singularis* Maia, 2001 specially due to the presence of two caudal lobes on the terminal segment, but it differs in having prothoracic spatula and four pairs of terminal papillae (in *L. singularis*: spatula absent and only 3 pairs of terminal papillae). The pupae differ mainly in having dorsal spines on abdominal segments 2-8 (these spines are absent in *L. singularis*) and the male in having circumfilar loops similar in length (in *L. singularis* they are not similar in length). This is the first species of *Lopesia* known on Nyctaginaceae.

#### *Lopesia spinosa* sp. nov. Figs.41-51

#### ADULT

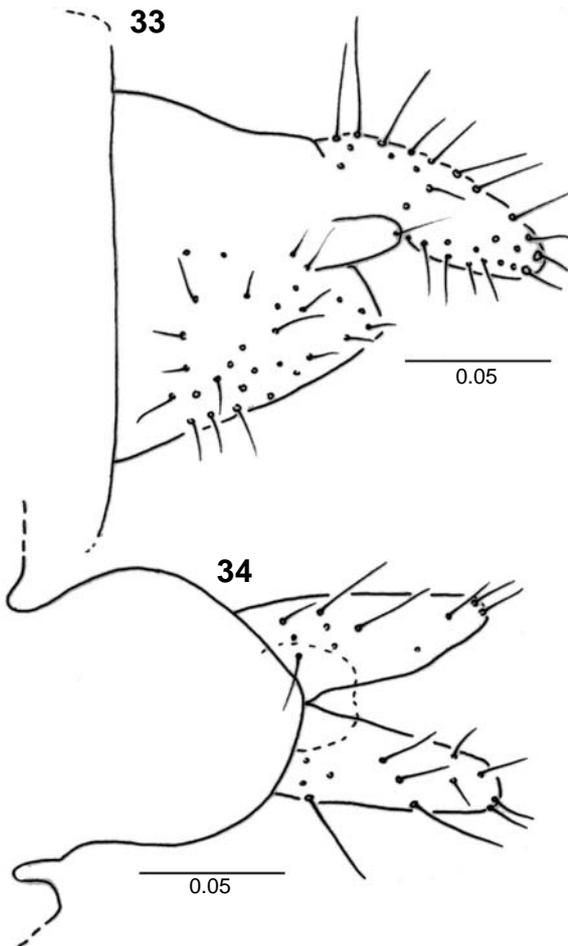
Body length – 2.6mm (in male, N=1); 3.9-4.6mm (in female, N=3).

Head – occipital process absent. Eye facets circular; male flagellomeres binodal and trircumfilar, all loops short and subequal in length (Fig.41); female flagellomeres cylindrical with circumfila as in figure 42. Flagellomere 12 with apical process

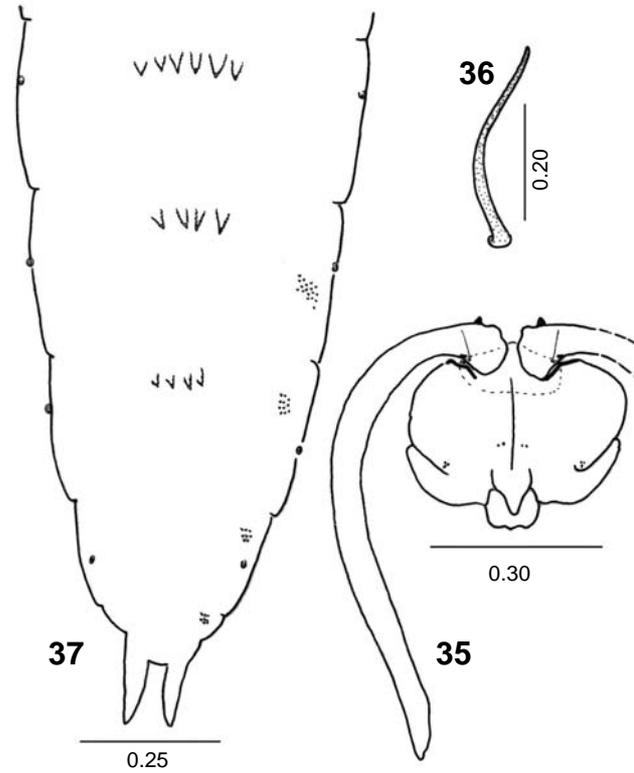
(Fig.43). Frontoclypeus with twelve long setae. Labrum triangular, long-attenuate, with three pairs of ventral sensory setae and lateral setulae. Hypopharynx of the same shape as labrum with lateral setulae. Labellae elongate-convex, with twelve lateral and four mesal sensory setae.

Palpus – first segment about as long as wide (length: 0.03-0.04mm); second about 1.8-2.5 times as long as wide (length: 0.04-0.07mm); third segment about 2.8-4.5 times as long as wide (length: 0.07-0.10mm), all covered with setulae and setae.

Thorax – wing length: 2.0mm (in male, N=1); 2.85-2.95mm (in female, n=2). Venation as in figure 44. Anepisternum bare. Anepimeron with vertical row of ten setae. Tarsal claws bent beyond midlength and simple on all legs; empodium very short (Fig.45).



*Lopesia bilobata* sp.nov. – ♀ : fig.33- ovipositor (lateral view); fig.34- ovipositor (dorsal view). Scales in mm.



*Lopesia bilobata* sp.nov. – pupa: fig.35- cephalic region (ventral view); fig.36- prothoracic spiracle; fig.37- abdominal segments 5-9 (dorsal view). Scales in mm.

Abdomen – ♂ : tergites 1-6 rectangular with single, complete row of caudal setae, several lateral setae, one pair of basal trichoid sensilla, and elsewhere with scattered scales; tergite 7 rectangular with caudal row of setae and scales only present laterally, lateral setae and two basal trichoid sensilla present. Tergite 8 not sclerotized with only a pair of trichoid sensilla as vestiture. Sternites 2-6 rectangular and setose, setae more abundant mesally and caudally. Sternites 7-8 quadrate, each one with caudal and midlength rows of setae and basal pair of trichoid sensilla. ♀ : tergites 1-7 as 1-6 in male; tergite 8 unsclerotized with row of setae and a pair of trichoid sensilla. Sternites 2-6 rectangular with setae mesally, caudally and laterally, a pair of trichoid sensilla and scales elsewhere. Sternite 7 square with the same chaetotaxy of the preceding ones. Sternite 8 unsclerotized with only a pair of trichoid sensilla as vestiture. Male terminalia (Fig.46): gonocoxites not splayed, gonostylus elongate, narrow, discreetly bent and tapered near the apex, cercus wider than

hypoproct, cercal lobes triangular and setose; hypoproct longer than cercus; aedeagus longer than hypoproct and truncate. Ovipositor protrusible, female cerci not fused, elongate-ovoid and setose (Fig.47).

#### PUPA

Body length: 3.8-4.6mm (N=4). Cephalic region (Fig.48): antennal horn 2-toothed with 0.09-0.13mm of length (N=4); upper cephalic margin thickened laterally; face with a pair of sclerotized spine-like lateral processes. Full complement of cephalic, lower and lateral papillae; cephalic setae with 0.05-0.08mm of length (N=4). Lower facial papillae in two sclerotized spine-like processes (Fig.49). Thorax: prothoracic spiracle with 0.20-0.25mm of length (N=4) (Fig.50). Wing sheath reaching basal 1/3-1/2 of abdominal segment 3; fore leg sheath reaching distal margin

of abdominal segment 5 or midlength of segment 4; mid leg sheath reaching midlength of segment 4 or basal margin of segment 5 and hind leg sheath reaching distal 1/3 of segment 4 or basal 1/5 of segment 5. Abdominal segments 2-8 with only one row of few and conspicuous spines; central area not sclerotized and with 6 setose dorsal papillae, integument rough and sclerotized elsewhere (Fig.51). Pupation in the gall. Number of larvae/gall: 01.

Gall – Leaf gal, ovoid, yellowish, hairy and one-chambered (MAIA & FERNANDES, in press: fig.35).

Host-plant – *Croton floribundus* Spreng. (Euphorbiaceae).

Material (MNRJ) – Holotype ♂: BRAZIL, MINAS GERAIS, Tiradentes, Serra de São José, 28/XI/2001, V.Maia col. Paratypes: 1♀, 21/XI/2001; 2♀, 30/I/2002; 1 pupal exuvia 28/IX/2001; 1 pupal exuvia 21/XI/2001; 1 pupa 21/XI/2001; 1 pupal exuvia 30/I/2002; 1 pupa 28/IX/2001 (same locality and collector as holotype).

Other material (MNRJ) – 3 pupal exuviae 27/V/2002 (same locality and collector as holotype).

Etymology – The name *spinosa* refers to the presence of spine-like sclerotized processes on pupal face.

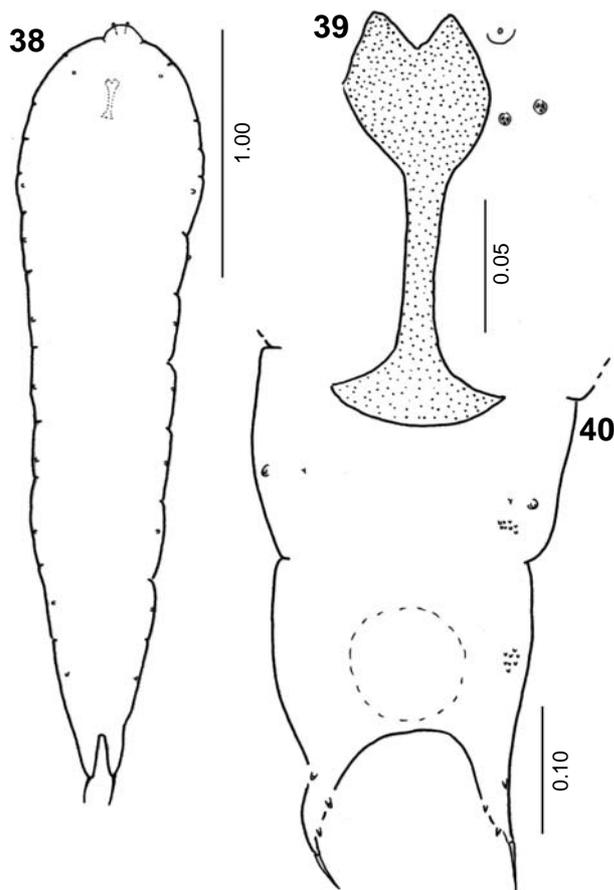
Remarks – *Lopesia spinosa* sp.nov. differs from all other *Lopesia* species mainly by the presence of sclerotized facial processes and 2-toothed antennal horn of the pupa. Besides, this is the first species of *Lopesia* associated with Euphorbiaceae.

#### *Lopesia tibouchinae* sp.nov. (Figs.52-61)

#### ADULT

Body length – 3.1-3.5mm (in male, N=4); 4.1-4.7mm (in female, N=4).

Head – occipital process present. Eye facets circular; male flagellomeres binodal and tricircumfilar, basal and distal similar with loops subequal in length (Fig.52); mid circumfilar with reduced loops; female flagellomeres cylindrical with circumfilar as in figure 53. Flagellomeres 1 and 2 not connate. Flagellomere 12 with apical process. Frontoclypeus with 8 long setae. Labrum triangular, long-attenuate, with two pairs of ventral sensory setae and lateral setulae.



*Lopesia bilobata* sp.nov.– larva: fig.38- general aspect (dorsal view); fig.39- spatula and associated papillae (ventral view); fig.40. abdominal segments 8 and 9 (dorsal view). Scales in mm.

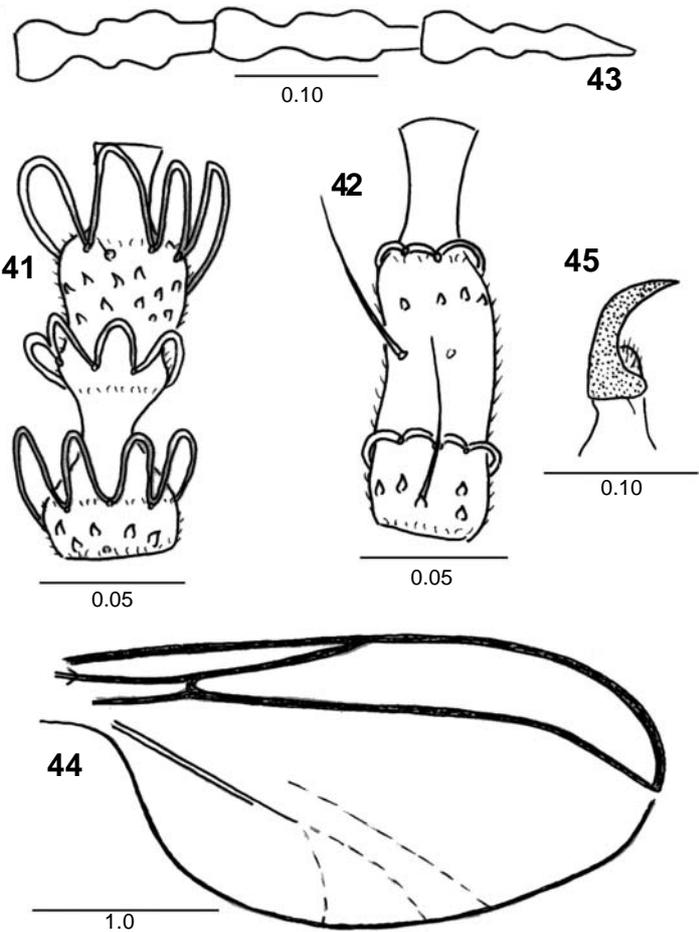
Hypopharynx of the same shape as labrum with lateral setulae. Labellae elongate-convex, with five lateral and 0-1 mesal sensory setae.

Palpus – first segment about as long as wide (length: 0.04mm); second about 1.6 times as long as wide (length: 0.04mm); third segment about 5.0-6.0 times as long as wide (length: 0.08mm), all covered with setulae and setae.

Thorax – wing length: 2.7mm (in male, N=1); 3.4-3.5mm (in female, n=4). Venation as in figure 54. Anepisternum bare. Anepimeron with vertical row of ten setae. Tarsal claws toothed on all legs; empodium very short reaching bend in claws (Fig.55). Abdomen – ♂: tergites 1-6 rectangular with single, complete row of caudal setae, some lateral setae, a pair of basal trichoid sensilla, and elsewhere with scattered scales; tergites 7-8 not sclerotized mesally at distal margin, each one with a pair of trichoid sensilla and scattered scales elsewhere. Sternites 2-7 rectangular and setose, setae more abundant mesally and caudally, each with a pair of trichoid sensilla and scattered scales elsewhere. Sternite 8 square with scattered setae and a pair of trichoid sensilla. ♀: tergites 1-7 as 1-6 in male; tergite 8 sclerotized, band-like with a pair of trichoid sensilla. Sternites 2-7 as in male. Sternite 8 unsclerotized with only a pair of trichoid sensilla as vestiture. Male terminalia (Fig.56): gonocoxites not splayed, gonostylus elongate, narrow and discretely bent; cercus wider and longer than hypoproct, cercal lobes triangular and setose; hypoproct bilobate; aedeagus longer than hypoproct, triangular and rounded at the apex. Ovipositor barely protrusible, female cerci not fused, elongate-ovoid and setose (Fig.57).

#### PUPA

Body length: 4.6-4.7mm (N=2). Cephalic region (Fig.58): antennal horn simple, triangular, with 0.11-0.12mm of length (N=2); upper cephalic margin thickened laterally. Full complement of cephalic, lower and lateral papillae; cephalic setae with 0.07mm of length (N=4) (Fig.59). Thorax: prothoracic spiracle setiform with 0.40mm of length (N=4) (Fig.60). Wing sheath reaching 1/2 of abdominal segment 3; fore leg



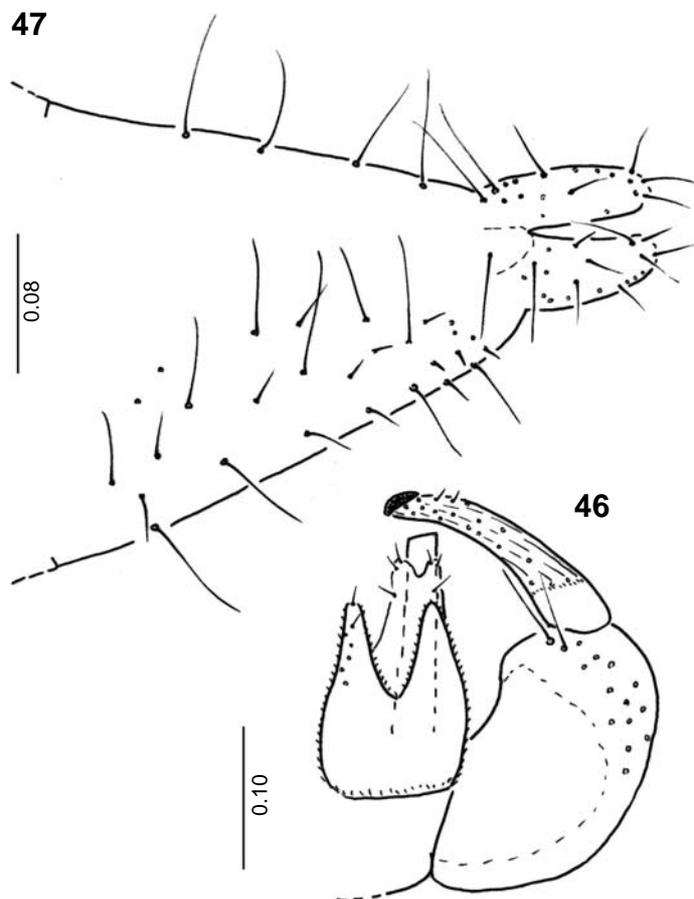
*Lopesia spinosa* sp.nov. – adult: fig.41- flagellomere 5, ♂; fig.42- flagellomere 5, ♀; fig.43- flagellomeres 10-12, ♂; fig.44- wing, ♀; fig.45- tarsal claw and empodium, fore leg, ♀. Scales in mm.

sheath reaching distal margin of abdominal segment 4; mid leg sheath reaching basal 1/6 of segment 5 and hind leg sheath reaching basal 1/4 of segment 5. Abdominal segments 2-8 with only one row of few and conspicuous spines and six setose dorsal papillae; integument rough; terminal segment with two apical spiny lobes in both sexes (Fig.61). Pupation in the gall. Number of larvae/gall: 01.

Gall – Swelling of leaf veins or petiole, one-chambered.

Host-plant – *Tibouchina candolleana* (DC.) Cogn. (Melastomataceae).

Material (MNRJ) – Holotype ♂: BRAZIL, MINAS GERAIS, Tiradentes, Serra de São José, 28/XI/2001, V.Maia col. Paratypes: 5♂, 28/V/2002;



*Lopiesia spinosa* sp.nov. – adult: fig.46- male terminalia, dorsal view; fig.47- ovipositor (dorsal view). Scales in mm.

1♀, 25/X/2001; 5♀, 28/V/2002; 1 pupal exuvia 24/X/2001; 1 pupal exuvia and 2 pupae 24/IV/2002; 13 pupal exuviae and 1 pupa 28/V/2002 (same locality and collector as holotype).

Other material (MNRJ) – 1 pupal exuvia 31/VIII/2001; 1 pupal exuvia 25/X/2001 (same locality and collector as holotype).

**Etymology** – The name *tibouchinae* refers to the generic name of the host plant.

**Remarks** – *Lopiesia tibouchinae* sp.nov. differs from all other *Lopiesia* species mainly by the arrangement of dorsal spines on abdominal segments of the pupa and by the presence of two terminal lobes on the last segment of the pupa. This is the second species of *Lopiesia* known on Melastomataceae. The other species, *L. brasiliensis* Rübssaamen, 1908 induces galls on *Ossaea* DC in Brazil.

*Myrciariamyia fernandesi* sp.nov.  
(Figs.62-73)

ADULT ♂

Body length – 3.8-4.0mm (N=2).

Head – eye facets hexagonal; eyes not joined at vertex; flagellomeres cylindrical, neck setulose and as long as or longer than the node in male; short neck in female; circumfila flat and joined by a transverse connection (Figs.62-63); frontoclypeus with 16-18 long setae; labrum triangular, long attenuate with two or three pairs of ventral sensory and long, anteriorly directed lateral setulae; labella elongate-convex and setose; palpus with four setose and cylindrical segments (segments 1, 2, 3 and 4 measuring 0.05mm, 0.07mm, 0.11mm and 0.11mm, respectively).

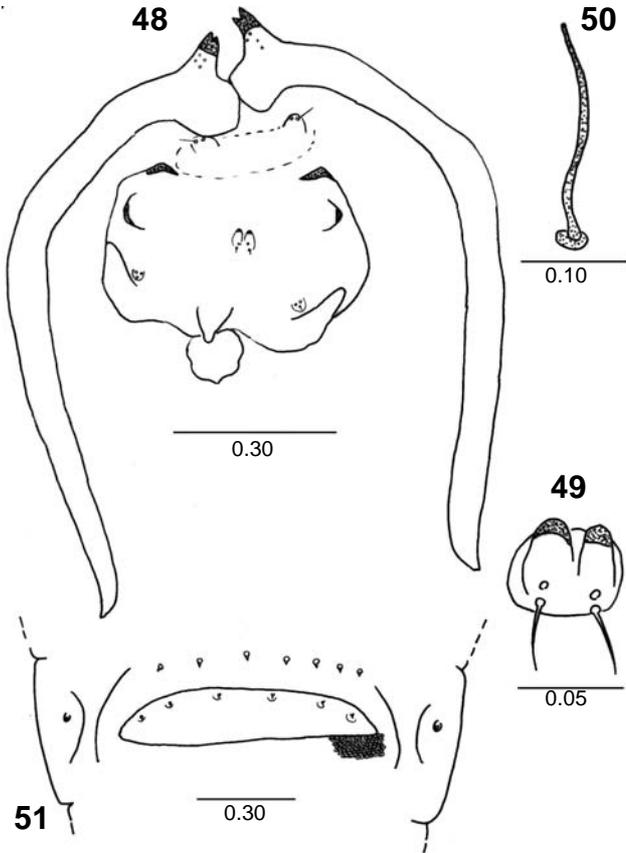
Thorax – Wing length: 2.7-3.0mm (N=4); venation (Fig.64): Rs absent, R5 almost straight, reaching the margin just before the apex, M3 present but evanescent, Cu forked, CuP present; anepisternum with few scales near midlength; anepimeron with a group of setae; legs: tarsal claws with a single tooth on all legs; empodium as long as claws (Fig.65).

Abdomen – tergites 1-7 rectangular with a irregular row of setae at distal margin and a pair of trichoid sensilla, scattered scales elsewhere; tergite 8 ovoid with a pair of trichoid sensilla; sternites 2-7 rectangular with a row of setae at distal margin, some lateral setae and irregular rows of setae mesally. Terminalia (Fig.66): gonocoxite wide, gonostylus widest at basal half and narrowing toward the apex; cerci elongate-ovoid and setose; hypoproct bilobed (lobes narrow, setulose, rounded at the apex and with a single apical setae); aedeagus elongate with truncate apex; parameres well developed, longer than hypoproct.

ADULT ♀

Body length – 4.1mm (N=1); 29 flagellomeres; flagellomeres 1-28 cylindrical with short and almost glabrous neck; flagellomere 29 elongate-cylindrical, longer than the others; circumfila as in male (Fig.63).

Wing length – 3.1-3.5mm (N=4). Tergites 1-8 as 1-7 in male; sternites 2-7 as in male. Ovipositor



*Lopesia spinosa* sp.nov. – pupa: fig.48- cephalic region (ventral view); fig.49- lower facial papillae (ventral view); fig.50- prothoracic spiracle; fig.51- abdominal segment 6 (dorsal view). Scales in mm.

protrusible, cerci not fused and ovoid (Fig.67). Other characters as in male.

PUPA

Body length: 4.5-4.6mm (N= 2). Colour: brownish. Cephalic region (Fig.68): antennal horn short (length: 0.03-0.04mm, N=2); cephalic seta with 0.06-0.07mm (N=2); facial integument smooth; upper cephalic margin thickened laterally; three pairs of lateral facial papillae (two setose and one without seta); one pair of lower facial papillae (with seta).

Thorax: prothoracic spirale (Fig.69) setiform with 0.20-0.22mm of length (N=4). Abdominal tergites 2-8 with irregular rows of spines, less numerous on the last segments (Fig.70).

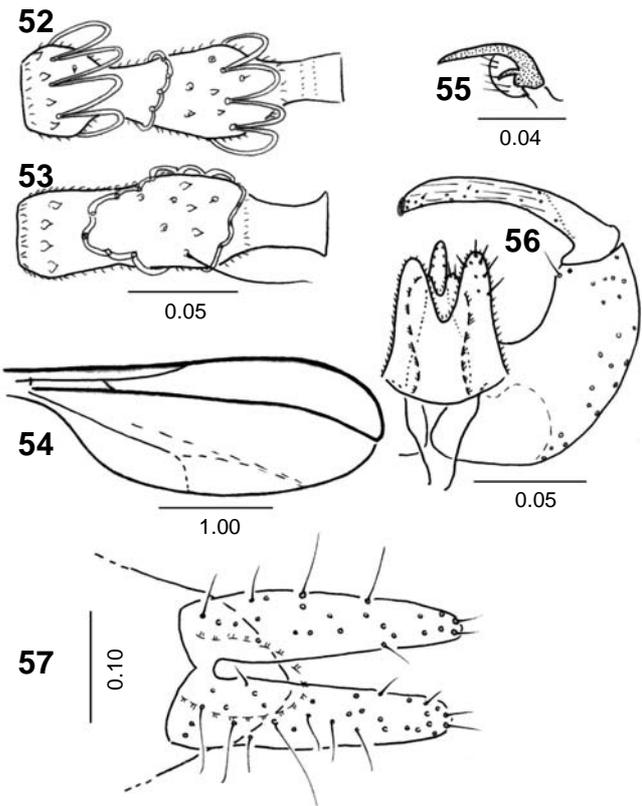
LARVA (Fig.71)

Body length: 3.0-4.0mm (N=4). Colour: yellow. Integument rough. Spatula (Fig.72): length 0.09-0.11mm (N=4); 2 -toothed with short stalk; two

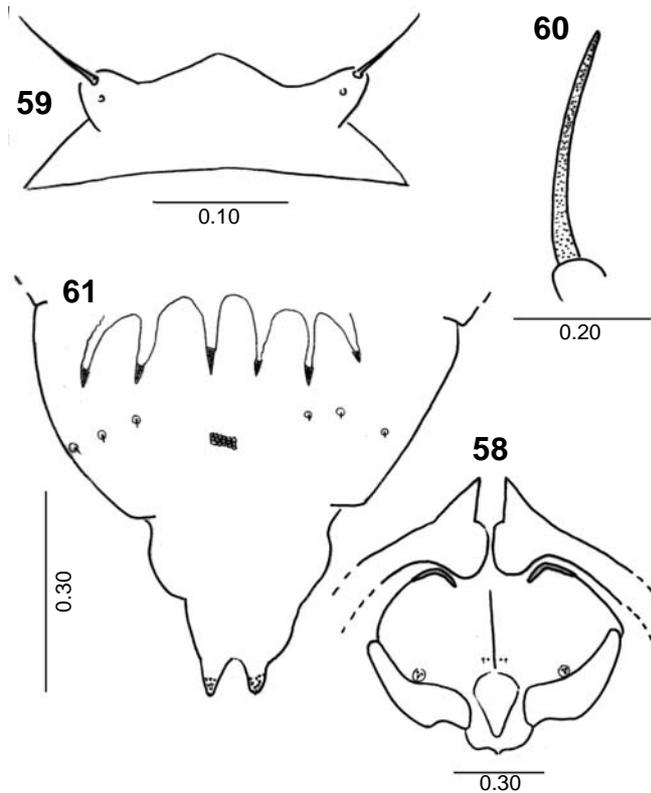
groups of three setose lateral papillae per side and each group with two papillae similar in shape; sternal and ventral papillae setose; dorsal papillae with seta conspicuously longer than the ventral ones. Terminal segment (Fig.73) greatly narrowed and elongated with 3 pairs of setose terminal papillae subequal in length and two pairs of setose anal papillae (one pair smaller than the other). Pupation in the gall. Number of larvae/gall: 01. Gall – Bud gall, green, composed by two valves.

Host plant – *Myrciaria tenella* (DC.) O.Berg. (Myrtaceae).

Material (MNRJ) – Holotype ♂ : BRAZIL, MINAS GERAIS, Tiradentes, Serra de São José, 21/XI/2001, V.Maia col. Paratypes: 1♂ , 24/X/2001; 1♀ , 24/X/2001; 1♀ , 21/XI/2001; 2 pupae and 3 pupal exuviae 21/IX/2001; 3 pupal exuviae 24/X/2001; 4 larvae 24/X/2001 (same locality and collector as holotype).



*Lopesia tibouchinae* sp.nov. – adult: fig.52- flagellomere 5, ♂ ; fig.53- flagellomere, 5, ♀ ; fig.54- wing, ♂ ; fig.55- tarsal claw and empodium, fore leg, ♂ ; fig.56- male terminalia (dorsal view); fig.57- female cerci (dorsal view). Scales in mm.



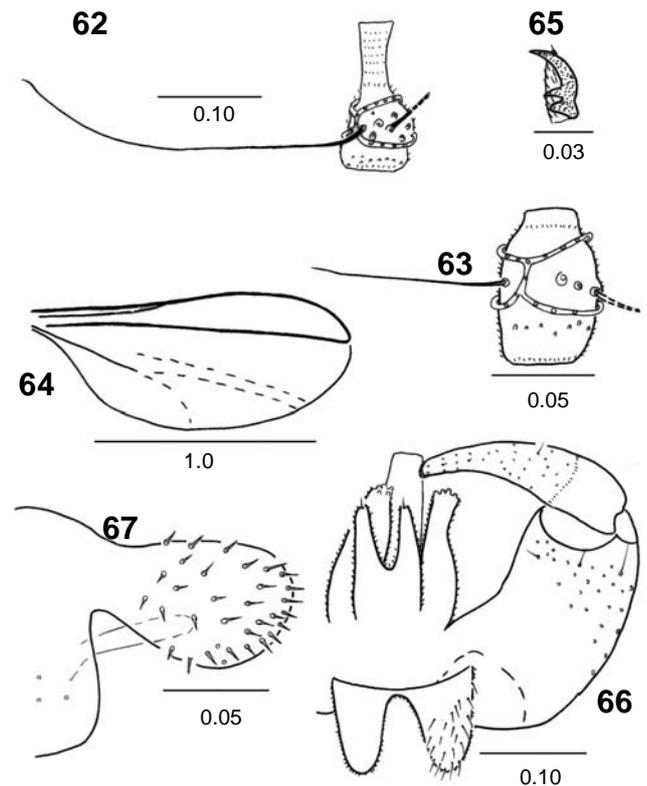
*Lopsesia tibouchinae* sp.nov. – pupa: fig.58- cephalic region (ventral view); fig.59- apical setae; fig.60- prothoracic spiracle; fig.61- abdominal segments 8 and 9 (dorsal view). Scales in mm.

**Etymology** – The species is named in honor of Dr. Geraldo Wilson Fernandes (Universidade Federal de Minas Gerais, Brazil).

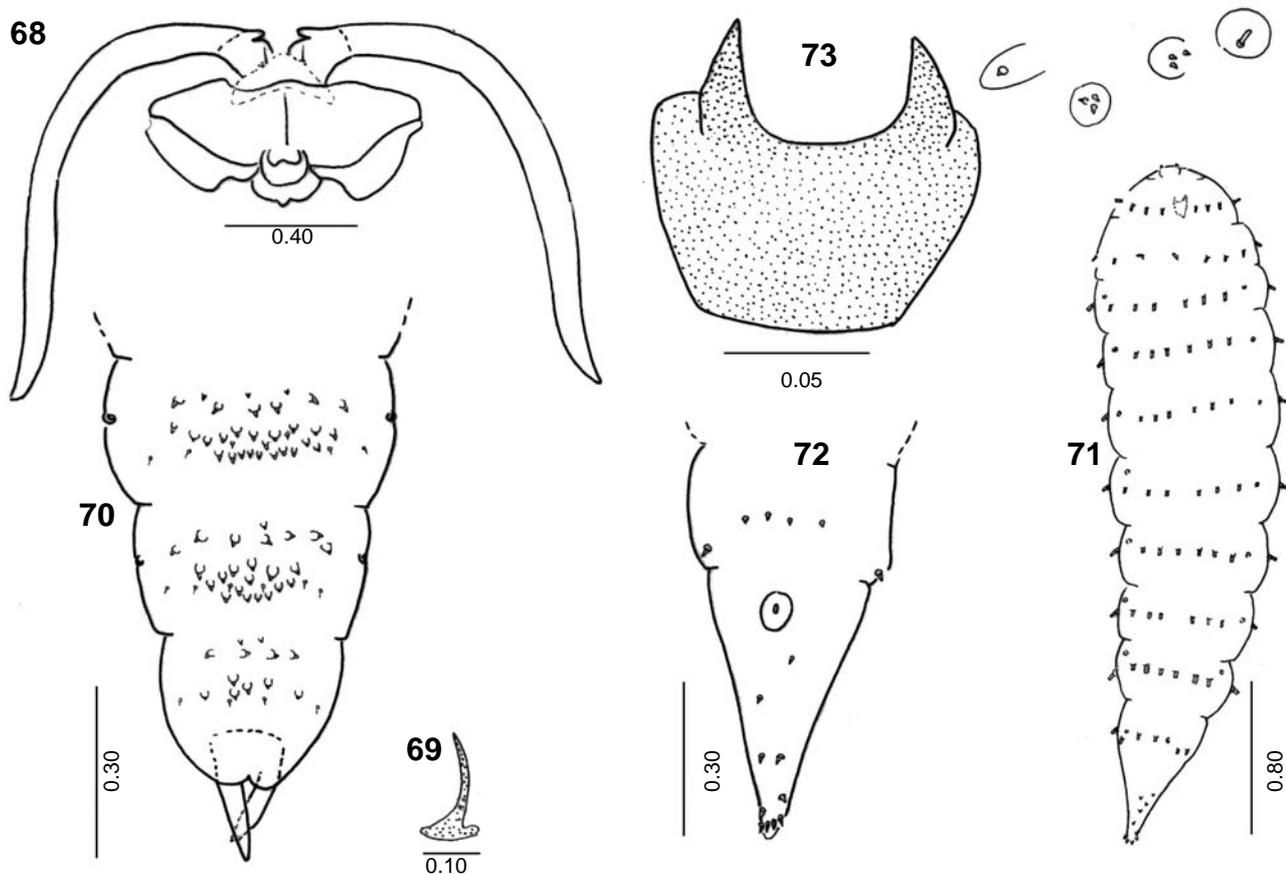
**Distribution** – BRAZIL: MINAS GERAIS (Serra de São José).

**Remarks** – This is the second described species of *Myrciariamyia* Maia, 1994. The previous known species, *Myrciariamyia bivalva* Maia, 1994, induces bivalve bud galls on *Myrciaria floribunda* (Camb.) (Myrtaceae) and has been recorded for restinga areas of Rio de Janeiro State (Brazil) (MAIA, 2001). Interestingly, the new species also induces bivalve bud galls and is associated with the same genus of host plant. Both species are univoltine, but the adults of *M. bivalva* emerge during the winter (July and August), while those of *Myrciariamyia fernandesi* sp.nov. emerge during the spring (September–November). The pupa of both species are

easily distinguishable mainly due to the arrangement of the lower facial papillae (two pairs in *M. bivalva* and one pair in *M. fernandesi* sp.nov.) and the dorsal abdominal spines (spines forming evident rows in *M. bivalva* and spines more grouped in *M. fernandesi* sp.nov.) and to the length of the prothoracic spiracle (with 0.40mm in *M. bivalva* and 0.20–0.22mm in *M. fernandesi* sp.nov.). The larva of both species show small differences, the most conspicuous ones refer to the shape of lateral papillae (all of them similar in *M. bivalva* and one papilla more robust than the others in *M. fernandesi* sp.nov.) and to the length of the terminal segment (longer in *M. fernandesi* sp.nov.). Besides, *M. fernandesi* sp.nov. adults are shorter than those of *M. bivalva*, and in the new species, the male cercus has more pronounced lobes.



*Myrciariamyia fernandesi* sp.nov. – adults: fig.62- flagellomere 5, ♂; fig.63- flagellomere 5, ♀; fig.64- wing, ♂; fig.65- tarsal claw and empodium, mid leg, ♂; fig.66- male terminalia (dorsal view); fig.67- female cerci (lateral view). Scales in mm.



*Myrciariamyia fernandesi* sp.nov. – pupa: fig.68- cephalic region (ventral view) (facial papillae not drawn); fig.69- prothoracic spiracle; fig.70- abdominal segments 7 and 9 (dorsal view); larva: fig.71- general aspect (dorsal view); fig.72- spatula and associated papillae (ventral view); fig.73- abdominal segments 8 and 9 (dorsal view). Scales in mm.

#### ACKNOWLEDGMENTS

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