

# Description of two new species of *Marilia* Müller (Trichoptera, Odontoceridae) from southeastern Brazil, including the description of the female of *Marilia major* Müller

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**ABSTRACT.** Description of two new species of *Marilia* Müller (Trichoptera, Odontoceridae) from southeastern Brazil, including the description of the female of *Marilia major* Müller. Two new species of *Marilia* Müller (Odontoceridae), *M. aiuruoca* **sp. nov.** and *M. huamantincoae* **sp. nov.**, are described and figured from Itatiaia massif, Mantiqueira mountain range, southeastern Brazil. The female of *M. major* Müller, 1880 is described and the species is recorded for the first time from Rio de Janeiro state.

**KEYWORDS.** Atlantic Forest; Neotropical Region; *Marilia aiuruoca*; *Marilia huamantincoae*; taxonomy.

**RESUMO.** Descrição de duas novas espécies de *Marilia* Müller (Trichoptera, Odontoceridae) para o sudeste do Brasil, incluindo a descrição da fêmea de *Marilia major* Müller. Duas novas espécies de *Marilia* Müller (Odontoceridae), *M. aiuruoca* **sp. nov.** e *M. huamantincoae* **sp. nov.**, são descritas e ilustradas para o Maciço do Itatiaia, Serra da Mantiqueira, Sudeste do Brasil. A fêmea de *M. major* Müller, 1880 é descrita, sendo a espécie registrada pela primeira vez para o Estado do Rio de Janeiro.

**PALAVRAS-CHAVE.** *Marilia aiuruoca*; *Marilia huamantincoae*; Mata Atlântica; Região Neotropical; taxonomia.

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The genus *Marilia* Müller is worldwide distributed, with 51 extant and two fossil species (Bueno-Soria & Rojas-Ascencio 2004). The genus reaches its greatest diversity in the Neotropics, being Central America (including Great Antilles) the area with highest number of species. Only the Chilean Subregion and Lesser Antilles have no records for the genus (Flint *et al.* 1999). In Brazil, there are 11 known species (Paprocki *et al.* 2004), five of which endemic for the country: *Marilia albicornis* (Burmeister, 1839), *M. fasciculata* Banks, 1913, *M. major* Müller, 1880, *M. minor* Müller, 1880 and *M. sioli* Marlier, 1964 (Flint *et al.* 1999). Endemic patterns appear to be strong among species of this genus, but this may reflect the lack of surveys, since several species are known only from type locality (Flint 1991).

The genus can be separated into two groups: one with tibial spur formula 2–4–4, and other with 2–4–2. However, the presence (or lack) of the pair of preapical spurs on the hind legs cannot be to consider synapomorphies in the absence of cladistics studies (Flint 1983).

In this present contribution we describe two new species of *Marilia* from the Itatiaia massif, Mantiqueira mountain range, southeastern Brazil, between São Paulo, Minas Gerais and Rio de Janeiro states. *Marilia major* Müller, 1880 is recorded for the first time from Rio de Janeiro state, and the female of this species is here described.

## MATERIAL AND METHODS

The specimens were collected with Pennsylvania light traps and conserved in 80% ethanol. The illustrations were made

under optic microscope and estereomicroscope, both equipped with camera lucida. The terminology used in descriptions follows Flint (1983, 1991) and Bueno-Soria & Rojas-Ascencio (2004). The type specimens have been deposited in the following collections: Coleção Entomológica Professor José Alfredo Pinheiro Dutra, Departamento de Zoologia, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil (DZRJ); Museu Nacional, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil (MNRJ) and Museu de Zoologia, Universidade de São Paulo, São Paulo, Brazil (MZSP).

### *Marilia aiuruoca* **sp. nov.**

(Figs. 1–8)

*Marilia aiuruoca* **sp. nov.** is close to *M. major* and the related New World species by having tergite IX distinct from segment X and tibial spur formula 2–4–4. Besides these features, the new species has a median incision on tergum X with wide U-shaped apical notch, and tergum X without lateral subapical expansions, in dorsal view, resembling the pattern found in *M. spangleri* Bueno-Soria & Rojas-Ascencio, 2004. *M. aiuruoca* can be distinguished from this species by the structure of the phallotremal sclerite, which is not so wide and tripartite. The new species can be separated from the other species of the genus by the presence of footlike segment X, with rounded apex, in lateral view.

**Description.** Length of forewing: male 11.0–12.0 mm (n=10); female 12.0 mm (n=10). General color light brown, in alcohol.

**Head:** Eyes lateral, extremely developed in males, almost

touching middorsally, separated only by narrow area, with setae extending up to postgena. Ocelli absent. Antenna long, about 1.5 times length of body; scape broad, covered with light setae. Frons with pubescence of light setae. Maxillary palp well developed, 5-segmented, segments subequal, densely setose. Labial palp 3-segmented, segments subequal, setose.

Thorax: Prothorax very short; pronotum with a pair of setal warts long, transversal. Mesothorax broad, without setae; mesonotum with dark longitudinal median line, extending up to mesoscutellum, with pair of setal warts and small depressions behind them; mesoscutellum almost circular. Metathorax with about half length of mesothorax, without setae; metascutellum subtriangular. Tibial spur formula 2–4–4; external spur of mid- and hindtibia shorter than internal one. Forewing brown; forks I, II and V present (Fig. 1A). Hindwing with only fork I; anal lobe with tuft of setae similar to a brush (lacking in female) (Fig. 1B).

Abdomen: simple, without differentiated structures.

Male genitalia: Segment IX, in lateral view, with anterior margin slightly concave; posterior margin slightly projected medially, with rounded apex; 2 latero-median sutures separating each side of segment in 3 parts, the posterior one about half length of segment (Fig. 2); not dorsally projected above segment X (Fig. 3); ventrally with internal margin concave (Fig. 4). Preanal appendages, in lateral view, long, oblong, with rounded apex, slightly twisted longitudinally (Fig. 3); claviform in dorsal view, with numerous long setae, especially on external margin (Fig. 3). Segment X slightly longer than preanal and inferior appendages, with numerous long setae; apex footlike in lateral aspect (Fig. 2); dorsally with a large apical U-shaped notch (Fig. 3). Inferior appendages with two articles; basal article cylindrical, with base broader than apex; apical article short, with small apical conical dark spines (Figs. 2, 4); ventrally with internal margin slightly sinuose (Fig. 4). Phallus tubular, widened at apex, slightly curved ventrally; endotheca membranous, phallosomal sclerite curved in lateral view and rodlike in dorsal view (Figs. 5, 6).

Female genitalia: Inferior appendages closely appressed to segment X, with dark sclerotized apical area bearing numerous long setae (Fig. 7). Sternite IX with anterolateral curved bars; central region with two striate areas. Bursa copulatrix well developed, sclerotized, bell-shaped, with central keyhole-like structure (Fig. 8).

Holotype male: Brazil, Minas Gerais, Itamonte: Rio Aiuruoca, 22°20'56.9''S 44°41'06.6''W, 1860 m., 25.x.2002, J.L. Nessimian & A.A. Huamantincó leg. (DZRJ 1531).

Paratypes: Brazil, Minas Gerais, Itamonte: 9 males, 18 females, same data of holotype (DZRJ 1532-1558); 2 males, 2 females, same data of holotype (MNRJ); 2 males, 2 females, same data of holotype (MZSP).

Additional Material Examined. Brazil, Minas Gerais, Itamonte: Rio Aiuruoca, 22°20'56.9''S 44°41'06.6''W, 1860 m., 24.xi.2003, J. L. Nessimian, L. Montel & N. Ferreira Jr. leg., 4 males, 2 females (DZRJ 1593-1595); same locality, 19.iii. 2004, J. L. Nessimian & N. Ferreira Jr. leg., 4 males, 4 females (DZRJ 1596-1597); same locality, 08.xii.2005, J. L. Nessimian, A. P. M. dos Santos & L. L. Dumas leg., 1 female (DZRJ 1598); same locality, 01.xi.2007, J. L. Nessimian, A. P. M. dos Santos & L. L. Dumas leg., 7 males, 11 females (DZRJ 1599-

1600); Rio Aiuruoca tributary, 22°19'45.0''S 44°40'41.7''W, 1947m., 02.xi.2007, J. Nessimian, L. L. Dumas, A. P. M. dos Santos, N. Ferreira Jr. & A. L. Henriques-Oliveira leg., 1 female (DZRJ 1601). Minas Gerais, Bocaina de Minas: Córrego do Morro Cavado, 22°18'47.2''S 44°36'48.8''W, 1240 m., 25.xi.2003, J. L. Nessimian & A. A. Huamantincó leg., 1 female (DZRJ 1602). Rio de Janeiro, Itatiaia: vale do Rio das Cruzes, 24.ii.2001, J. L. Nessimian & A. A. Huamantincó leg., 1 male (DZRJ 1603); Maromba, tributário do Rio Preto, 22°19'67.9''S 44°36'56.8''W, 1509 m., 24.xi.2003, J. L. Nessimian & A. A. Huamantincó leg., 1 female (DZRJ 1604); Maringá, Rio Preto, 22°19'41.2''S 44°34'44.8''W, 1109 m., 04.ix.2007, L. L. Dumas, A. P. M. dos Santos, G. A. Jardim & J. L. Nessimian leg., 2 males (DZRJ 1605); Maringá, Rio Preto, 22°19'38.8''S 44°34'40.1''W, 1110 m., 04.ix.2007, L. L. Dumas, A. P. M. dos Santos, G. A. Jardim & J. L. Nessimian leg., 2 females (DZRJ 1606); Parque Nacional do Itatiaia, Piscina do Maromba, Rio Campo Belo, 22°25'46.21''S 44°37'09.74''W, 957 m., 16.iv.2007, L. L. Dumas, A. P. M. dos Santos, N. Ferreira Jr. & J. L. Nessimian leg., 1 male (DZRJ 1607). Rio de Janeiro, Resende: Parque Nacional do Itatiaia, Rio Campo Belo, 22°23'11.30''S 44°40'40.14''W, 2365 m., 25.xi.2007, L. L. Dumas, M. R. de Souza, & J. L. Nessimian leg., 1 male (DZRJ 1608).

Etymology. The species epithet name refers to Aiuruoca river, where part of the material (including type-series) was collected. Aiuruoca, in Tupi language, means “parrots’ house”.

#### *Marilia huamantincóae* sp. nov.

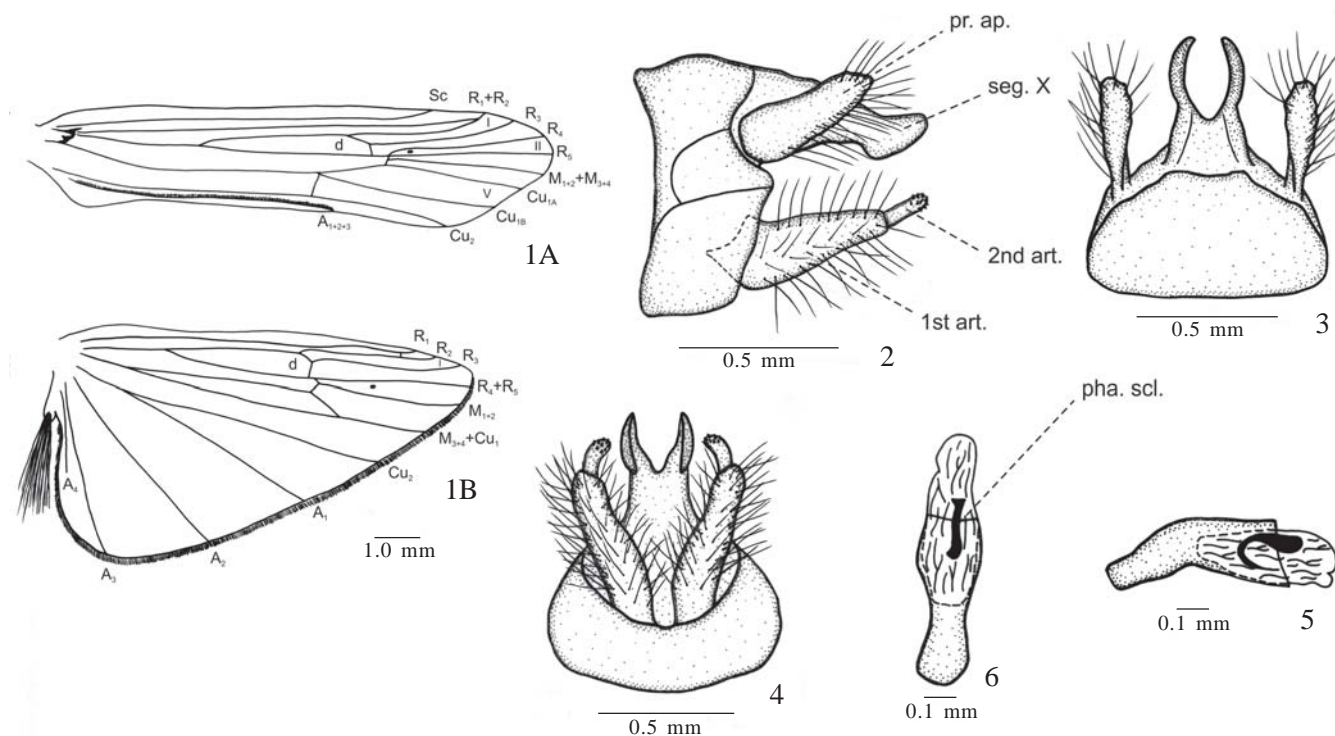
(Figs. 9–16)

*Marilia huamantincóae* sp. nov. is close to the Australian and Asian species of the genus by male genitalia morphology. The new species shares some similarities with *M. bola* Mosely, 1953, *M. javana* Ulmer, 1951 and *M. lata* Ulmer, 1925, as the triangular segment IX, produced over segment X, and the oblong preanal appendages, in dorsal aspect. *Marilia huamantincóae* sp. nov. can be distinguished from *M. bola* by lacking hindwing forks II and V, from *M. javana* by the presence of forewing complete  $M_2$  and *M. lata* mainly by having inferior appendages digitiform, with internal margin almost straight. The new species can be recognized by well separated eyes on vertex, the tibial spur formula 2–4–2, segment IX dorsally long, and apicolateral projections on phallus.

Description. Length of forewing: male 7.0–8.5 mm (n=10); female 8.0 mm (n=1). General color dark brown, with head almost black, in alcohol.

Head: Eyes lateral, well separated middorsally. Ocelli absent. Antenna long, about 2.0 times length of body; scape broad, covered with light setae. Frons with tuft of long light setae on central region, near antennal base. One pair of oval posterior setal warts; one pair long on postgena. Maxillary palp well developed, 5-segmented, segments subequal, densely setose. Labial palp 3-segmented, segments subequal, setose.

Thorax: Prothorax very short; pronotum with pair of setal warts long, transversal. Mesothorax broad, with three pairs of small longitudinal sulci anteriorly; mesonotum with anterior pair of setal warts and small depressions behind them; mesoscutellum oval. Metathorax with about half length of mesothorax, without setae; metascutellum triangular. Tibial spur formula 2–4–4; foreleg spurs subequal; external spur of



Figs. 1–6. *Marilia aiuruoca* sp. nov., male. 1, Wings: A, forewing; B, hindwing; 2, Genitalia, lateral view; 3, Genitalia, dorsal view; 4, Genitalia, ventral; 5, Phallus, lateral view; 6, Phallus, dorsal view. Abbreviations. d – discoidal cell; pr. ap. – preanal appendages; seg. X – segment X; 1st art. – first article of inferior appendage; 2nd art. – second article of inferior appendage; pha. scl. – phallic sclerite.

mid- and hindtibia half length of internal one. Forewing brown, translucent, with brown setae; forks I, II and V present (Fig. 9A). Hindwing with only fork I; anal lobe with tuft of setae similar to a brush (Fig. 9B).

Abdomen: simple, without differentiated structures.

Male genitalia: Segment IX, in lateral view, with anterior margin almost straight, slightly convex; posterior margin slightly produced medially, apex rounded; a median suture dividing segment in two parts similar in size (Fig. 10); dorsally triangular, produced over segment X, tapering up to apex (Fig. 11); ventrally concave (Fig. 12). Preanal appendage short, subtriangular, widened at base, narrowed at apex, in lateral view (Fig. 10); oblong, in dorsal view, with crenulated borders, apex slightly obtuse with few marginal long setae (Fig. 11). Segment X, in lateral view, long, conical, produced, with rounded apex, projected beyond preanal and inferior appendages (Fig. 10); dorsally triangular, widened at base, with a short and narrow median notch apically (Fig. 11). Inferior appendage with two articles, cylindrical; basal article digitiform; apical article short with small conical dark spines (Fig. 10); ventrally with internal margin almost straight, bearing numerous ventral setae (Fig. 12). Phallus tubular, slightly curved ventrally; endotheca membranous, with phallotremal sclerite indistinct in lateral aspect (Fig. 13); dorsally, phallic guide with two lateroapical acute projections, phallotremal sclerite C-shaped, in dorsal view (Fig. 14).

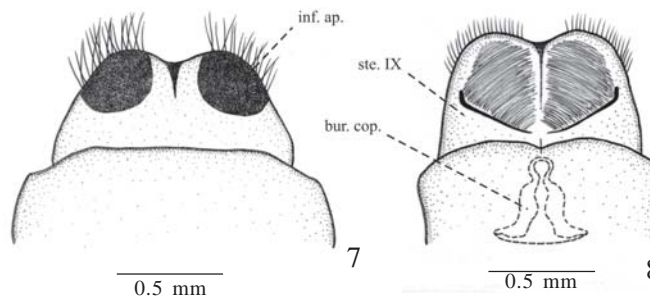
Female genitalia: Inferior appendage appressed to segment X, with sclerotized dark area bearing long setae (Fig. 15).

Sternite IX with anterolateral curved bars, almost black. Bursa copulatrix well developed, bell-shaped, with central keyhole-like structure (Fig. 16).

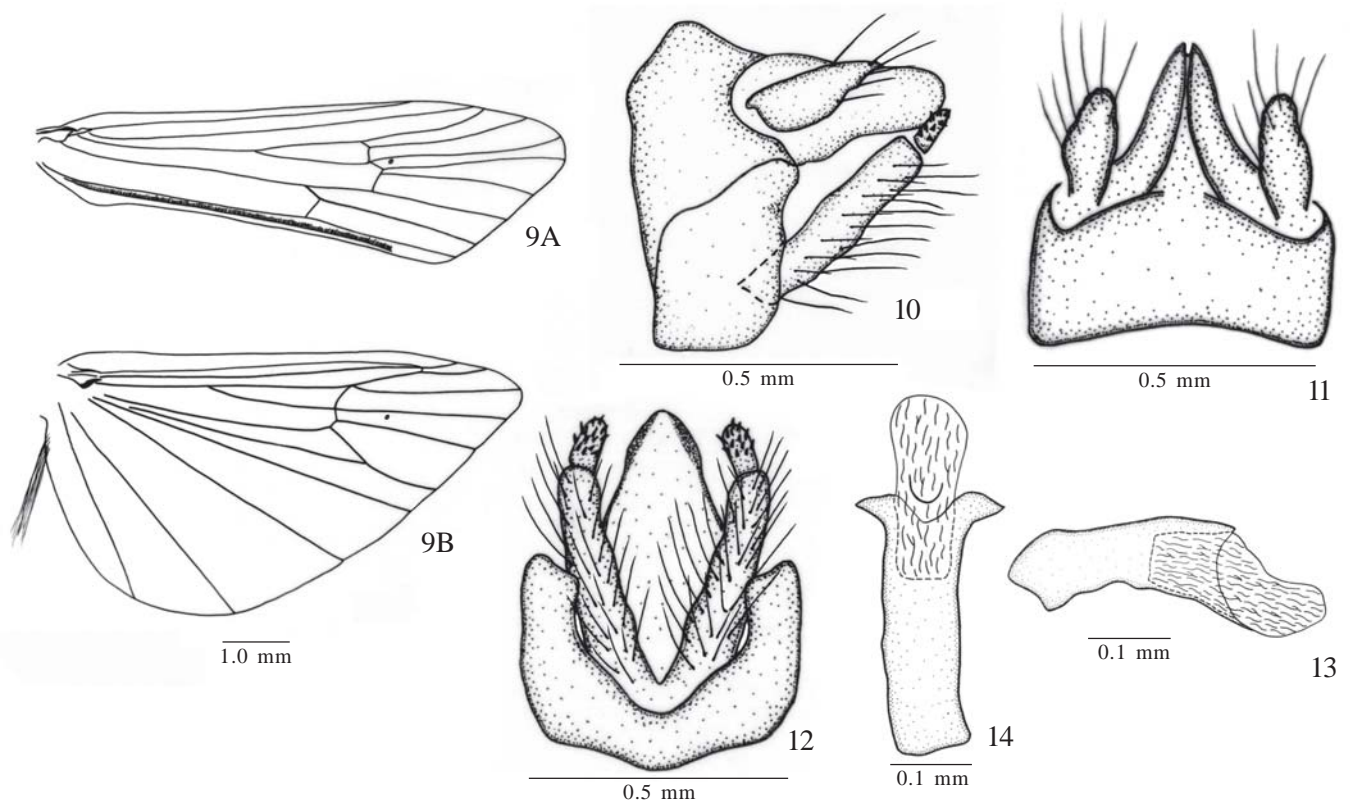
Holotype male: Brazil, Rio de Janeiro, Itatiaia: Maromba, Escorrega do Maromba, Rio Preto, 22°19'48.81''S 44°36'53.94''W, 1357 m., 24.xi.2003, J. L. Nessimian & A. A. Huamantincó leg. (DZRJ 1559).

Paratypes: Brazil, Rio de Janeiro, Itatiaia: 31 males, 1 female, same data of holotype (DZRJ 1560-1591); 2 males, same data of holotype (MNRJ); 2 males, same data of holotype (MZSP).

Additional Material Examined. Brazil, Rio de Janeiro: Itatiaia: Penedo, Três Bacias, Rio das Pedras, 22°24'33.0''S 44°33'08.0''W, 706 m., 05.iii.2008, J. L. Nessimian, L. L. Dumas, M. R. de Souza & R. B. Braga leg., 1 male, 1 female (DZRJ 1609-1610); Penedo, Rio Palmital, 22°25'33.0''S 44°32'53.0''W, 720 m., 06.iii.2008, J. L. Nessimian, L. L. Dumas, M. R. de Souza & R. B. Braga leg., 1 male (DZRJ 1611).



Figs. 7–8. *Marilia aiuruoca* sp. nov., female. 7, Genitalia, dorsal view; 8, Genitalia, ventral view. Abbreviations. inf. ap. – inferior appendages; ste. IX – sternum IX; bur. cop. – bursa copulatrix.



Figs. 9–14. *Marilia huamantincoae* sp. nov., male. 9, Wings: A, forewing; B, hindwing; 10, Genitalia, lateral view; 11, Genitalia, dorsal view; 12, Genitalia, ventral; 13, Phallus, lateral view; 14, Phallus, dorsal view.

**Etimology.** This species is dedicated to Dra. Ana Asunción Huamantínco, for her important contribution to the knowledge of Brazilian Trichoptera.

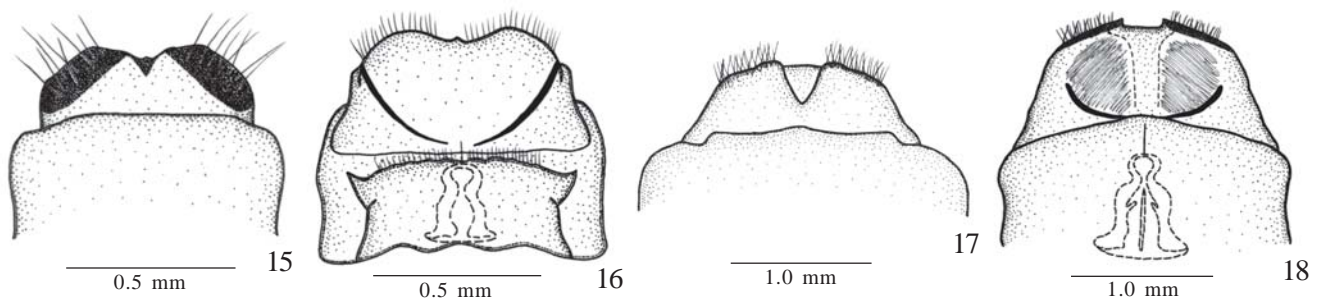
#### Description of female of *Marilia major* Müller, 1880

**Description.** Forewing length: 8.0–9.0 mm (n=3). Body general color: dark brown with head almost black, in alcohol.

**Head:** Eyes lateral, well separated dorsally. Ocelli absent. Antenna long, about twice body length, with scape broad and covered by light setae. Frons with tuft of light setae, long on central region, near antennal base. Pair of posterior small oval setal warts; pair of long setal warts on postgena. Maxillary

palp well developed, 5-segmented, segments subequal, densely setose. Labial palp 3-segmented, segments subequal, setose.

**Thorax:** Prothorax short; pronotum with pair of transversal long setal warts. Mesothorax wide, with 3 pairs of small longitudinal sulci anteriorly; mesonotum with anterior pair of setal warts and pair of depressions behind them; mesoscutellum oval. Metathorax with half length of mesothorax, without setae; metascutellum triangular. Tibial spur formula 2–4–2; foreleg spurs subequal; external spur of mid- and hindtibia half length of internal one. Forewing brown, translucent, with brown setae; forks I, II and V present. Hindwing with only fork I; anal lobe with tuft of setae. The



Figs. 15–18. 15–16, *Marilia huamantincoae* sp. nov., female. 15, Genitalia, dorsal view; 16, Genitalia, ventral view; 17–18, *Marilia major*, female. 17, Genitalia, dorsal view; 18, Genitalia, ventral view.

wings are similar to those of male, as described and illustrated by Ulmer (1905).

Abdomen: simple, without differentiated structures.

Female genitalia: Tergite X with V-shaped insision middorsally. Inferior appendage appressed to segment X, bearing numerous setae (Fig. 17). Sternite IX with anterolateral curved bars almost black; central region with 2 striate areas. Bursa copulatrix well developed, sclerotized, bell-shaped, with central keyhole-like structure (Fig. 18).

Distribution. Brazil (Minas Gerais, Rio de Janeiro, Paraná and Santa Catarina states).

Material Examined. Brazil, Rio de Janeiro, Itatiaia: Maringá, Rio Preto, 22°19'41.2''S 44°34'44.8''W, 1109 m, 04.ix.2007, L. L. Dumas, A. P. M. dos Santos, G. A. Jardim & J. L. Nessimian leg., 1 female (DZRJ 1613); Maringá, Rio Preto, 22°19'38.8''S 44°34'40.1''W, 1110m, 04.ix.2007, L. L. Dumas, A. P. M. dos Santos, G. A. Jardim & J. L. Nessimian leg., 1 female (DZRJ 1616); same locality, 28.ix.2007, L. L. Dumas leg., 1 female (DZRJ 1617).

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