Three new species of *Maruina* Müller (Diptera, Psychodidae) from Brazil

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ABSTRACT. Three new species of *Maruina* Müller, 1895 from Brazil are described, one species from northeastern, Bahia, and two from southeastern, one from Rio de Janeiro and the other from São Paulo.
KEY WORDS. South America, Neotropical, Psychodinae.

RESUMO. **Três espécies novas de *Maruina* Müller (Diptera, Psychodidae) do Brasil.** Neste trabalho são descritas três novas espécies de *Maruina* Muller, 1895 do Brasil, uma espécie do nordeste, Bahia, e duas do sudeste, uma de Rio de Janeiro e a outra de São Paulo.
PALAVRAS CHAVE. América do Sul, neotropical, Psychodinae.

The genus *Maruina* Müller, 1895 comprises thirty-four species from the Americas; four from western United States and thirty from the Neotropics (Müller 1895, Kincaid 1899, Johannsen 1938, Vaillant 1963, 1989, Hogue 1973, 1990, Wagner 1988, 1993, Ibañez-Bernal 1994, Wagner & Joost 1994, Bravo & Lago, 2003, Bravo, 2004). Six species of *Maruina* are known from Brazil: *M. pilosella* Müller, 1895 and *M. spinosa* Müller, 1895 from Itajaí, Santa Catarina State, southern Brazil (Müller 1895); three from southeastern Brazil, *M. garota* Hogue, 1973 and *M. namorada* Hogue, 1973 from Rio de Janeiro State (Hogue 1973); *M. guria* Bravo, 2004 from Minas Gerais State (Bravo 2004); and one from Bahia State in northeastern Brazil, *M. menina* Bravo & Lago, 2003 (Bravo & Lago 2003). All the Brazilian species belong to the subgenus *Maruina* Hogue, 1973 except for *M. guria*, which belong to the subgenus *Alcucina* Hogue, 1973. *M. pilosella* was registered from Tucuman, Argentina (Quate & Wirth 1951) and from São Paulo State, Brazil (Barretto 1954). Barretto (1954) made a detailed description, including nine figures, of both male and female of *M. pilosella*, based on specimens from São Paulo. However, some characters observed by Barretto (1954) were not figured by Müller (1895) to the same species. Three new species of *Maruina* are described here, one of the subgenus *Alcucina*, from Rio de Janeiro, and two others of the subgenus *Maruina*, one from São Paulo and one from Bahia, the first are based on specimens identified by Barretto (1954) as *M. pilosella*.

MATERIAL AND METHODS

All the type material studied are deposited in the entomological collection of Museum of Zoology of the Universidade Estadual de Feira de Santana (CUFS), Feira de Santana, Bahia, Brazil. The specimens from Rio de Janeiro and Bahia were treated with 10% KOH and mounted in Canadian balsam. The specimens from São Paulo were previously mounted in Canadian balsam. The terminology used for the description of wings follows Colless & McAlpine (1991). Morphological terminology follows McAlpine (1981).

RESULTS AND DISCUSSION

Maruina (*Alcucina*) *duckhousei* sp. nov.

Figs 1-7

Type material. Holotype male and one paratype male: Brazil, *Rio de Janeiro State*: Represa Rio Grande, IX.1969, M. Alvarenga *leg*. (CUFS).

Etymology. Named in honor of Dr. Derek A. Duckhouse in recognition of his contribution to psychodid systematics.

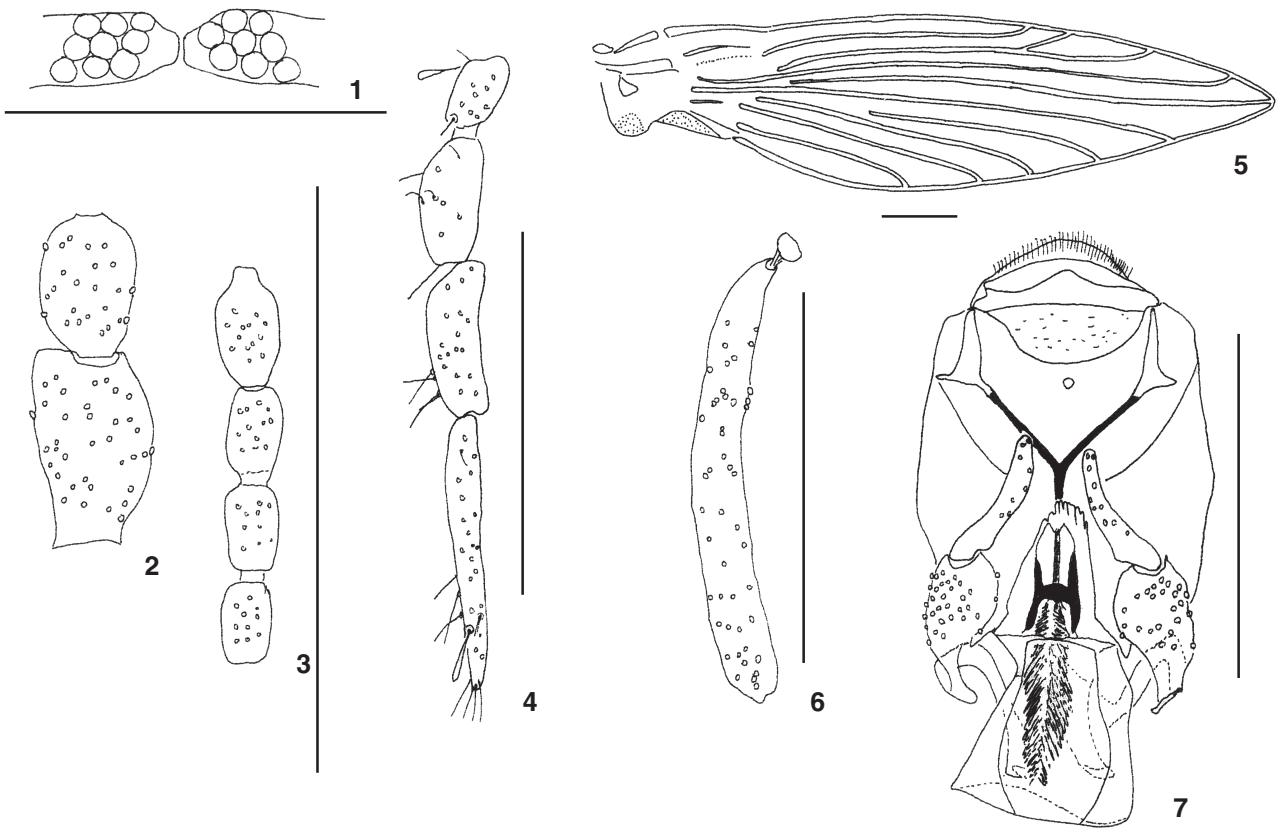
Description. Male. Holotype without cerci and flagellomeres. Length from thorax to the posterior end of abdomen, 2.12 mm.

Head. Subcircular in frontal view; eye bridge approximate, interocular space equal to 1/4 facet diameter (Fig. 1). Antenna incomplete in paratype; scape cylindrical; pedicel spherical, smaller than scape (Fig. 2); flagellomeres barrel-shaped (Fig. 3); ascoids lost. Palpi with four articles; relative length of palpomeres 1.0:1.7:2.1:3.7 (Fig. 4).

Thorax. Wing (Fig. 5) lanceolate; wing length 1.74 mm; maximum width 0.54 mm; with R_5 ending at tip. Sc short, not reaching C; R_3 jointed to R_{2+3}.

Abdomen. Sternites 5-8 without internal sclerotized bands; tergite 7 with a pair of long-bristled tufts.

Male terminalia (Fig. 7). Gonocoxites and gonostyles with pilosity; cerci of paratype with pilosity; gonocoxites with approximately 29 bristles on the dorsal surface; sternite 10 with apical micropilosity. Tergite 9 plate-like, rectangular. Sternite 9



Figures 1-7. *Maruina duckhousei* **sp. nov.** Male. 1. Eye bridge (holotype). 2. Base of antenna (scape, pedicel) (holotype). 3. Flagellomeres I-IV (paratype). 4. Palpus (holotype). 5. Wing (holotype). 6. Cercus (paratype). 7. Male terminalia, dorsal view (holotype). Scale lines: 0.2 mm.

lacking. Gonostyle digitiform. Aedeagus symmetrical; aedeagal spines monomorphic, short and thin. Aedeagal sheath wide at distal end, with median sclerotized area. Aedeagal apodema slightly longer than gonocoxite. Gonocoxal apodema smaller than aedeagal apodema. Cerci digitiform with a single apical tenaculum in the paratype (Fig. 6).

Comments. *M. duckhousei* **sp. nov.** belongs to the subgenus *Alcucina* Hogue, 1973. This new species presents the following characters that are unique to *Alcucina* (Hogue 1973, Bravo 2004): contiguous ocular bridge, R_2 united to R_3, sternite 9 absent, and aedeagal spines monomorphic.

From the 11 neotropical previously known species of *Maruina* (*Alcucina*), only one is known from Brazil (Bravo 2004). *M. duckhousei* **sp. nov.** can be distinguished from other species of the subgenus by the space separating the eye bridge. In the new species this space is 1/4 of the diameter of the ocular facet, while in most species of *Maruina* (*Alcucina*) the space between the eye bridge is equal to 1 to 4 facet diameters (except in the brazilian species, *M. guria* Bravo, 2004, in which it is contiguous).

Maruina duckhousei **sp. nov.** differs from *M. guria* for the presence of monomorphic aedeagal spines.

Among the species of *Alcucina* subgenus, only *M. muchacha* Hogue, 1973 and *M. duckhousei* **sp. nov.** have similar male terminalia. However, *M. muchacha* has a wide aedeagal apodem while in the new species it is narrow. An additional difference between the two species is the location of the sclerotized area of the aedeagal sheet: in *M. muchacha* it is apical, while in *M. duckhousei* **sp. nov.** it is medial.

Maruina (*Maruina*) *barrettoi* **sp. nov.**

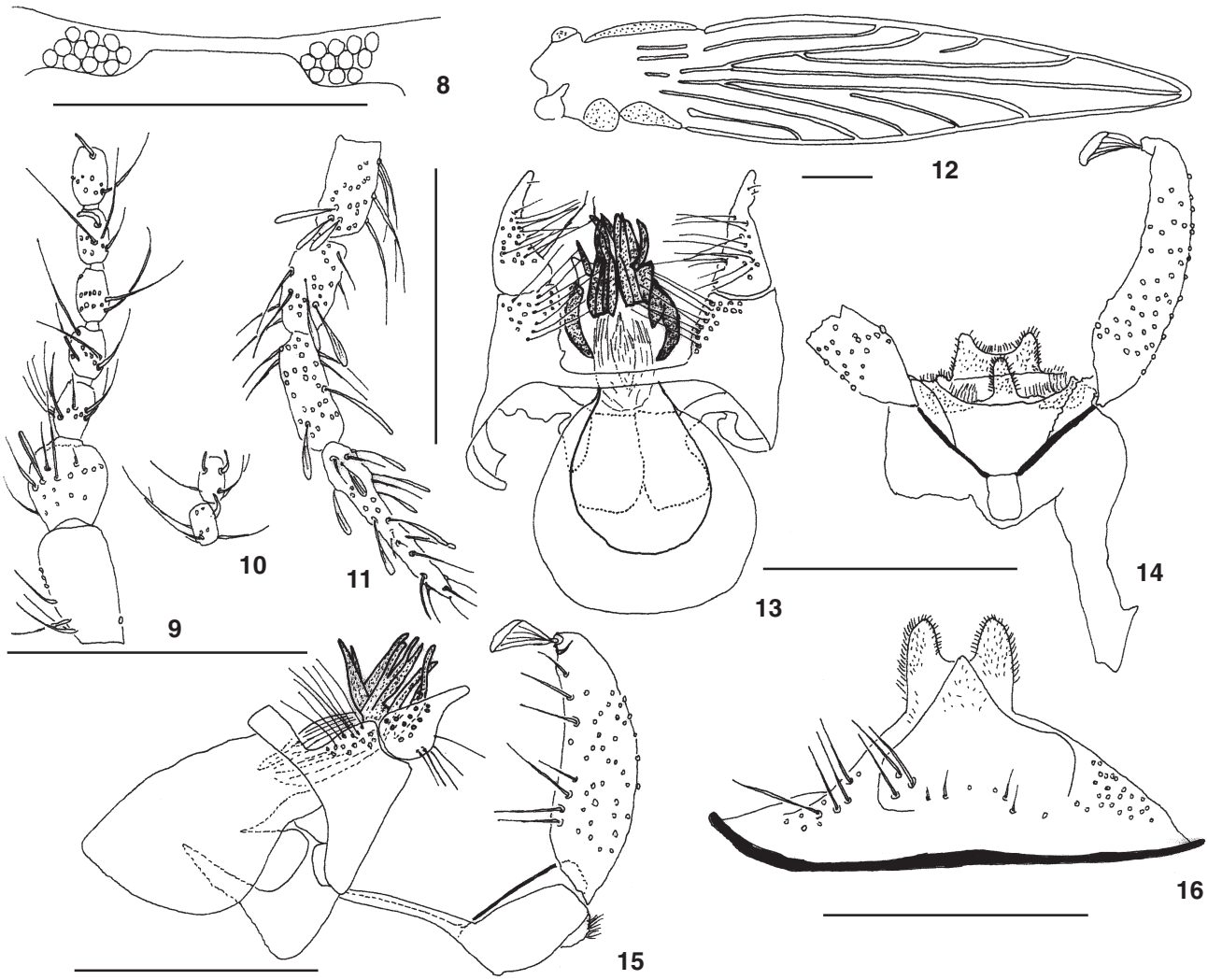
Figs 8-16

Type material. Holotype male, thirteen paratypes male and seven paratypes female: Brazil, *São Paulo State*: Rancharia, Usina Caiuá, M. Barretto *leg.* (CUFS).

Etymology. Named in honor of Prof. Mauro Barretto, an important Brazilian psychodids researcher.

Description. Male. Length from thorax to the posterior end of the abdomen, 1.66 mm.

Head. Subcircular in frontal view; eye bridge joined by a sclerotized band; interocular space equal to nine facet diameters (Fig. 8). Antenna with 14 flagellomeres; scape cylindrical;



Figures 8-16. *Maruina barrettoi* **sp. nov.** Figures 1-15, holotype male. 8. Eye bridge. 9. Scape, pedicel and five flagellomeres. 10. Flagellomeres XIII-XIV. 11. Palpus. 12 Wing. 13. Male terminalia, dorsal view. 14. Male terminalia, cerci, tergite IX and sternite X. 15. Male terminalia, lateral. 16. Allotype, sternite VIII. Scale lines: 0.2 mm.

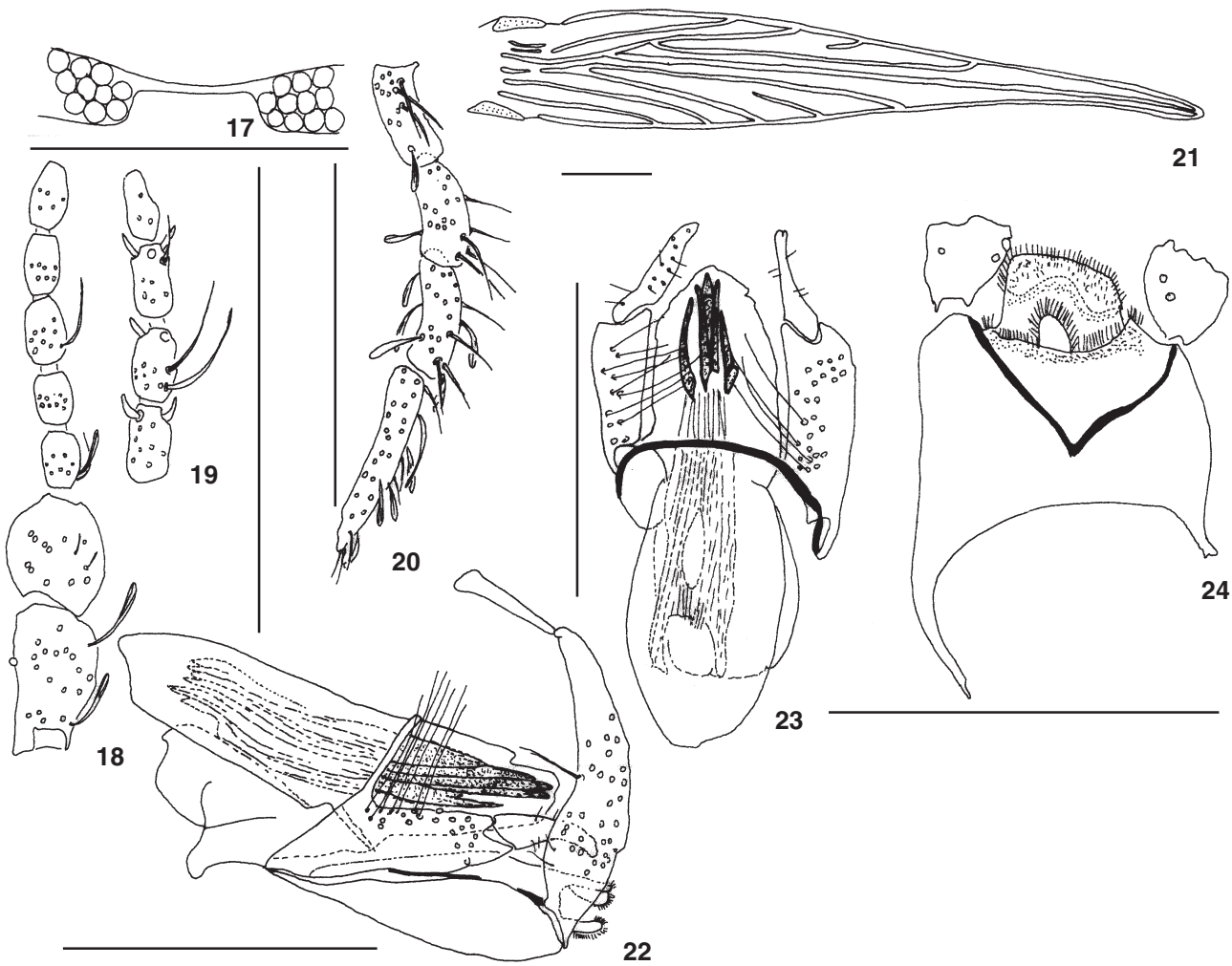
pedicel spherical, smaller than scape (Fig. 9); flagellomeres barrel-shaped; a pair of short, single filamented ascoids are present after flagellomere 4 (Figs 9, 10). Palpi with four articles; relative lengths of palpomeres 1.0:0.9:1.1:2.0 (Fig. 11).

Thorax. Wing (Fig. 12) lanceolate; wing length 1.71 mm; maximum width 0.38 mm, with R_5 ending at tip; R_2 incomplete, not united to R_3; M_2 not united to M_1.

Male terminalia. Cerci, gonocoxites, and gonostyles with pilosity (Figs 13, 14); gonocoxites with approximately 20 bristles on the dorsal surface; sternite 10 with apical micropilosity (Fig. 14). Tergite 9 plate-like, rectangular (Fig. 14). Sternite 9 present, narrow (Fig. 13). Cerci digitiform, with a single apical tenaculum (Figs 14, 15). Gonostyle triangular, with base wider than apex (Fig. 13). Aedeagus symmetrical; aedeagal spines dimorphic, apical spines thick, basal spines small and thin (Figs 13, 14). Aedeagal sheath wide, with lateral sclerotized area. Aedeagal apodema wide, circular in dorsal view (Fig. 14). Gonocoxal apodema smaller than aedeagal apodema (Fig. 15).

Female. Similar to male except for the following: length of body 1.96 mm. Relative length of palpomeres: 1.0:1.0:1.1:2.0. Wing length 2.04 mm; maximum width 0.42 mm. Subgenital plate conical with two lobes short (Fig. 16).

Comments. *M. barretoi* **sp. nov.** belongs to the subgenus *Maruina* Hogue, 1973. This new species presents the following characters that are unique to the subgenus *Maruina* (Hogue 1973, Bravo 2004): presence of dimorphic edeagal spines, with the



Figures 17-24. *Maruina jezeki* **sp. nov.** Holotype male. 17. eye bridge. 18. Scape, pedicel and five flagellomeres. 19. Flagellomeres XI-XIV. 20. Palpus. 21. Wing. 22. Male terminalia, lateral. 23. Male terminalia, dorsal. 24. Male terminalia, tergite IX and sternite X. Scale lines: 0.2 mm.

posterior ones being much heavier and shorter than the anterior, ninth male sternite well developed, with a well sclerotized subgenital plate, eye bridge separated by 7 to 10 facet diameters, and R_3 not united to R_2. There are 23 known species of *Maruina* (*Maruina*), five of them from Brazil (Bravo 2004).

The specimens studied here were identified by Barretto (1954) as *Maruina pilosella*. There is no evidence of long aedeagal spines on the aedeagal sheet, similar to those observed in all males of this species from São Paulo, in the figures of *M. pilosella* made by Müller (1895: figs 19, 20). Another difference between the new species described here and the drawings of Müller (1895) is the relative size of the gonostylus, smaller than the gonocoxite in *M. pilosella* and larger in *M. barrettoi* **sp. nov.**

Only two other species are known to have aedeagal spines projected besides the aedeagal sheet: *M. boulderina* Vaillant, 1963 and *M. lanceolata* (Kincaid 1899), both from northern of Mexico. *M. boulderina* has an incomplete sternite 9, while in *M. duckhousei* **sp. nov.** it is complete. In *M. lanceolata* the gonostylus is smaller than the gonocoxite, while in *M. duckhousei* **sp. nov.** it is larger.

Maruina (*Maruina*) *jezeki* **sp. nov.**

Figs 17-24

Type material. Holotype male and two paratype males: Brazil, B*ahia State:* Cachoeira, Fazenda Villa Rial, 24.V.2004, F. Bravo leg. (CUFS).

Etymology. Named in honor of Dr. Jan Jezek in recognition of his contribution to psychodid systematics.

Description. Male. Length from thorax to the posterior end of abdomen, 1.47 mm.

Head. Subcircular in frontal view; eye bridge joined by a sclerotized band; interocular space equal to seven facet diameters (Fig. 17). Incomplete antenna in the specimens studied; scape cylindrical; pedicel spherical, smaller than scape (Fig. 18); flagellomeres barrel-shaped; a pair of short, single-filamented ascoids (Fig. 19). Palpi with four articles; relative length of palpomeres 1.0:1.1:1.3:1.8 (Fig. 20).

Thorax. Wing lanceolate (Fig. 21); wing length 1.63 mm; maximum width 0.27 mm; wing with very narrow apex; R_5 ending at tip; R_2 incomplete, not united to R_3; M_2 not united to M_1.

Male terminalia. Cerci, gonocoxites, and gonostyles with pilosity (Figs 22, 23); gonocoxites with approximately 25 bristles on the dorsal surface; sternite 10 with apical micropilosity (Fig. 24). Tergite 9 plate-like, rectangular (Fig. 24). Sternite 9 present, narrow (Fig. 23). Cerci digitiform, with a single apical tenaculum (Fig. 22). Gonostyle digitiform, smaller than gonocoxite (Fig. 23). Aedeagus symmetrical; aedeagal spines dimorphic, apical spines thick, while basal spines small and thin (Figs 22, 23). Aedeagal sheath wide, without median sclerotinized area. Aedeagal apodema as long as gonocoxite (Figs 22, 23). Gonocoxal apodema smaller than aedeagal apodema (Fig. 22).

Comments. In agreement with the characteristics mentioned above for *M. barretoi* **sp. nov.**, *M. jezeki* **sp. nov.** belongs to the subgenus *Maruina*.

Seven species of the subgenus *Maruina* have an incomplete sternite 9, while in *M. barrettoi* **sp. nov.** and in other 15 species it is complete (according to Bravo 2004: table 1). Müller (1895) did not mention this structure for *M. spinosa* Müller, 1895, from southern Brazil.

Maruina jezeki **sp. nov.** has a complete sternite 9. Wing drawings are available for only 7 species (of the 16 species of *M.* (*Maruina*) with a complete sternite 9): *M. barrettoi* **sp. nov.**, *M. hoguei* Wagner, 1993, *M. lanceolata* (Kinkaid, 1899), *M. menina* Bravo & Lago, *M. mollesi* Vaillant, 1989, *M. pilosella* Müller, 1895, and *M. tobagensis* Wagner, 1993 (Bravo 2004). None of these seven species has the wing shape as in *M. jezeki* **sp. nov.**, with a very narrow apex in relation to the middle area of the wing.

The remaining nine species of the subgenus *Maruina* having a complete sternite differ from *M. jezeki* **sp. nov.** by: *M. dama* Hogue, 1973 and *M. garota* Hogue, 1973 have monomorphic aedeagal spines, while in *M. jezeki* **sp. nov.** it is dimorphic; *M. penaki* Vaillant, 1963 has narrower aedeagal spines than *M. jezeki* **sp. nov.**; the aedeagal spines of *M. nina* Hogue, 1973 and *M. bellaca* Hogue, 1973 reach the apex of the edeagal sheet, while in *M. jezeki* **sp. nov.** they reach only the middle portion of the edeagal sheet; *M. vidamia* Hogue, 1973 has a bifurcated gonostylus, while in *M. jezeki* **sp. nov.** it is simple; the apex of the gonostylus of *M. pebeta* Ibañez-Bernal, 1994 is acute, while in *M. jezeki* **sp. nov.** it is rounded; the gonostyle of the *M. jezeki* **sp. nov.** is half the length of the gonocoxite, while in *M. chamaquita* Hogue, 1973, and *M. namorada* Hogue, 1973, it is larger than the gonocoxite.

Maruina spinosa was probably described by using an exemplar female. The type material has been lost. The drawing of the head (Müller 1895: fig. 16) is typical of *Maruina* (*Maruina*). The base of the abdomen seems to be that of a female (Müller 1895: fig. 17). The apex of the wing is very rounded (Müller 1895: fig. 14) and is different from any other known species of the subgenus *Maruina*.

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