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# Description of the female of *Brasineura diamantina* Silva-Neto & García Aldrete (Psocodea: "Psocoptera": Ptiloneuridae), with comments on variation in the wing venation

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**Abstract.** The unknown female of *Brasineura diamantina* Silva-Neto & García Aldrete is described and illustrated, with new records and comments on variation in the fore-hindwing venation, based on 27 females and 113 males collected in five localities in the Chapada Diamantina, Bahia, Brazil. Thirty four types of variation and anomalies in the fore-hindwing veins were found. A revised diagnosis of *B. diamantina* is also presented.

**Key-Words.** Taxonomy; Neotropics; Epipsocetae.

## INTRODUCTION

*Brasineura* Silva-Neto & García Aldrete (2015) is one of 11 recent genera in the psocopteran family Ptiloneuridae. It presently includes five species: *B. diamantina* Silva-Neto & García Aldrete 2015; *B. troglophilica* Silva-Neto & García Aldrete 2015b. *B. serranortensis* Silva-Neto, García Aldrete & Rafael 2016; *B. jiboia* Silva-Neto, García Aldrete & Rafael 2018 and *B. spinosa* Silva-Neto, García Aldrete & Rafael 2018. Among the five species, only in *B. jiboia* the female is known. The type species of *Brasineura* is *B. diamantina,* from the Chapada Diamantina, Palmeiras, Bahia, Brazil. Recently, two of us (D. Moura Lima and A. Moreira da Silva Neto) found among specimens collected by the PPBio-Semi-arid Project, in the Chapada Diamantina region of Bahia, 113 males and 27 females specimens of *B. diamantina.* The purpose of this paper is to describe and illustrate the female of *B. diamantina,* to describe the variation and anomalies of the fore-hindwing venation, to present a revised diagnosis of *B. diamantina* and to modify the identification key to the males of the species of *Brasineura,* in Silva-Neto *et al.* (2018).

## MATERIAL AND METHODS

There were 113 males and 27 females were available for study. They were dissected in 80% etanol and their parts were mounted on permanent slides in Canada balsam. Standard measurements (in µm) were taken with a filar micrometer. Abbreviations of parts measured are as follows: FW and HW: right fore- and hindwing lengths; F, T, t1, t2 and t3: lengths of femur, tibia and tarsomeres 1, 2 and 3 of right hind leg; f1…fn: lengths of flagellomeres 1…n of right antenna; Mx4: length of fourth segment of right maxillary palpus; IO: minimum distance between compound eyes in dorsal view of head; D and d: antero-posterior and transverse diameter, respectively, of right compound eye in dorsal view of head; PO: d/D. The specimens were stored in "CD boxes" as described by Silva-Neto *et al.* (2016a). The variable number of branches (primary and secondary) of the M vein of the fore-hindwings, were considered as variations, while other modifications in wing veins such as presence of the spur-vein, transverse vein and forewing $R_{4+5}$ or $R_{2+3}$ forked were considered as anomalies, because they are not present in most specimens of *B. diamantina* and absent in



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other species of Ptiloneuridae (With the exception of one crossvein between vein 2A and wing margin in the forewing as in *Timnewia* Garcia Aldrete and *Loneuroides* Garcia Aldrete and one crossvein between 1A and wing margin and pterostigma with a spur-vein in forewing as in *Timnewia*). Specimens that presented wings with a pattern different from the holotype of *B. diamantina* were named as follows: Male (M1…Mn) or female (F1… Fn).

Photographs of parts of the specimens were taken with a Leica DFC500 digital camera attached to a Leica M205C stereomicroscope, connected to a computer with the Leica Application Suite LAS v3.6 software, which includes an Auto-Montage module (Syncroscopy software). The distribution map was generated on the website SimpleMappr.

The specimens studied are deposited in the Entomological Collection Prof. Johann Becker of the Zoology Museum of the Universidade Estadual de Feira de Santana, in Feira de Santana, Bahia, Brazil (MZFS).

## RESULTS

### *Brasineura diamantina* Silva-Neto & García Aldrete (Figs. 1-8).

*Brasineura diamantina* Silva-Neto & García Aldrete 2015: 171, Figs. 1-7; Silva-Neto & García Aldrete 2016 (catalog); Silva-Neto, García Aldrete & Rafael 2016b: 445 (taxonomy); Silva-Neto, García Aldrete & Rafael 2016c: 80 (phylogeny); Silva-Neto, García Aldrete & Rafael 2018: 547 (taxonomy).

**Revised diagnosis.** Forewing vein M with 4-7 primary branches; hindwing vein M with 2-5 primary branches. Hypandrium anteriorly concave with border strongly sclerotized and triangular distally (fig. 6 in Silva-Neto & Garcia Aldrete, 2015); phallosome with external parameres not forked, distally with a small tripartite area heavily sclerotized; three pairs of endophallic sclerites; an antero-mesal pair long, slender, proximally almost touching in the middle, bearing a row of small spines, distally pointed; a posterior pair wide based, narrowing distally, then curving distally to a pointed apex; antero-lateral pair short, widest in the middle, narrowing to the ends (fig. 7 in Silva-Neto & Garcia Aldrete, 2015); ninth sternum with an anterior area almost elliptic, slightly concave in the middle, anteriorly and posteriorly; mesal area wide, transverse, with inner margin almost trapezoidal and antero-lateral corners narrowing posteriorly, with apices acuminate; a posterior area with numerous small lines, proximally wide, narrowing posteriorly (Fig. 6); gonapophyses with six large setae on outer lob (Fig. 7).

### Description of the female

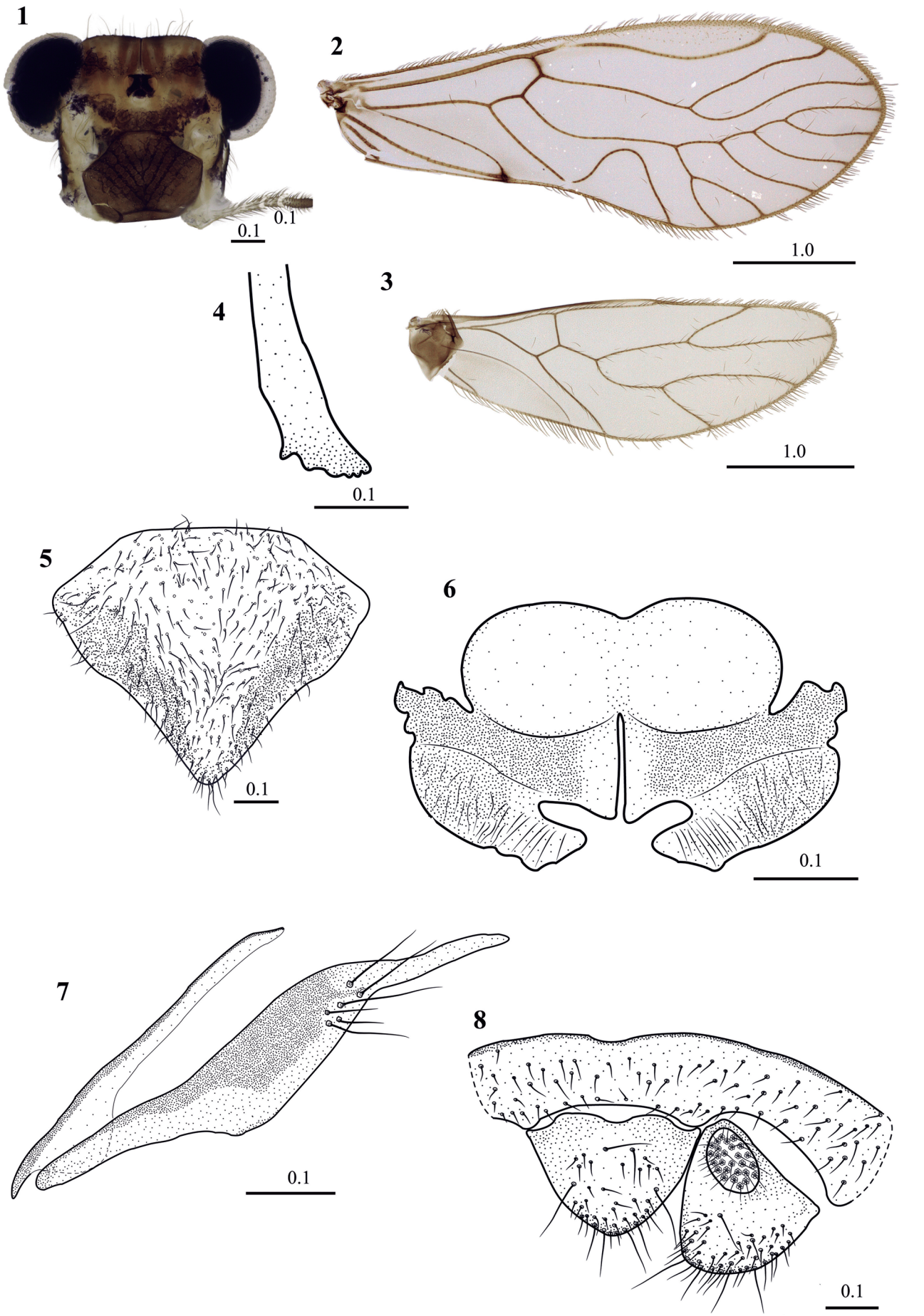
**Color:** Body pale yellow, with brown and pale brown areas as indicated below. Compound eyes black, ocelli hyaline, with ochre centripetal crescents; head pattern (Fig. 1); a brown band on vertex, from each compound eye to upper part of ocellar group; a brown irregular band between compound eyes, limited posteriorly by the postclypeus; each gena with a brown band from lower compound eye to subgenal sulcus. Scape, pedicel and f1 pale brown, f2-f4 brown. Maxillary palps pale yellow, Mx4 more pigmented distally. Legs with coxae yellow; trochanters, femora, tibiae and tarsomeres pale brown. Forewings almost hyaline, as illustrated in Fig. 2; a brown spot on confluence of Cu2-1A; veins brown. Hindwing (Fig. 3) almost hyaline throughout, veins brown.

**Morphology:** Compound eyes without interommatidial setae (Fig. 1). Outer cusp of lacinial tip broad, with five denticles and distally markedly sclerotized (Fig. 4). Forewing pterostigma elongate, constricted proximally, wider in the middle. Areola postica tall, wide basally, triangular, with apex rounded; vein M with five primary branches, M5 distally forked, resulting in M5a and M5b (Fig. 2; see also variation of the other females below). Hindwing Rs-M joined for a distance, Rs, $R_{2+3}$ and $R_{4+5}$ almost straight, M vein 2-branched (Fig. 3; see also variation of the other females below). Subgenital plate broad, wide basally, with sides converging towards a straight posterior border, pigmented area wide, V-shaped, setae as illustrated in Fig. 5. Ninth sternum (Fig. 6) broad, with three distinct areas, an anterior area weakly sclerotized, almost elliptic, slightly concave in the middle, anteriorly and posteriorly; a mesal area heavily sclerotized, wide, transverse, with inner margin almost trapezoidal and antero-lateral corners narrowing posteriorly, with apices acuminate; a posterior área with numerous small lines, proximally wide, narrowing posteriorly. Gonapophyses: v1 stoutest near its base rather than in the middle and distally acuminate; outer edge and ends heavily sclerotized; v2 + 3 broad, narrowing at the ends, with long, almost rectangular heel, distally blunt; six setae on outer lobe, distal process slender, short and distally lightly acuminate (Fig. 7). Epiproct triangular, with three mesal setae, other setae as illustrated in Fig. 8. Paraprocts almost triangular, broad, sensory fields with 27 trichobothria on basal rosettes; setae as illustrated in Fig. 8.

**Measurements (in microns):** FW: 4660, HW: 3284, F: 1235, T: 2138, t1: 832, t2: 88, t3: 133, f1: 990, f2: 1044, f3: 913, f4: 970, Mx4: 315, IO: 478, D: 448, d: 294, PO: 0.66.

Below are the additional specimens (9 females and 22 males) that presented the pattern of fore-hindwing veins identical to the female described above and to the holotype of *B. diamantina* (see figures 2 and 3 in Silva-Neto & García Aldrete, 2015).

**Material examined: Females:** 2 of Brazil, Bahia, Chapada Diamantina, Abaíra, Catolés de Cima, Cachoeira Pinga Pinga. 07°08'07.2"S, 35°47'17.8"W. 01.xi.2013. Light trap. Nascimento *et al.,* 5 (including the female described above) of Brazil, Bahia, Chapada Diamantina, Mucugê, Sempre Viva, Corrego Boiadeiro, 13°00'S, 41°22"W. Malaise 4. vii.2015. 3 of Brazil, Bahia, Chapada




**Figures 1-8.** *Brasineura diamantina* (Female pattern from Mucugê). (1) Front view of head. (2) Forewing. (3) Hindwing. (4) Lacinial tip. (5) Subgenital plate. (6) Ninth sternum. (7) Right gonapophyses. (8) Clunium, right paraproct and epiproct. Scales in mm.

Diamantina, Piatã, Cachoeira do Patricio. 13°05'13"S, 41°51'10"W. 05.xi.2013. Menezes, E. Light trap. **Males:** 10 of Brazil, Bahia, Chapada Diamantina, Abaíra, Catolés de Cima, Cachoeira Pinga Pinga. 07°08'07.2"S, 35°47'17.8"W. 01.xi.2013. Light trap. Nascimento *et al.,* 7 of Brazil, Bahia, Chapada Diamantina, Mucugê, Sempre Viva, Corrego Boiadeiro, 13°00'S, 41°22"W. Malaise 4. vii.2015. 2 of Brazil, Bahia, Chapada Diamantina, Piatã, Cachoeira do Patricio. 13°05'13"S, 41°51'10"W. 05.xi.2013. Menezes, E. Light trap. 2 of Brazil, Bahia, Chapada Diamantina, Mucugê, Sempre Viva. 12°57'585"S, 41°20'495"W. Ligth trap. iii.2018. Vanine & Daniel. 1 of Brazil, Bahia, Andaraí, Igatu, Rio Coisa Boa. 12°53'33.7"S, 41°18'58.8"W. 11.iii.2011. Luz. Calor, A. Camelier, P. Zanata, A.

### Variations and anomalies in the fore- and hindwing veins of males

Below, the 34 different types of variations and anomalies, of the fore- and hindwing veins, found in males and females of *B. diamantina* are described:

**Type 1.** Forewing M with four primary branches, without secondary branches (variation) (Fig. 9).

**Type 2.** Forewing M with four primary branches, $M_4$ forked resulting in $M_{4_a}$ and $M_{4_b}$ (variation) (Fig. 10).

**Type 3.** Forewing M with four primary branches, $M_2$ and $M_4$ forked, resulting in $M_{2_a}$, $M_{2_b}$, $M_{4_a}$ and $M_{4_b}$ (variation) (Fig. 11).

**Type 4.** Forewing M with four primary branches, $M_3$ forked and $M_4$ forked distally, resulting in $M_{3_a}$, $M_{3_b}$, $M_{4_a}$ and $M_{4_b}$; $R_{2+3}$ forked, with $R_2$ connected to pterostigma and this with a transverse vein (variation and anomaly) (Fig. 12).

**Type 5.** Forewing M with five primary branches, without secondary branches (variation) (Fig. 13).

**Type 6.** Forewing M with five primary branches, with $M_3$ and $M_5$ forked, resulting in $M_{3_a}$, $M_{3_b}$, $M_{5_a}$ and $M_{5_b}$ (variation) (Fig. 14).

**Type 7.** Forewing M with five primary branches, with $M_2$ and $M_5$ forked, resulting in $M_{2_a}$, $M_{2_b}$, $M_{5_a}$ and $M_{5_b}$ (variation) (Fig. 15).

**Type 8.** Forewing M with five primary branches, with $M_2$ forked resulting in $M_{2_a}$, $M_{2_b}$ and $M_5$ three branched resulting in $M_{5_a}$, $M_{5_b1}$ and $M_{5_b2}$ (variation) (Fig. 16).

**Type 9.** Forewing M with five primary branches, with $M_4$ and $M_5$ forked, resulting in $M_{4_a}$, $M_{4_b}$, $M_{5_a}$ and $M_{5_b}$ (variation) (Fig. 17).

**Type 10.** Forewing M with five primary branches, $M_5$ three branched, resulting in $M_{5_a}$, $M_{5_b1}$ and $M_{5_b2}$ (variation) (Fig. 18).

**Type 11.** Forewing M with five primary branches, $M_3$ forked resulting in $M_{3_a}$ $M_{3_b}$ and $M_5$ three branched resulting in $M_{5_a}$, $M_{5_b1}$ and $M_{5_b2}$ (variation) (Fig. 19).

**Type 12.** Forewing M of five primary branches, $M_5$ forked, resulting in $M_{5_a}$, and $M_{5_b}$ and with a transverse vein between them (variation and anomaly) (Fig. 20).

**Type 13.** Forewing M with five primary branches, $M_5$ three branched, resulting in $M_{5_a}$, $M_{5_b1}$ and $M_{5_b2}$; vein $R_{4+5}$ distally forked (variation and anomaly) (Fig. 21).

**Type 14.** Forewing M with five primary branches, with $M_4$ and $M_5$ forked, resulting in $M_{4_a}$, $M_{4_b}$, $M_{5_a}$ and $M_{5_b}$ and with a transverse vein between $M_{4_b}$ and $M_{5_a}$ (variation and anomaly) (Fig. 22).

**Type 15.** Forewing M of five primary branches, $M_5$ forked, resulting in $M_{5_a}$ and $M_{5_b}$ and with a spur-vein in $M_{5_b}$ (variation and anomaly) (Fig. 23).

**Type 16.** Forewing M with six primary branches, without secondary branches (variation) (Fig. 24).

**Type 17.** Forewing M with six primary branches, $M_6$ forked resulting in $M_{6_a}$ and $M_{6_b}$ (variation) (Fig. 25).

**Type 18.** Fore wing M with six primary branches, $M_6$ three branched, resulting in $M_{6_a}$, $M_{6_b1}$ and $M_{6_b2}$ (variation) (Fig. 26).

**Type 19.** Forewing M with six primary branches, $M_4$ forked resulting in $M_{4_a}$ and $M_{4_b}$ (variation) (Fig. 27).

**Type 20.** Forewing M with six primary branches, $M_6$ forked, resulting in $M_{6_a}$ and $M_{6_b}$, areola postica with a spur-vein (variation and anomaly) (Fig. 28).

**Type 21.** Forewing M of six primary branches, $M_6$ forked, resulting in $M_{6_a}$ and $M_{6_b}$ and with a spur-vein in $M_{6_b}$ (variation and anomaly) (Fig. 29).

**Type 22.** Forewing M with six primary branches, $M_6$ forked, with $M_{6_a}$ three branched and $M_{6_b}$ as a spur-vein (variation and anomaly) (Fig. 30).

**Type 23.** Forewing M with six primary branches, $M_5$ and $M_6$ fused proximally and subsequently trifurcated (variation and anomaly) (Fig. 31).

**Type 24.** Forewing M with six primary branches, $M_6$ forked resulting in $M_{6_a}$, and $M_{6_b}$ with a transverse vein between them (variation and anomaly) (Fig. 32).

**Type 25.** Forewing M with six primary branches, $M_6$ forked resulting in $M_{6_a}$, and $M_{6_b}$ with a transverse vein between them and $M_{6_a}$ forked (variation and anomaly) (Fig. 33).

**Type 26.** Forewing $R_{4+5}$ distally forked (anomaly) (Fig. 34).

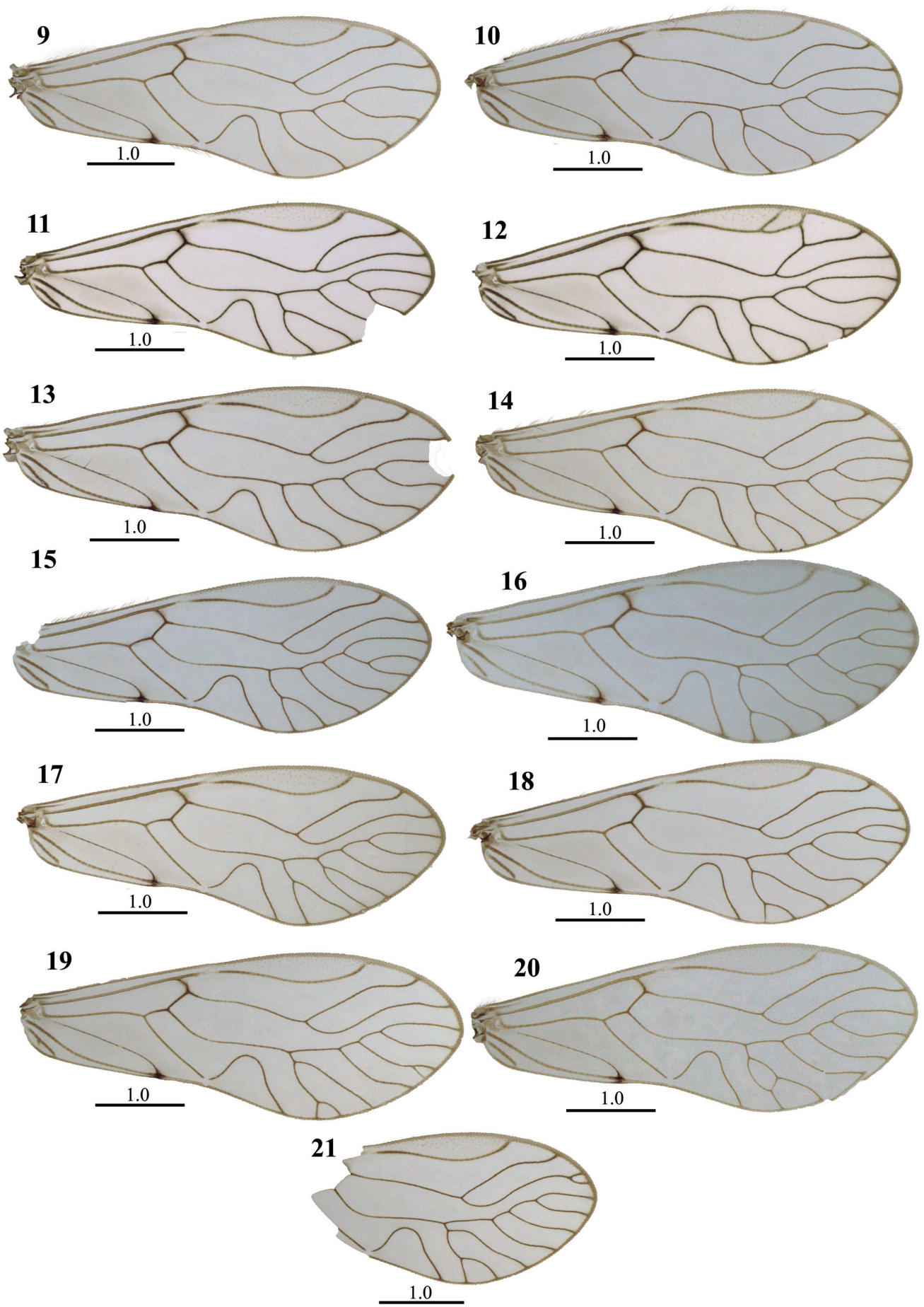
**Type 27.** Forewing with a crossvein between $R_{4+5}$ and M (anomaly) (Fig. 35).

**Type 28.** Hindwing M with two primary branches, $M_2$ forked, resulting in $M_{2_a}$ and $M_{2_b}$ (variation) (Fig. 36).

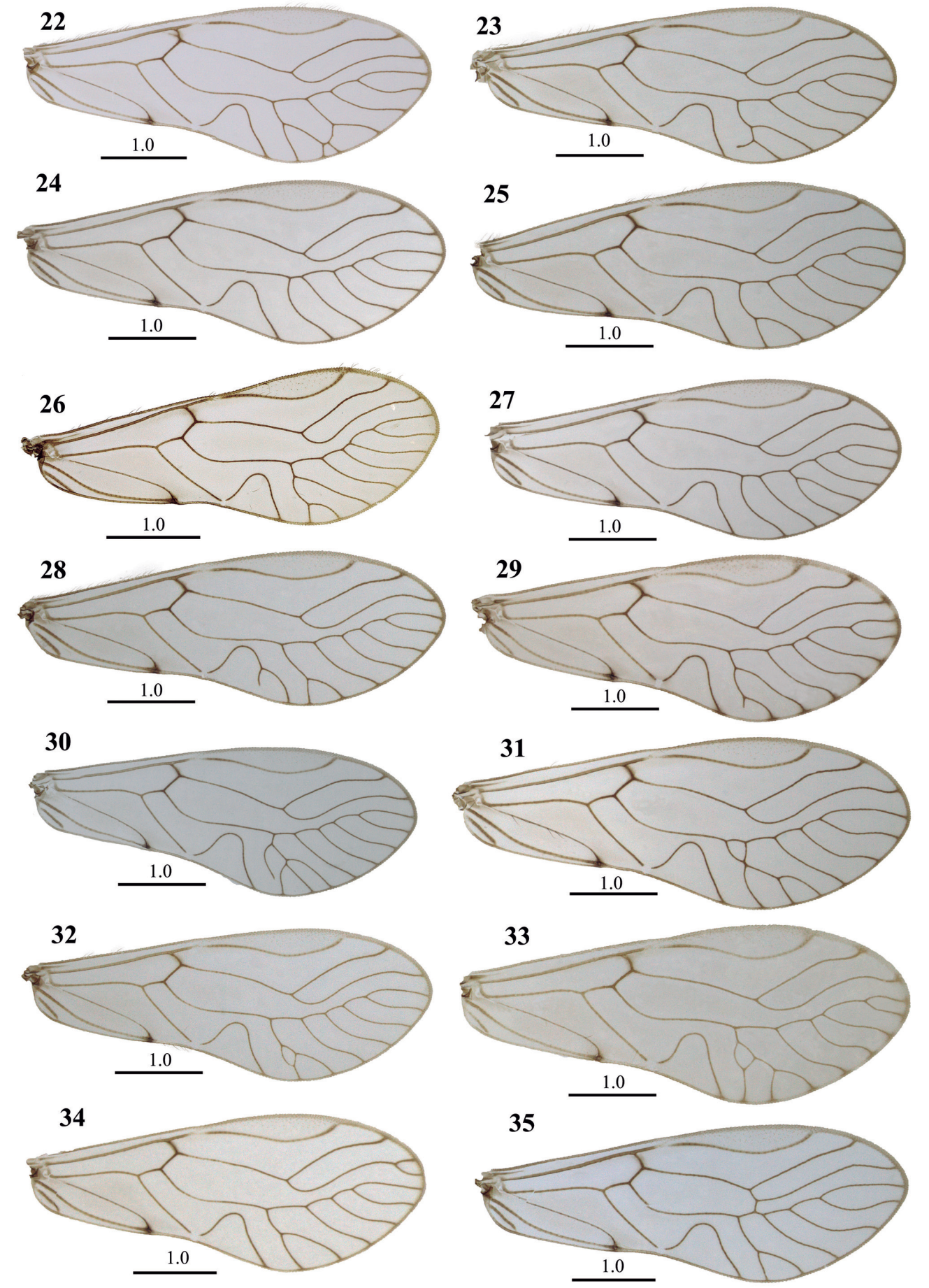
**Type 29.** Hindwing M vei with three primary branches (variation) (Fig. 37).

**Type 30.** Hindwing M with three primary branches, $M_3$ distally branched, resulting in $M_{3_a}$ and $M_{3_b}$ (variation) (Fig. 38).

**Type 31.** Hindwing M with four primary branches (variation) (Fig. 39).




**Figures 9-21.** Type of variation and anomaly in the forewing veins. (0) Type 1. (10) Type 2. (11) Type 3. (12) Type 4. (13) Type 5. (14) Type 6. (15) Type 7. (16) Type 8. (17) Type 9. (18) Type 10. (19) Type 11. (20) Type 12. (21) Type 13. Scales in mm.




**Figures 22-35.** Type of variation and anomaly in the forewing veins. (22) Type 14. (23) Type 15. (24) Type 16. (25) Type 17. (26) Type 18. (27) Type 19. (28) Type 20. (29) Type 21. (30) Type 22. (31) Type 23. (32) Type 24. (33) Type 25. (34) Type 26. (35) Type 27. Scales in mm.

**Type 32.** Hindwing M with four primary branches; $R_{2+3}$ distally forked (variation and anomaly) (Fig. 40).

**Type 33.** Hindwing M with five primary branches. (variation) (Fig. 41).

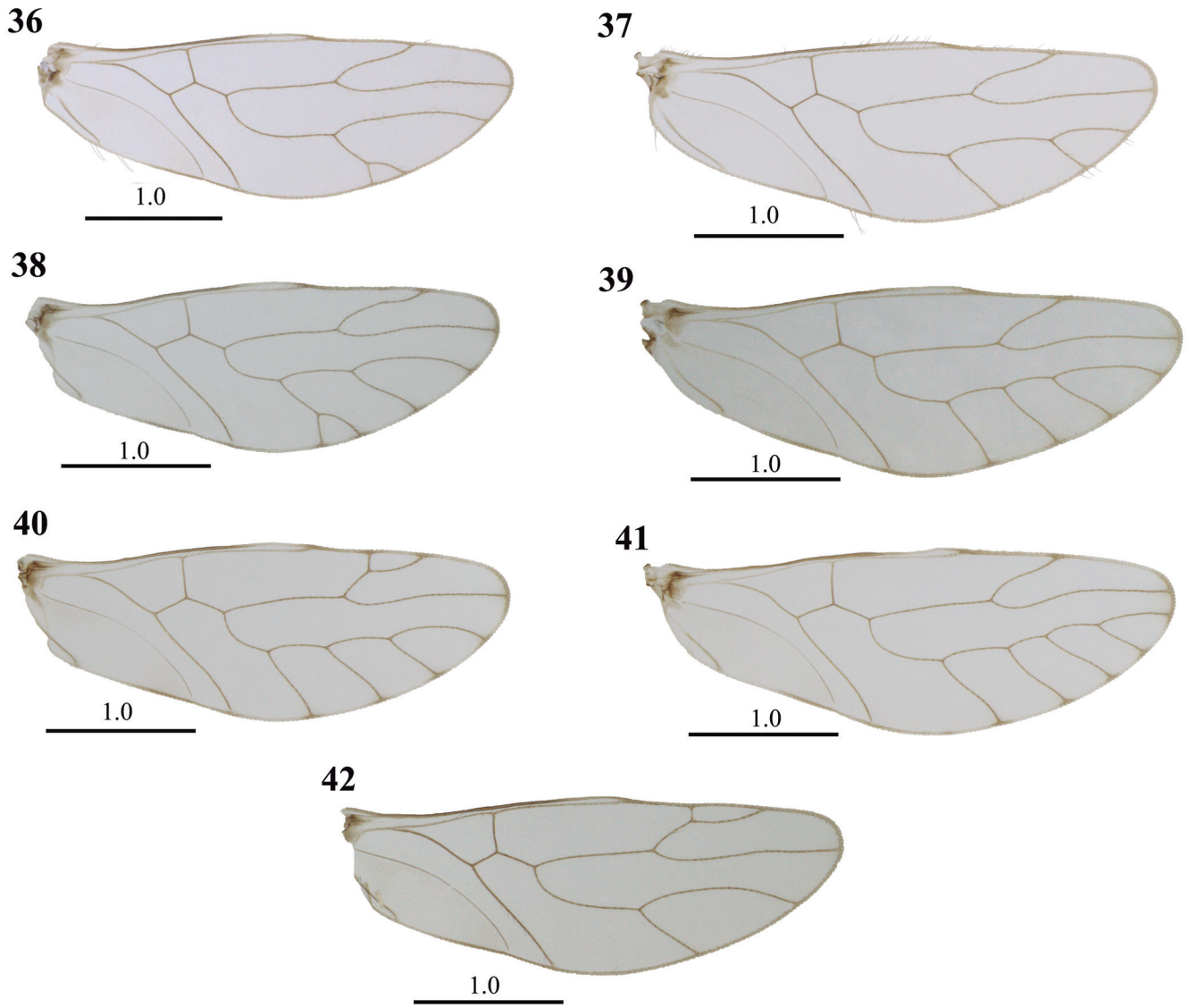
**Type 34.** Hindwing M with two primary branches, and with $R_{2+3}$ distally forked (variation and anomaly) (Fig. 42).

### Variations and anomalies in the fore-hindwing veins of females

17 females had some type of variation or anomaly described above, at least on one of the fore-hindwing (left or right or both) as described below:

1 female (F1) with right forewing type 5 and left forewing type 23; 1 female (F2) with right forewing type 17 and left forewing type 10; 1 female (F3) with forewings type 17; 1 female (F4) with left forewing type 2; 1 female (F5) with left forewing type 1; 1 female (F6) with left forewing type 10; 2 females (F7, F14) with right forewing type 10; 3 females (F8, F11, F13) with right forewing type 17; 1 female (F9) with right forewing type 17 and right hindwing type 29; 1 female (F10) with left forewing type 5; 1 female (F12) with forewings type 17, right hindwing type 32 and left hindwing type 30; 1 female (F15) with with right forewing type 12; 1 female (F16) with left forewing type 17; 1 female (F17) with right forewing type 4 and left forewing type 3.

**Material examined:** 8 females (F1-F7, F14): Brazil, Bahia, Chapada Diamantina, Abaíra, Catolés de Cima, Cachoeira Pinga Pinga. 07°08'07.2"S, 35°47'17.8"W. 01.xi.2013. Light trap. Nascimento *et al.,* 5 females (F8-F10, F16, F17): Brazil, Bahia, Chapada Diamantina, Mucugê, Sempre Viva, Córrego Boiadeiro, 13°00'S, 41°22"W. Malaise 4. vii.2015. 3 females (F11, F12, F15): Brazil, Bahia, Chapada Diamantina, Piatã, Cachoeira do Patricio. 13°05'13"S,




**Figures 36-42.** Type of variation and anomaly in the hindwing veins. (36) Type 28. (37) Type 29. (38) Type 30. (39) Type 31. (40) Type 32. (41) Type 33. (42) Type 34. Scales in mm.

41°51'10"W. 05.xi.2013. Menezes, E. Light trap. 1 female (F23): Brazil, Bahia, Chapada Diamantina, Mucugê, Sempre Viva, 12°57'585"S, 41°20'495"W. Ligth trap. iii.2018. Vanine & Daniel.

### Variation or anomaly in the fore-hindwing veins of males

91 males had some of the variations described above, at least on one of the forewings or hindwings, (left or right or both) as described below:

13 males (M1, M5, M14, M16, M42, M56, M63, M64, M71, M76, M82, M84, M91) with both forewings type 17; 1 male (M2) with right forewing type 19; 5 males (M3, M37, M51, M69, M85) with right forewing type 17. 2 males (M4, M59) with right forewing type 16; 1 male (M6) with right forewing type 13; 1 male (M7) with right forewing type 10 and left forewing type 17; 1 male (M8) with left forewing type 26; 7 males (M9, M30, M38, M54, M70, M79, M88) with right forewing type 17; 5 males (M10, M26, M27, M66, M78) with right forewing type 10; 6 males (M11, M50, M52, M57, M58, M67) with both forewings type 17 and both hindwings type 31; 1 male (M12) with right forewing type 10 and left forewing type 3; 1 male (M13) with right forewing type 20; 1 male (M15) with right forewing type 14, left forewing type 10 and both hindwings type 29; 1 male (M17) with right forewing type 19, left forewing type 17 and rigth hindwing type 29; 1 male (M18) with right forewing type 17 and rigth hindwing type 29; 1 male (M19) with left forewing type 6; 3 males (M20, M35, M86) with left forewing type 10; 1 male (M21) with left forewing type 10, rigth hindwing type 33 and left hindwing type 31; 1 male (M22) with left forewing type 17 and both hindwings type 33; 2 males (M23, M89) with rigth forewing type 6 and left forewing type 10; 1 male (M24) with rigth forewing type 17, rigth hindwing type 34 and left hindwing type 33; 1 male (M25) with both forewings type 17, rigth hindwing type 31 and left hindwing type 32; 1 male (M28) with left forewing type 18 and both hindwings type 33; 1 male (M29) with right forewing type 10 and left hindwing type 29; 1 male (M31) with right forewing type 7, left forewing type 18 and right hindwing type 28; 1 male (M32) with right forewing type 15 and left forewing type 10; 1 male (M33) with both forewings type 10, right hindwing type 31 and left hindwing type 30; 1 male (M34) with both forewings type 8 and right hindwing type 29; 1 male (M36) with left forewing type 10, rigth hindwing type 32 and left hindwing type 31; 1 male (M39) with rigth forewing type 24 and left forewing type 17; 1 male (M40) with rigth forewing type 16 and left forewing type 9; 1 male (M41) with right forewing type 17 and left forewing type 7; 1 male (M43) with rigth forewing type 21, both hindwings type 31; 1 male (M44) with rigth forewing type 17, left forewing type 16 and left hindwing type 29; 3 males (M45, M62, M87) with left forewing type 17 and right hindwing type 29; 1 male (M46) with right forewing type 17 and right hindwing type 28; 1 male (M47) both forewings type 17 and left hindwing type 29; 2 males (M48, M49) with rigth forewing type 17, left forewing type 10 and both hindwings type 31; 1 male (M53) with rigth forewing type 22, left forewing type 17 and left hindwing type 29; 2 males (M55, M65) with both forewings type 17 and right hindwing type 29; 1 male (M60) with rigth forewing type 18, left forewing type 17 and both hindwings type 31; 1 male (M61) with rigth forewing type 18, left forewing type 17 and right hindwing type 29; 1 male (M68) with rigth forewing type 17, left forewing type 16 and both hindwings type 29; 1 male (M72) with rigth forewing type 17 and left forewing type 10; 1 male (M73) with left forewing type 10, right hindwing type 29 and left hindwing type 34; 1 male (M74) with right forewing type 10, left forewing type 17 and right hindwing type 29; 1 male (M75) with right hindwing type 29; 1 male (M77) with right forewing type 9; 1 male (M80) with right forewing type 27; 1 male (M81) with right forewing type 16 and left forewing type 17; 1 male (M83) with rigth forewing type 11, left forewing type 17 and both hindwings type 29; 1 male (M90) with rigth forewing type 25, left forewing type 11, right hindwing type 31 and left hindwing type 33.

**Material examined:** 74 males (M1-M72, M75): Brazil, Bahia, Chapada Diamantina, Abaíra, Catolés de Cima, Cachoeira Pinga Pinga. 07°08'07.2"S, 35°47'17.8"W. 01.xi.2013. Light trap. Nascimento *et al.,* 6 males (M76-M81): Brazil, Bahia, Chapada Diamanta, Mucugê, Sempre Viva, Corrego Boiadeiro, 13°00'S, 41°22"W. Malaise 4. vii.2015. 2 males (M73, M74): Brazil, Bahia, Chapada Diamantina, Abaíra, Catolés de Cima, Cachoeira Pungelança 01.xi.2011. Carvalho *et al.,* Brasil, 8 males (M82-M89): Brazil, Bahia, Chapada Diamantina, Piatã, Cachoeira do Patricio. 13°05'13"S, 41°51'10"W. 05.xi.2013. Menezes, E. Light trap. 1 male (M90): Brazil, Bahia, Morro do Chapéu.11°54'93"S, 41°15'60"W. 18.ix.2012; 1 male (M91): Brazil, Bahia, Chapada Diamantina, Mucugê, Sempre Viva. 12°57'585"S, 41°20'495"W. Ligth trap. iii.2018. Vanine & Daniel.

## DISCUSSION

Until now, the distribution of *B. diamantina* was restricted to the type locality, but with the new records found, the distribution increases to 218 km (from Abaíra to Morro do Chapéu), but remains restricted to the Chapada Diamantina region (Fig. 43). The female of *B. diamantina* differs from that of *B. jiboia* in details of the ninth sternum (compare Fig. 6 in this paper with fig. 13 in Silva-Neto *et al.,* 2018) and by having gonapophyses with six large setae on outer lob, rather than five setae as in *B. jiboia*.

The presence of stout v1, rather than slender in both of the females known of *Brasineura,* is a rare character state in Ptiloneuridae. It is shared only by three species of *Triplocania* Roesler (*T. magnifica* Roesler, *T. manueli* Silva-Neto, García Aldrete & Rafael and *T. rosae* Silva-Neto, García Aldrete & Rafael) and two species of *Euplocania*

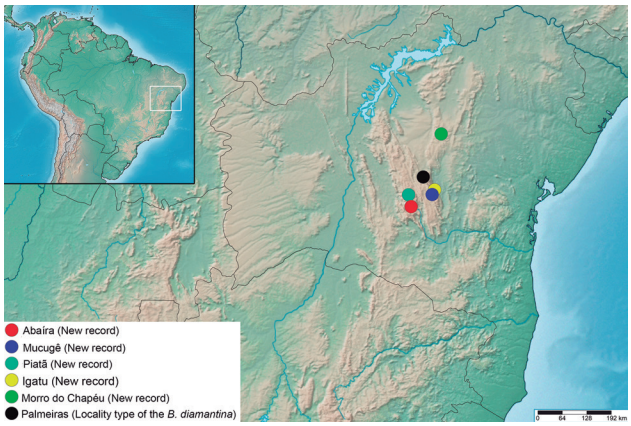



**Figure 43.** Distribution of the *Brasineura diamantina* specimens with new records for five localities of the Chapada Diamantina.

Enderlein (*E. caquetaensis* González, García Aldrete & Carrejo and *E. laelsa* González, García Aldrete & Carrejo).

The number of primary branches in vein M of the fore-hindwings is an important diagnostic character of ptiloneurid genera. In *Brasineura* the number of primary branches in vein M of the hindwing is also an important diagnostic character, it is associated with the external parameres distally forked or not forked, in the first step of the key to identify the species of *Brasineura* (see Silva-Neto *et al.,* 2018), dividing them in two groups: one with hindwing M two-branched, and external parameres distally not forked (*B. diamantina* and *B. jiboia*) and another group with hindwing M three to four-branched and external parameres distally forked (*B. serranortensis, B. troglophilica* and *B. spinosa*). The extreme intra specific variation in number of primary branches of the hindwing M described in this paper for *B. diamantina,* imposes the need to modify the first step of the key cited above. The exclusion of the hindwing in the first step of the key solves the question, without loss of efficiency of the latter.

The number of branches (primary or secondary) in the fore-hindwing M is not a good diagnostic character for species of *Brasineura*. Variations in the number of branches in the forewing M were reported in other species of *Brasineura* by Silva-Neto *et al.* (2016b, 2018), although the number of specimens analyzed by these authors was small.

The holotypes of *B. troglophilica* and *B. serranortensis* have forewings identical to type 17 and hindwings type 31, as described in this paper for six *Brasineura* males (M11, M50, M52, M57, M58, M67). Furthermore, the paratypes of *B. troglophilica* and *B. serranortensis* present forewings identical to type 18 as described in this paper.

In the future with more collections of specimens, including species of other genera of Ptiloneuridae, investigators may be alerted to the need to exclude the number of branches in the fore-hindwing M as a key step for specific or generic identification keys in this family.

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