

Four new Neotropical species of *Stilobezzia* (*Acanthohelea*) Kieffer (Diptera: Ceratopogonidae)

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Abstract

The subgenus *Stilobezzia* (*Acanthohelea*) Kieffer is newly recorded from several provinces of northern Argentina and Paraguay, and the following four new species are described, and illustrated: *S. (A.) guarani*, *S. (A.) monopicta*, *S. (A.) paranaense* and *S. (A.) xerophila*. These species are compared with similar congeners.

Key words: Ceratopogonidae, *Stilobezzia* (*Acanthohelea*), new species, northern Argentina, Paraguay

Introduction

Stilobezzia Kieffer is a large and diverse genus of Ceratopogonidae, worldwide in distribution. The adult females are important predators on other small insects, and the immature stages are found in a wide variety of aquatic and semiaquatic habitats, including streams, lakes and ponds margins, puddles, swamps, rice fields, rock pools, and tree holes (De Meillon & Wirth, 1991; Cazorla et al., 2006).

The subgenus *Stilobezzia* (*Acanthohelea*) is represented in the Neotropical region by 19 species that have been described from Paraguay (Kieffer, 1917), Brazil and Guyana (Macfie, 1940), Brazil (Lane, 1947), Panama (Lane & Forattini, 1956, 1958), French Guiane (Clastrier, 1991) and the remaining nine from Argentinean and Chilean Patagonia (Ingram & Macfie, 1931; Cazorla & Spinelli, 2007).

During the past 15 years, several collecting trips to northern Argentina and Paraguay have yielded specimens of *Stilobezzia* (*Acanthohelea*) deposited in the Museo de La Plata, Argentina (MLP). The study of this material revealed the presence of four unknown species which are herein described and illustrated.

Material and methods

Specimens were slide mounted in Canada balsam, examined, measured and drawn using a binocular compound microscope with attached camera lucida. Terms for structures follow those in the Manual of the Nearctic Diptera (McAlpine et al. 1981). Terms for wing veins follow the system of the Manual of Nearctic Diptera, with modifications proposed by Szadziewski (1996). Photomicrographs were taken with an Olympus digital camera X-845 through a Laboval 4 (10×).

The holotypes and paratypes of the new species are deposited in the collection of the División Entomología of the Museo de La Plata, Argentina (MLPA).

Results

Stilobezzia (Acanthohelea) guarani n. sp.

(Figs. 1–9, 39)

Diagnosis. The only species of Neotropical *Stilobezzia (Acanthohelea)* distinguished by the basal 2/3 of hind femora and apex of tibia dark brown and blackish knees, and the gonocoxite elongate with inner protuberance bearing two small sclerotized teeth.

Male. Head. Dark brown. Antenna (lost in the holotype) with flagellomeres as in Fig. 1; plume dark brown; antennal ratio 0.65. Maxillary palpus brown; third segment stout with apical sensory pit; palpal ratio 2.20–2.5 (2.35, n=2).

Thorax. Dark brown. Scutum, with anteromesal pale yellowish spots, as in Fig. 34. Legs brown, basal 2/3 of hind femora, apex of hind tibia dark brown, knees blackish; hind tibial comb with 4–5 spines; prothoracic TR 2.22–2.29 (2.25, n=2); mesothoracic TR 2.50–2.70 (2.60, n=2); metathoracic TR 2.14–2.44 (2.29, n=2). Wing (Fig. 2) length 0.92–1.13 (1.25, n=2) mm; width 0.33–0.39 (0.36 n=2) mm; membrane hyaline; anterior veins pale; cubital fork distal to level of beginning of r-m crossvein; macrotrichia on costa, scarce on distal margin of r_3 , m_1 ; first radial cell narrow; second 3.23 times longer than first. Halter pale brown.

Abdomen. Pale. Genitalia (Figs. 3–5, 35): dark brown; tergite 9 reaching level of end of gonocoxites, posterior margin rounded; cercus not in position to be described; sternite 9 with broad, shallow posteromedian excavation. Gonocoxite elongate, 2.28 times longer than greatest breadth, inner margin with mesal stout, blunt protuberance bearing two small sclerotized teeth (evident in paratype, Fig. 4). Gonostylus pale, stout, nearly straight, 0.6 times longer than gonocoxite, blunt apex. Parameres separate, each with basal portion slender, articulated to strongly sclerotized, trilobed apodeme; posteromedian process broad on mid portion, gradually tapering to pointed apex, later curved ventrad. Aedeagus represented by two slender, convergent, slightly sinuose sclerites, each with slightly bulbous tip.

Female. Similar to male, with usual sexual differences.

Head. Dark brown. Antenna as in Fig. 6, flagellomeres 1–8 pale, apices darker, 9–13 dark brown; antennal ratio 0.85–0.87 (0.86, n= 2). Maxillary palpus (Fig. 7) very dark brown; palpal ratio 2.20 (n= 2). Mandible with 7 teeth.

Thorax. Scutum pale yellowish, humeral areas, anterolateral margins, prescutellar depression dark brown; scutellum yellowish brown with 4 strong setae, 2 thinner ones; postscutellum dark brown. Legs pale brown; coxae dark brown except basal 1/2 of hind coxa pale; basal 2/3 of hind femora, apex of hind tibia dark brown, knees blackish; hind tibial comb with 7 spines; prothoracic TR 2.29–2.50 (2.43, n= 3), mesothoracic TR 2.70–3.16 (2.85, n= 3), metathoracic TR 2.29–2.66 (2.46, n= 3); claws as long fifth tarsomere, those of hind leg shorter. Wing (Fig. 8) length 1.12–1.27 (1.17, n= 3); width 0.48–0.55 (0.50, n= 3) mm; membrane hyaline; anterior veins pale, CuP dark brown; cubital fork slightly distal to level of beginning of r-m crossvein; macrotrichia on costa, R_1 , R_2 , M_1 , M_2 , abundant on distal margin of r_3 , m_1 , scarce on distal margin of m_2 , cua_1 ; second radial cell 2.92 times longer than first.

Abdomen: pale brown, segments 8–9 dark brown. Genitalia as in Fig. 9; anterior margin of sternite 8 convex, posteromedian excavation V-shaped; sternite 10 short, setae no distinguishable in studied specimens; cercus short, rounded. Two ovoid, strongly sclerotized spermathecae with hyaline punctations, with short necks, measuring 5.2 x 3.8 μ m, 4.6 x 3.3 μ m; rudimentary third present.

Distribution. Argentina (Misiones province) and Paraguay (Itapúa department) (Fig. 39).

Types. Holotype male, Misiones prov., National route 14, km 813, arroyo Anyico, 18-V-2008, G. Spinelli, 1 male, sweep net; allotype female Argentina, Misiones prov., Corpus, 17-IX-1999, G. Spinelli. Paratypes 1 male, 2 females as follows: same data as allotype except 18-V-2004, A. Jiménez, 1 male, female, CDC light trap; Paraguay, Itapúa, Encarnación, arroyo Santa María, III-1996, G. Spinelli, 1 female, sweep net.

Discussion. *Stilobezzia (A.) guarani* is similar to *Stilobezzia (A.) xerophila* (described below) but the female abdomen of the latter species is pale brown except segments 8–10 dark brown, and the male gonocoxite lacks the conspicuous inner protuberance with two teeth.

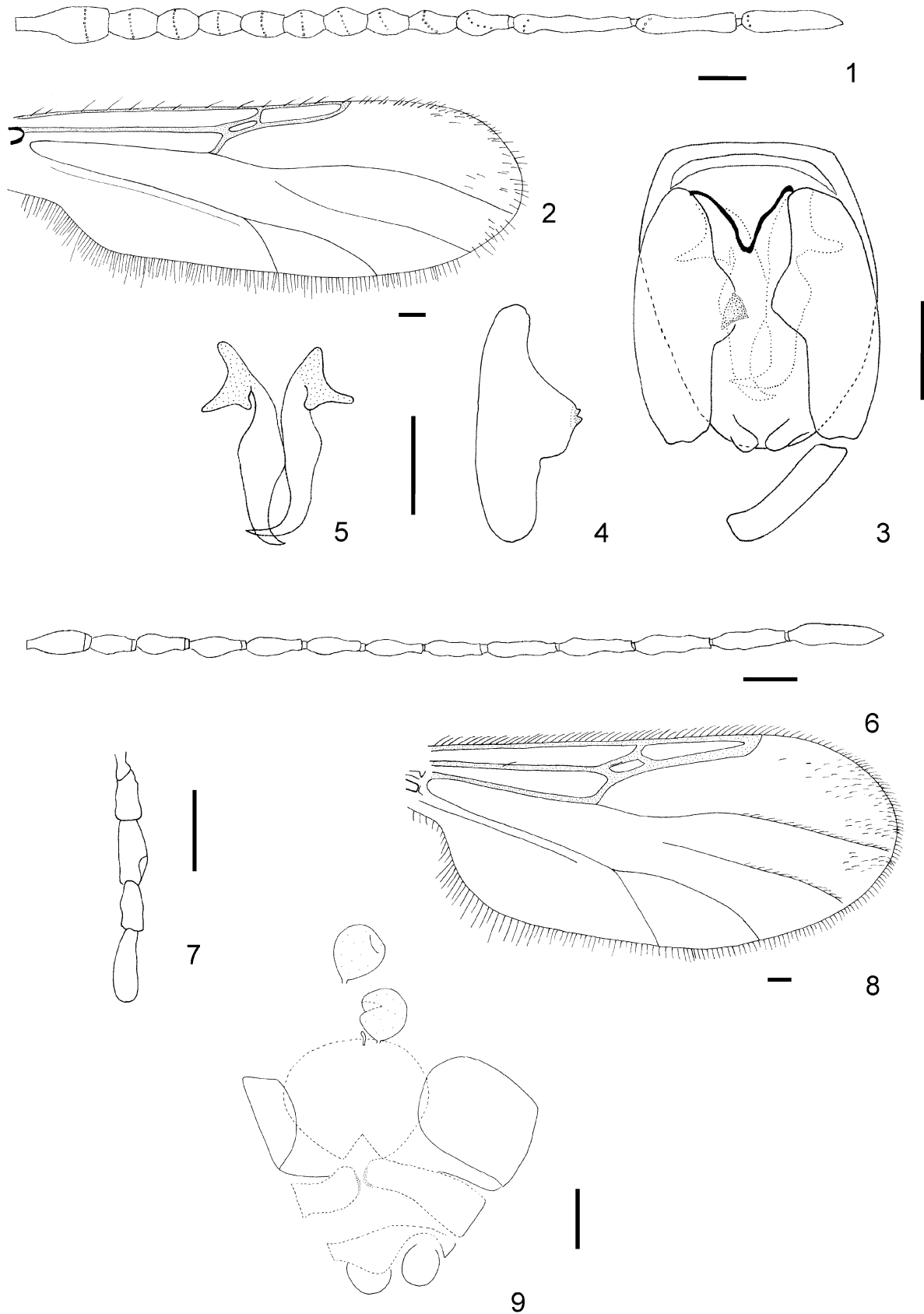


FIGURE 1–9. *Stilobezzia (Acanthohelea) guarani* sp. n., 1–5 male; 6–9 female; 1—antenna, 2—wing, 3—genitalia (ventral view), 4—gonocoxite of paratype, 5—parameres removed, 6—antenna, 7—maxillary palpus, 8—wing, 9—genitalia (dorsal view). Scale bars: 0,05 mm.

***Stilobezzia (Acanthohelea) monopicta* n. sp.**

(Figs. 10–17, 36, 39)

Diagnosis. The only species of Neotropical *Stilobezzia (Acanthohelea)* with a single, small and diffuse dark spot on anterior portion of r-m crossvein.

Male. Head. Dark brown. Antenna with flagellomeres as in Fig. 10; plume dark brown, moderately developed; antennal ratio 0.88–1.10 (0.98, n= 2). Maxillary palpus brown; third segment stout with apical sensory pit; palpal ratio 3.00–4.00 (3.76, n= 4).

Thorax. Scutum dark brown, humeral pits pale yellowish, two faint longitudinal yellowish bands down to prescutellar depression; scutellum pale yellowish with 6 strong setae, 4 thinner ones; postscutellum dark brown. Legs dark brown, fore coxa pale brown, fore femur, basal 2/3 of mid femur, basal 1/4 of hind femur pale; hind tibial comb with 5–6 spines; prothoracic TR 1.71–1.85 (1.78, n= 5), mesothoracic TR 2.21–2.50 (2.43, n= 5), metathoracic TR 1.73–1.93 (1.82, n= 5). Wing (Fig. 11) length 1.63–1.80 (1.73, n= 6) mm; width 0.57–0.58 (0.57, n= 6) mm; membrane slightly infuscated, especially on anterior cells; veins dark brown; small diffuse dark spot on anterior portion of r-m crossvein cubital fork proximal to level of beginning of r-m crossvein; macrotrichia on costa, R₁, R₃, M₁, distributed in V-shaped way distally on r₃, scarce on m₁; first radial cell narrow, second 3.15 times longer than first. Halter pale.

Abdomen. Dark brown. Genitalia (Figs. 12–13, 36). Tergite 9 not reaching level of end of gonocoxite, progressively narrowing distad, posterior margin rounded; sternite 9 folded in the available specimens, with deep posteromedian excavation; sternite 10 produced beyond base of cercus; cercus rounded, short, divergent. Gonocoxite stout, 1.61 times longer than greatest breadth, inner margin with mesal stout protuberance. Gonostylus as long as gonocoxite, straight with blunt tip. Parameres separate, subparallel, each with basal portion straight, articulated to stout apodeme; posteromedian process slightly sclerotized, slightly curved, divergent distally in some specimens, tip bulbous. Aedeagus composed of two sinuose, stout, convergent sclerites, each with pointed tip.

Female. Similar to male, with usual sexual differences.

Head. Dark brown. Antenna with flagellomeres as in Fig. 14; antennal ratio 1.27–1.33 (1.29, n= 4). Maxillary palpus (Fig. 15) dark brown; palpal ratio 3.10–3.50 (3.26, n= 6). Mandible with 7 teeth.

Thorax. Scutellum with 7–8 strong setae, 5–6 thinner ones; hind tibial comb with 8 spines; prothoracic TR 1.92–2.00 (1.94, n=5), mesothoracic TR 2.46–2.50 (2.48, n= 6), metathoracic TR 1.87–2.00 (1.92, n= 6). Wing (Fig. 16) length 1.86–2.00 (1.95, n= 6) mm; width 0.72–0.76 (0.74, n= 6) mm; cubital fork at same level of beginning of r-m crossvein; macrotrichia on costa, R₁, R₂, R₃, M₁, M₂, Cua₁ abundant on distal portion of r₃, m₁, scarce on m₂; second radial cell 2.76 times longer than first.

Abdomen. Dark brown. Genitalia as in Fig. 17; anterior margin of sternite 8 convex, posteromedian excavation V-shaped; sternite 10 with five pairs of setae; cercus short, rounded; two ovoid spermathecae with very short necks, measuring 9.1 x 5.8 µm, 8.3 x 5.1 µm, rudimentary third present.

Distribution. Argentina (Catamarca, La Rioja and San Luis provinces) (Fig. 39).

Types. Holotype male, ARGENTINA, San Luis Prov., Merlo, 14/15-XI-2007, G. Spinelli, CDC light trap; allotype female, same data as holotype except 15-XI-2007, at light. Paratypes 9 males, 10 females as follows: same data as holotype, 2 females; same data as allotype, 2 males, 1 female; Catamarca prov., Departamento Londres, El Shincal, XII-2004, S. Bogan, 4 males, 4 females, at light. La Rioja Prov., río Miranda, 18-XI-07, G. Spinelli, 3 males, 3 female, at light.

Discussion. *Stilobezzia (Acanthohelea) monopicta* resembles the Patagonian species *S. (A.) patagonica* Ingram & Macfie, especially by the similar shape of the aedeagal sclerites and parameres, but the latter species lacks the dark spot on the wing membrane and their spermathecae are very conspicuous and elongated.

Stilobezzia (A.) guianae (Macfie) from Guyana is the other Neotropical species with spotted wings, exhibiting one dark spot on r-m crossvein and another at apex of R₃. However, the female of *S. guianae* differs from this new species by the presence of two strong setae on the tarsomere 5 of all legs. The male genitalia is also very different, with globose gonocoxite, straight posteromedian processes of parameres and aedeagal sclerites more slender and nearly straight.

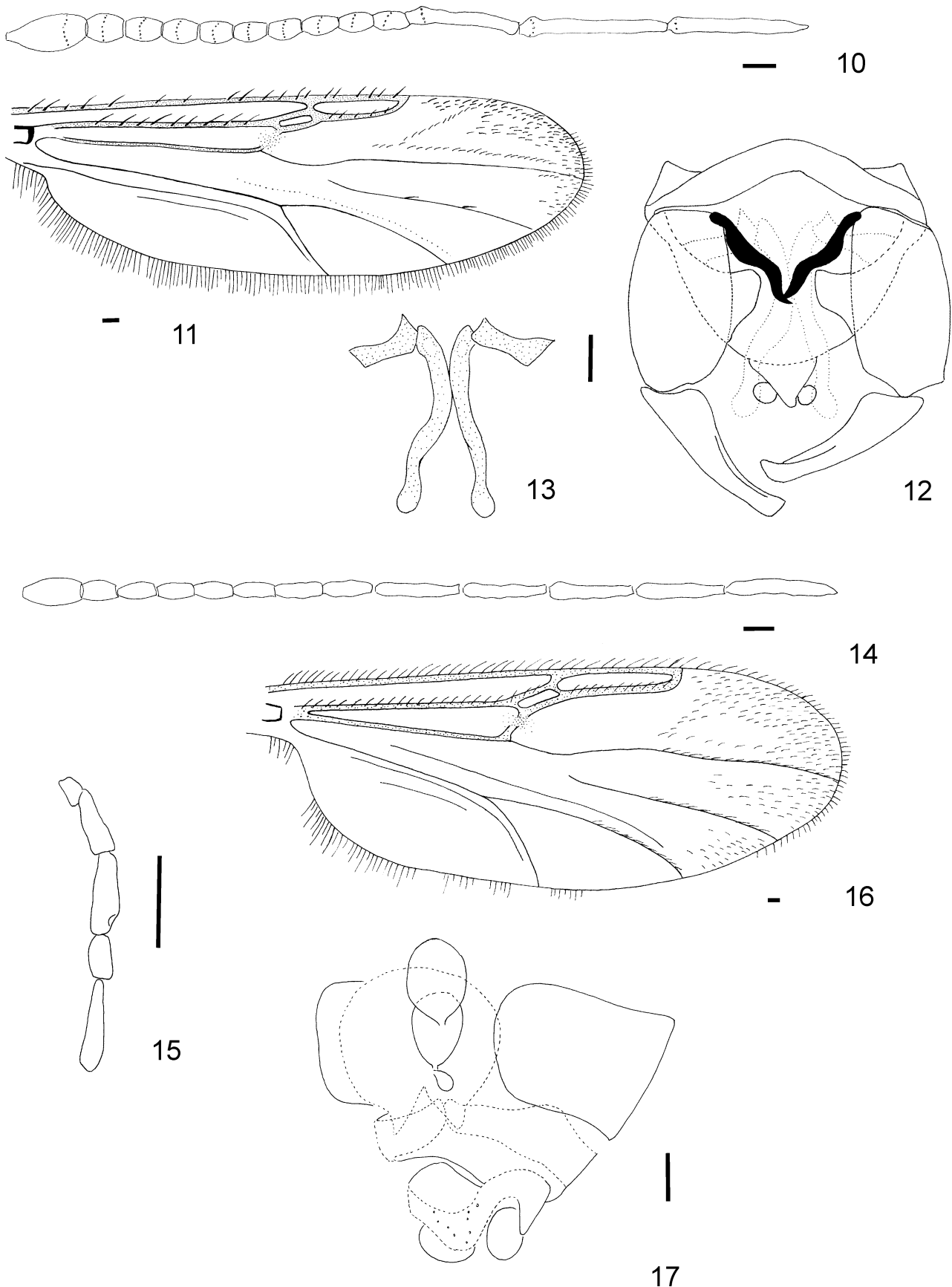


FIGURE 10–17. *Stilobezzia (Acanthohelea) monopicta* sp. n., 10–13 male; 14–17 female; 10—antenna, 11—wing, 12—genitalia (ventral view), 13—parameres removed, 14—antenna, 15—maxillary palpus, 16—wing, 17—genitalia (dorsal view). Scale bars: 0,05 mm.

***Stilobezzia (Acanthohelea) paranaense* n. sp.**

(Figs. 18–25, 37, 39)

Diagnosis. The only species of Neotropical *Stilobezzia (Acanthohelea)* with general pale coloration, wing membrane hyaline, gonocoxite with mesal protuberance pointed and gonostylus stout and pale, contrasting with the rest of genitalia dark brown.

Male. Head. Dark brown. Antenna with flagellomeres as in Fig 18; plume brown, dense; antennal ratio 0.74. Maxillary palpus dark brown; third segment short; palpal ratio 2.00.

Thorax. Dark brown. Scutum with anterolateral pale yellowish spots; scutellum with 6 stout setae. Legs pale brown, basal 1/2 of femora brown, knees dark brown; hind tibial comb with 6 spines; prothoracic TR 2.13; mesothoracic TR 2.70; metathoracic TR 2.13. Wing (Fig 19) length 1.13 mm; width 0.42 mm; membrane hyaline, anterior veins pale brown, other veins poorly perceptible except cubital fork, later distal to level of beginning of r-m; macrotrichia on costa, R₁, scarce on distal margin of r₃; first radial cell narrow; second 2 times longer than first. Halter pale.

Abdomen. Pale. Genitalia (Figs. 20–21, 37) dark brown; tergite 9 produced beyond level of end of gonocoxites, progressively narrowing distad, posterior margin rounded; cercus stout, rounded; sternite 9 folded in the studied specimen. Gonocoxite 2.16 times longer than greatest breadth, inner margin with pointed protuberance directed anteromesad. Gonostylus pale, stout, 1.58 times shorter than gonocoxite, slightly curved with blunt apex. Parameres separate, articulated to sclerotized, bilobed apodeme, each with basal portion slender, curved; posteromedian process broad anteriorly, distal portion narrowed, curved mesad to pointed apex. Aedeagus represented by short, convergent sclerites.

Female. Similar to male, with usual sexual differences.

Head. Yellowish brown. Antenna as in Fig. 22; antennal ratio 1.14–1.42 (1.25, n= 5). Maxillary palpus (Fig. 23) brown, except first segment pale; palpal ratio 3.25–3.75 (3.56, n= 7). Mandible with 7–8 teeth.

Thorax. Dark brown, humeral areas yellowish; scutellum yellowish brown with 4 setae. Legs pale yellowish, hind femur slightly darker; hind tibial comb with 7 spines; prothoracic TR 1.76–1.91 (1.82, n= 7); mesothoracic TR 2.33–2.53 (2.39, n= 7); metathoracic TR 2.02–2.14 (2.08, n= 7); claws of hind legs small. Wing (Fig. 24) length 1.10–1.24 (1.19 n= 7) mm; width 0.45–0.49 (0.47, n= 7) mm; membrane hyaline, anterior veins pale brown; macrotrichia on costa, R₁, R₂, R₃, M₁, M₂, abundant on distal 1/3 of r₃, m₁, scarce on distal margin of m₂; first radial cell elongate, second 3.58 times longer than first.

Abdomen. Pale brown. Genitalia as in Fig. 25; anterior margin of sternite 8 straight, posteromedian excavation V-shaped; sternite 10 short with 4 pairs of setae; cerci short, rounded; two ovoid spermathecae, necks nearly indistinguishable, measuring 7.5 x 5.2 µm, 5.0 x 4.0 µm; rudimentary third present.

Distribution. Argentina (Misiones province) Paraguay (Itapúa department) (Fig. 39).

Types. Holotype male, Argentina, Misiones prov., Corpus, 6-IX-2000, G. Spinelli, trampa CDC; allotype female, same data as holotype except 5-IV-2000. Paratypes: 7 females as follows: same data as allotype, 4 females; same data except 8-III-2000, 1 female; El Soberbio, 11-XI-2006, G. Spinelli, 1 female, light trap. Paraguay, Itapúa, Bella Vista, 8-III-2000, A. Ortiz & D. Lopez, 1 female, CDC light trap.

Discussion. *Stilobezzia (Acanthohelea) paranaense* strongly resembles the Nearctic species *S. (A.) fuscula* Wirth, especially by the male genitalia. However, the gonocoxite of the latter species bears an elongate mesal protuberance directed anterad, the gonostylus is slender and the apodemes of parameres are trilobed. The female of *S. (A.) fuscula* exhibits the thorax and the abdomen entirely dark brown.

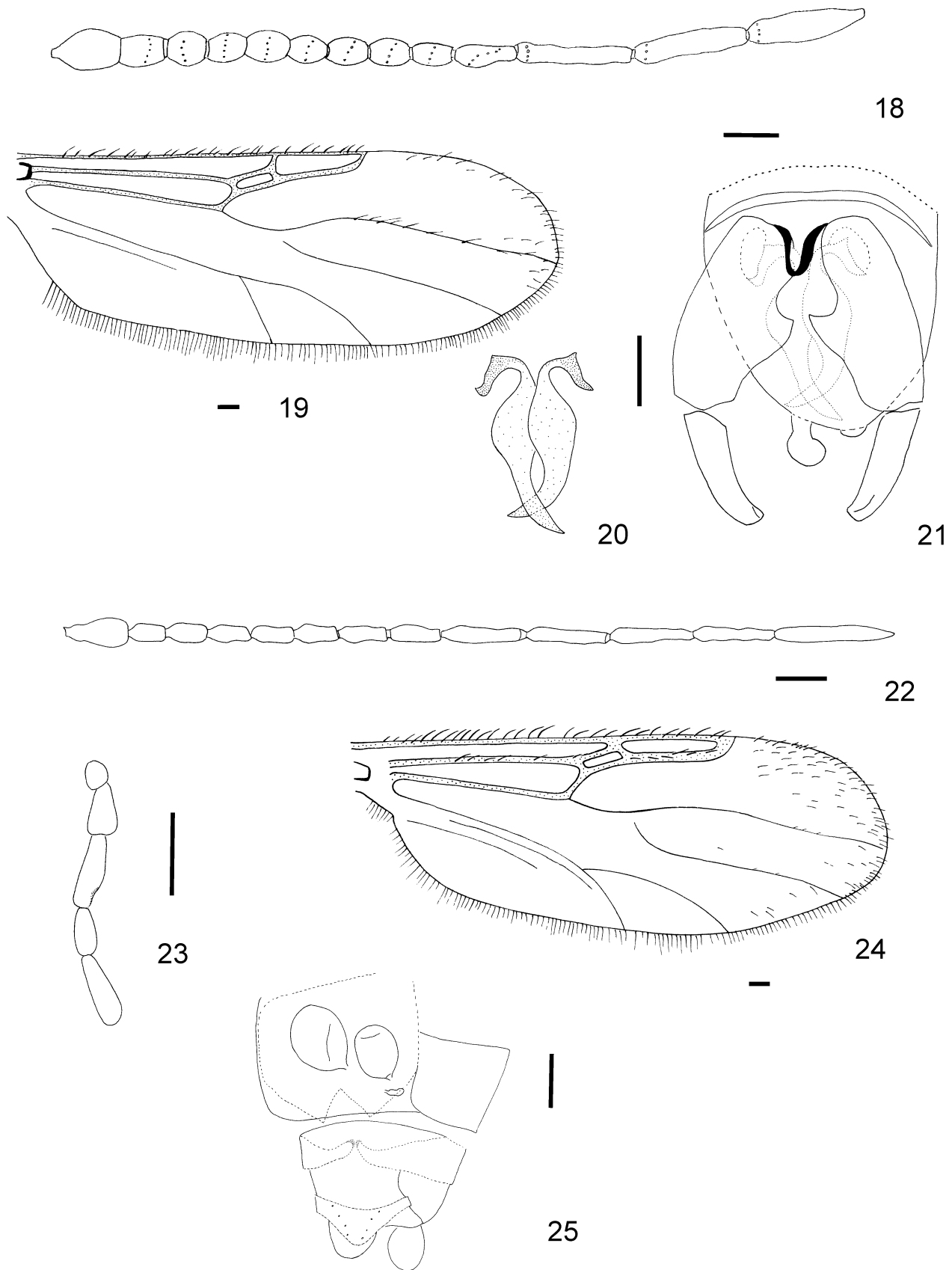


FIGURE 18–25. *Stilobezzia (Acanthohelea) paranaense* sp. n., 18–21 male; 22–25 female; 18—antenna, 19—wing, 20—genitalia (ventral view), 21—parameres removed, 22—antenna, 23—maxillary palpus, 24—wing, 25—genitalia (dorsal view). Scale bars: 0,05 mm.

Stilobezzia (Acanthohelea) xerophila n. sp.

(Figs. 26–33, 38, 39)

Diagnosis. The only species of Neotropical *Stilobezzia (Acanthohelea)* with legs dark brown except base and apex of femora with pale rings, male flagellomeres 1–10 pale brown and 11–13 contrastingly dark brown and male abdomen pale brown with genitalia dark brown.

Male. Head. Dark brown. Antenna as in Fig. 26; flagellomeres 1–10 pale brown, 11–13 dark brown; antennal plume brown, poorly developed; antennal ratio 0.69–0.80 (0.73, n= 8). Maxillary palpus brown; third segment stout with apical sensory pit; palpal ratio 2.75–3.25 (3.03, n= 8).

Thorax. Scutum dark brown, humeral areas slightly paler; scutellum slightly paler, 4 strong setae, 2–3 thinner ones; postscutellum dark brown. Legs dark brown, bases and apices of femora and tibiae with pale rings; tarsomeres pale; hind tibial comb with 6 spines; prothoracic TR 1.89–2.29 (2.10, n= 8); mesothoracic TR 2.12–2.57 (2.36, n= 8); metathoracic TR 2.00–2.8 (2.10, n= 8). Wing (Fig. 27) length 0.94–1.12 (1.00, n= 8) mm; width 0.37–0.44 (0.39, n= 8) mm; membrane slightly infuscated, anterior veins brown, cubital fork distal to level of beginning of r-m; dense macrotrichia on costa, scarce on R₁, R₂, M₁, abundant on distal margin of r₃, scarce on m₁; first radial cell narrow; second 2 times longer than first. Halter whitish.

Abdomen. Pale brown. Genitalia (Figs. 28–29, 38) dark brown; tergite 9 produced beyond level of end of gonocoxite, progressively narrowing distad, posterior margin rounded; cercus stout, slightly divergent; sternite 9 folded in the available specimens. Gonocoxite stout, 1.56 times longer than greatest breadth, inner margin with short protuberance. Gonostylus 1.24 times shorter than gonocoxite, straight with pointed apex.

Parameres separated, subparallel, sclerotized, articulated to stout, trilobed apodeme; each with basal portion slender, posteromedian process broad on mid portion, tapering to pointed apex. Aedeagus represented by two slender, convergent sclerites.

Female. Similar to male, with usual sexual differences.

Head. Antenna as in Fig. 30, flagellomeres dark brown, bases paler; antennal ratio 0.89–0.95 (0.91, n= 5). Maxillary palpus (Fig. 31) brown; palpal ratio 2.60–3.25 (2.85, n= 6). Mandible with 7 teeth.

Thorax. Scutellum with 4 strong setae; hind tibial comb with 6 spines; prothoracic TR 2.17–2.33 (2.22, n= 5); mesothoracic TR 2.40–2.52 (2.46, n= 5); metathoracic TR 2.28–2.42 (2.31, n= 5); claws as long as fifth tarsomere. Wing (Fig. 32) length 1.02–1.19 (1.11 n= 7) mm; width 0.48–0.52 (0.50, n= 7) mm, dense macrotrichia on costa, R₁, M₁, M₂, scarce on R₂, R₃, abundant on distal 1/3 of r₃, m₁, scarce on margins of m₂, cu₁; second radial cell 2.25 times longer than first.

Abdomen. Pale brown, segments 8–10 dark brown. Genitalia as in Fig. 33; anterior margin of sternite 8 convex, posteromedian excavation U-shaped; sternite 10 short with 3–4 pairs of setae; cercus rounded; two pyriform spermathecae with short necks, measuring 4.8 x 3.0 μm, 4.2 x 3.0 μm; rudimentary third present.

Distribution. Argentina (Salta, Tucumán, San Luis and Córdoba provinces) (Fig. 39).

Types. Holotype male, allotype female, Argentina, Salta prov., Cafayate, Motel del ACA, 27-III-2005, G. Spinelli, light trap. Paratypes: 8 males, 9 females, as follows: same data as holotype 1 male, 1 female; Salta prov., Ojo de Agua, km 1640 Ruta Nacional 9, 23-III-2005, G. Spinelli, 1 male, red; Tucumán prov., Taí del Valle, 19-I-2000, G. Spinelli, 1 female, light trap; Córdoba prov., Capilla de Monte, 7-III-2006, D. Carpintero, 2 males, 2 females, light trap; 4 km NW Cura Brochero 17/29-II-2004, H. López, 1 male, light trap; Río San Antonio, paraje Las Jarillas, 31° 32' 02.8" S, 64° 33' 01.7" O, 820 m, G. Spinelli, 3 males, 4 females, light trap; same data except Malaise trap, 1 female; San Luis prov., Merlo, 14/15-XI-2007, G. Spinelli, 1 female, CDC light trap.

Discussion. *Stilobezzia (A.) xerophila* sp. n. is similar to *S. (A.) guarani* sp. n. Characters for distinguishing both species may be found in the discussion under the latter species.

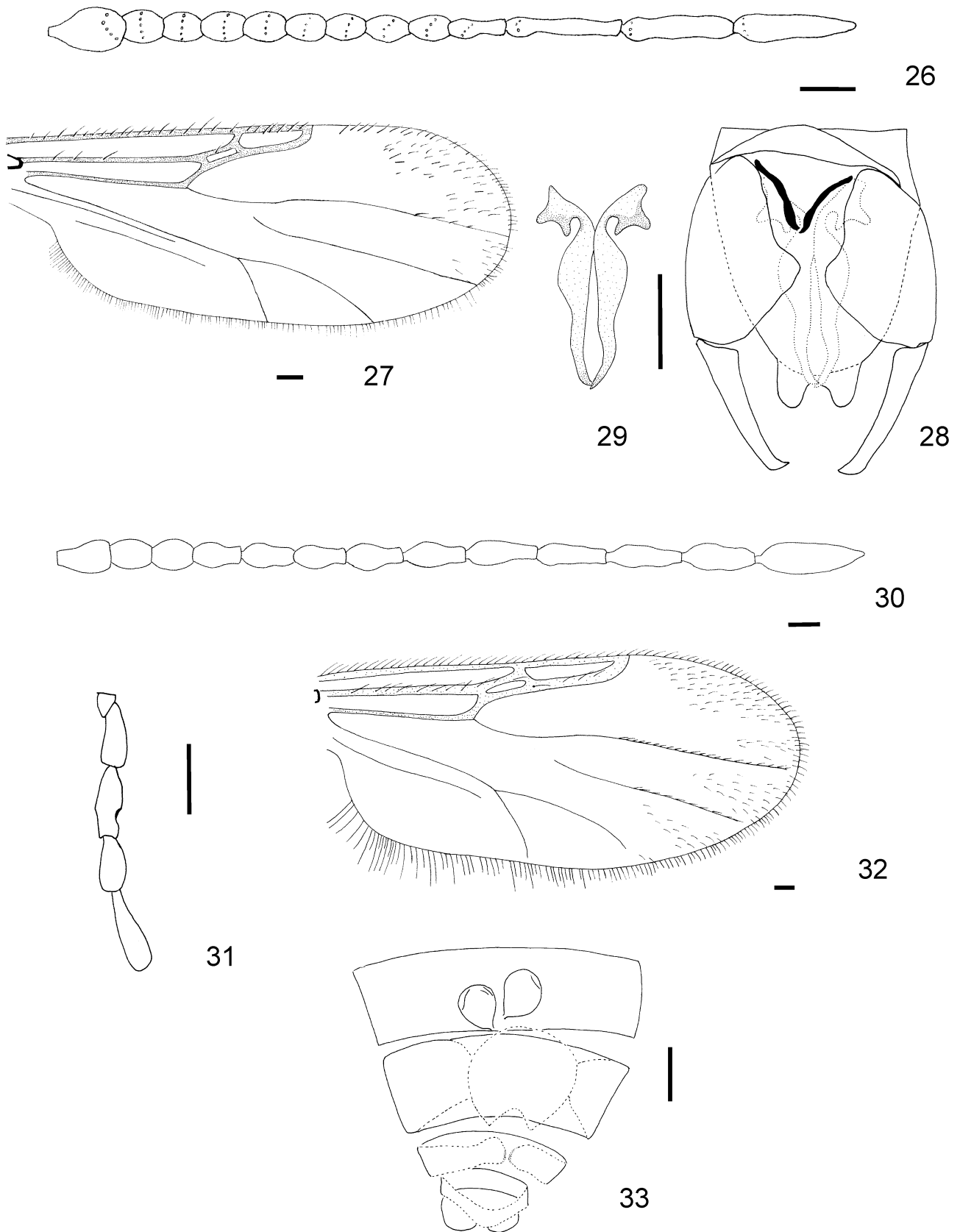


FIGURE 26–33. *Stilobezzia (Acanthohelea) xerophila* sp. n., 26–29 male; 30–33 female; 26—antenna, 27—wing, 28—genitalia (ventral view), 29—parameres removed, 30—antenna, 31—maxillary palpus, 32—wing, 33—genitalia (dorsal view). Scale bars: 0,05 mm.

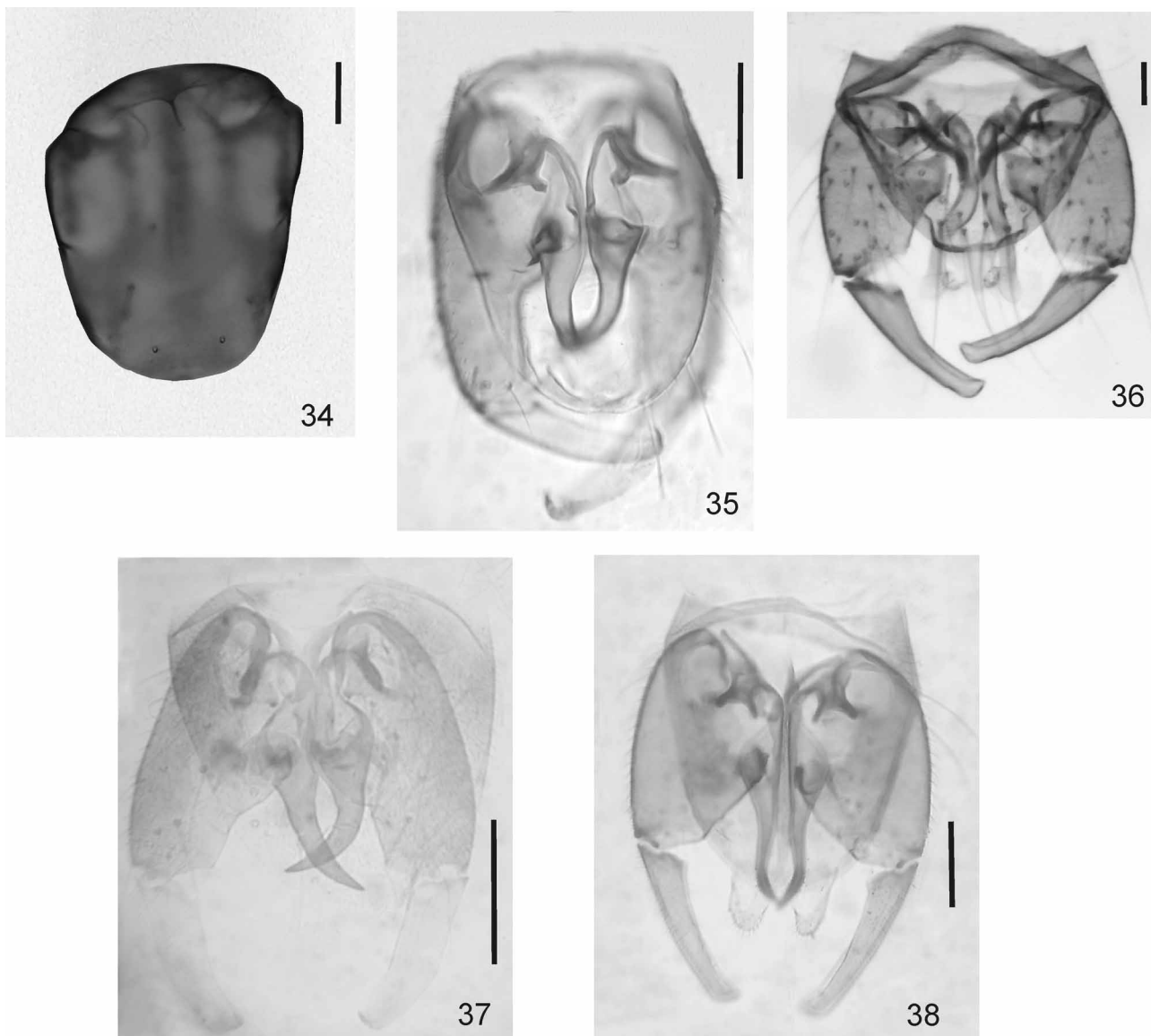


FIGURE 34–38. *Stilobezzia (Acanthohelea) guarani* sp. n., 34—scutum, 35—male genitalia; *Stilobezzia (Acanthohelea) monopicta* sp. n., 36—male genitalia; *Stilobezzia (Acanthohelea) paranaense* sp. n., 37—male genitalia; *Stilobezzia (Acanthohelea) xerophila* sp. n., 38—male genitalia. Scale bars: 0,05 mm.

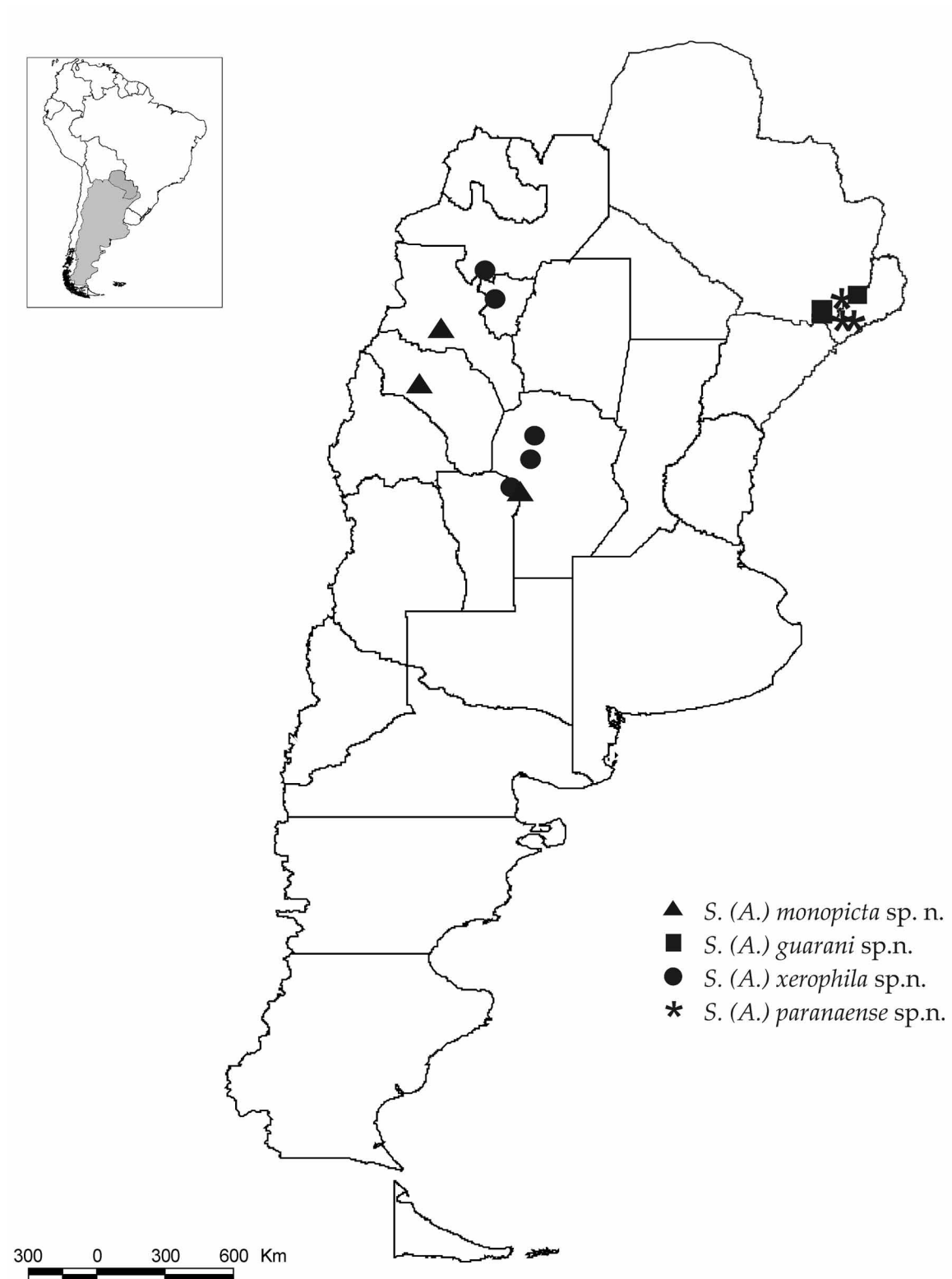


FIGURE 39. Distribution of *Stilobezzia (Acanthohelea) guarani*, *S. (Acanthohelea) monopicta*, *S. (Acanthohelea) paranaense* and *S. (Acanthohelea) xerophila*.

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