



New species of *Steleops* (Psocodea: 'Psocoptera': Psocidae) from Brazil, Colombia, Mexico and Peru

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Abstract

Ten species of neotropical *Steleops* Enderlein, are described and illustrated. A key to the neotropical species of the genus is provided, with comments on the affinities of the new species. The location of the types is indicated with each description.

Key words: taxonomy, neotropics, North America, South America

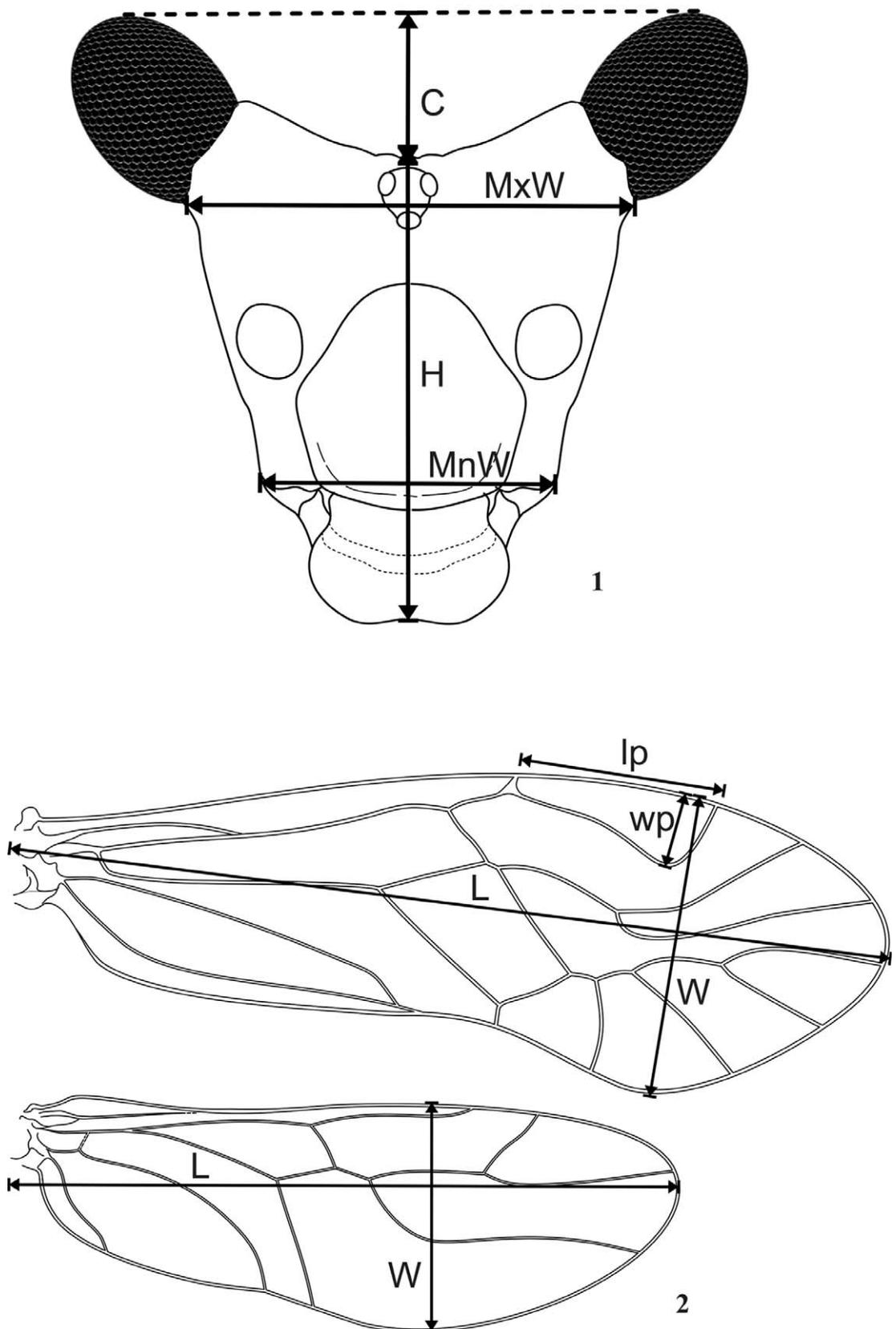
Introduction

The largely neotropical genus *Steleops* Enderlein, presently includes 14 species, that range from Central-Eastern U.S.A., south to Central Brazil. In the neotropics the genus is recorded from Colombia, Bolivia, Brazil, Mexico, Paraguay, Peru and Venezuela (Lienhard & Smithers 2002, González *et al.* 2011). Most of the species are quite eye-catching, due to their pedunculate eyes. Examination of the collection of one of us (ANGA), the collection of Universidade Estadual de Feira de Santana, Bahia, Brazil, and recent collecting by the authors in Caldas and Valle del Cauca, Colombia, revealed the presence of ten undescribed species of *Steleops*, so the purpose of this paper is to describe and illustrate them, and to provide an identification key to the neotropical species in the genus.

Material and methods

In total, 23 specimens were available for study. Most of these were dissected in 80% ethyl alcohol, and the head, right wings, legs, and genitalia were processed in 80%–100% ethyl alcohol, xylol and clove oil, before mounting onto slides in Canada balsam. Color was recorded from whole specimens, before dissection, in 80% ethyl alcohol under a dissecting microscope at 80X, with white cold light illumination. Measurements of slide mounted parts were taken using an ocular micrometer mounted on a Nikon Eclipse 200 microscope. The illustrations were made from photographs taken with a Nikon Coolpix 4500 digital camera, processed in a vector graphics editor CorelDRAW. Abbreviations, for parts measured are: FW—right fore wing; HW—right hind wing; F, T, t1, t2—femur, tibia and tarsomeres of right hind leg; ctt1—number of ctenidiobothria on t1; Mx4—fourth segment of right maxillary palpus; f1...fn—flagellomeres 1...n; IO—minimum distance between compound eyes; D and d—antero-posterior diameter and transverse diameter, respectively, of right compound eye; PO—d/D. For additional measurements included in descriptions see Figs 1–2.

Types depositaries: CNIN—National Insect Collection, Instituto de Biología, Universidad Nacional Autónoma de México, México City; MUSENUV—Entomological Museum, Universidad del Valle, Santiago de Cali, Colombia; MZUEFS—Zoology Museum, Universidade Estadual de Feira de Santana, Bahia, Brasil.



FIGURES 1–2. Some measurements in *Steleops*. 1. Head. 2. Fore wing and hind wing. C: Head concavity. H: Head length. MxW: Maximum head width. MnW: Minimum head width. L: Fore wing length. W: Fore wing width. lp: Length of pterostigma. wp: Width of pterostigma.

Characters studied. The following characters appear to be of importance in discriminating species of this genus:

1. Head pigmentation pattern (Figs 4, 9, 13, 18, 24, 29, 34, 40, 46, 52, 57, 62, 67, 73).
2. C, depth of the head concavity, from vertex to upper level of compound eyes (Fig. 1).
3. Ratio of head length, H, divided by maximum head width, MxW (Fig. 1).
4. Ratio of maximum head width, divided by minimum head width (MxW/MnW) (Fig. 1).
5. Ratio fore wing length/fore wing width (L/W) (Fig. 2).
6. Ratio pterostigma length/pterostigma width (lp/wp) (Fig. 2).
7. Fore wing pigmentation pattern (or absence of it), in both sexes (Figs 3, 8, 12, 17, 22, 28, 33, 39, 44, 50, 55, 61, 66, 71). Some species are sexually dimorphic for this character, e.g. *S. buitrensis* González, García & Carrejo (2011).
8. Morphology of hypandrium (Figs 5, 25, 36, 49, 60).
9. Morphology of phallosome (Figs 7, 27, 37, 48, 58).
10. Morphology of male epiproct and setal fields (Figs 6, 26, 38, 47, 59).
11. Morphology of male paraprocts, setal field, sensory fields and paraproctal prongs (Figs 6, 26, 38, 47, 59).
12. Presence or absence of clunial projections over the area of the paraprocts-epiproct (Fig. 47).
13. Female subgenital plate: shape, pigmented area, setal field, presence or absence of distinct sclerotized bands on surface, morphology and setal field of median process (Figs 11, 15, 19, 31, 43, 54, 63, 70, 75).
14. Gonapophyses: morphology and setal fields of valvulae V1, V2 and V3, presence or absence of distal process on V2, presence or absence of triangular process on V3, size and position of it (Figs 10, 14, 21, 30, 42, 51, 64, 68, 72).
15. Female ninth sternum: general morphology, pigmentation, size and shape of spermapore and spermapore sclerite (Figs 21, 30, 42, 51, 64, 68).
16. Morphology of female epiproct and setal field (Figs 20, 32, 41, 53, 65, 69, 74).
17. Morphology of female paraprocts, setal fields and sensory fields (Figs 20, 32, 41, 53, 65, 69, 74).

Key to Neotropical *Steleops* species

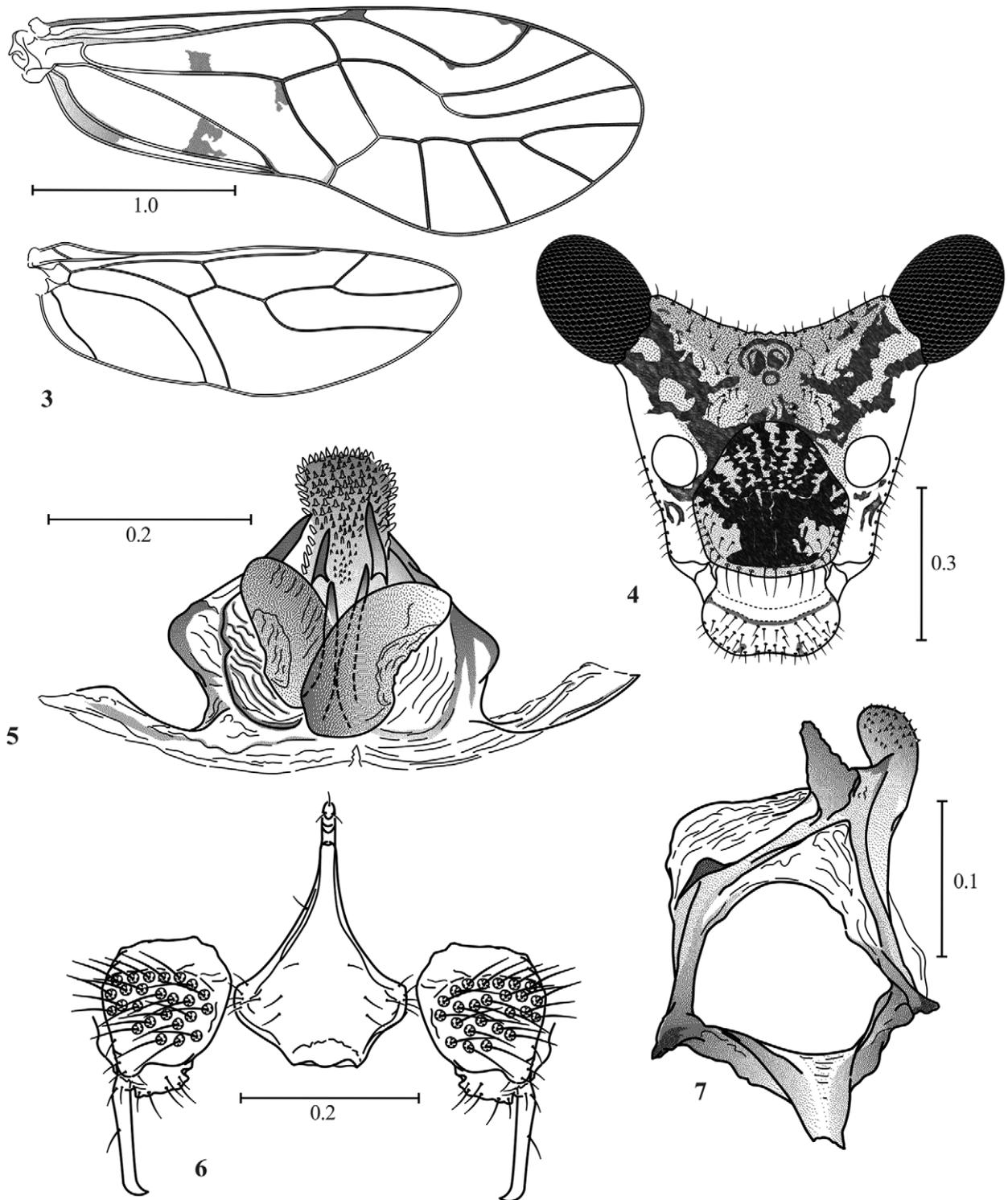
- | | | |
|----|---|---|
| 1. | Males | 2 |
| -. | Females | 10 |
| 2. | Fore wings extensively pigmented, with large, brown areas, vein A with a large flap. | 3 |
| -. | Fore wings hyaline, or not pigmented as above, vein A without a flap | 4 |
| 3. | Fore wings with areola postica almost totally pigmented, Rs-M diverging from a point; sides of hypandrium and posterior projection denticulate, phallosome distally pointed | <i>S. barrerai</i> García Aldrete |
| -. | Fore wings with areola postica almost totally hyaline; Rs-M fused for a short length; sides of hypandrium and posterior projection smooth, phallosome distally with two projections (Figs. 55–60) | <i>S. plenitudensis</i> n. sp. |
| 4. | Fore wings pigmented, with well defined brown spots; pterostigma little widened distally (lp/wp: 4.3–5.0) | 5 |
| -. | Fore wings hyaline, at most with small brown spots proximally; pterostigma distinctly wider distally, lp/wp ratio less than 4.0 | 7 |
| 5. | Fore wings long, slender, ratio L/W: 3.48, with medium sized brown spots, and many small, round spots; epiproct with slender posterior projection; hypandrium with two distal, acuminate processes, flanking a central area with a dense row of setae posteriorly, phallosome with a broad, distal process, with field of spines along posterior border (Figs. 33–38) | <i>S. manizalensis</i> n. sp. |
| -. | Fore wings shorter than above, ratio L/W less than 3.0; FW pattern, epiproct, hypandrium and phallosome not as above ... | 6 |
| 6. | Fore wings with radial series of brown spots distally, on cells R, R2+3, R4+5, M1 and M2; epiproct with two distal, smooth side lobes, hypandrium with a central, elongate, strongly sclerotized body, distally divided in two curved projections, denticulate on inner edge, phallosome long, with side arms stout, ending distally in a rounded, rugose body | <i>S. monticola</i> García Aldrete |
| -. | Fore wings with proximal and distal brown spots, but without radial spots as above; epiproct with two distal, rounded lobes, bearing each a field of microspines; central strap of hypandrium with sides distinctly sclerotized; phallosome ending distally in wide spatulate process. | <i>S. wygodzynskiyi</i> Mockford |
| 7. | Fore wings completely hyaline | 8 |
| -. | Fore wings with small brown spots proximally, on cells R-Cu, Cu-Cu2 and Cu2 | 9 |
| 8. | Epiproct wide at base, with a median, slender posterior projection, distally rounded; hypandrium asymmetric, with a row of denticles along one side, and two small mesal apophyses; phallosome distally pointed, with two side flaps; clunium without projections | <i>S. buitrensis</i> González <i>et al.</i> |
| -. | Epiproct longer than wide, postero-lateral corners round, protruding; hypandrium symmetric, sides of central strap with a row | |

- of mid sized denticles; phallosome with two rounded lobes distally; clunium with elongate, distally curved projections bearing short spines on surface, flanking paraprocts and epiproct (Figs. 44–49) *S. mendivili* **n. sp.**
9. Epiproct broadly pear-shaped, median posterior projection slender; mid strap of hypandrium bearing a dense field of short, coarse spines; two reniform bodies at base, and two pairs of pointed apophyses, an anterior and a posterior pair; phallosome distally with two projections, one stout, broadly triangular, and an elongate, distally rounded one, bearing short spines (Figs. 3–7) *S. albertoneto* **n. sp.**
- Epiproct as above, but median posterior projection stout; mid strap of hypandrium bearing a dense field of minute, slender spines; reniform bodies and acuminate apophyses as above; phallosome almost as above: triangular projection long, slender, the rounded projection bearing spines only on posterior border (Figs. 22–27) *S. machupicchuensis* **n. sp.**
10. Fore wings almost totally hyaline; pterostigma widest approximately in the middle. 11
- Fore wings distinctly pigmented; pterostigma widest distally 12
11. Fore wings with small brown spot at confluence of Rs-R2+3-R4+5; subgenital plate with median process slender, pointed, setose (Figs. 50–54) *S. mendivili* **n. sp.**
- Fore wings with a small brown spot on cell Cu1; subgenital plate with median process stout, projected in the middle, glabrous *S. pedunculatus* (Enderlein)
12. Fore wings with a flap on vein A 13
- Fore wings without a flap on vein A 15
13. Fore wings with a slender, transverse, brown band proximally from mid R to A; areola postica and cell M mostly hyaline. 14
- Fore wings without a proximal, pigmented transverse band; areola postica with small, hyaline proximal area, cell M with hyaline area distally *S. ortegae* García Aldrete
14. Cell M3 pigmented throughout, only with small hyaline lacunae; median process of subgenital plate long, slender
- *S. tambopata* García Aldrete
- Cell M3 with large hyaline area, only with small brown spots; median process of subgenital plate short, stout (Figs. 61–64)
- *S. plenitudensis* **n. sp.**
15. Fore wing with L/W: 3.42, extensively pigmented, with medium sized spots and many small, round, brown spots, a pigmented oblique band from anterior end of pterostigma to Cu2, subgenital plate with median process elongate, more than twice as long as wide (Figs. 39–43) *S. manizalensis* **n. sp.**
- Fore wing with L/W less than 3.0, with brown spots not as above; with or without an oblique pigmented band on proximal half of wing; subgenital plate with median process short or long, if short, less than twice as long as wide 16
16. Subgenital plate with median process elongate, more than twice as long as wide; fore wing with a well defined pigmented band from anterior end of pterostigma to A, and an irregular pigmented band distally, ninth sternum wide, approximately rectangular *S. buitrerensis* González *et al.*
- Subgenital plate with median process less than twice as long as wide 17
17. Fore wing distally hyaline, brown spots on proximal half, on cells R, M, and Cu1 y nodulus), not forming a transverse band
- *S. purus* Mockford
- Fore wing with variable brown spots throughout the wing, with or without a transverse, anterior, pigmented band 18
18. Fore wing with radial spots on cells R1 to M2 weakly pigmented, and brown spots proximally on cells R, Cu1 and Cu2
- *S. monticola* García Aldrete
- Fore wing with well defined pigmented spots throughout the wing 19
19. Fore wing with clearly marked pigmented band from anterior end of pterostigma to vein A 20
- Fore wing without a defined pigmented band proximally 23
20. Head not pedunculate, C less than 100 microns; V2 long, stout, with very long, slender distal process; V3 triangular (Figs. 71–75) *S. thornstoni* **n. sp.**
- Head pedunculate, C >100 microns; V2 not as pointed as above, V3 oval or triangular 21
21. V3 triangular; V2 distally rounded, with small distal process; fore wing with median transverse band from posterior end of pterostigma to upper part of areola postica; spermapore sclerite irregular, elongate (Figs. 66–70) *S. rioblancoensis* **n. sp.**
- V3 oval, V2 variable; fore wing pattern variable 22
22. Fore wing with median pigmented band from distal end of pterostigma to areola postica, continuing to cell M3; pigmented area of subgenital plate clearly divided in two; V2 distally only slightly projected *S. conipata* García Aldrete & Menchaca
- Fore wing with median pigmented band not as above; pigmented area of subgenital plate not divided; V2 decidedly projected
- *S. pulcher* New
23. V3 oval, V2 with long distal process, subgenital plate with long median process, mesally with a well defined triangular area, with a row of long setae on posterior border; fore wing with distal brown spots from cell R1 to areola postica (Figs. 8–11)
- *S. cashiriarensis* **n. sp.**
- V3 with posterior triangular process, V2 variable, fore wing variable, subgenital plate not as above 24
24. Head not pedunculate; V2 with long, slender distal process (Figs. 12–16) *S. chameleensis* **n. sp.**
- Head pedunculate; V2 with distal process at most of medium length, decidedly shorter than above 25
25. Subgenital plate pigmented throughout; areola postica with a brown spot on apex 26
- Subgenital plate with a longitudinal hyaline middle band, dividing the pigmented area; areola postica more fully pigmented than above 27
26. R1 forming an angle with wing margin of more than 90°; areola postica low, slanted posteriorly; V2 with short distal projection; head little pedunculate (Figs. 17–21) *S. cuzcoensis* **n. sp.**
- R1 forming an angle with margin of about 90°; areola postica tall, not slanted posteriorly; V2 not projected distally; head more pedunculate than above (Figs. 28–32) *S. machupicchuensis* **n. sp.**

27. Cell M almost hyaline, areola postica with transverse, long brown spot distally; subgenital plate with pigmented area deeply cleft anteriorly; V2 with distal process of medium length; fore wing veins with a brown spot at wing margin *S. punctipennis* Enderlein
- Cell M with brown spots distally, areola postica almost pigmented throughout; subgenital plate with pigmented area deeply cleft posteriorly; V2 with short distal process; fore wing veins without brown spots at wing margin. *S. maculatus* New

***Steleops albertoneto* n. sp. (Male)**

(Figs. 3–7)



FIGURES 3–7. *Steleops albertoneto* n. sp. Male. 3. Fore wing and hind wing. 4. Front view of head. 5. Hypandrium. 6. Paraprocts and epiproct. 7. Phallosome. Scales in mm.

Color (in 80% alcohol). Body creamy white, with dark brown areas as indicated below. Compound eyes black, ocelli hyaline, with ochre centripetal crescents, thicker in the two upper ones. Head pattern as illustrated (Fig. 4): two ochre bands from each compound eye, directed towards epistomal sulcus, meeting a slender ochre band radiating on each side of ocellar group, then continuing to epistomal sulcus; a creamy area between the bands from the compound eyes, and a large unpigmented area between ocellar group and epistomal sulcus, as illustrated. Postclypeus with ochre diagonal striae. Antennae: Scape pale brown, pedicel and flagellum creamy white; maxillary palpomeres 1–3 white, Mx4 pale brown. Prothoracic coxae pale brown; meso- and metathoracic coxae dark brown. Tergal lobes of meso- and metathorax dark brown. Abdomen creamy, with well defined brown bands on tergum, corresponding to each segment, these bands interrupted in the pleura of each side of the abdomen, to continue ventrally, but much less pigmented. Fore wings almost hyaline, veins brown, with brown spots on the basal part of the wing, as illustrated (Fig. 3): small spot on cell R, small spot at confluence of Cu-Cu1a, a bigger spot between Cu2-A, toward distal ends, and a brown basal band between A and wing margin. Hind wings hyaline, veins pale brown.

Morphology. Head concave at vertex, compound eyes pedunculate (Fig. 4), C: 210 microns; almost as long (from vertex to distal end of labrum) as wide at the level of the lower ends of the compound eyes. H/MxW: 1.09; almost triangular in front view, MxW/MnW: 1.52; compound eyes elongate. Fore wing pterostigma much wider posteriorly, lp/wp: 3.0; Rs-M joined by a short crossvein; Rs slightly curved and shorter than R 2+3; cell M almost rectangular; areola postica trapeziform. Hind wing Rs-M fused, Rs slightly longer than the fused length; vein R 4+5 1.7 times as long as Rs (Fig. 3). Hypandrium symmetric (Fig. 5) with sides basally straight; distal half of each side slender, strongly sclerotized, acuminate. Central body formed by two close together bean-shaped bodies, with two longitudinal, basal, acuminate projections; middle strap bearing a short acuminate prong basally on each side, and a field of short spines covering the whole surface. Phallosome (Fig. 7) rhomboid, apex with a wide based, conical projection on one side, the other side associated with a long, rounded lobe, bearing a distal field of microspines. Clunium distinctly extended posteriorly over the area of the paraprocts-epiproct. Paraprocts (Fig. 6) round, setose, sensory fields with 26–28 trichobothria in basal rosettes; mesal prong long, slender, curved at the end. Epiproct (Fig. 6) approximately triangular, broad at base, extended posteriorly to form a long, distally rounded projection.

Measurements. FW: 2950, HW: 2180, f1: 630, f2: 540, f3: 510, IO: 470, D: 250, d: 280, IO/d: 1.68 .

Specimen studied: Holotype male. **BRAZIL.** Bahia. Senhor de Bonfim, 10°22'197"S: 40°10'840"W, 800m. 8.x.2005. Light trap. R. Vieira & C. Chagas. MZUEFS, slide cod. 41464 (223).

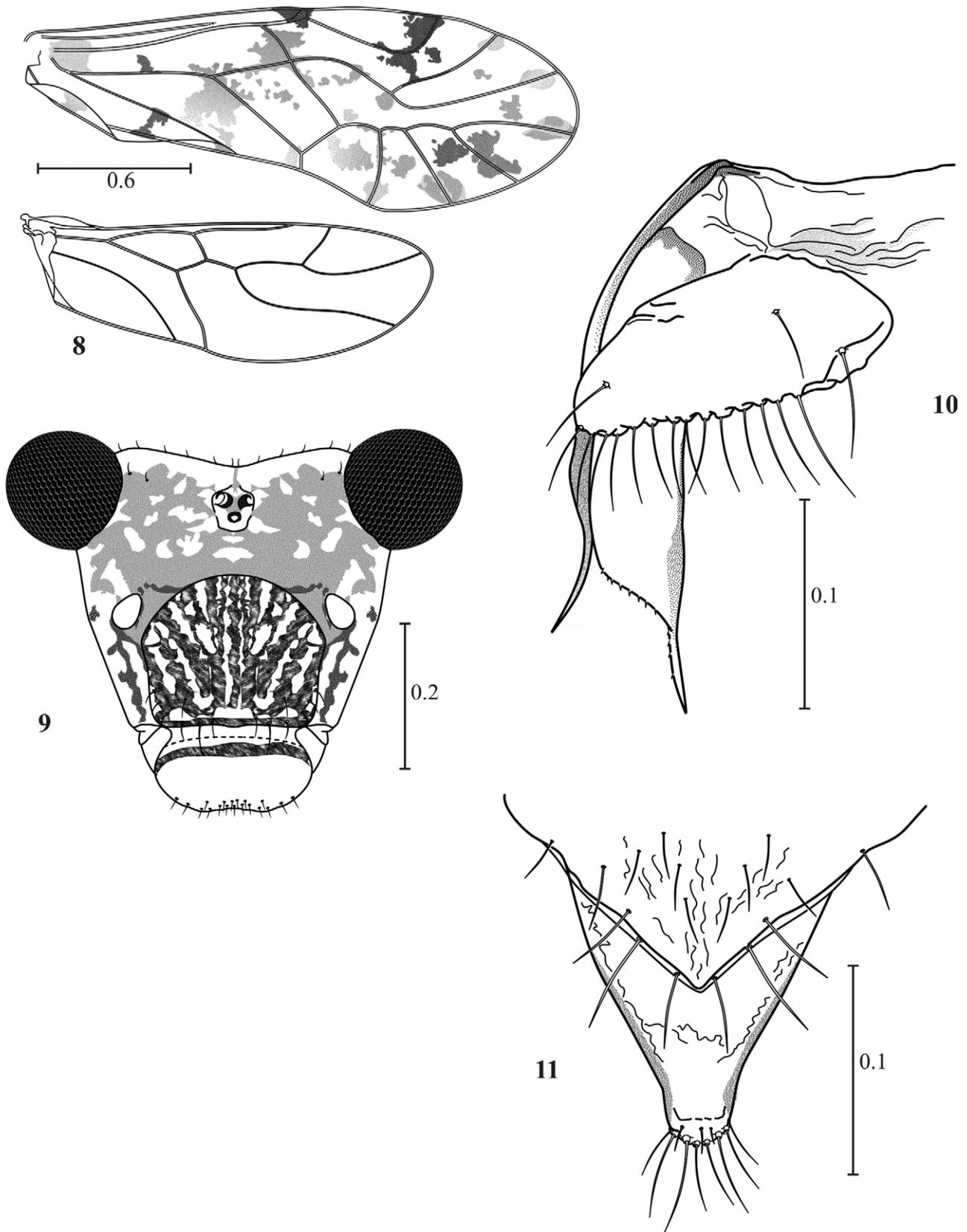
Etymology. This species is dedicated to Alberto Moreira da Silva Neto, of the Universidade Estadual de Feira de Santana, Bahia, Brazil, for the loan of the specimen of this species, and in recognition to his enthusiasm and energetic psocid collecting in NE Brazil, within the frame of the Programa de Pesquisas em Biodiversidade (PPBIO–Semiárido).

***Steleops cashiriariensis* n. sp. (Female)**

(Figs. 8–11)

Color (in 80% alcohol). Body pale brown, with creamy areas as indicated below. Compound eyes black, ocelli hyaline, with ochre centripetal crescents, the upper ones thicker than the lower one. Head pattern (Fig. 9) with a wide brown area from the lower margin of compound eyes, through postclypeus and labrum. Postclypeus with diagonal, pale brown striae; labrum brown. Antennae: Scape and pedicel brown, flagellum creamy white; maxillary palpomeres creamy white. Legs creamy white, hind t1 with small brown spot basally, pretarsus brown. Tergal lobes of meso- and metathorax dark brown; pleura with creamy and brown areas. Abdomen creamy white, with small, brown narrow spots on tergum and sternum of each segment, pleura creamy white, epiproct and paraprocts creamy white.

Fore wings (Fig. 8) maculate, without defined brown pigmented transverse band, but with large brown spots from anterior end of pterostigma to CuP. Pterostigma with a dark brown irregular spot posteriorly; veins R2+3, R4+5, M1, M3 and Cu1a with pale brown spots distally, areola postica with a brown area in the middle; other brown spots and clear windows as illustrated. Hind wings hyaline, almost all the veins creamy white or translucent, some veins (M, M-Cu, Rs-M, CuA) in the central part of the wing pale brown.



FIGURES 8–11. *Steleops cashiriariensis* n. sp. Female. 8. Fore wing and hind wing. 9. Front view of head. 10. Left gonapophyses. 11. Subgenital plate. Scales in mm.

Morphology. Head slightly concave at vertex, compound eyes little pedunculate, almost as long as its maximum width, H/MxW: 1.15; MxW/MnW: 1.42; compound eyes oval, C: 60 microns. Antennal flagellomeres with

short, sparse setae. Fore wing (Fig. 8): L/W: 2.67. Pterostigma much wider posteriorly, lp/wp: 3.12; apex rounded, almost at an angle of 90° with wing margin. Rs slightly curved and shorter than R 2+3 and R 4+5; Rs-M joined by a short crossvein. Cell M, large, rectangular; areola postica trapeziform. Hind wing Rs-M fused, Rs almost twice as long as the fused length; vein R 4+5 1.8 times as long as Rs.

Subgenital plate (Fig. 11) triangular, with setae scattered on surface; median projection short, rounded, distally broad and with macrosetae along posterior margin. Ninth sternum broad, membranous. Gonapophyses (Fig. 10): V1 long, slender, distally pointed, V2 distally straight, with microsetae along posterior border; V3 oval, with posterior margin straight, bearing a row of macrosetae.

Paraprocts damaged in mounting, broadly triangular, with a row of macrosetae along outer margin, sensory fields with 16–18 trichobothria issuing from basal rosettes. Epiproct basally wide, almost trapeziform, widely rounded distally, with setae along postero-lateral border.

Measurements. FW: 2100, HW: 1563, F: 475, T: 913, t1: 350, t2: 83, ctt1: 20, f1: 330, f2: 230, f3: 220, f4: 170, IO: 310, D: 170, d: 180, IO/d: 1.72

Specimen studied. Holotype female. **PERU.** Cuzco. Cashiriari. Nuevo Mundo. Base Pluspetrol, 11°33'02"S: 78°08'30"W. 4.vii.2005. Light trap. J. Williams. CNIN.

Etymology. The specific name refers to the type locality.

***Steleops chamelaensis* n. sp. (Female)**

(Figs. 12–16)

Color (in 80% alcohol). Head and thorax brown, abdomen creamy white, with dark areas as indicated below. Compound eyes black, ocelli hyaline, with ochre centripetal crescents. Head pattern (Fig. 13): wide brown area from lower ends of compound eyes, through postclypeus and labrum. Postclypeus with pale brown diagonal striae, labrum brown. Antennae: Scape brown, pedicel and flagellum creamy white; maxillary palpomeres creamy white. Prothoracic coxae creamy white, meso and metathoracic coxae brown; trochanter, femur, tibia and tarsi creamy white, hind tarsi basally brown, pretarsus brown. Tergal lobes and pleura of meso- and metathorax dark brown. Abdomen creamy white, with brown narrow bands on tergum and sternum of each segment, pleura creamy white, epiproct and paraprocts creamy white.

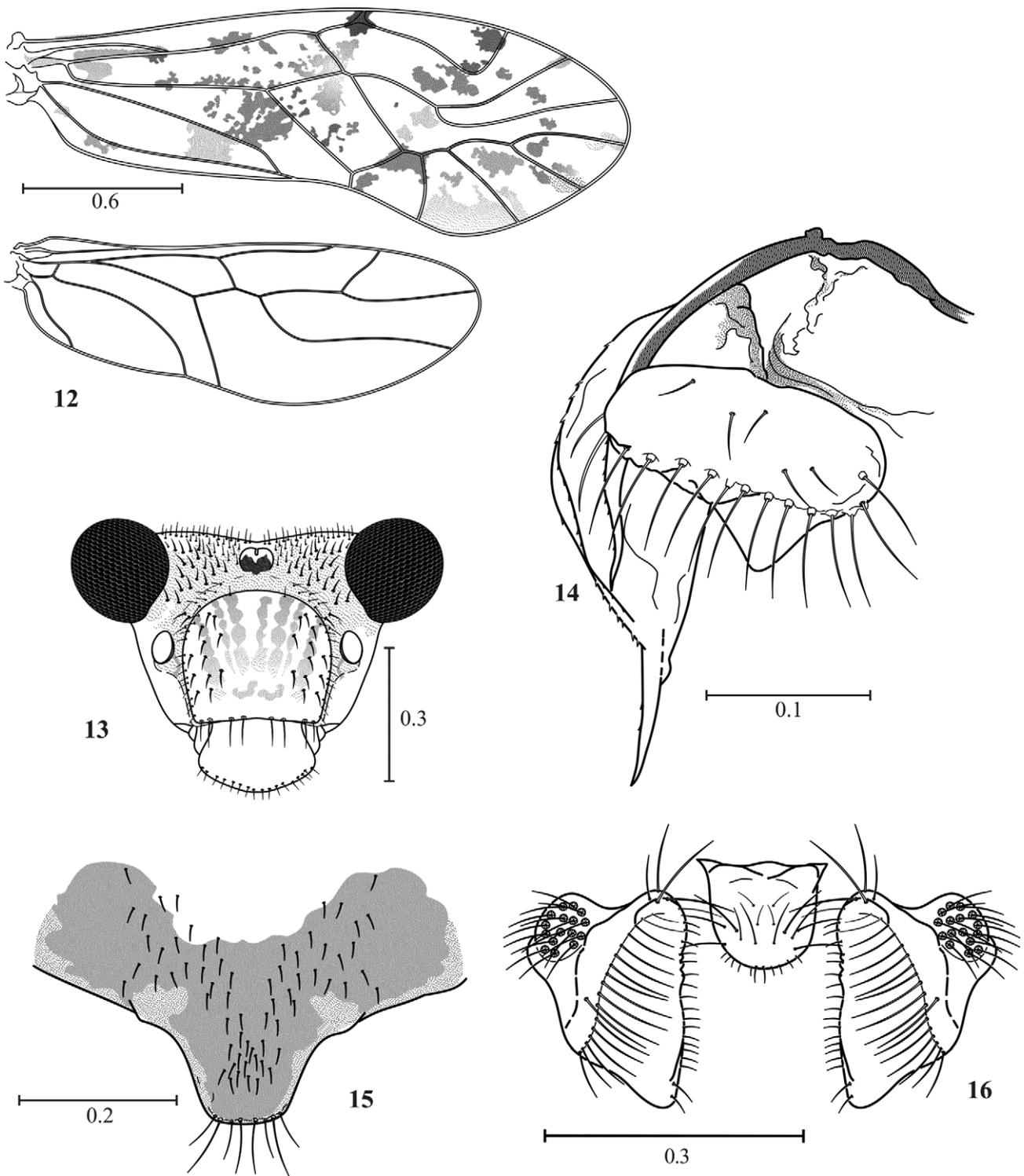
Fore wings (Fig. 12) maculate, without defined brown pigmented transverse band, but with large brown spots from anterior end of pterostigma to CuP. Pterostigma with a dark brown irregular spot posteriorly; veins R 2+3, R4+5, M1-M3 and Cu 1a distally with pale brown spots, areola postica with brown area near M, other brown spots and hyaline windows as illustrated. Hind wings hyaline, veins creamy white or translucent, veins M, M-CuA, Rs-M, and CuA at the central part of the wing pale brown.

Morphology. Head almost straight at vertex, compound eyes not pedunculate, almost as long as its maximum width, H/MxW: 0.98; MxW/MnW: 1.48; compound eyes oval, C: 45 microns. Antennal flagellomeres with short, sparse setae. Fore wing (Fig. 12): L/W: 2.82. Pterostigma much wider posteriorly, lp/lw: 2.7; almost straight posteriorly; Rs slightly curved and shorter than R 2+3 and R 4+5; Rs-M fused for a short distance. Cell M pentagonal, areola postica trapeziform. Hind wing Rs-M fused, Rs almost five times as long as the fused length; vein R 4+5 1.6 times as long as Rs. Subgenital plate (Fig. 15) broad, with scattered setae on the surface; posterior projection short, almost truncate posteriorly, broad and with macrosetae along posterior margin. Ninth sternum broad, membranous. Gonapophyses (Fig. 14): V1 long, slender, distally pointed, with field of microsetae distally along inner margin; V2 short, distally straight, with microsetae along posterior border; V3 oval, with posterior triangular projection, with row of macrosetae along posterior margin. Paraprocts broadly triangular (Fig. 16) with row of macrosetae along outer margin; sensory fields with 18–20 trichobothria issuing from basal rosettes. Epiproct basally wide, almost trapeziform, widely rounded distally, with setae along postero-lateral border.

Measurements. FW: 2363, HW: 1850, F: 513, T: 1025, t1: 375, t2: 95, ctt1: 19, Mx4: 142, f1: 560, IO: 396, D: 240, d: 235, IO/d: 1.69.

Specimen studied. Holotype female. **MEXICO.** Jalisco. Chamela. UNAM Tropical Biology Station, 19°30'N: 105°03'W, 100m. 18.vi.1979, beating branches of *Ficus* sp. A. N. García Aldrete. CNIN.

Etymology. The specific name refers to the type locality.



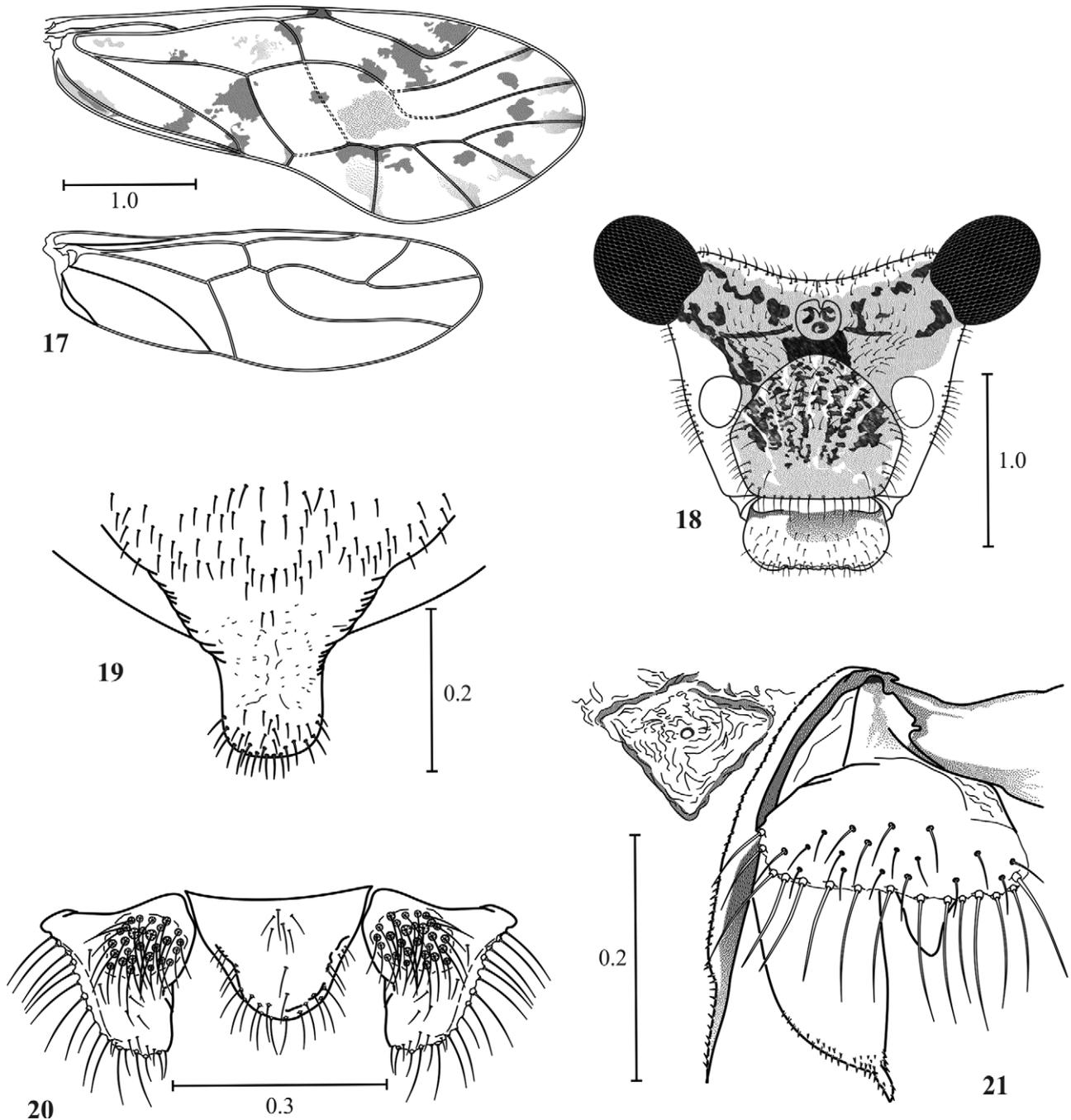
FIGURES 12–16. *Steleops chamelaensis* n. sp. Female. 12. Fore wing and hind wing. 13. Front view of head. 14. Left gonapophyses. 15. Subgenital plate. 16. Paraprocts and epiproct. Scales in mm.

***Steleops cuzcoensis* n. sp. (Female)**

(Figs. 17–21)

Color (in 80% alcohol). Body creamy, with dark areas as indicated below. Compound eyes black, ocelli hyaline, with ochre centripetal crescents; ocellar group in a whitish area. Head (Fig. 18): vertex, frons and postclypeus pale

brown yellowish, an irregular line of brown spots from upper angle of each compound eye to ocellar group; another similar line from lower angle of each compound eye to epistomal sulcus, next to antennal fossae; a dark brown area between ocellar group and epistomal sulcus; genae pale yellowish. Postclypeus with thick, brown diagonal striae. Antennae: Scape, pedicel and flagellum creamy, with distal flagellomeres pale brown, maxillary palpomeres creamy white. Legs creamy white, tarsi pale brown, pretarsus brown. Tergal lobes of meso- and metathorax brown, pleura creamy, with pale brown longitudinal line. Fore wings with brown spots as illustrated (Fig. 17); pterostigma with a distal brown spot, cell M almost hyaline, areola postica with pale brown spot at apex, distal half of wing with a series of radial spots on cells R 2+3, R 4+5 and M1-M3. Hind wings hyaline, veins creamy white. Abdomen creamy. Epiproct, paraprocts and subgenital plate creamy, V1 with a brown band along outer border, V2 proximally brown, V3 creamy white.



FIGURES 17–21. *Steleops cuzcoensis* n. sp. Female. 17. Fore wing and hind wing. 18. Front view of head. 19. Subgenital plate. 20. Paraprocts and epiproct. 21. Left gonapophyses and spermapore. Scales in mm.

Morphology. Head almost straight at vertex, compound eyes little pedunculate, H/MxW: 0.96, MxW/MnW: 1.52; C: 160 microns. Antennae with short setae. Fore wing (Fig. 17): L/W: 2.54, pterostigma much wider posteriorly, lp/wp: 3.21; Rs slightly curved and shorter than R 2+3; cell M almost rectangular; areola postica trapeziform. Hind wing Rs-M fused, Rs about four times as long as the fused length; vein R 4+5 1.1 times as long as Rs. Ovipositor valvulae (Fig. 21): V1 slender, elongate, pointed, inner border with a field of microspines; V2 long, broad, stout, more sclerotized anteriorly, posteriorly with a small, pointed projection, V3 about half as long as V2, almost ovoid, posterior border with a row of macrosetae, other setae on surface as illustrated; a small triangular projection near the middle. Ninth sternum membranous (Fig. 21), spermapore sclerite rhomboid, with small, circular spermapore in the middle. Subgenital plate broad (Fig. 19) with setal field in the middle, posterior projection short, apically rounded, with a field of setae. Paraprocts (Fig. 20) broadly triangular, apex rounded, with a row of macrosetae on outer border, sensory fields with 28–30 trichobothria in basal rosettes. Epiproct (Fig. 19) trapeziform, posteriorly rounded, with setae as illustrated.

Measurements. FW: 4000, HW: 2950, F: 700, T: 1625, t1: 550, t2: 138, ctt1: 28, Mx4: 170, f1: 830, f2: 830, f3: 780, IO: 530, D: 255, d: 250, IO/d: 2.12

Specimen studied. Holotype female. **PERU.** Cuzco. Machu Picchu, 13°09'48"S: 72°32'49"W. 2288 m., 9.VIII.2005. On rock wall of ancient temple, together with specimens of the species described below. A. N. García Aldrete. CNIN.

Etymology. The specific name refers to the origin of this species, in Cuzco, Peru.

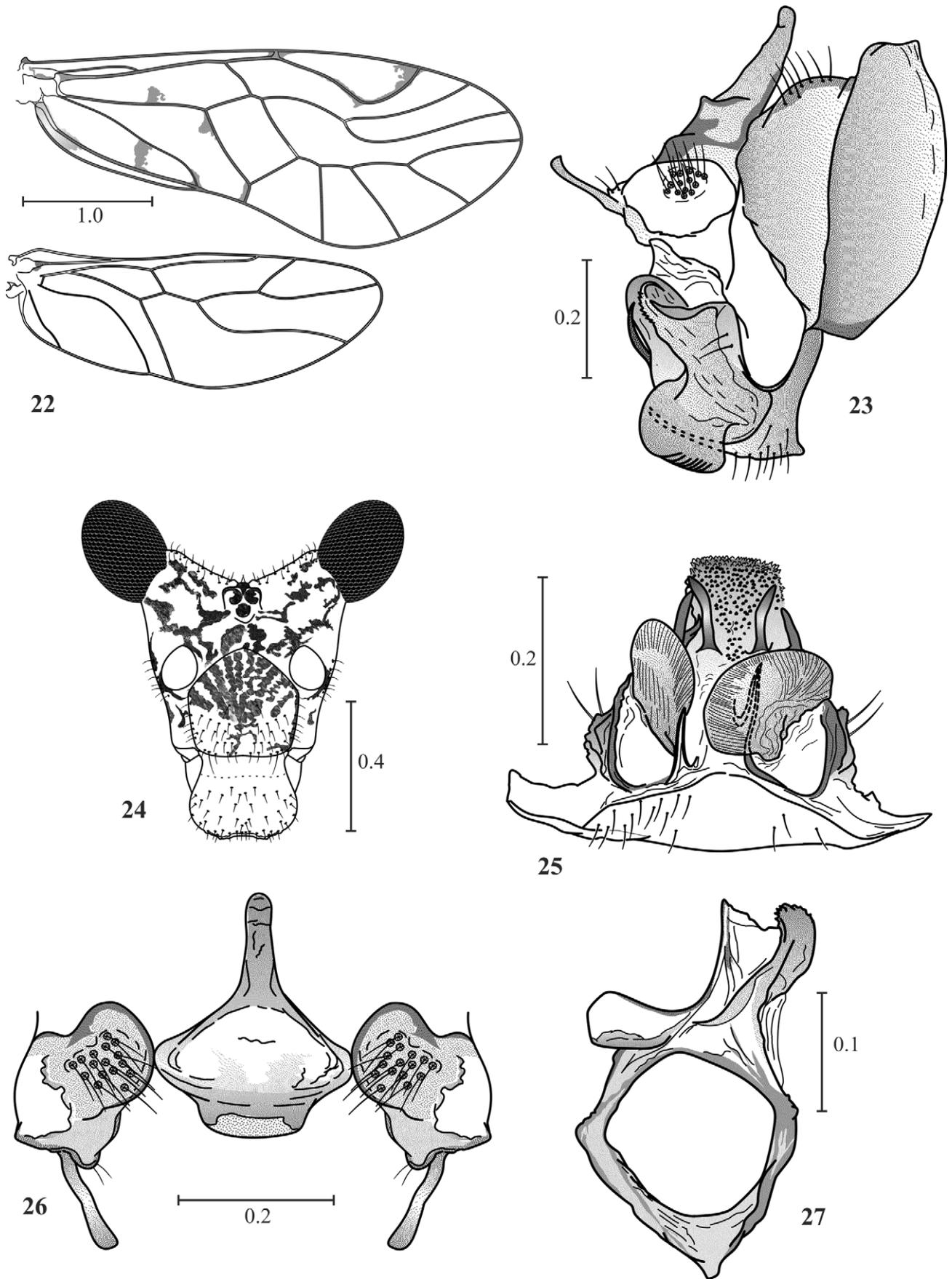
Steleops machupicchuensis n. sp.

(Figs. 22–32)

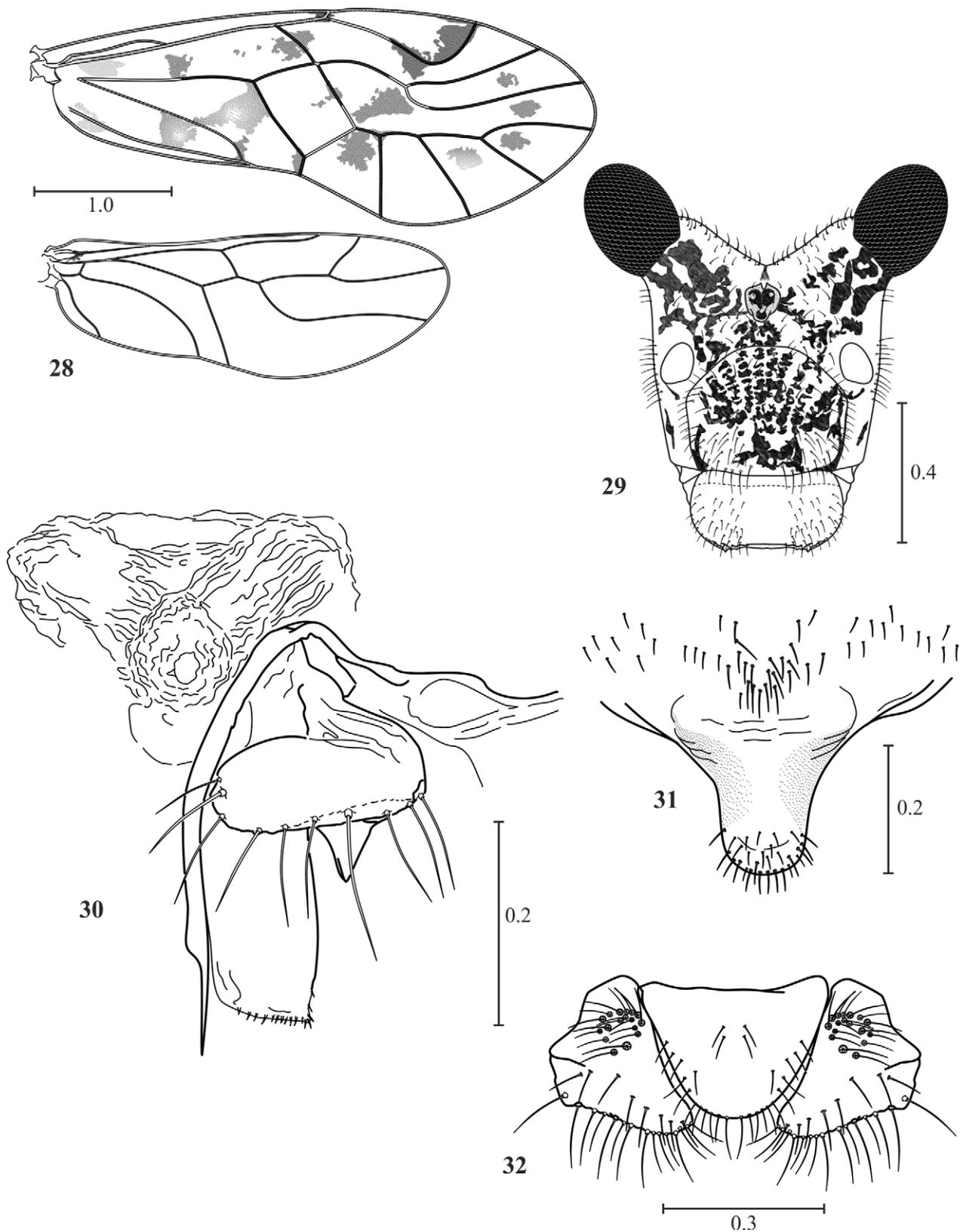
Male. Color (in 80% alcohol). Body creamy white, with dark brown areas as indicated below. Compound eyes black, ocelli hyaline, with ochre centripetal crescents, the two upper ones thicker than the lower one. Head vertex, frons and postclypeus pale brown yellowish, genae yellowish pale. An unpigmented area surrounding ocellar group, extending posteriorly towards epistomal sulcus, as illustrated (Fig. 24). Postclypeus with pale brown diagonal striae. Antennae: Scape, pedicel and flagellum pale brown; maxillary palpomeres pale brown. Prothoracic coxae creamy white; meso- and metathoracic coxae pale brown; tarsomeres brown. Tergal lobes of meso- and metathorax dark brown. Fore wings almost hyaline, veins brown, with brown spots on the basal part of the wing, as illustrated: small spot on Cu, small spot at confluence of Cu-Cu1a, a bigger spot between Cu2-A, toward distal ends, and a brown basal band between A and wing margin. Hind wings hyaline, veins pale brown. Abdomen creamy, with well defined brown bands on tergum, corresponding to each segment, these bands interrupted in the pleura of each side of the abdomen, to continue ventrally, but much less pigmented. Paraprocts and epiproct creamy white. Hypandrium ochre, phallosome brown.

Morphology. Head concave at vertex, compound eyes pedunculate, slightly longer, from vertex to the distal end of labrum than the width at the lower ends of the compound eyes; H/MxW: 1.20; sides in front view almost parallel; MxW/MnW: 1.45; compound eyes elongate; C: 270 microns; antennae with long setae, about one fifth the length of f1. Fore wing (Fig. 22): 2.55 times as long as the maximum width; pterostigma much wider posteriorly, L/W: 3.0; Rs-M fused for a short length; Rs slightly curved and shorter than R 2+3-R 4+5; cell M pentagonal; areola postica trapeziform. Hind wing Rs-M fused, Rs slightly longer than the fused length; R 4+5 1.9 times as long as Rs. Hypandrium symmetric (Fig. 25), with sides basally straight; distal half of each side slender, strongly sclerotized, acuminate. Central body formed by two close together, large, bean-shaped bodies, with two longitudinal, basal, acuminate projections; and a middle, tongue-shaped posterior projection, bearing an acuminate prong basally on each side, and a field of dense, short spines covering the whole surface. Phallosome (Fig. 27) rhomboid, apex with a long distally rounded lobe on one side; the other side with a pointed projection, partially covered by a membrane from the rounded lobe. Clunium distinctly extended posteriorly over the area of the paraprocts-epiproct. Paraprocts (Fig. 26) round, setose, sensory fields with 18–20 trichobothria in basal rosettes; mesal prong long, slender, curved at the end. Epiproct (Figs. 26, 27) approximately bottle shaped in dorsal view, broad at base, extended posteriorly to form a long, distally rounded projection.

Measurements. FW: 3825, HW: 2775, F: 775, T: 1625, t1: 688, t2: 145, ctt1: 31, Mx4: 205, f1: 840, f2: 690, f3: 580, IO: 460, D: 250, d: 305, IO/d: 1.51.



FIGURES 22–27. *Steleops machupicchuensis* n. sp. Male. 22. Fore wing and hind wing. 23. Side view of genitalia: Clunium, paraprocts-epiproct and hypandrium. 24. Front view of head. 25. Hypandrium. 26. Paraprocts and epiproct. 27. Phallosome. Scales in mm.



FIGURES 28–32. *Steleops machupicchuensis* n. sp. Female. 28. Fore wing and hind wing. 29. Front view of head. 30. Left gonapophyses and spermapore. 31. Subgenital plate. 32. Paraprocts and epiproct. Scales in mm.

Female. Color (in 80% alcohol). Same as the male. Antennae: Scape, pedicel and flagellum pale brown, maxillary palpomeres creamy white, apex of Mx4 pale brown. Fore wings with brown spots, as illustrated (Fig. 28), veins brown, except M+CuA and proximal part of Cu1a, small spot at confluence of Cu-Cu1a, a bigger spot

between Cu2-A, toward distal ends. Hind wings hyaline, veins creamy white, very clear or pale. Abdomen creamy white, with well defined brown bands on tergum. Epiproct, paraprocts and subgenital plate creamy white.

Morphology. Head pedunculate, slightly longer than its maximum width, at the level of the lower ends of the compound eyes; H/MxW: 1.19; somewhat triangular in front view, MxW/MnW: 1.32; compound eyes elongate; C: 285 microns; flagellum with short setae, length about the diameter of the pedicel. Fore wing 2.56 times longer than the maximum width, pterostigma much wider posteriorly, as in the males, L/W: 2.8; Rs-M fused for a short distance, shorter than in the males; Rs slightly curved and shorter than R 2+3-R 4+5; cell M and areola postica as in the males. Hind wing Rs-M fused, Rs more than twice as long as the fused length; veins R 4+5 1.7 times the length of Rs-M. Ovipositor valvulae (Fig. 30): V1 long, slender, acuminate; V2 long, broad, stout, more sclerotized proximally, distally almost straight; V3 about as half the length of V2, stout, with a row of macrosetae along posterior margin, and a short triangular projection; ninth sternum broad, membranous, trianguliform, spermapore circular, surrounded by a brown oval rim (Fig. 30). Subgenital plate broad, with a mesal field of setae; posterior projection short, bluntly rounded, distally broad and with short setae (Fig. 31). Paraprocts trianguliform, with two rows of setae, macrosetae abundant on lateral margin, sensory fields with 20–22 trichobothria in basal rosettes. Epiproct trapeziform, apex widely rounded, with setae on lateral margin and apex.

Measurements. FW: 4050, HW: 2925, F: 850, T: 1750, t1: 700, t2: 150, ctt1: 36, Mx4: 205, f1: 870, f2: 750, f3: 620, IO: 500, D: 280, d: 330, IO/d: 1.52

Specimens studied. Holotype male. **PERU.** Cuzco. Machu Picchu, 13°09'48"S: 72°32'49"W. 2288 m., 9.viii.2005. Paratypes: 3 females, 2 males, same data as the holotype. On rock wall of ancient temple, together with one female of *S. cuzcoensis* **n. sp.** All specimens collected by A. N. García Aldrete. CNIN.

Etymology. The specific name refers to the type locality.

Steleops manizalensis **n. sp.**

(Figs. 33–43)

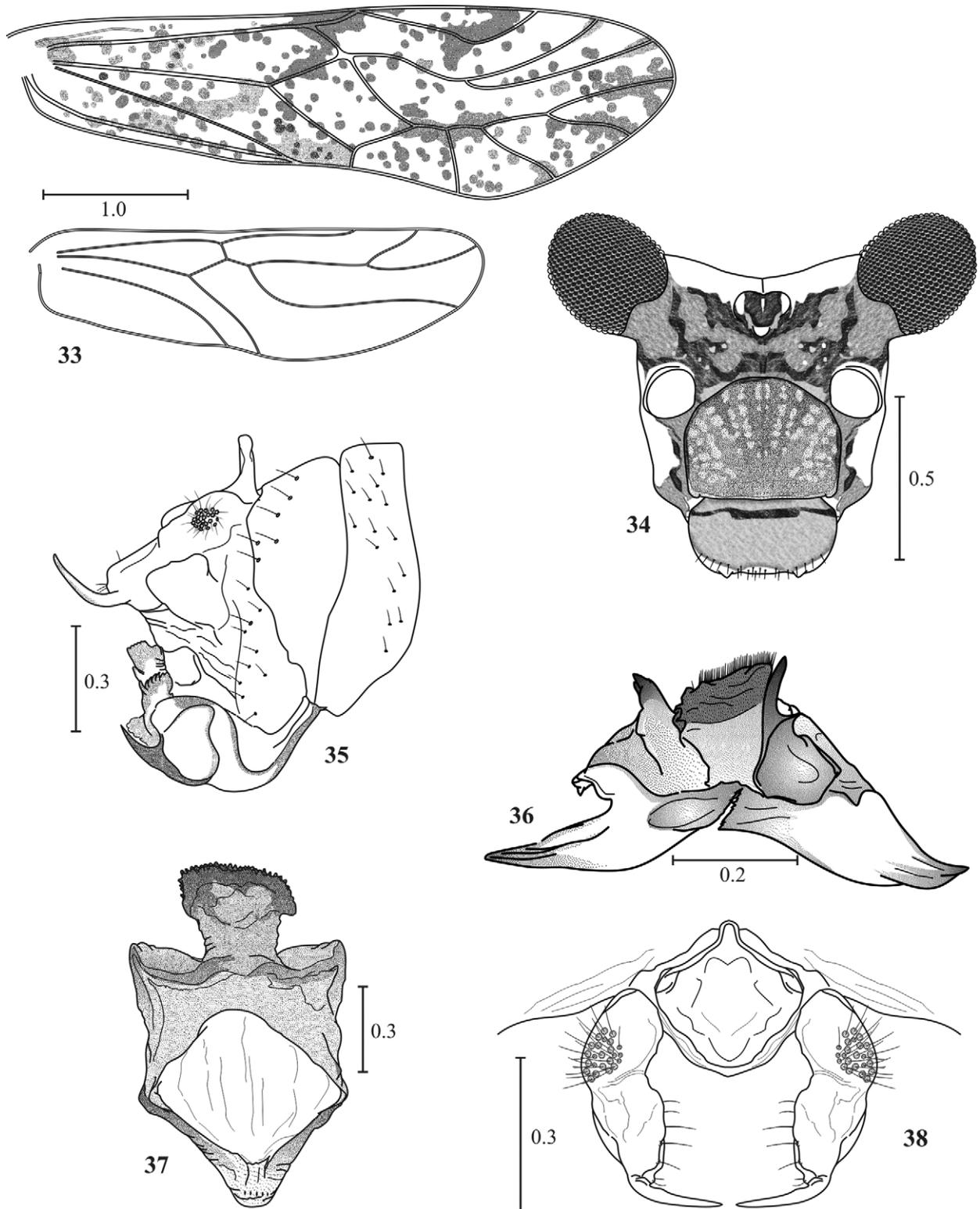
Male. Color (in 80% alcohol). Body creamy white, with dark areas as indicated below. Compound eyes greenish, on black background, ocelli hyaline, with dark brown centripetal crescents. Head pattern as illustrated (Fig. 34): one large, dark brown transversal band from each compound eye and upper part of the gena, extending to frons, postclypeus and labrum, paler on the clypeus; genae creamy white; vertex and occiput creamy white. Antennae: Scape pale brown, pedicel and flagellum creamy white; maxillary palpomeres 1–3 creamy, Mx4 pale brown, with dark brown apex. Prothoracic coxae creamy white, brown basally; meso and metathoracic coxae dark brown. Pro-, meso-, and metathoracic femora with dark basal spot. Trochanters and tibiae creamy white; tarsi brown. Tergal lobe of mesothorax creamy white with brown spot, metathorax dark brown. Abdomen creamy white, with brown bands on tergum, corresponding to each segment, ventrally less pigmented. Fore wings (Fig. 33) distinctly pigmented, with irregular grayish brown areas, dark brown diagonal band from anterior end of pterostigma to Cu2, joined by a few round spots to greater spot ending in the middle of A; pterostigma with a dark greyish band posteriorly, extending to cell R1; hind wings hyaline, veins brown, R 2+3, R 4+5 and M distally with brown spots, as illustrated (Fig. 33).

Morphology. Head concave at vertex, somewhat trapeziform in front view, compound eyes pedunculate, somewhat elongate, MxW/MnW: 1.31, H/MxW: 1.11; C: 200 microns. Fore wings elongate, slender, L/W: 3.48, costal margin approximately straight; pterostigma wider posteriorly, lp/wp: 5.00. Rs-M fused for a short length; Rs curved towards the pterostigma and shorter than R 2+3; cell M almost rectangular, with concave parallel sides; areola postica trapeziform, elongate. Hind wing Rs-M fused for a short distance, Rs three times as long as the fused length. Vein R 4+5 0.9 times the length of Rs. Hypandrium asymmetric (Fig. 36) with two well sclerotized apical processes; the right one more slender and acuminate than the left one; posterior margin with fine setae. Phallosome pentagonal (Fig. 37) with a stout, rugose, posterior process, bearing a field of small teeth along posterior border.

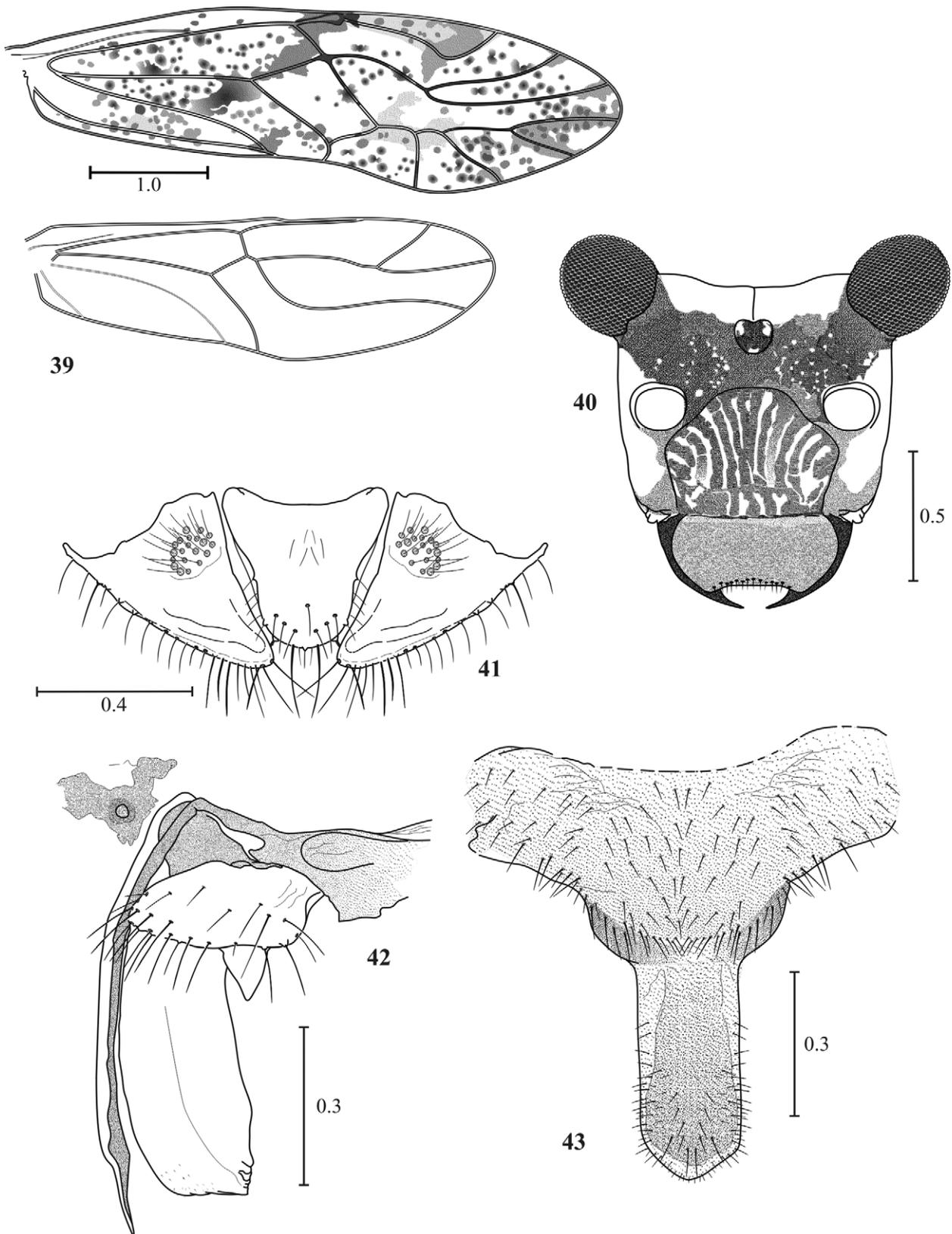
Clunium extended posteriorly over the area of the paraprocts-epiproct. Paraprocts (Fig. 38) elongate, with slender, acuminate mesal prong; sensory fields with 34–35 trichobothria in basal rosettes; epiproct (Fig. 38) broadly pear shaped, extended anteriorly to form a long, distally rounded projection.

Measurements. FW: 5575, HW: 4138, F: 1225, T: 2325, t1: 800, t2: 163, ctt1: 35, Mx4: 220, f1: 1450, f2: 1570, f3: 1310, f4: 1095, IO: 570, D: 370, d: 380, IO/d: 1.50.

Female. Color. Color patterns of head, thorax, wings and abdomen as in the males. Clunium, epiproct, paraproct, ovipositor valvulae and subgenital plate reddish brown.



FIGURES 33–38. *Steleops manizalensis* n. sp. Male. 33. Fore wing and hind wing. 34. Front view of head. 35. Side view of genitalia: Clunium-paraprocts-epiproct and hypandrium. 36. Hypandrium. 37. Phallosome. 38. Paraprocts and epiproct. Scales in mm.



FIGURES 39–43. *Steleops manizalensis* n. sp. Female. 39. Fore wing and hind wing. 40. Front view of head. 41. Paraprocts and epiproct. 42. Left gonapophyses and spermapore. 43. Subgenital plate. Scales in mm.

Morphology. Head concave at vertex, somewhat trapeziform in front view (Fig. 40); MxW/MnW: 1.22; C: 190 microns. Compound eyes elongate, pedunculate, as in the males. Fore wings elongate, L/W: 3.42, shorter than the males; costal margin strongly convex (Fig. 39); pterostigma wider posteriorly, lp/wp: 3.93. Rs-M fused for a

short distance, as in the males; Rs curved towards the pterostigma and shorter than R 2+3; cell M almost rectangular, with concave parallel sides; areola postica trapeziform, elongate. Hind wing Rs-M fused at a short distance, as in males; Rs six times as long as the fused length, R 4+5 twice as long as Rs. Subgenital plate (Fig. 43) broad, setose, with stout, long, columnar middle projection, rounded distally. Ninth sternum membranous, concave anteriorly; spermapore circular, surrounded by ochre, irregular rim (Fig. 42). Ovipositor valvulae (Fig. 42): V1 slender, elongate, distally pointed; V2 long, broad, stout, distally rounded; V3 short, relatively small, broad, with macrosetae on posterior margin; with posterior, triangular small lobe. Paraprocts triangular (Fig. 41) with setae on apex and lateral margin; sensory fields with 30 trichobothria in basal rosettes. Epiproct bell-shaped, broad at base, longer than wide, with setae on posterior margin.

Measurements. FW: 5175, HW: 3950, F: 1288, T: 2525, t1: 925, t2: 183, ctt1: 35, f1: 1450, f2: 1950, f3: 1680, f4: 1430, IO: 740, D: 360, d: 395, IO/d: 1.87.

Specimens studied. Holotype male. **COLOMBIA.** Caldas. Manizales, Río Blanco Reserve (N 05° 03' 56.8"N: 75° 26' 52.5"W. 2339 m. 15.i.2011. MUSENUV slide cod. 23538. Paratype female, same data as holotype. MUSENUV slide cod. 23539. R. González and A. N. García Aldrete. On palm trunk, together with two females of *S. rioblancoensis* n. sp., described below.

Etymology. The specific name refers to the type locality.

Steleops mendivili n. sp.

(Figs. 44–54)

Male. Color (in 80% alcohol). Head with genae creamy white; compound eyes black, ocelli hyaline, surrounded by a thick, ochre rim, the lower one separated from the two upper ones by thin, creamy, convergent lines. Head with dark brown pattern as illustrated (Fig. 46): two dark brown, diagonal bands from each compound eye, directed towards epistomal sulcus, forming a V, continuing to postclypeus and labrum; a creamy white area between the bands from the compound eyes and in vertex. Postclypeus with ochre, almost vertical striae. Genae creamy white. Antennae: Scape and pedicel cream, pedicel with small, apical, dark brown band; flagellum creamy white; maxillary palpomeres creamy white, Mx4 distally pale brown. Prothorax creamy white, meso- and metathorax dark brown, with some small creamy areas; prothoracic coxae and trochanter creamy white, prothoracic femur, tibia and tarsi pale brown, femur with a dark ring medially; meso and metathoracic coxae dark brown, with apex creamy white; meso- and metathoracic trochanter, femur, tibia and t1 creamy, distally brown, t2 brown; meso- and metathoracic femora with dark brown ring medially. Tergal lobes of meso- and metathorax dark brown. Abdomen creamy white, with irregular dark, subcuticular rings, less pigmented ventrally; genital segments dark brown; epiproct and paraprocts yellowish cream. Fore wings and hind wings hyaline, veins brown.

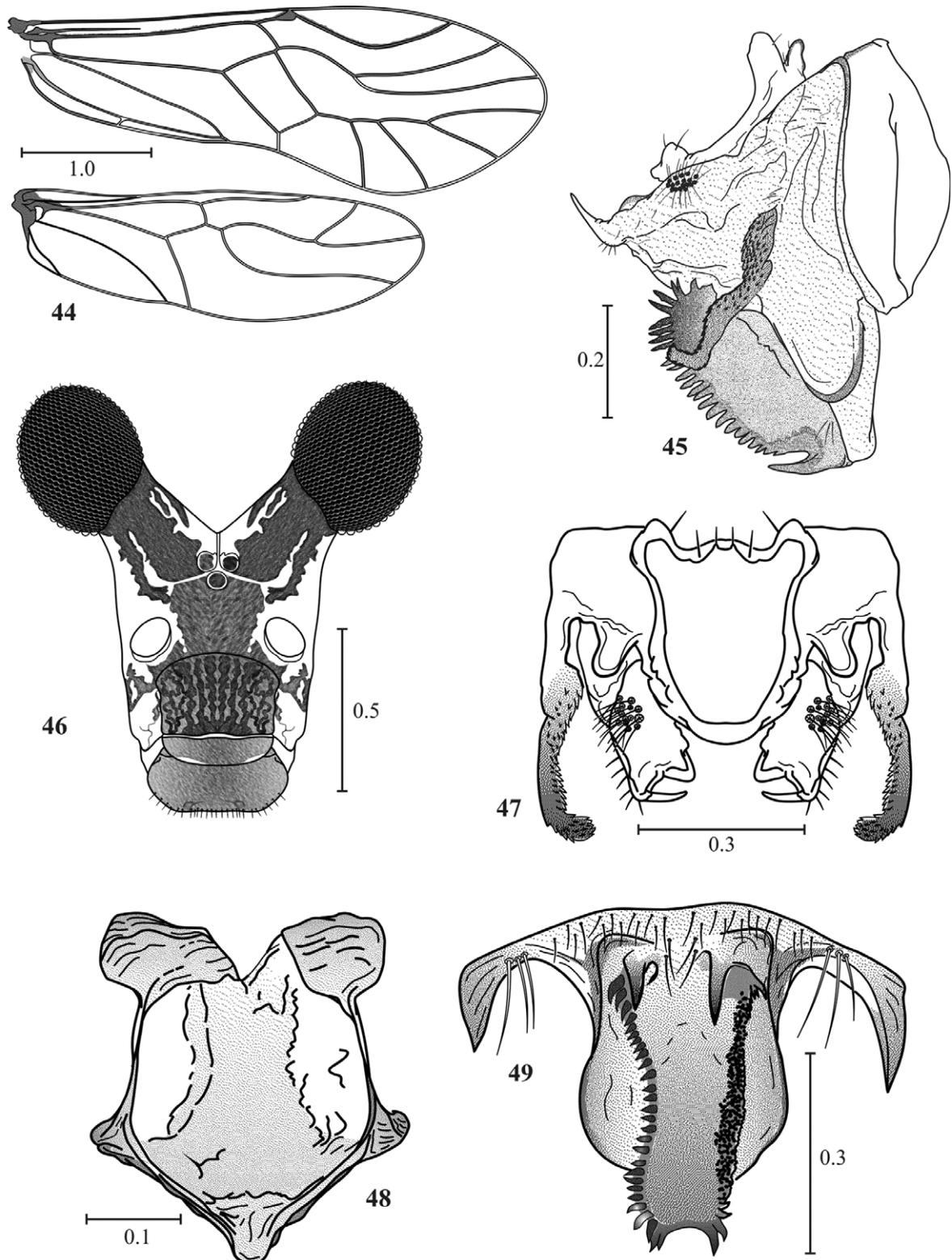
Morphology. Head deeply concave at vertex, compound eyes elongate, pedunculate (Fig. 46), sides almost parallel in front view, MxW/MnW: 1.42, H/MxW: 1.20; C: 425 microns. Fore wings (Fig. 44): L/W: 2.85; pterostigma widest in the middle, Rs-M joined by a short crossvein; Rs curved and shorter than R 2+3-R 4+5; cell M almost rectangular; areola postica trapeziform. Hind wing Rs-M fused, Rs about four times the length of the fused length; R 4+5 about three times as long as Rs. Hypandrium symmetric (Fig. 49); central strap strongly sclerotized, curved posteriorly (Fig. 45), with a row of denticles along the sides; two basal, short, acuminate projections. Phallosome broadly pentagonal (Fig. 48). Clunium with two long, strongly sclerotized projections, with small denticles, distally rounded, curved inwards (Figs. 45, 47).

Paraprocts (Fig. 47) round, setose, sensory fields with 20–22 trichobothria in basal rosettes; mesal prong short, slender, acuminate. Epiproct (Fig. 47) broad, scutiform, concave laterally, with antero-lateral corners round, slightly protruding.

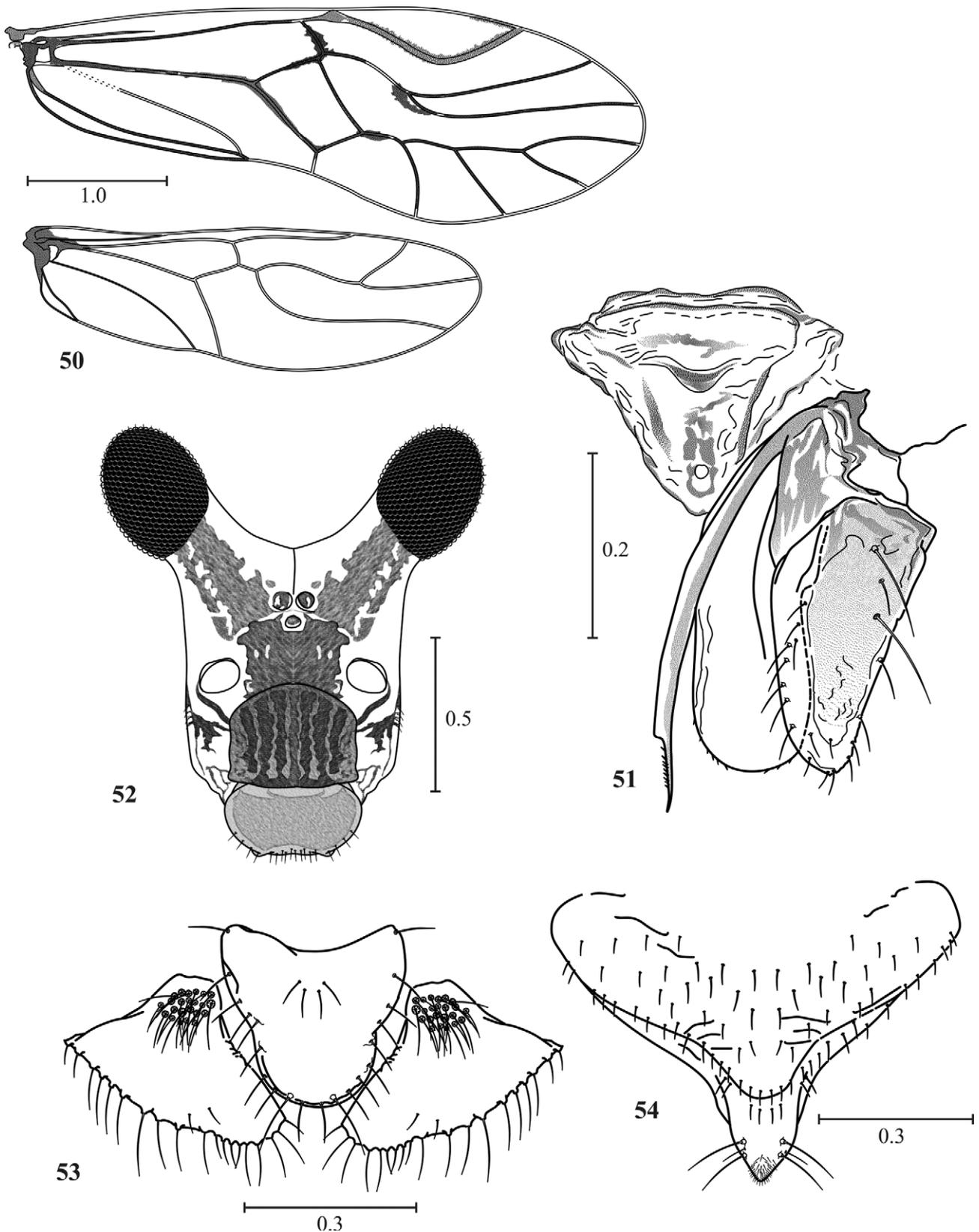
Measurements. FW: 4175, HW: 3075, F: 925, T: 1800, t1: 800, t2: 175, ctt1: 40, Mx4: 220, f1: 1140, f2: 1160, f3: 930, f4: 810, IO: 350, D: 460, d: 350, IO/d: 1.31.

Female. Color (in 80% alcohol). Body creamy white, with dark areas as indicated below. Compound eyes black, ocelli hyaline, as in the male. Head pattern as illustrated (Fig. 52): two ochre bands from each compound eye, directed towards epistomal sulcus, meeting a slender ochre band radiating on each side of ocellar group, then continuing to epistomal sulcus; a cream area between the bands from the compound eyes, and a large pigmented area between ocellar group and epistomal sulcus, as illustrated. Postclypeus with ochre diagonal striae. Antennae: Scape pale brown, pedicel and flagellum creamy white; maxillary palpomeres 1–3 white, Mx4 pale brown. Protho-

racic coxae pale brown; meso- and metathoracic coxae dark brown. Tergal lobes of meso- and metathorax dark brown. Abdomen creamy, with well defined subcuticular dark rings. Fore wings (Fig. 50) almost hyaline, Sc brown, R1 creamy-yellowish, bordering the pterostigma, nodus brown. M+CuA, CuA, Cu 1b, proximal part of Cu 1a, distal part of R 2+3 and basal part of M2 y M3 yellowish green; other veins brown. Brown spots on Rs, M and near nodulus (junction CuP-A), as illustrated. Hind wings hyaline, veins Rs, M, and CuA brown.



FIGURES 44–49. *Steleops mendivili* n. sp. Male. 44. Fore wing and hind wing. 45. Side view of genitalia: Clunium, paraprocts-epiproct and hypandrium. 46. Front view of head. 47. Paraprocts and epiproct. 48. Phallosome. 49. Hypandrium. Scales in mm.



FIGURES 50–54. *Steleops mendivili* n. sp. Female. 50. Fore wing and hind wing. 51. Left gonapophyses and spermapore. 52. Front view of head. 53. Paraprocts and epiproct. 54. Subgenital plate. Scales in mm.

Morphology. Head deeply concave at vertex, sides almost parallel, compound eyes oval, pedunculate (Fig. 52), H/MxW: 1.25; MxW/MnW: 1.30, C: 380 microns.

Fore wings (Fig. 50): L/W: 2.97; pterostigma as in the males, lp/wp: 3.46; Rs-M joined by a short crossvein; Rs curved and shorter than R 2+3; cell M almost rectangular; areola postica trapeziform. Hind wing as in the males; vein R 4+5 almost 3 times as long as Rs. Subgenital plate (Fig. 54) broad, triangular, setose, with posterior projection short, rounded, distally narrow and with two pairs of macrosetae and one pair of short setae: apex with a field of fine setae. Ninth sternum broad, membranous; spermapore circular, surrounded by a little pigmented, elongate area, spermapore sclerite broad, triangular (Fig. 51). Gonapophyses (Fig. 51): V1 long, slender, distally pointed, with a field of spines distally on inner margin; V2 almost as long as V1, stout, distally rounded, with scattered microsetae; V3 trianguliform, as long as V2, setose as illustrated. Paraprocts (Fig. 53) broadly triangular, with apex rounded, with macrosetae in outer margin; sensory fields with 24 trichobothria issuing from basal rosettes. Epiproct (Fig. 53), basally wide, almost trapeziform; posterior border widely rounded, with field of setae mesally, and a row of setae along postero-lateral border.

Measurements. FW: 4525, HW: 3300, F: 950, T: 1900, t1: 788, t2: 175, ctt1: 46, Mx4: 270, f1: 1120, f2: 1250, f3: 965, f4: 830, IO: 550, D: 330, d: 410, IO/d: 1.34.

Specimens studied. Holotype male. **COLOMBIA**, Valle del Cauca, Dagua, Km 30. (3° 34' 19,8" N: 76° 39' 46,5" W), 1344 m, 24.iv.2011. MUSENUV slide cod. 23540. J. Mendívil. Paratypes: 1 female, 13.iii.2011, MUSENUV slide cod. 23541, 3 females and 2 males, 29.iv. 2011, MUSENUV cod. 23542. J. Mendívil & R. González. On trunk and branches of *Psidium guajava*.

Etymology. This species is dedicated to its collector, Julián Alexander Mendívil, a student of the Biology Department, Universidad del Valle, Santiago de Cali, Colombia.

Steleops plenitudensis n. sp.

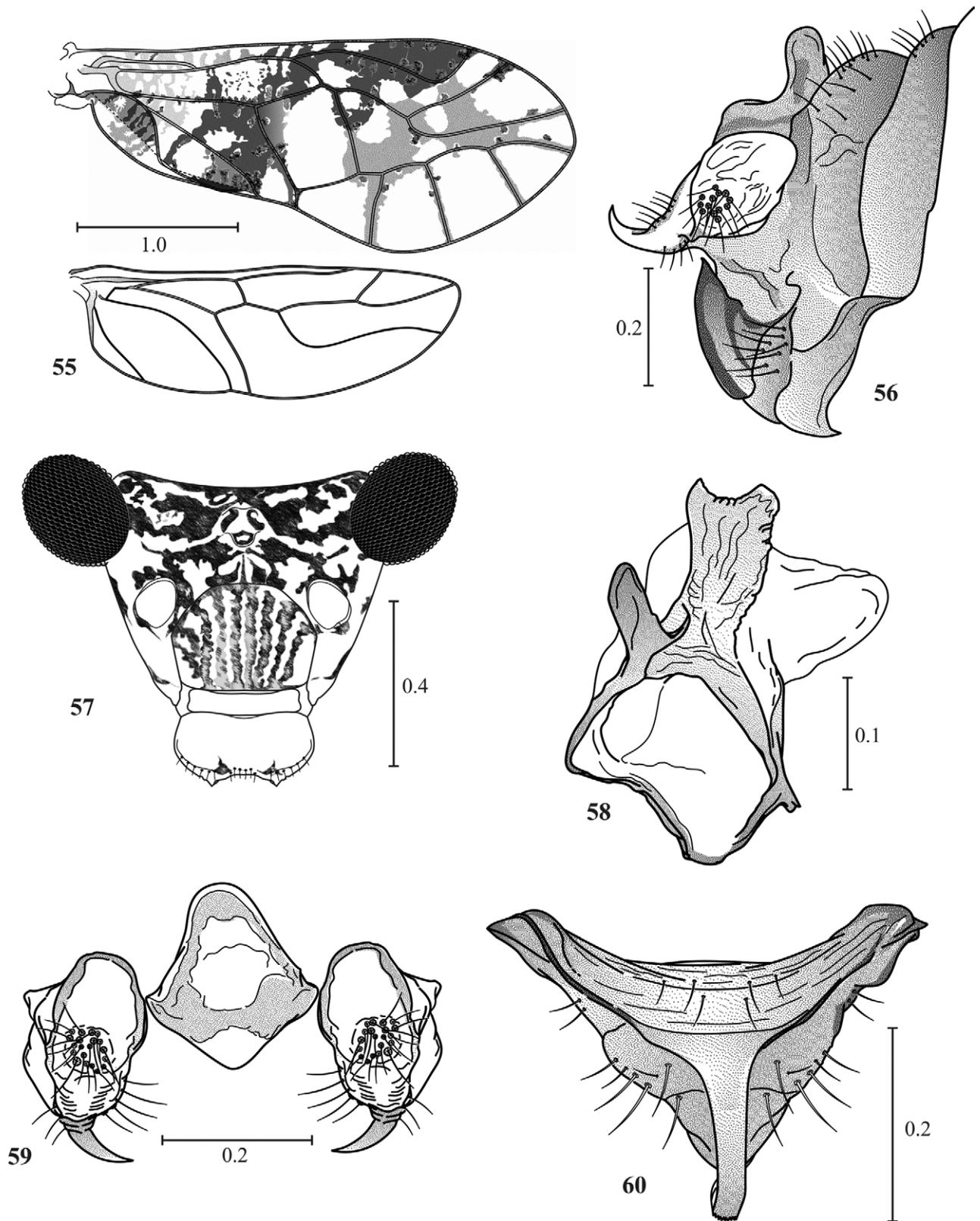
(Figs. 55–65)

Male. Color (in 80% alcohol). Body dark brown yellowish. Compound eyes green yellowish, on a black background; ocellar field cream-yellowish, the two upper ocelli hyaline, with thick centripetal crescents, the lower one almost inconspicuous in an ochre area. Head pattern as illustrated (Fig. 57): mostly creamy, vertex with dark brown areas at sides of ocellar field as illustrated. Postclypeus with pale brown, thick vertical striae. Labrum creamy with a large, central ochre spot. Antennae: Scape and pedicel dark brown, flagellomeres brown, with both ends white, f1 with a white area mesally; maxillary palpomeres: 1 brown ochre, 2–4 creamy white, with proximal end brown ochre, Mx4 with apical area brown ochre. Coxae proximally creamy white, with reddish brown spots, rest of the coxae dark brown; trochanters dark brown, femur proximally dark brown, with brown spots on a creamy ground; tibiae creamy, with distal, small, brown spots, tarsi pale brown. Tergal lobe of mesothorax brown, on a creamy ground; tergal lobes of metathorax dark brown. Fore wing pattern as illustrated (Fig. 55): a transverse brown band from anterior end of pterostigma to wing margin, anterior to Cu2-A, with hyaline lacunae on both sides of Cu2; a row of small lacunae on both sides of R; pterostigma almost totally pigmented, with a peripheral row of small yellowish-hyaline areas; cells R 1, R 2+3, R 4+5, M1, M2, M3, areola postica, and M almost totally hyaline. Hind wings pale brown, veins brown. Abdomen creamy, with brown spots, ventrally less pigmented; terminal abdominal segments, clunium, epiproct, paraproct and hypandrium reddish brown, epiproct, and paraprocts with posterior border yellowish.

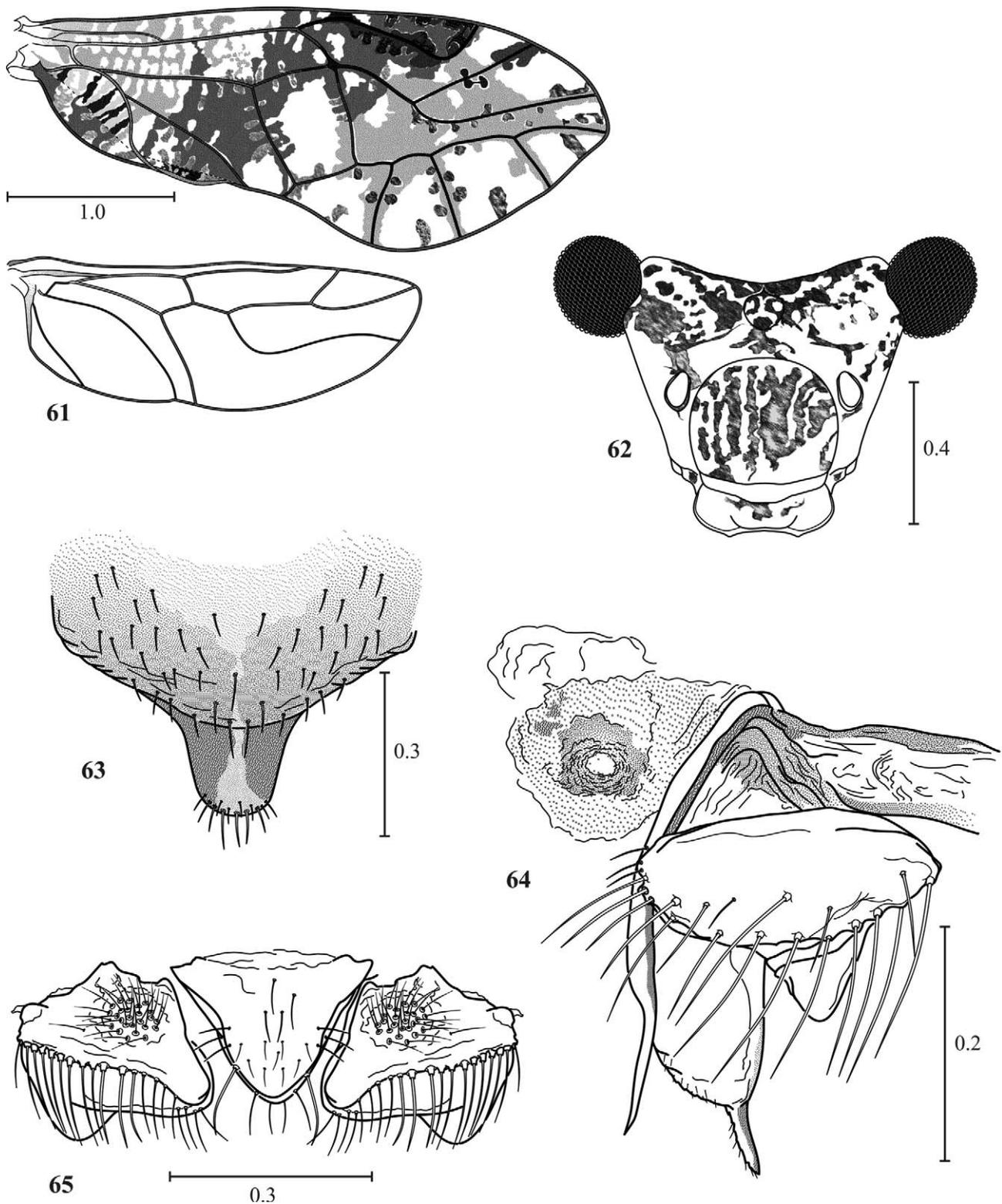
Morphology. Head slightly concave at vertex, short, trapeziform, MxW/MnW: 1.50, H/MxW: 1.0, compound eyes slightly elongate, little pedunculate (Fig. 57), C: 75 microns; antennae about as long as the hind wings, with abundant long setae. Fore wings (Fig. 55) 2.35 times as long as wide; pterostigma wider posteriorly, lp/wp: 2.4. Rs-M fused; Rs slightly curved and shorter than R 2+3, cell M pentagonal; areola postica trapeziform, elongate; vein A with large flap. Hind wing Rs-M fused, R 4+5 1.3 times as long as Rs.

Hypandrium (Fig. 60) symmetric, wide anteriorly, central body with a slender, curved band directed posteriorly. Phallosome (Fig. 58) rhomboid, with two distinct posterior processes, one short, stout, distally rounded, the other long, broad, with sides almost parallel, with posterior border concave. Clunium extended posteriorly over the area of the paraprocts-epiproct; paraprocts (Fig. 59) elongate, with stout, acuminate process, sensory fields with 32–34 trichobothria in basal rosettes. Epiproct (Fig. 56, 59) broad, anteriorly rounded, extended posteriorly to form a widely rounded projection.

Measurements. FW: 3175, HW: 2250, F: 575, T: 1200, t1: 438, t2: 125, ctt1: 22, Mx4: 135, f1: 380, f2: 230, f3: 260, f4: 210, IO: 220, D: 540, d: 210, IO/d: 2.45.



FIGURES 55–60. *Steleops plenitudensis* n. sp. Male. 55. Fore wing and Hind wing. 56. Side view of genitalia: Clunium, paraprocts-epiproct and hypandrium. 57. Front view of head. 58. Phallosome. 59. Paraprocts and epiproct. 60. Hypandrium. Scales in mm.



FIGURES 61–65. *Steleops plenitudensis* n. sp. Female. 61. Fore wing and Hind wing. 62. Front view of head. 63. Subgenital plate. 64. Left gonapophyses and spermapore. 65. Paraprocts and epiproct. Scales in mm.

Female. Color. Essentially as in males. Head pattern (Fig. 62) as in males. Fore wing (Fig. 61), with extensive hyaline lacunae on the pigmented areas, and small yellowish spots on the hyaline areas as illustrated. Hind wing (Fig. 61) pale brown as in males. Abdomen creamy, with brown spots, ventrally less pigmented; terminal abdominal segments, clunium, epiproct, paraproct and subgenital plate reddish brown, epiproct and paraprocts with posterior border yellowish.

Morphology. Head slightly concave at vertex, short, trapeziform, H/MxW: 0.9, MxW/MnW: 1.64. Compound eyes slightly elongate, little pedunculate (Fig. 62), C: 110 microns. Fore wing (Fig. 61): L/W: 2.41. Pterostigma wider posteriorly; Rs slightly curved and shorter than R 2+3; Rs-M fused for a short length; cell M, areola postica and A as in males. Hind wing Rs-M fused, Rs more than twice the fused length. R 4+5 as long as Rs. Subgenital plate (Fig. 63) broad, setose, posterior projection short, distally rounded, with a field of setae on posterior border. Ninth sternum broad, membranous, spermapore circular, surrounded by a wide, brown area (Fig. 64). Ovipositor valvulae (Fig. 64): V1 slender, elongate, distally pointed; V2 broad, with a slender, sharp, distal process; V3 broad, with posterior triangular lobe; macrosetae as illustrated.

Paraprocts broadly triangular (Fig. 65) with a row of setae on outer border, sensory fields with 20–21 trichobothria in basal rosettes. Epiproct (Fig. 65) triangular, broad at base, apex rounded, setae as illustrated.

Measurements. FW: 3500, HW: 2500, F: 625, T: 1250, t1: 425, t2: 130, ctt1: 23, Mx4: 140, f1: 290, f2: 185, f3: 183, IO: 690, D: 240, d: 268, IO/d: 2.57.

Specimens studied. Holotype male. **COLOMBIA**, Valle del Cauca, Dagua, Km 30, Parcelación Plenitud, 03°22'19.8"N: 76°39'46.5"W, 1344 m., 29.iv.2011, MUSENUV slide cod. 23543. J. Mendivil. Paratypes: 3 females, 1 male, same data as holotype, 13.iii.2011, slide MUSENUV cod. 23544. J. Mendivil. 1 female, Valle del Cauca, Santiago de Cali, Km 11, 03°28'39.8"N: 76°35'56.68"W, 1528 m., 24.iv.2011. MUSENUV cod. 23545. R. González and N. Carrejo. 1 female, Tuluá, Mateaguagua, 4° 01' 38.2" N: 76° 09' 59.9" W, 1128m 21.v.2011. MUSENUV cod. 23546. J. Mendivil.

Etymology. The specific name refers to the type locality, Parcelación Plenitud.

***Steleops rioblancoensis* n. sp. (female)**

(Figs. 66–70)

Female. Color (in 80% alcohol). Body creamy, with small ochre areas on thorax and abdomen. Compound eyes green yellowish, ocelli hyaline, with ochre centripetal crescents, the two upper ones thicker than the lower one. Head pattern (Fig. 67) as illustrated: one ochre band from each compound eye, directed towards epistomal sulcus, then continuing to postclypeus, anteclypeus and central part of labrum. Postclypeus with thick ochre diagonal striae. Antennae: Scape and pedicel creamy white, flagellum pale brown; maxillary palpomeres creamy white, Mx4 pale brown distally. Coxae creamy white, meso- and metathoracic coxae basally with small pale brown spot. Tergal lobes of meso- and metathorax dark brown. Fore wings (Fig. 66) with well defined brown transverse band, from area anterior to pterostigma to apical third of vein A; distal ends of veins R 2+3, R4+5, M1-M3, and cells R1, R 2+3, R 4+5, M1 and M2 with brown spots, areola postica with a large brown spot extended to cell M3; pterostigma with a dark brown band along posterior end, other brown spots and clear windows as illustrated. Hind wings (Fig. 66) hyaline, veins pale brown.

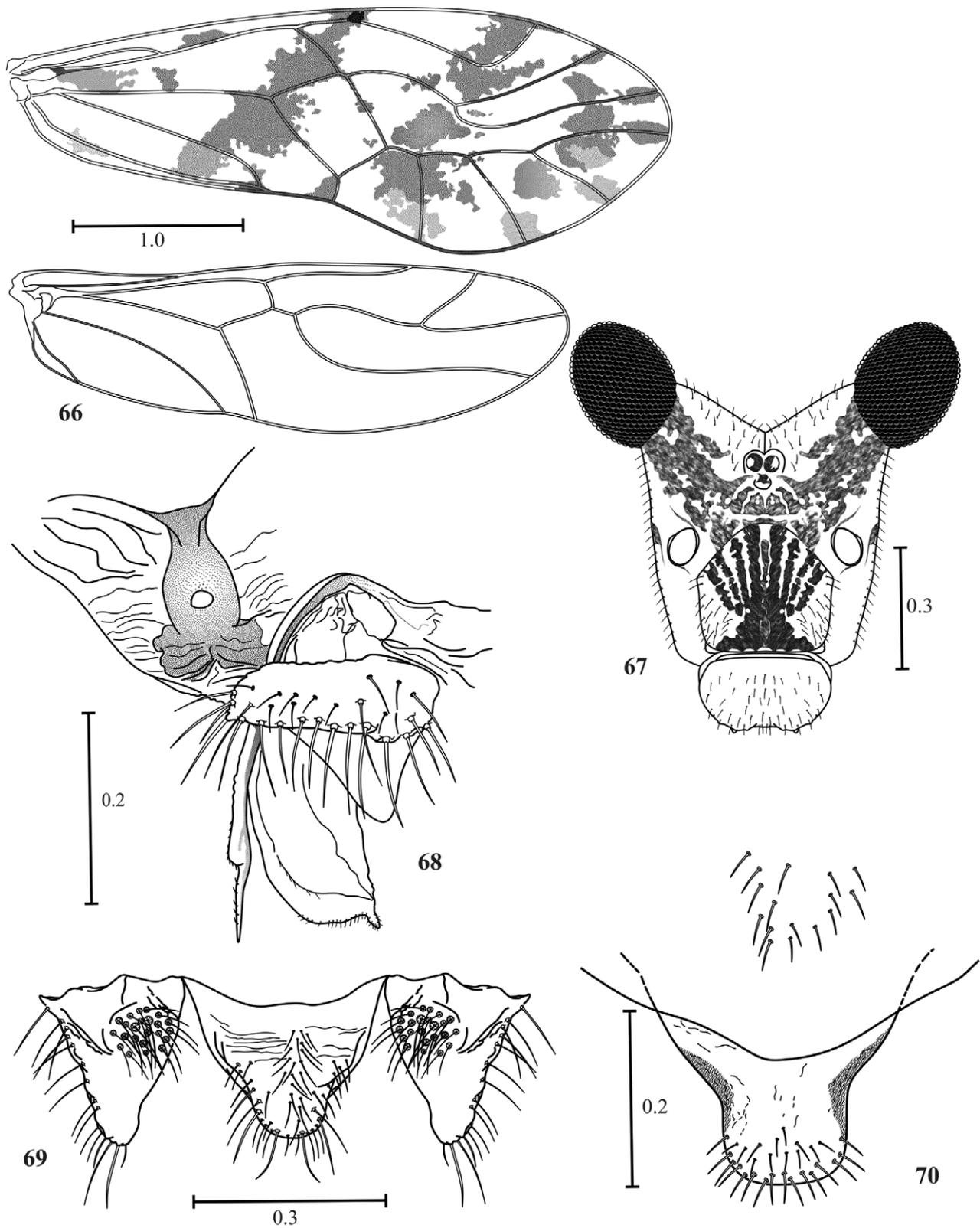
Morphology. Head concave at vertex, somewhat trapeziform in front view, MxW/MnW: 1.24; compound eyes elongate, pedunculate, H/MxW: 1.36, C: 290 microns. Antennal flagellomeres with short, sparse setae. Fore wing: L/W: 2.71. Pterostigma much wider posteriorly, distally rounded, lp/wp: 3.22; Rs curved and shorter than R 2+3-R 4+5; Rs-M fused for a short length; cell M pentagonal; areola postica trapeziform. Hind wing: Rs-M fused, Rs 4.5 times as long the fused length; vein R4+5 about as long as Rs. Subgenital plate (Fig. 70) broad, with mesal setal field; posterior projection short, distally broad, apex blunt, with field of short setae. Ninth sternum broad, membranous; spermapore circular, surrounded by a pigmented, elongate area (Fig. 68). Gonapophyses (Fig. 68): V1 long, slender, distally pointed, inner margin distally with a field of short spines; V2 long, stout, distally rounded, with a field of microsetae, apex of inner border slightly projected to form a slender, pointed extension; V3 oval, with wide triangular projection, a row of macrosetae along posterior border, and other setae on surface, as illustrated. Paraprocts (Fig. 69) broadly triangular, with setae as illustrated, sensory fields with 27 trichobothria issuing from basal rosettes. Epiproct (Fig. 68) basally wide, almost trapeziform, widely rounded posteriorly, with field of setae mesally and a row of setae along postero-lateral border.

Measurements. FW: 3900, HW: 2850, F: 897, T: 1765, t1: 735, t2: 172, ctt1: 31, Mx4: 200, f1: 1180, f2: 1190, IO: 445, D: 260, d: 340, IO/d: 1.31

Specimens studied. Holotype female. **COLOMBIA**. Caldas. Manizales. Río Blanco Reserve. 05°03'56.8"N: 75°26'52.5"W, 2339 m., 16.i.2011. On palm trunk. R. González and A. N. Garcia Aldrete. Slide MUSENUV cod.

23547. Paratypes: 1 female, same data as holotype, MUSENUV cod. 23548, taken together with specimens of *S. manizalensis* n. sp., described above.

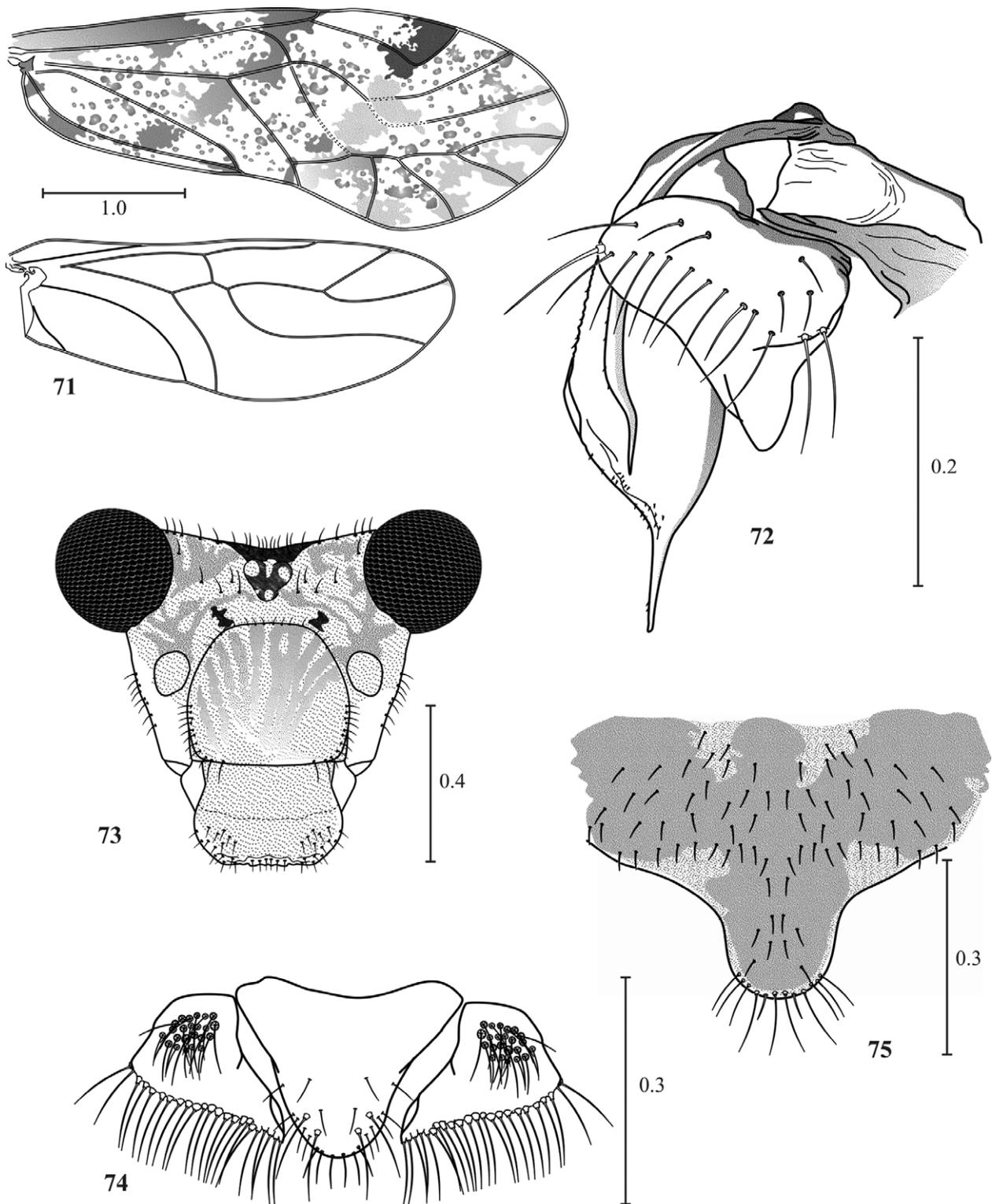
Etymology. The specific name refers to the type locality.



FIGURES 66–70. *Steleops rioblancoensis* n. sp. Female. 66. Fore wing and hind wing. 67. Front view of head. 68. Left gonapophyses and spermapore. 69. Paraprocts and epiproct. 70. Subgenital plate. Scales in mm.

Steleops thorntoni n. sp. (Female)

(Figs. 71–75)



FIGURES 71–75. *Steleops thorntoni* n. sp. Female. 71. Fore wing and hind wing. 72. Left gonapophyses. 73. Front view of head. 74. Paraprocts and epiproct. 75. Subgenital plate. Scales in mm.

Color (in 80% alcohol). Body pale brown. Compound eyes black, ocelli hyaline, with ochre centripetal crescents. Head pattern (Fig. 73) with two ochre diagonal bands from each compound eye, enclosing the antennal fossae, forming a Y on the lower postclypeus, anteclypeus and labrum. Postclypeus with brown diagonal striae; labrum

brown. Antennae: scape brown, pedicel pale brown; flagellum creamy white; maxillary palpomeres 1–3 creamy white, Mx4 pale brown distally. Prothoracic coxae creamy, pale brown proximally; meso- and metathoracic coxae dark brown; trochanter, femora and tibia creamy, tarsi brown. Tergal lobes and pleura of meso- and metathorax dark brown. Abdomen creamy white, with brown spots on tergum of each segment, pleura creamy, epiproct and paraprocts creamy white. Fore wings maculate as illustrated (Fig. 71), with a little defined brown transverse band, from proximal end of pterostigma to vein A, interrupted in CuP. Pterostigma with a dark brown band along posterior end, continuing on cell R1. Hind wings hyaline (Fig. 71).

Morphology. Head concave at vertex, almost as long as its maximum width, H/MxW: 1.16, trapeziform in front view, MxW/MnW: 1.32; compound eyes little pedunculate (Fig. 73), C: 95 microns. Antennal flagellomeres with short, sparse setae. Fore wing: L/W: 2.63. Pterostigma much wider posteriorly, lp/wp: 3.04; Rs slightly curved and shorter than R 2+3-R 4+5; cell M rectangular, areola postica trapeziform. Hind wing Rs-M fused, Rs about five times as long as the fused length; R 4+5 1.3 times as long as Rs. Subgenital plate (Fig. 75) broad, setose, with median projection short, posterior border rounded, with a row of setae as illustrated. Ninth sternum broad, membranous; spermapore circular, surrounded by a small, somewhat elongated pigmented area. Gonapophyses (Fig. 72): V1 long, slender, distally pointed, not extending beyond V2, distal inner margin with a field of short spines; V2 long, stout, distally rounded, with scattered microsetae distally, postero-lateral corner extended, forming a slender, pointed process; V3 broadly triangular, with a row of macrosetae and other setae as illustrated. Paraprocts triangular (Fig. 74), with a dense row of macrosetae along outer margin, sensory fields with 28 trichobothria issuing from basal rosettes. Epiproct (Fig. 74) wide anteriorly, the sides converging posteriorly to widely round posterior border, setal field on distal half, as illustrated.

Measurements. FW: 4075, HW: 3375, F: 788, T: 1675, t1: 575, t2: 138, ctt1: 24, Mx4: 200, f1: 630, f2: 480, f3: 400, f4: 180, IO: 490, D: 320, d: 320, IO/d: 1.53.

Specimens studied. Holotype female. **MEXICO.** Jalisco, 69 km SW Guadalajara, rd. to Autlán, 1700m., 15.viii.1987, I. W. B. Thornton. Beating branches of *Quercus* sp. CNIN. Paratypes: 2 females, same data as holotype, CNIN.

Etymology. This species is dedicated to the late Ian W. B. Thornton, a distinguished British-Australian psocopterologist, as a small tribute to his memory (see García Aldrete et al. 2004); he collected the specimens here studied during a field trip in western Mexico with ANGA.

Comments

The species described here increase to 24 the number currently recognised in *Steleops*. Two of these are nearctic [*S. elegans* (Banks), and *S. lichenatus* (Walsh)] but the rest are neotropical. In eight species both sexes are known [*S. buitrerensis* González, García & Carrejo, *S. elegans* (Banks), *S. lichenatus* (Walsh), *S. machupicchuensis* n. sp., *L. manizalensis* n. sp., *S. mendivili* n. sp., *S. monticola* García Aldrete, and *S. plenitudensis* n. sp.]. Three species are known only from males (*S. albertoneto* n. sp., *S. barrerai* García Aldrete, and *S. wygodzinskyi* Mockford), and 13 species are known only from females [*S. cashiriariensis* n. sp., *S. chamelaensis* n. sp., *S. conipata* García Aldrete & Menchaca, *S. cuzcoensis* n. sp., *S. maculata* New, *S. ortegae* García Aldrete, *S. pedunculata* (Enderlein), *S. pulcher* New, *S. punctipennis* (Enderlein), *S. purus* Mockford, *S. rioblancoensis* n. sp., *S. tambopata* García Aldrete, and *S. thornstoni* n. sp.].

S. albertoneto and *S. machupicchuensis* constitute a sister-species pair, the males showing a similar head pattern, hypandrium, phallosome, paraprocts and epiproct, and differing in morphological details of those structures (compare Figs 3–7 with Figs 22–27). It is predictable that the female of the former be similar to the female of the latter, e.g. fore wing with a pigmented pattern and genitalia built on the same plan.

S. manizalensis shares some genitalic character states with *S. buitrerensis* González, García & Carrejo (male epiproct projected posteriorly, male paraprocts with similar prongs, female subgenital plate with long, stout median process), but it shows an autapomorphic fore wing pattern, clunium and phallosome.

The closest species to *S. mendivili* appears to be *S. wygodzinskyi* Mockford, but the former is autapomorphic in having two peculiar, long clunial projections over the area of the paraprocts-epiproct.

S. plenitudensis belongs in a group characterized by having a lichenoid fore wing pigmentation pattern, e.g., fore wing with extensive pigmented areas, these with many small hyaline lacunae, and the membrane showing large hyaline areas, with small, pigmented spots. This assemblage of species includes *S. barrerai* García Aldrete, *S.*

lichenatus (Banks), *S. ortegae* García Aldrete, and *S. tambopata* García Aldrete, but the affinities of the included species remain uncertain.

S. cashiriariensis appears to be close to *S. pulcher* New; they share a somewhat similar fore wing pigmentation pattern, also presence of a distinct, sclerotized triangular band on the subgenital plate, and lack of a triangular projection on V3; the compound eyes are only slightly pedunculate in both species.

S. chamelaensis and *S. thorntoni*, both from western Mexico (Jalisco), seem to be close to each other; the subgenital plates, gonapophyses, epiproct and paraprocts are built on the same plan, but the fore wing pigmentation patterns are distinct, and in the former the head is almost straight at the vertex, and it is only a little concave at the vertex in the latter species. The ninth sternum in *S. thorntoni* is more pigmented and well defined as an oval-circular area, with a spermapore clearly defined; in *S. chamelaensis* the ninth sternum is more membranous, with the spermapore not well defined. Besides, *S. thorntoni* is distinctly bigger than *S. chamelaensis*.

S. cuzcoensis is close to *S. machupicchuensis* (compare Figs 17–21 with Figs 28–32); both species were found together at the same locality and the same date; the fore wing pigmentation pattern, the subgenital plate, gonapophyses, paraprocts and epiproct are similar in both species, but the IX sternum is quite different, V2 in the latter lacks a distal projection, and the head is decidedly more concave in the vertex in the former; also, the head pigmentation pattern is different in the two species. It is likely that the males of these two species will be similar to each other.

S. rioblancoensis seems also close to *S. machupicchuensis*; they share a somewhat similar fore wing and head pigmentation pattern, and the subgenital plate, gonapophyses and paraprocts-epiproct are similar in the two species, but they differ in details of the fore wing pattern, genitalia, and mostly in the IX sternum.

The present scenario in *Steleops* calls for a more detailed study of the affinities of the included species, but we have become aware recently of several undescribed species in the INPA collection, in Manaus, Brazil, and from Bolivia, so we prefer to study first those species before attempting a cladistic analysis of the species in *Steleops*.

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