



## Research article

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# Taxonomic revision of the Neotropical genus *Ectophasiopsis* Townsend, 1915 (Diptera: Tachinidae: Phasiinae)

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**Abstract.** The monotypic Neotropical genus *Ectophasiopsis* Townsend, 1915 (Diptera, Tachinidae, Phasiinae) is revised, with the addition of two species (one new and another transferred species), and a redefinition of the genus, accompanied by photographs and drawings of specimens and male terminalia. A new combination is proposed, *Ectophasiopsis gradata* (Wiedemann, 1830) comb. nov., previously *Trichopoda* Berthold, 1827, and a new species *Ectophasiopsis ypiranga* sp. nov. is described. A key for the genera of the “*Trichopoda typica*” subgroup *sensu* Sabrosky (1950), as well as a key to species of *Ectophasiopsis* is given. The geographical range of the genus and the host list are updated.

**Keywords.** Trichopodini, taxonomy, Neotropical, parasitoid.

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## Introduction

The genus *Ectophasiopsis* was erected by Townsend (1915) to include a single new species from Chile, *E. chilensis*. Townsend commented that the genus was closely related to *Trichopodopsis* Townsend, 1913, now a synonym of *Trichopoda* Berthold, 1827. He also suggested that *Trichopoda arcuata* Bigot, 1876 could be a synonym of *E. chilensis*. Aldrich (1934) formally proposed that synonymy and pointed out the incorrect synonymy between *T. arcuata* and *T. pennipes* Fabricius, 1781, made by Brauer (1898), probably because the latter may not have seen the type (he mentioned “Plata” as the type-locality). Townsend (1936) did not consider Aldrich’s (1934) synonymy and kept *E. chilensis* as a valid name and, moreover, placed *Ectophasiopsis* in the tribe Phasiini. Then, Townsend (1938) noted that the name *T. arcuata sensu* Aldrich (1934) could represent at least two species. Sabrosky (1950), after examining the male and female terminalia, stated that *Ectophasiopsis* was closer to Trichopodini than Phasiini. Dupuis (1963) kept *Ectophasiopsis* in the subtribe Trichopodina in his tribe Ectophasiini but as *incertae sedis*. In the Neotropical Catalogue, Guimarães (1971) placed the genus in Phasiini, following Townsend (1936). Currently, the genus *Ectophasiopsis* is monotypic with only *E. arcuata* (Bigot, 1876).

The objective of this paper is to revise the genus *Ectophasiopsis*, to provide an identification key for the species and for the genera of the “Trichopoda typica” subgroup (*sensu* Sabrosky 1950) and to update the genus range and host list. In the revision, a new species is described from Brazil (*E. ypiranga* sp. nov.) and *T. gradata* Wiedemann, 1830 is transferred to *Ectophasiopsis*. The genus is here redefined to accommodate all three species.

## Material and methods

The examined material is deposited at the following institutions:

CAS	=	California Academy of Sciences, San Francisco, USA
CEIOC	=	Coleção Entomológica do Instituto Oswaldo Cruz, Rio de Janeiro, Brazil
DZUP	=	Coleção Entomológica Pe. Jesus Santiago Moure Curitiba, Brazil
INTA	=	Instituto Nacional de Tecnología Agropecuária, Castelar, Argentina
MNHN	=	Muséum national d’Histoire naturelle, Paris, France
MZSP	=	Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil
NHMW	=	Naturhistorisches Museum Wien, Vienna, Austria
USNM	=	National Museum of Natural History, Washington D.C., USA
ZMHB	=	Museum für Naturkunde, Berlin, Germany

Additional material sent by researchers from agricultural research centers was also examined:

Dr. Ricardo Antonio Panizzi (EMBRAPA –Trigo)  
 Dr. Nelson Perito (APTA Ribeirão Preto)  
 Dr. Enrique Castiglioni (EEMAC, Paysandú, Uruguay)  
 Dr. Jerson Guedes (UFSM)  
 All this material was deposited at MZSP.

Males and females of *Trichopoda gradata* comb. nov. and *Ectophasiopsis ypiranga* sp. nov. were dissected and illustrated. Only males of *E. arcuata* were dissected and illustrated due the availability of material. The holotype of *T. gradata* was examined by photo (sent by Dr. Peter Sehnal, NHMW), and the syntypes of *E. arcuata* were examined. The description of *T. gradata* comb. nov. was made based on a male identified by Wiedemann.

Specimens were photographed using a stereo microscope Leica MZ16 with an attached digital camera Leica model DFC420, using the software Leica Application Suite (LAS) Version 4.1.0 Build 1264. The images were subsequently stacked (merging different focal planes into one image) with the software Helicon Focus 5.3.14 (Kozub *et al.* 2000–2013) and later edited in Adobe Photoshop CS2. Measurements were also made with the LAS software. For each species, at least five males and five females were measured (depending on the availability of material); measurements provided in the descriptions were taken from the holotype and measurements of paratypes and / or additional specimens (non-types) are presented in the “Variation” sections. Illustrations were made using a stereo microscope Leica MZ16 with attached camera lucida, and later edited in Adobe Illustrator CS2. Final plates were prepared in Adobe Illustrator CS2.

For the study of male and female terminalia, specimens were first placed in a moist chamber for 48 to 72 hours, then the terminalia were dissected, placed into 10% solution of KOH and heated for 5 minutes. After that, to neutralize the KOH, terminalia were put into 1% solution of acid alcohol for 15 seconds, and then washed and cleaned cautiously with water and a series of ethanol solutions of increasing concentrations. After examination, terminalia were stored in plastic microvials with glycerin and attached to the corresponding specimens.

Terminology of morphology follows Cumming & Wood (2009), and for antenna Stuckenberg (1999).

Individuals from the same locality and collector, but from different dates, are marked “ditto” and then the date is given for the set of specimens. Original labels are quoted between square brackets. The examined material is listed geographically from north to south for countries and states, and in alphabetical order for municipalities and localities.

Geographical data are based on the original labels and then georeferenced from Google Maps (when not available from labels). Distribution maps were prepared and edited in the software QGIS v.2.8 Valmiera (QGIS Development Team 2014).

## Results

Class Hexapoda Blanchard, 1816  
Order Diptera Linnaeus, 1758  
Family Tachinidae Bigot, 1853  
Genus *Ectophasiopsis* Townsend, 1915

### Systematic placement of *Ectophasiopsis*

In recent classifications, the tribe Trichopodini is usually placed within Gymnosomatini, considering some shared characteristics of the male terminalia (Tschorsnig 1985). In the last morphological phylogeny of the family (Cerretti *et al.* 2014), those two tribes were grouped together in Gymnosomatini, with one apomorphy of the male terminalia (sperm duct developed into three well sclerotized ducts). In this morphological phylogeny, a single genus of Trichopodini was included (*Trichopoda*). The genus *Ectophasiopsis* shares most of the male terminalia characteristics with *Trichopoda*, including the sperm duct that is simple, the other two tubes are greatly reduced, to almost invisible, as Tschorsnig (1985) has already mentioned. More inclusive systematic studies, with wider sampling, are necessary to clarify these relationships.

The former tribe Trichopodini was divided by Sabrosky (1950) into three generic groups: *Acaulona*-complex (7 genera), *Trichopoda*-complex (12 genera) and *Xanthomelanodes*-complex (2 genera). The *Xanthomelanodes*-complex was grouped by the presence of basal scutellar bristles widely divergent and much longer than the apical bristles; the *Trichopoda*-complex was grouped by the presence of a dorsal row of feather-like bristles on the posterior tibia; and the *Acaulona*-complex was grouped by the absence of those bristles.

Sabrosky also split the *Trichopoda*-complex into two subgroups: “*Trichopoda typica*” and “*Trichopoda atypica*”. The subgroup “*typica*” included the genera *Eutrichopoda* Townsend, 1908, *Trichopoda* and *Polistomyia* (Townsend, 1908), the latter a junior synonym of *Trichopoda*; the subgroup “*atypica*” included the remaining genera. The “*typica*” subgroup is differentiated by a postcoxal area (between the hind coxae and first abdominal sternite) membranous and sunken or shriveled, and the front somewhat narrowed at vertex, the sides parallel on the basal half then suddenly diverging. The “*atypica*” subgroup have the postcoxal area closed (sclerotized) and the front different from that described for the other group (Sabrosky 1950).

Nowadays the valid genera in the “*Trichopoda typica*” subgroup *sensu* Sabrosky (1950) are *Eutrichopoda* and *Trichopoda*, and now we also include *Ectophasiopsis* in this group. Although a taxonomic revision of *Eutrichopoda* and *Trichopoda* was not the aim of the present study, those genera are included in the identification keys for that subgroup. Revisions of these genera are being made by the authors.

### Key to genera of the subgroup “*Trichopoda typica*”

1. Frontal vitta at vertex level usually wider than at lunula level, often yellow to light-tawny anteriorly. Wing with hyaline portion inside cell dm and forming a characteristic sinuosity in the hyaline border. Dm-cu crossvein almost straight or slightly curved. Claws dark-tawny with darker tips ..... *Ectophasiopsis* Townsend, 1915
  - Frontal vitta at lunula level usually wider than at vertex level (or subequal), tawny to dark-tawny, at most with some lighter spots. Hyaline portion of wing outside cell dm (if inside, only slightly, not forming sinuosity). Dm-cu crossvein usually curved, sometimes even sinuous. Claws yellow to pale-tawny with black tips ..... 2
2. Male: cerci weakly concave before posteromedian process, and posterolateral lobes absent or weakly developed. Postgonite distally very broad, in posterior view. Female: cerci thick, posteriorly flattened, with the flattened surfaces covered with rows of small setulae (for male and female terminalia, please see figures in Dios & Nihei 2016) ..... *Eutrichopoda* Townsend, 1908
  - Male: cerci usually concave before posteromedian process, and posterolateral lobes developed or moderately developed. Postgonite distally moderately broadened, in posterior view. Female: cerci plate-like (sub-genus *Galactomyia* - resembling *Ectophasiopsis*, Fig. 3A–B), or cerci widely separated basally with converging apical portions elongate and slender, forceps-like (subgenus *Trichopoda* – see image of *Polistomyia* in Sabrosky 1950) ..... *Trichopoda* Berthold, 1827

### Genus *Ectophasiopsis* Townsend, 1915

*Ectophasiopsis* Townsend, 1915: 439. Type species: *Ectophasiopsis arcuata* (Bigot, 1876) = *chilensis* Townsend, 1915.

*Ectophasiopsis* – Aldrich 1934: 11. — Townsend 1936: 55; 1938: 47. — Wolcott 1948: 271. — Sabrosky 1950: 361 (as *Ectophasiops*). — Dupuis 1963: 89. — Guimarães 1971: 12.

### Redefinition

**COLORATION.** Frontal vitta often yellow to light-tawny anteriorly. Wing with strong yellow radiation always starting at base. Wing with hyaline portion inside cell dm and forming a characteristic sinuosity in hyaline border. Claws brown to dark-tawny, black distally.

**HEAD.** Eyes dichoptic in both sexes. Frontal vitta wider (or only slightly wider) anteriorly, narrowing in middle and diverging posteriorly; wider at vertex level than at lunule level (sometimes subequal). Pair of ocellar setae thin and divergent. Fronto-orbital plate bare; wider anteriorly. Vibrissa present, shorter than length of arista. Antennal axis subequal to oral axis. Postpedicel reniform rounded, slightly flattened laterally, little longer than scape and pedicel together.

**THORAX.** Intra-alar setae 0+1; supra-alar setae 1+1; 2 postalar setae. Scutellum with one pair of basal setae and one pair of subapical setae. Postcoxal bridge membranous.

**WING.** Cell r4+5 closed and short petiolate, meeting wing margin a little before apex. Crossvein dm-cu straight to slightly sinuous. Posterior border of lower calypter slightly concave, external lobe enlarged. Legs. Fore tibia with two rows of dorsal feather-like setae, one outer with very short setae and inner much longer. Claws in male straight elongate and curved at tip and pulvilli elongate, squared, almost same length as claw; in female claws short and curved, and pulvilli shorter and rounded.

**ABDOMEN.** Elliptical to rounded, dorsoventrally flattened, tergites 1+2 to tergite 6 visible dorsally, without strong differentiated setae. Sternites free and membrane exposed.



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**MALE TERMINALIA.** Cerci with posteromedian process and slightly broadened posterolateral lobes; posteromedian process with an anterior notch in lateral view, distally flattened, large and rounded in lateral view. Pregonite and postgonite fused. Postgonite slightly widened apically and rounded in posterior view. Distiphallus as a membrane-covered complex of two sclerotized plates distally opened ‘Halbschalen’ in Tschorsnig 1985) that surrounds a sclerotized inner tube: one as an outer half-tube-like plate with a large opening on right-posterior portion; other as an inner sclerotized ring-like plate, dorsally invaginated following sclerotized inner tube through its entire extent, indented with slender transversal slit on right side. Sclerotized inner tube simple (‘Samenleiter’ in Tschorsnig 1985), dorsally bulbous, outside ring-like plate, bending and becoming straight inside ring-like plate, sometimes a little curved; dorsally it is connected to spermatic duct that goes along with aedeagus and connects with spermatic pump (as in other genera of ‘Trichopoda typica’ group).

**FEMALE TERMINALIA.** Sternite and tergite 7 not fused. Sternite 8 short, rounded distally. Cercus flattened plate-like, subquadrate, with lateral projections; connected to base of sternite 8 by a thin sclerotized strip. Epiproct and hypoproct absent.

**Key to species of *Ectophasiopsis* Townsend, 1915**

1. Ratio of frontal vitta width at level of lunula/width at vertex level of 0.8 to 0.9. Dorsocentral setae 2+2 or 3+2 (presutural setae short). Thorax long setulose dorsally and laterally. Male: hind femur with posteroventral setae long and slightly flattened ..... *E. arcuata* (Bigot, 1876)
- Ratio of frontal vitta width at level of lunula/width at vertex level of 0.55 to 0.75. Dorsocentral setae 1+1 or 1+2. Thorax short setulose. Male: hind femur with posteroventral setae short ..... 2
2. Antennal axis longer (Figs 7C, 8C), fronto-orbital plate at lunule level and parafacial enlarged (Fig. 1C). Male: cerci midventral opening lateral border not visible in dorsal view (Fig. 1A) ...  
..... *E. gradata* (Wiedemann, 1830) comb. nov.
- Antennal axis shorter (Figs 9C, 10C, 11C), fronto-orbital plate at lunule level and parafacial narrowed (Fig. 1D). Male: cerci midventral opening lateral border visible in dorsal view, as a small lappet (Fig. 1B) ..... *E. ypiranga* sp. nov.

***Ectophasiopsis arcuata* (Bigot, 1876)**

Figs 2A–E, 4–6

*Trichopoda arcuata* Bigot, 1876: 397. Lectotype ♂, BMNH (other “syntypes” misidentified; see discussion below). Type locality: “Chile” (examined).

*Ectophasiopsis chilensis* Townsend, 1915: 439. Syntypes, two ♂♂ and one ♀, USNM. Type locality: “Chile”. (syn. by Aldrich 1934).

*Trichopoda arcuata* – Townsend 1893: 70; 1915: 439. — Guimarães 1971: 12.

*Ectophasiopsis chilensis* – Townsend 1915: 439; 1936: 55; 1938: 47. — Aldrich 1934: 12. — Guimarães 1971: 12.

*Ectophasiopsis arcuata* – Aldrich 1934: 12. — Wolcott 1948: 471. — Guimarães 1971: 12.

**Diagnosis**

*Ectophasiopsis arcuata* closely resembles *E. gradata* comb. nov. as both have the antennal axis longer and fronto-orbital plate at the lunule level and parafacial enlarged, but differs from other species by the thorax being long setulose laterally and dorsally and dorsocentral setae 2+2 or 3+2 (short presutural setae).

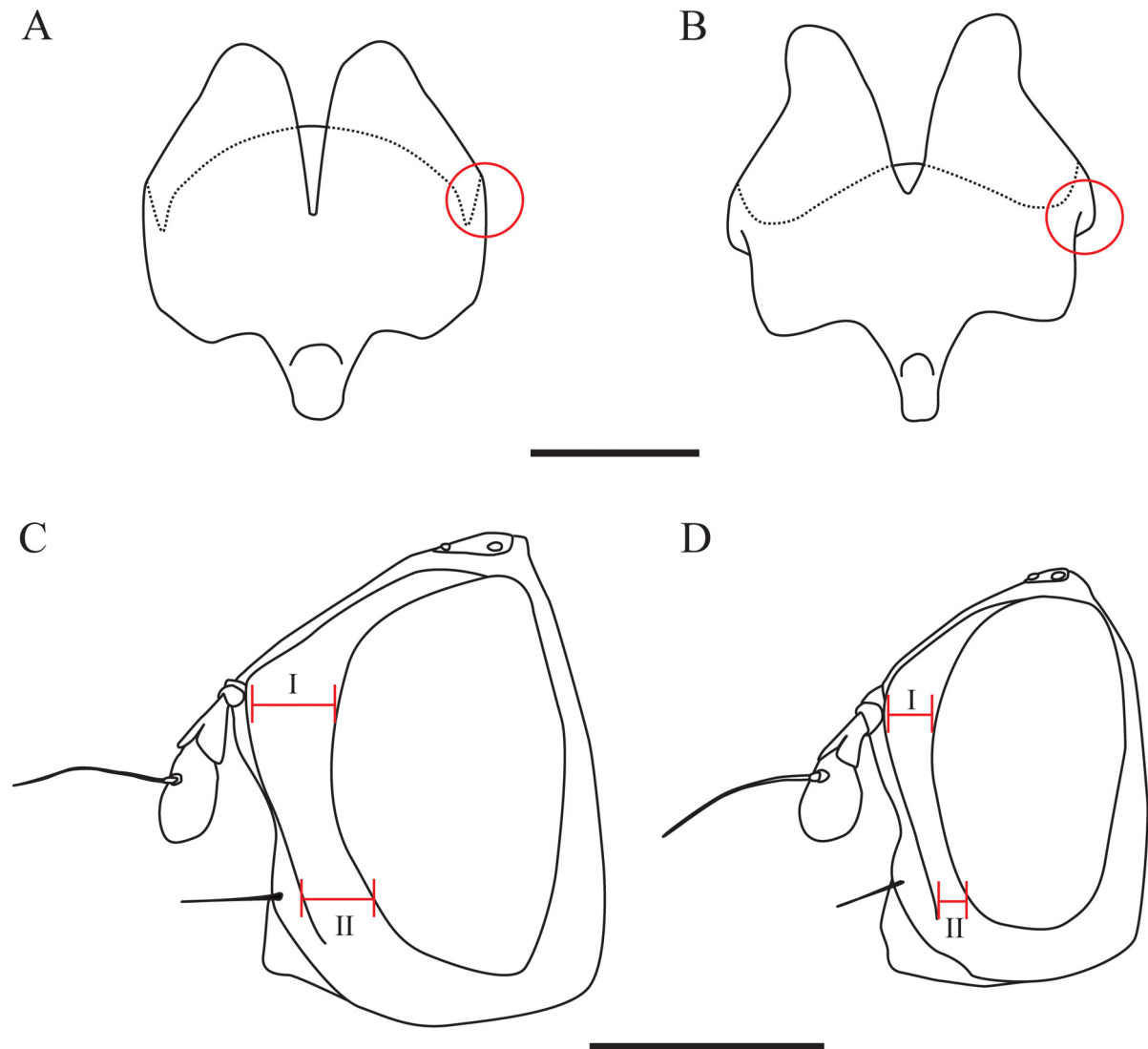
## Type material examined

### Lectotype

CHILE: ♂, *T. arcuata* (BMNH) by present designation. “Syntype” (white label with blue border); [“Brauer / Wien. CVII. / (No. 105)” “*Trichopoda / arcuata* Bigot / syntype ♂ / Chile, Plata / ex. Bigot Coll: / B.M. 1960-539”]; “*T. arcuata* / Chili, Plata. J. Bigot [white with black border]” “BMNH (E) # / 230866”; “Lectotype / *Ectophasiopsis arcuata* (Bigot) / R. Dios des. 2016”].

### Additional material examined

CHILE, Región Metropolitana: 1 ♂, 1 ♀, Santiago, “Puelma” (ZMHU). – Región del Maule: 1 ♂, Cauquenes, 20 Nov. 1997, S. Schönemann leg. (ZMHU) (dissected); 1 ♀, ditto, 6 Aug. 1999 (ZMHU); 1 ♂, Caiablo or Carablo (illegible), Jan. 1954, E.P. Reed leg. (CAS).



**Fig. 1.** **A.** Male cerci of *Ectophasiopsis gradata* (Wiedemann, 1830) comb. nov., dorsal view; red circle indicates the midventral opening, the lateral border is not visible in dorsal view. **B.** Male cerci of *E. ypiranga* sp. nov., dorsal view; red circle indicates the midventral opening, the lateral border is visible in dorsal view as a small laplet. **C.** Head of *E. gradata* (Wiedemann, 1830) comb. nov., lateral view. Red bars showing width of fronto orbital plate at the lunule level (I) and parafacial (II). **D.** Head of *E. ypiranga* sp. nov., lateral view. Red bars show the width of the fronto orbital plate at the lunule level and parafacial. Scale bars: A–B = 0.2 mm; C–D = 1 mm.

## Redescription

### Male (Fig. 5)

BODY LENGTH. 6.9 mm (lectotype), 7.3–7.6 mm (n = 3).

COLORATION. Frontal vitta yellowish-tawny with region around ocellar triangle dark brown to black. Ocellar triangle black. Fronto-orbital plate light-tawny to orange with silver and light-golden pruinosity. Parafacial and gena light-tawny-yellow with silver pruinosity. Antenna tawny-yellow, with area close to joints and posterior part of postpedicel slightly yellowish-orange. Palpus tawny to light-tawny. Presutural scutum dark brown to black (lacking pruinosity probably due to effects of preservation), with light-golden pruinosity delimiting two diverging median black stripes fused anteriorly and two triangular lateral black spots. Postpronotal lobe dark brown with silver pruinosity. Postsutural scutum dark brown, with light-golden pruinosity delimiting two central small triangular black spots and two outer long triangular black spots. Scutellum dark brown to black with silver pruinosity. Thorax laterally brown to black with silver pruinosity. Wings with orange-yellow radiation from the base to little beyond vein r-m anteriorly and little beyond vein bm-cu posteriorly, followed by infusate band ranging from anal lobe to almost apex of cell r4+5 and posterior border hyaline; hyaline part extending to cell dm and r4+5. Calypters orange-yellow, basally lighter. Legs brown, coxae with silver pruinosity; pulvilli pale-tawny to brown. Abdomen yellow-orange; tergite 1 dark brown; tergite 4 posteriorly dark brown; dorsal median longitudinal dark brown line between tergite 1 and 4; tergite 5 dark brown, but orange on posterior lateral margins and thin median posterior dark brown line; tergite 6 orange yellow with thin median anterior dark brown stripe; silver and light-golden pruinosity on tergites 5 and 6, and scarcely on tergite 4 posteriorly. Abdomen ventrally with almost same pattern as dorsally, without pruinosity.

HEAD. Ratio of head width / thorax width dorsally of 1.35. Ratio of head length/head width 0.5. Ratio of frontal vitta width at level of lunula/width at vertex level 0.8. Fronto-orbital plate width subequal to frontal vitta width at level of lunula. Antennal axis long, fronto-orbital plate at lunule level and parafacial enlarged. Ratio of gena height/eye height 0.16.

THORAX. Acrostichal setae apparently 0+0 (area damaged by pin; 0+1 in non-types, sometimes weak); dorsocentral setae 3+2; all thorax long setulose, almost same length as setae. Postpronotal lobe damaged by pin (3 setae on non-types). Two katapisternal setae.

WING. Subtriangular, anal lobe slightly larger. Ratio of wing length/wing maximum width 2.37. Crossvein dm-cu straight.

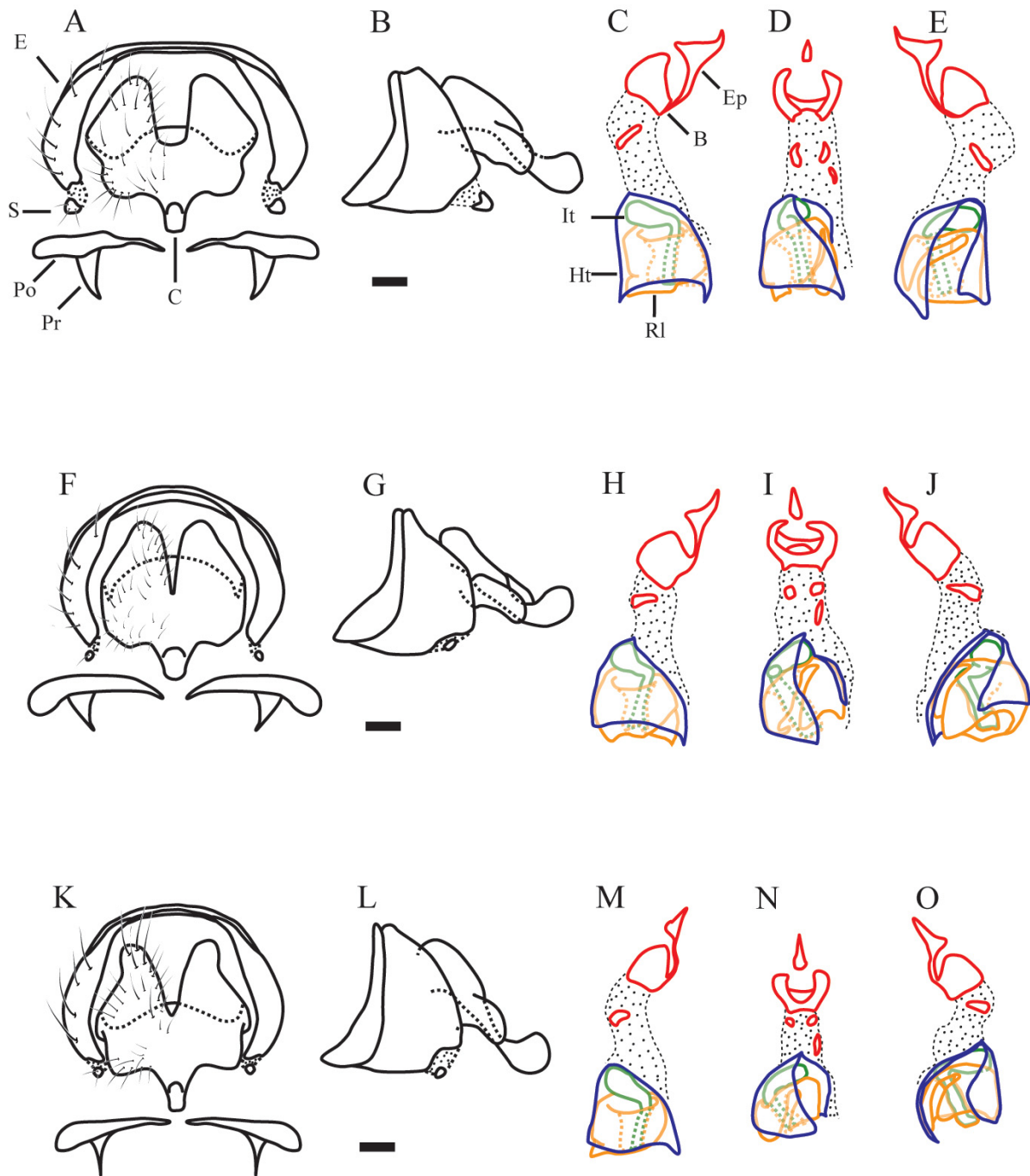
LEGS. Hind femur with row of anterodorsal setae, one preapical anteroventral seta and row of posteroventral setae on apical third, some setae slightly flattened; hind tibia with one median anteroventral seta and one median posterodorsal setae; row of longer feather-like setae covering apical 0.76, length of longest feather-like seta 1.77 times the tibial width.

ABDOMEN. Elliptical, little rounded, dorsoventrally flattened. No differentiated setae, only small setae laterally on tergites posterior margins. Ratio of abdomen length/thorax length 1.39. Ratio abdomen width/thorax width 1.33. Ratio of abdomen length/abdomen width 1.37.

TERMINALIA (Fig. 2A–E). Cerci midventral opening lateral border not visible in dorsal view. Postgonite almost not enlarged distally in posterior view, subequal in its length. Phallapodeme subequal in its length, slightly widened apically. Basiphallus as an incomplete ring, open posteriorly.

## Variation

COLORATION. Frontal vitta and postpedicel sometimes darker. Presutural scutum with median black stripes fused. Postpronotal lobe lighter brown. Postsutural scutum sometimes posteriorly all dark brown



**Fig. 2.** Male terminalia. – **A–E.** *Ectophasiopsis arcuata* (Bigot, 1876). **A.** Epandrium, cerci, surstyli, pregonite and postgonite, posterior view. **B.** Epandrium, cerci and surstyli, lateral view. **C.** Phallus, right lateral view. **D.** Phallus, posterior view. **E.** Phallus, left lateral view. – **F–J.** *E. gradata* (Wiedemann, 1830) comb. nov. **F.** Epandrium, cerci, surstyli, pregonite and postgonite, posterior view. **G.** Epandrium, cerci and surstyli, lateral view. **H.** Phallus, right lateral view. **I.** Phallus, posterior view. **J.** Phallus, left lateral view. – **K–O.** *E. ypiranga* sp. nov. **K.** Epandrium, cerci, surstyli, pregonite and postgonite, posterior view. **L.** Epandrium, cerci and surstyli, lateral view. **M.** Phallus, right lateral view. **N.** Phallus, posterior view. **O.** Phallus, left lateral view. Abbreviations: B = basiphallus (red color); C = cerci; E = epandrium; Ep = epiphallus (red color); Ht = half-tube like plate (blue color); It = sclerotized inner tube (green color); Po = postgonite; Pr = pregonite; Rl = ring-like plate (orange color); S = surstylus. Scale bars: 0.2 mm.

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to black. Wing with orange-yellow coloration pale; infusate band more diffuse, cell dm posteriorly weak infusate and hyaline. Abdomen with dorsal median longitudinal dark brown line wider, tergite 6 without brown markings, and varying pruinosity.

HEAD. Ratio of head width/thorax width dorsally 1.35 to 1.52. Fronto-orbital plate width little wider than frontal vitta width at level of lunula. Ratio of gena height / eye height 0.13 to 0.16. Thorax. Dorsocentral setae 2+2.

WING. Ratio of wing length / wing maximum width 2.19 to 2.57.

LEGS. Fore femur with rows of short posterodorsal and posteroventral setae sometimes very weak. Hind femur with preapical anteroventral seta not differentiated and row of posteroventral setae on apical third with varied sizes and lengths. Row of long feather-like setae on hind tibia covering apical 0.76 to 0.9 of tibia, and length of longest feather-like seta 1.51 to 1.77 times tibial width. Abdomen. Ratio of abdomen length/thorax length 1.32 to 1.39. Ratio abdomen width / thorax width 1.33 to 1.68. Ratio of abdomen length/abdomen width 1.15 to 1.37.

**Female** (Fig. 6)

Differs from male as follows:

BODY LENGTH. 6.6–7.3 mm (n = 2).

COLORATION. Head with silver pruinosity only and background color usually darker. Thorax darker, with silver pruinosity, sometimes scarce as two longitudinal thin lines; Postsutural scutum all dark brown to black posteriorly. Wings sometimes paler orange-yellow, extending a little less than in males; hyaline border wider and clearly defined. Abdomen yellow-orange, dorsal median longitudinal dark brown line ending in middle of tergite 1+2; tergite 4 with median dorsal dark brown black triangle pointing anteriorly; tergite 5 and 6 dark brown to black.

THORAX. Postpronotal lobe with 2 setae, sometimes a third very weak.

WING. Elliptical.

LEGS. Hind femur with row of posteroventral setae on apical third, never flattened; hind tibia with length of longest feather-like seta 2.11 times tibial width. Claws shorter and curved. Pulvilli shorter, more rounded.

ABDOMEN. Elliptical. Very weakly differentiated median marginal setae on tergite 4 to tergite 6. Slightly shorter (ratio of abdomen length/thorax length 1.21 to 1.28) and narrower (ratio abdomen width/thorax width 1 to 1.2). Ratio of abdomen length/abdomen width 1.31 to 1.6.

TERMINALIA. Due to lack of material, no female was dissected.

**Distribution** (Fig. 4)

Chile, and introduced in Puerto Rico (Wolcott 1948). The species was also introduced to Easter Island, from mainland Chile (Ripa *et al.* 1995)

**On the type specimens of *E. arcuata* and its identity**

There has been confusion surrounding the type material of *Ectophasiopsis arcuata* (7 syntypes). Bigot's (1876) original description did not state the number of specimens examined nor did he describe any variation (e.g., in the color of the abdomen and wings). Aldrich (1934) examined the types of *E. chilensis* and *E. arcuata*, without mentioning their labels and localities. Now we have had the opportunity to study the entire type series borrowed from BMNH and we could observe that actually only one syntype is



labeled from “Chile, Plata” and bears Bigot’s characteristic identification label with the black border (see Crosskey 1971). This syntype is the only one that fits the original description so, in the interests of nomenclatural stability, is designated here as the lectotype of *Trichopoda arcuata* Bigot, 1876. The other six syntypes of *arcuata* are now paralectotypes, but all them were misidentified by Bigot: one is a *Trichopoda* sp. while the remaining five are *E. gradata* (Wiedemann, 1830) comb. nov. These six paralectotypes bear two labels: [“Brauer / Wien. CVII. / (No. 105)”] and [“Syntype”] (round label from BMNH), but not Bigot’s identification labels. However, in Verrall’s handwritten notes about Bigot’s type collection, he stated that there were seven specimens in the *Trichopoda arcuata* type series (Adrian Pont, pers. comm.). It is likely that these six paralectotypes might be Brauer’s further addition to the type series, but we cannot state it with certainty. Therefore, we assume that the seven specimens belong to Bigot’s type series of *E. arcuata* and it involves three different identities. Townsend (1938) had stated earlier that the types of *E. arcuata* could represent at least two species.

***Ectophasiopsis gradata* (Wiedemann, 1830) comb. nov.**

Figs 1A, C, 2F–J, 3A, 4, 7–8

*Trichopoda gradata* Wiedemann, 1830: 275. Holotype ♀, NHMW. Type locality: “Brasil”.

*Trichopodopsis argentinensis* Blanchard, 1966: 65. Holotype ♂, INTA (examined). Type locality: Argentina, Córdoba.

*Trichopodopsis incognita* Blanchard, 1966: 62. Holotype ♀, probably lost. Type locality: Argentina, La Rioja.

*Trichopodopsis christenseni* Blanchard, 1966: 78. Holotype ♂, INTA. Type-locality: Argentina, José C. Paz leg. (examined).

*Trichopoda gradata* – Walker 1853: 258.

*Ectophasiopsis arcuata* – Aldrich 1934: 12 (part, misidentification).

*Trichopoda (Trichopoda) gradata* – Guimarães 1971: 9.

*Trichopoda argentinensis* – Liljesthröm 1992: 51.

*Trichopodopsis incognita* – Liljesthröm 1992: 51.

*Trichopodopsis christenseni* – Liljesthröm 1992: 51.

*Trichopoda (Galactomyia) argentinensis* – Guimarães 1971: 10.

*Trichopoda (Trichopoda) incognita* – Guimarães 1971: 10.

*Trichopoda (Galactomyia) christenseni* – Guimarães 1971: 10.

## Diagnosis

*Ectophasiopsis gradata* comb. nov. closely resembles *E. arcuata* as both have the antennal axis longer and the fronto-orbital plate at the lunule level and parafacial enlarged, but differs from *E. arcuata* by having the thorax short setulose laterally and dorsally, and dorsocentral setae 1+2.

*Ectophasiopsis gradata* comb. nov. closely resembles *E. ypiranga* sp. nov. as both have the thorax short setulose laterally and dorsally, dorsocentral setae 1+2, but differs from *E. ypiranga* sp. nov. by having the antennal axis longer; fronto-orbital plate at the lunule level and parafacial enlarged; cerci midventral opening lateral border not visible in dorsal view; and posterolateral lobes usually less developed.

## Type material examined

Holotype of *T. gradata* ♀ (NHMW). [“gradrata (misspelling) Wd. / T. q. / Coll. Winthem”; “Brasilia”; “Holotype / Trichopoda / gradata / examinad 1999 / P. Sehnal” (red label)].

Holotype of *T. argentinensis* ♂ (INTA). [“Holótipo” (red label); “Córdoba / ii.1920”; “232”; “Holotypus”; “Trichopodopsis argentinensis / Blnchd / det. E. E. Blanchard”]. Head damaged; left wing broken;

lacking right wing, only with left mid leg and right fore leg; abdomen broken. Right wing mounted on microscope slide. Terminalia dissected in a vial, missing cerci, phallapodeme broken.

Holotype of *T. christenseni* ♂ (INTA). [“Holótipo” (red label); “J. C. Paz / iii.1939 / Christensen”; “*Athaumastus*”; “234”; “Holotypus”; “*Trichopodopsis christenseni* / Blnchd / det. E. E. Blanchard”]. Lacking right wing, right fore leg and both hind legs. Right wing mounted on microscope slide. Terminalia dissected in a vial, phallapodeme broken.

#### Additional material examined

BRAZIL, Paraná: 2 ♂♂, 1 ♀, Bela Vista do Paraíso, host *Dichelops melacanthus*, 27 Oct. 2008, Pavão leg. (DZUP) (1 ♂ dissected); 1 ♂, Laranjeiras do Sul, Jan.1962, S. Sakagami leg. (DZUP). – Santa Catarina: 1 ♀, Nova Teutônia, Oct.1967, F. Plaumann leg. (DZUP); 3 ♂♂, 3 ♀♀, Rio das Antas, Jan. 1963, Camargo-Andr. leg. (MNHN) (1♂ dissected); 1 ♀, ditto, (DZUP). – Rio Grande do Sul: 1 ♂, 3 ♀♀, Passo Fundo, host *Dichelops furcatus*, 24 Oct. 2014, A. Agostinetto leg. (MZSP) (1 ♂ and 1 ♀ dissected); 1 ♂, ditto, 28°15'28.1" S, 52°24'32.7" W, 19 Oct. 2012, A.Marsaro leg. (MZSP); 1 ♀, Porto Alegre, 30°05'38.2" S, 51°13'07.8" W, host: *Dichelops furcatus*, 30 Sep. 2012, A. Marsaro leg. (MZSP).

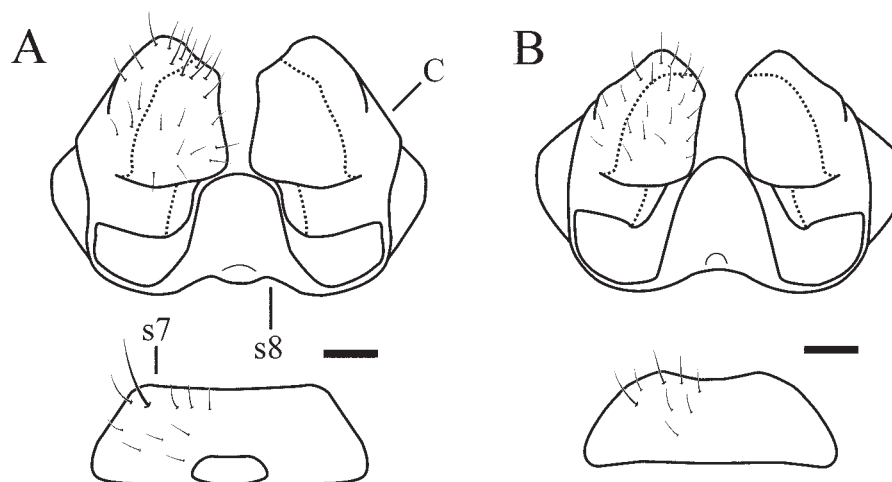
URUGUAY, Paysandú: 1 ♂, 1 ♀, Paysandú, host: *Dichelops furcatus*, 2006 (MZSP) (1 ♂, 1 ♀ dissected); 1 ♂, ditto, 1 Sep. 2006 (MZSP); 1 ♂, ditto, 20 Feb. 2007 (MZSP). – Montevideú: 1 ♂, 1 ♀, Montevideú, Sello leg. (ZMHU).

ARGENTINA, Santa Fé: 1 ♀, Carcarañá, 13 Apr. 1910 (ZMHU). – Santiago del Estero: 1 ♀, Averias, 1914, E.R. Wagner leg. (MNHN); 1 ♂, Banderas, 1910, E.R. Wagner leg. (MNHN); 1 ♂, 1 ♀, Icaño, (surroundings of) Guarda Escolta, 1909, E.R. Wagner leg. (MNHN); 1 ♂, 1 ♀, margins of Salado River, 1904, E.R. Wagner leg. (MNHN); 2 ♂♂, ditto, 1909 (MNHN) (1♂ dissected).

#### Male (Fig. 7)

BODY LENGTH. 7.5 mm (holotype) 6.4–7.2 mm (n = 5).

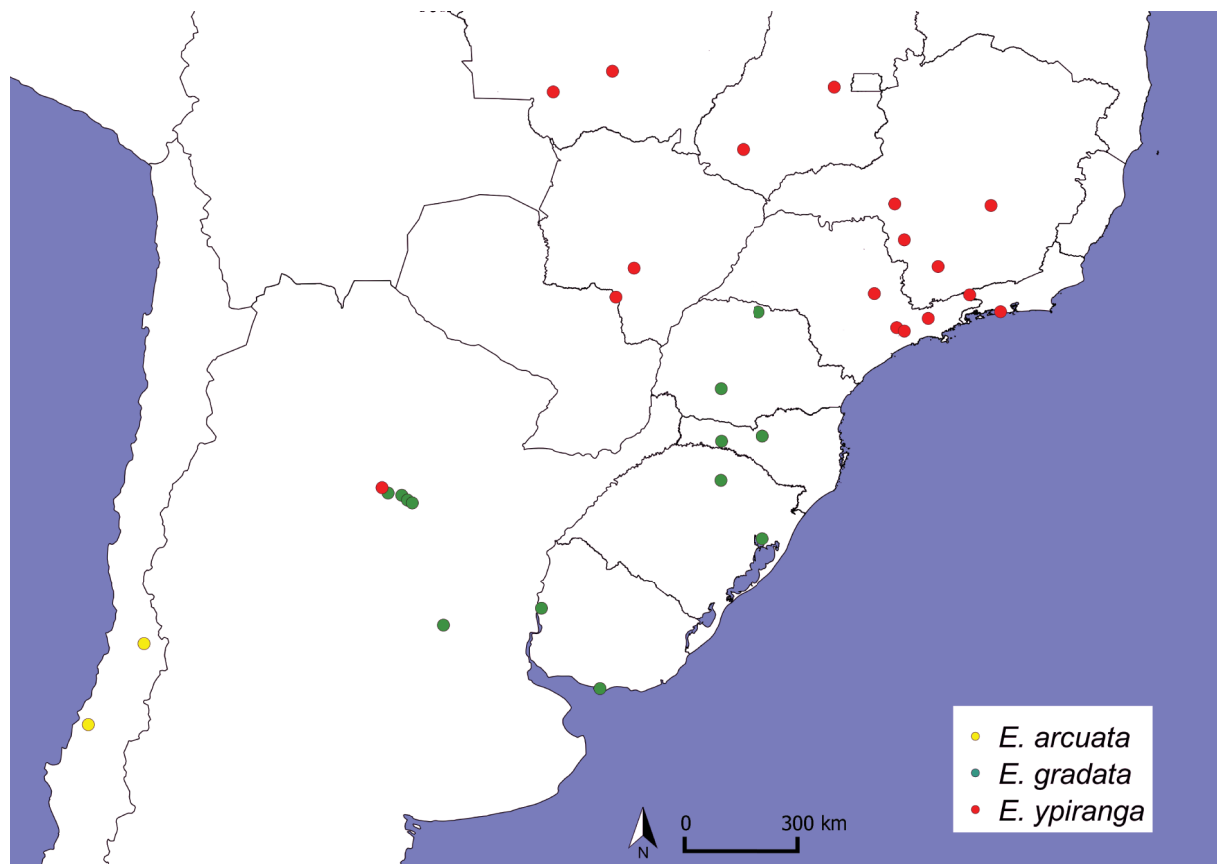
COLORATION. Frontal vitta light-tawny with region around ocellar triangle dark brown to black. Ocellar triangle black. Fronto-orbital plate light-tawny to orange with light-golden pruinosity. Parafacial light-tawny with light-golden pruinosity on upper half and silver pruinosity on lower half. Gena light-tawny



**Fig. 3.** Female terminalia. **A.** *Ectophasiopsis gradata* (Wiedemann, 1830) comb. nov. **B.** *E. ypiranga* sp. nov. Abbreviations: C = Cerci; s7 = Sternite 7; s8 = Sternite 8. Scale bars: 0.2 mm.

with silver pruinosity. Scape and pedicel tawny-yellow; postpedicel brown with base and posterior part slightly orange. Palpus light-tawny to pale yellow. Presutural scutum covered with light-golden pruinosity delimiting two diverging median black stripes fused anteriorly and two triangular lateral black spots. Postpronotal lobe covered with light-golden pruinosity. Postsutural scutum tawny to brown, tawny-yellow on sides; with light-golden pruinosity delimiting two median small triangular black spots and two outer long triangular black spots. Scutellum dark brown to black with silver pruinosity. Thorax laterally brown to black with silver pruinosity. Wings with orange-yellow radiation from base to sc anteriorly, beyond vein r-m medially and little beyond vein bm-cu posteriorly; followed by infusate band ranging from anal lobe almost to apex of wing, little beyond cell r4+5, and posterior border hyaline; hyaline part extending to cell dm. Calypters pale-yellow. Legs brown, coxae with silver pruinosity, trochanters and base of mid and hind-femora tawny-yellow; pulvilli pale-brown. Abdomen yellow-orange; tergite 1 medially with light-brown marking; tergite 2 with brown longitudinal median line, almost reaching margin; tergite 3 with brown median posterior triangle marking, expanding transversely between tergite 3 and 4; tergite 4 with brown trapezoidal median marking; tergite 5 with brown rectangular marking; tergite 6 with sparse light-golden pruinosity. Abdomen ventrally pale yellow, sternite 5 to rear end tawny.

HEAD. Ratio of head width/thorax width dorsally of 1.4. Ratio of head length/head width 0.5. Ratio of frontal vitta width at level of lunula/width at vertex level 0.7. Fronto-orbital plate width wider than frontal vitta width at level of lunula. Antennal axis long, fronto-orbital plate at lunule level and parafacial enlarged. Ratio of gena height/eye height 0.17.



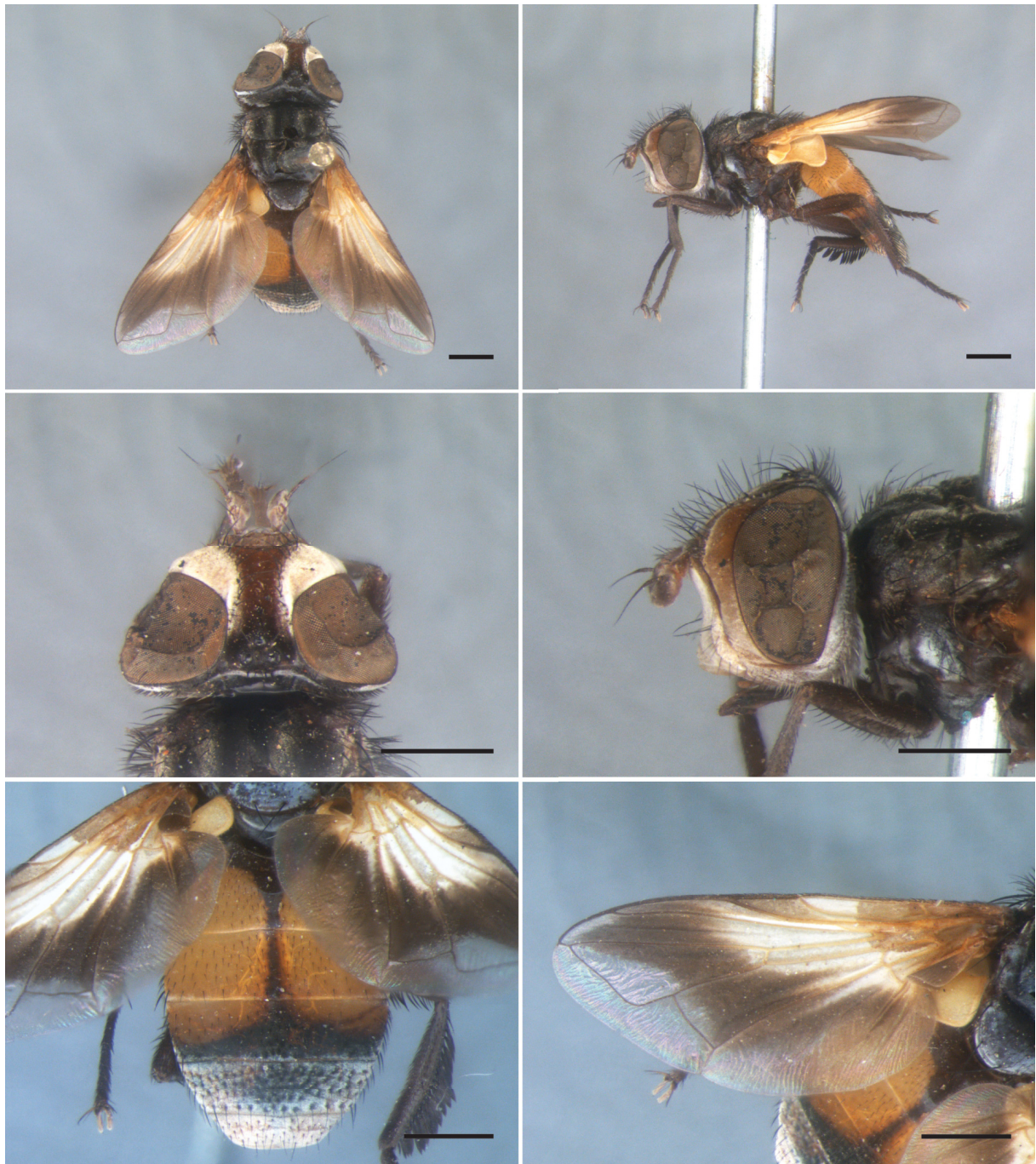
**Fig. 4.** Distribution map of *Ectophasiopsis* species. *E. arcuata* (Bigot, 1876) = yellow dots; *E. gradata* (Wiedemann, 1830) comb. nov. = green dots; *E. ypiranga* sp. nov. = red dots.



DIOS R. de V.P. & NIHEI S.S., Revision of the genus *Ectophasiopsis* (Diptera: Tachinidae)

THORAX. Acrostichal setae 0+1 (area damaged by pin, 0+1 on non-types); dorsocentral setae 1+2. Postpronotal lobe with 2 setae. Two katapisternal setae.

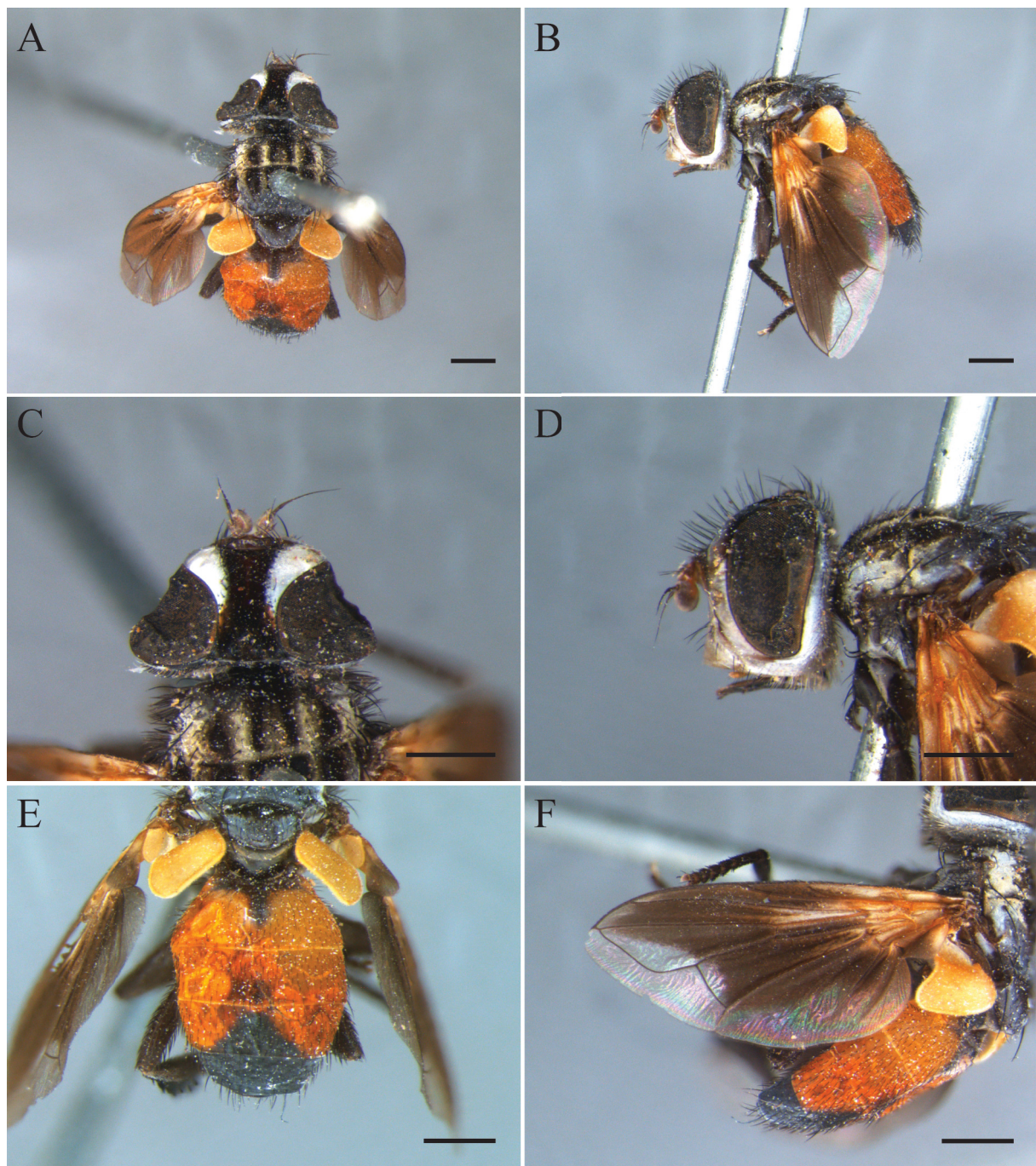
WING. Elliptical, anal lobe larger. Ratio of wing length/wing maximum width 2.57. Crossvein dm-cu straight.



**Fig. 5.** *Ectophasiopsis arcuata* (Bigot, 1876), ♂, lectotype, Chile, “Plata”, BMNH. **A.** Dorsal view. **B.** Lateral view. **C.** Head, dorsal view. **D.** Head, lateral view. **E.** Abdomen, dorsal view. **F.** Wing, dorsal view. Scale bars: 1 mm.



LEGS. Hind femur with row of short anterodorsal setae and row of weak posteroventral setae on apical third; hind tibia with one median anteroventral seta and one median posterodorsal setae; row of longer feather-like setae covering apical 0.75 of tibia, and length of longest feather-like seta 1.41 times tibial width.

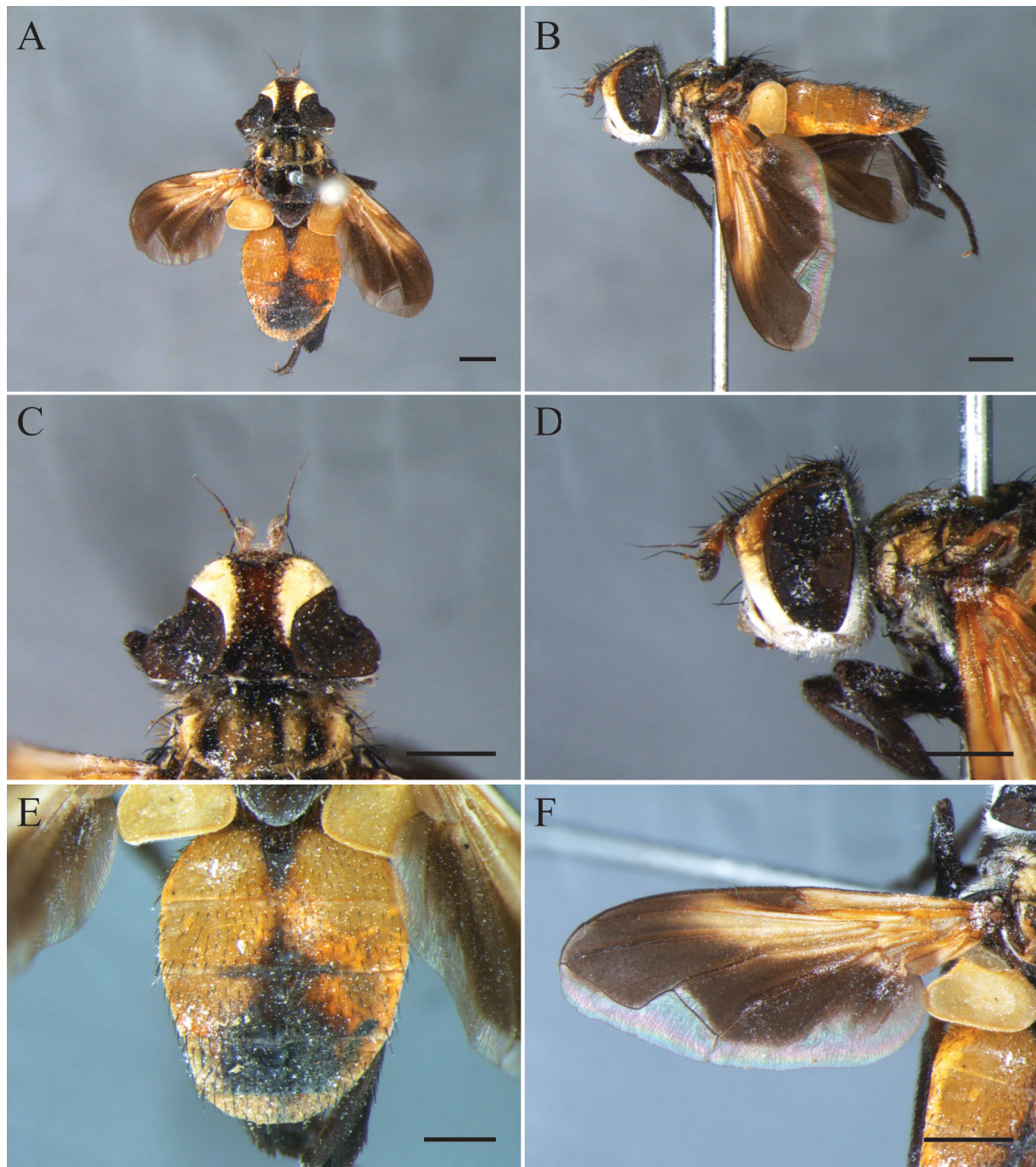


**Fig. 6.** *Ectophasiopsis arcuata* (Bigot, 1876), ♀, Chile, Santiago, ZMHU. **A.** Dorsal view. **B.** Lateral view. **C.** Head, dorsal view. **D.** Head, lateral view. **E.** Abdomen, dorsal view. **F.** Wing, dorsal view. Scale bars: 1 mm.



ABDOMEN. Rounded, somewhat elliptical, dorsoventrally flattened. No differentiated setae. Ratio of abdomen length/thorax length 1.35. Ratio abdomen width/thorax width 1.41. Ratio of abdomen length/abdomen width 1.27.

TERMINALIA (Fig. 2F–J). Cerci midventral opening lateral border not visible in dorsal view; posterolateral lobes usually less developed. Postgonite slightly enlarged distally in posterior view. Phallapodeme widened anteriorly. Basiphallus forming a complete ring, fused posteriorly.



**Fig. 7.** *Ectophasiopsis gradata* (Wiedemann, 1830) comb. nov., ♂, Uruguay, Montevideú, ZMHU. A. Dorsal view. B. Lateral view. C. Head, dorsal view. D. Head, lateral view. E. Abdomen, dorsal view. F. Wing, dorsal view. Scale bars: 1 mm.

### Variation of male

**COLORATION.** Frontal vitta orange-tawny to dark-brown. Fronto-orbital plate and parafacial pruinosity darker. Scutum covered with golden or dark-golden pruinosity; Presutural scutum with median black stripes sometimes not fused anteriorly. Scutellum sometimes with apex lighter. Wings with orange-yellow radiation varying in intensity; infusate band darker, almost black, sometimes not beyond cell r4+5; hyaline part sometimes enters cell r4+5. Calypters orange-yellow. Trochanters and base of femora sometimes light-yellow. Tergite 1 without brown marking; tergite 2 without brown longitudinal median line; tergite 3 without brown markings, sometimes with brown median longitudinal line or sometimes brown irregular marking; tergite 4 fully brown or with brown markings posteriorly varying in size, and / or with brown longitudinal line; tergite 5 fully brown; light-golden pruinosity sometimes also on tergite 5 and sparse on tergite 4.

**HEAD.** Ratio of head width / thorax width dorsally 1.31 to 1.4. Ratio of head length / head width 0.48 to 0.54. Ratio of frontal vitta width at level of lunula / width at vertex level 0.63 to 0.74. Fronto-orbital plate width sometimes little wider than frontal vitta width at level of lunula. Ratio of gena height / eye height 0.17 to 0.2.

**WING.** Ratio of wing length / wing maximum width 2.65 to 2.75. Crossvein dm-cu sometimes slightly sinuous.

**LEGS.** Hind femur with row of short anterodorsal setae only on distal half and row of posteroventral setae on apical third almost not differentiated; hind tibia with row of longer feather-like setae covering apical 0.75 to 0.8 of tibia, length of longest feather-like seta 1.41 to 1.87 times tibial width.

**ABDOMEN.** Sometimes more elliptical, and dorsoventrally less flattened. Some specimens with longer marginal setulae on tergites 4 and 5. Ratio of abdomen length / thorax length 1.35 to 1.65. Ratio abdomen width / thorax width 1.14 to 1.41. Ratio of abdomen length / abdomen width 1.27 to 1.8.

### Female (Fig. 8)

Differs from male as follows:

**BODY LENGTH.** 6.1–7.7 mm (n = 5).

**COLORATION.** Postsutural scutum pruinosity sometimes scarcer, as two longitudinal thin lines. Sometimes wings with weak orange-yellow radiation, strong only at wing base. Abdomen yellow-orange, dark-brown to black distally; tergite 3 usually with small triangular median posterior spot, rarely absent; tergite 4 mostly dark, only anterior lateral margins yellow-orange, varying in extent; tergite 5 to abdomen tip fully dark-brown to black, rarely with irregular yellow-orange spots.

**ABDOMEN.** Elliptical, sometimes slightly ovate. Ratio of abdomen length / thorax length 1.23 to 1.39. Slightly narrower (ratio of abdomen width / thorax width 1.17 to 1.31) and usually shorter (ratio of abdomen length / thorax length 1.23 to 1.39).

**TERMINALIA** (Fig. 3A). Sternite 8 short, rounded distally, with small less sclerotized spot ventrally.

### Distribution (Fig. 4)

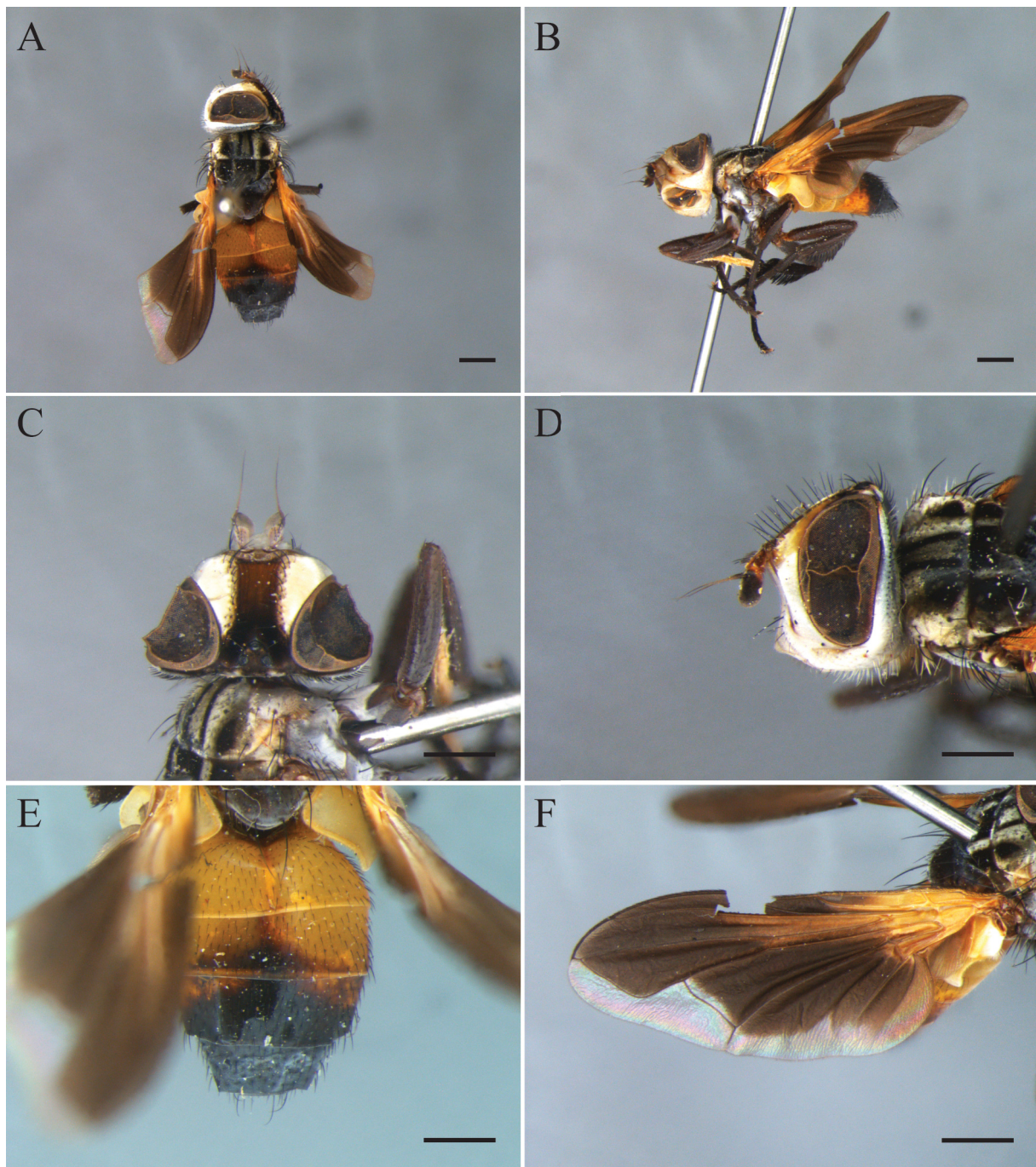
Brazil (Paraná, Santa Catarina, Rio Grande do Sul), Uruguay and Argentina.

### Remarks

The male specimen from Montevideú (ZMHU) was chosen as the basis of the species description as it has a determination label “*gradata*” handwritten by Wiedemann. The holotype of *E. gradata* comb. nov.



from “Brazil”, deposited at NHMW, is a female and was examined from photos kindly sent by Peter Sehnal (curator). The external features, especially the size and shape of the fronto orbital plate and parafacial in lateral view, were decisive in grouping the species. The holotype of *T. argentinensis* is damaged, but we could observe that it is conspecific with *E. gradata* comb. nov. The male terminalia (with the cerci lost) had already been dissected and preserved in a vial, pinned alongside the specimen. The holotype male of *T. christenseni* is better preserved and the synonymy is based on the external features, as well as the terminalia, which were found dissected and fully preserved.



**Fig. 8.** *Ectophasiopsis gradata* (Wiedemann, 1830) comb. nov., ♀, Brazil, Nova Teutônia, DZUP. **A.** Dorsal view. **B.** Lateral view. **C.** Head, dorsal view. **D.** Head, lateral view. **E.** Abdomen, dorsal view. **F.** Wing, dorsal view. Scale bars: 1 mm.

***Ectophasiopsis ypiranga* sp. nov.**

[urn:lsid:zoobank.org:act:082854A3-6E61-4232-8BBE-1B76302E379E](http://urn:lsid:zoobank.org:act:082854A3-6E61-4232-8BBE-1B76302E379E)

Figs 1B, D, 2K–O, 3B, 4, 9–11

**Diagnosis**

*Ectophasiopsis ypiranga* sp. nov. differs from *E. arcuata* by having the antennal axis shorter and the fronto-orbital plate at the lunule level and parafacial narrowed, the thorax short setulose laterally and dorsally, and dorsocentral setae 1+2.

*Ectophasiopsis ypiranga* sp. nov. closely resembles *E. gradata* comb. nov. in the thorax short setulose laterally and dorsally, dorsocentral setae 1+2, but *E. gradata* comb. nov. differs from *E. ypiranga* sp. nov. by having the antennal axis shorter; the fronto-orbital plate at the lunule level and parafacial narrowed; the cerci midventral opening lateral border visible in dorsal view, as a small lappet; and posterolateral lobes usually more developed.

**Etymology**

The specific epithet *ypiranga* is a noun in the indigenous language Tupi Guarani for ‘red river’ and it refers to the holotype location, nowadays a district in the city of São Paulo.

**Type material**

**Holotype**

BRAZIL: ♂ [“S. Paulo – Ypiranga / Langer M. Morris / col. 29.iii.36”; “Holotype” (red label)], (CEIOC).

**Paratypes** (all with a green label)

BRAZIL: 1 ♂ (DZUP) [“Dpto Zool / UF – Paraná”; “Cáceres , MT / 9.i.1985 / C. Elias leg.”; “Polonoroeste”; “DZUP / 251946”]; 1 ♂, dissected (DZUP) [“Dpto Zool / UF – Paraná”; “Cáceres , MT / 20.iii.1985 / C. Elias leg.”; “Polonoroeste”; “DZUP / 251956”]; 1 ♂ (MZSP) [“Brasil:MT: Chap. Dos Guimarães / P. N. Chapada dos Guimarães / Cerrado – 577m – Trilha Cachoeira / Andorinha (Piscinas naturais) / S 15°24’51.5” W 55°50’40.3” / Malaise 34 / 16–22.i.2012 / Lamas eq. col. / SISBIOTA / CNPq/FAPESP”]; 1 ♀ (MZSP) [“Est. De Goiás / Corumbá / F. Monjolinho / Barreto col. / ii.945”]; 1 ♂ (DZUP) [“Jataí, Goiaz, i.1995 / M. Carrera, A. Machado / F. S. Pereira & E. Dente / Milgar Loureiro col.”; “DZUP / 252106”]; 1 ♂ (CEIOC) [“Lagoa Santa / Minas Geraes / Lopes 27.ii.40”. ♂ (DZUP) “Dpto Zool / UF – Paraná”; “Araxá – Brasil / MG-22.11.1965 / C. T. Elias”; “DZUP / 252157”]; 1 ♀, ditto (DZUP), [“DZUP / 252120”. ♀ (DZUP) “Passos, MG / Brasil, v.1961 / C. Elias leg.”; “DZUP / 252143”]; 1 ♂, ditto, Jul. 1961 (DZUP), [“UFP”; “DZUP / 252032”. ♀ (DZUP) ditto, vi.1961 “DZUP / 252149”]; 1 ♂, dissected, ditto, Sep. 1961 (DZUP), [“DZUP / 252136”]; 1 ♂, ditto, Oct. 1961 (DZUP) [“DZUP / 252134”. ♀ (DZUP) ditto, “DZUP / 252142”]; 1 ♀, dissected (DZUP) [“Passos – Brasil / MG 1-30-x-61 / Claudionor Elias”]; 1 ♂ (DZUP) [“Varginha / M. Gerais, Brasil / ix.1951 / M. Alvarenga leg.”]; 1 ♂, 1 ♀ (MNHN) [“Museum Paris / Brésil / Prov. de Minas Geraes / (2.100 m. d’altitude)/E. R. Wagner, 1902”]; 1 ♂ (USNM) [“Maracajú / Mato Grosso [do Sul]/ Brasil”; “Maio / 1937”; “Serviço Febre / Amarela / M. E. S., Bras.”; “Trichopodopsis / sp. / Det. CHTT”; “♂♀”]; 3 ♂♂, 1 ♀ (1 ♂ dissected) (USNM) [“Maracajú / Mato Grosso [do Sul]/ Brasil”; “Maio / 1937”; “Serviço Febre / Amarela / M. E. S., Bras.”]; 1 ♀ (MZSP) [“Brasil, MS, Ponta Porã / 27.vii.2006 / N° 3”]; 1 ♀ (MNHN) [“Guaratiba, D.F. Brasil / J. H. Guimarães / 1.8.1959”]; 1 ♀ (MZSP) [“Est. R. Janeiro / Itatiaia / Campo Belo / Barreto col. / v.945”]; 1 ♂, dissected (MNHN) [“22.iv.1957 / Barueri / S. Paulo”, “K. Lenko leg.”]; 1 ♂ (DZUP) [“São Paulo / Rio Claro – Jul.1939 / Pde. Pereira leg”]; 1 ♂ (DZUP) [“São Paulo / Rio Claro – Out.1939 / Pde. Pereira leg” ♀ (CEIOC) “S. José dos Campos / Est. S. Paulo / H. S. Lopes xii.934”]; 1 ♂ (MNHN) [“S. Paulo / S. Amaro / J. Lane col. / xi-60”]; 1 ♀ (DZUP) “S. Paulo – Ypiranga / Langer M. Morris /



col. 31.iii.36”]; 1 ♂, dissected (MNHN) [“Museum Paris / Chaco de Santiago / del Estero / bords du rio Salado / la Palisa del Bracho / 25 kil. N. O. d’Icaño / E. R. Wagner 1909”].

### Type locality

BRAZIL: State of São Paulo, municipality of São Paulo, Ipiranga.

This species apparently has two distinct forms of males (see ‘remarks’ below). One darker and larger form, with light brown to tawny abdomen, with usually broader wings and abdomen, and another lighter color form, with abdomen more yellow, sometimes smaller in body size and with abdomen and wings usually narrower. The description below is based on a holotype representative of the large-dark form, and all variation found in this form and in the small-yellow form will be described separately. They are widely overlapping in their geographical range.

### Male (Fig. 9)

BODY LENGTH. 7.4 mm.

COLORATION. Frontal vitta light-tawny with region around ocellar triangle darker. Ocellar triangle black. Fronto-orbital plate light-tawny-yellow with light-golden to golden pruinosity. Parafacial light-tawny-yellow with light-golden pruinosity on upper half and silver pruinosity on lower half. Gena light-tawny-yellow with silver pruinosity. Scape and pedicel light-tawny-yellow; postpedicel light-brown with base and posterior part slightly orange-yellow. Palpus light-tawny to pale yellow. Presutural scutum covered with golden to light-golden pruinosity delimiting two diverging median black stripes fused anteriorly and two triangular lateral black spots. Postsutural scutum tawny to brown, light-tawny on sides, with light-golden pruinosity on sides and delimiting two median small triangular black spots; two long triangular black spots. Postalar callus with weak silver pruinosity. Scutellum dark brown to black with silver pruinosity. Thorax laterally brown to tawny with silver pruinosity. Wings with orange-yellow radiation from base to sc anteriorly, beyond vein r-m medially and little beyond vein bm-cu posteriorly; followed by infusate band ranging from anal lobe almost to apex of wing, little beyond cell r4+5, and posterior border hyaline; hyaline part extending to cell dm. Calypters yellow-orange. Legs brown, coxae with silver pruinosity, trochanters and base of mid and hind-femora tawny-yellow; pulvilli pale-brown. Abdomen yellow; centrally shiny-light-brown on tergites 2 to 4 almost entirely, only lateral margins yellow; tergite 4 with brown median posterior line; tergite 5 brown centrally to light-brown laterally and yellow on laterals; tergite 6 yellow; tergite 5 and 6 with sparse silver pruinosity. Abdomen ventrally yellow, slightly darker on tip.

HEAD. Ratio of head width / thorax width dorsally of 1.45. Ratio of head length / head width 0.46. Ratio of frontal vitta width at level of lunula / width at vertex level 0.6. Fronto-orbital plate width wider than frontal vitta width at level of lunula. Antennal axis short, fronto-orbital plate at lunule level and parafacial narrowed. Ratio of gena height / eye height 0.13.

THORAX. Acrostichal setae 0+1; dorsocentral setae 1+1. Postpronotal lobe with 2 setae, one of them very weak. Two katapisternal setae.

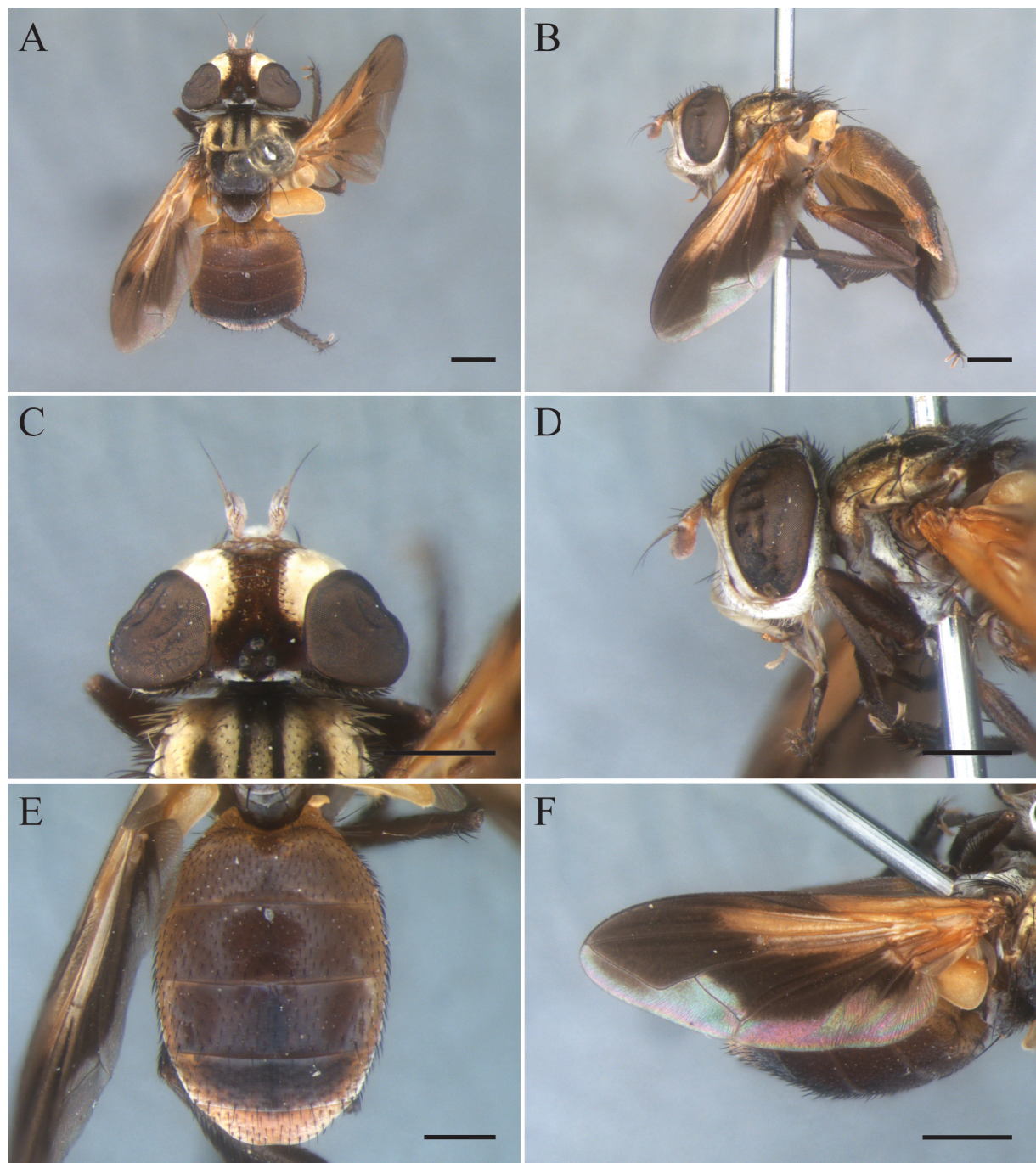
WING. Elliptical, anal lobe larger. Ratio of wing length / wing maximum width 2.8. Crossvein dm-cu straight, slightly sinuous.

LEGS. Hind femur with row of short anterodorsal setae on apical half and row of weak posteroventral setae on apical third; hind tibia with one median anteroventral seta and one median posterodorsal setae; row of longer feather-like setae covering apical 0.78 of tibia, length of longest feather-like seta 1.76 times tibial width.



ABDOMEN. Elliptical and broad, dorsoventrally flattened. No differentiated setae. Ratio of abdomen length/thorax length 1.49. Ratio of abdomen width / thorax width 1.39. Ratio of abdomen length/ abdomen width 1.48.

TERMINALIA (Fig. 2K–O). Cerci midventral opening lateral border visible in dorsal view, as a small lappet; posterolateral lobes usually more developed. Postgonite slightly enlarged distally in posterior view. Phallapodeme widened apically. Basiphallus forming a complete ring, fused posteriorly.



**Fig. 9.** *Ectophasiopsis ypiranga* sp. nov., ♂, holotype, Brazil, São Paulo, CEIOC. **A.** Dorsal view. **B.** Lateral view. **C.** Head, dorsal view. **D.** Head, lateral view. **E.** Abdomen, dorsal view. **F.** Wing, dorsal view. Scale bars: 1 mm.

### **Variation in the large-dark form**

BODY LENGTH. 7.4–8.0 mm (n = 5).

COLORATION. Frontal vitta and postpedicel darker. Presutural scutum covered with light-golden to silver pruinosity. Postpronotal lobe with light-golden to silver pruinosity. Postsutural scutum with silver pruinosity, sometimes only as two longitudinal thin lines. Scutellum lighter in ground color. Thorax laterally with light-golden pruinosity. Wings with radiation sometimes pale-yellow; infusate band ranging little further but weakly infusate; in this form the hyaline border entering cell dm is weakly distinguished. Calypters pale-yellow. Abdomen darker with yellow borders sometimes not distinguishable or narrower; brown to dark-brown median line ranging from tergites 2 to 4 or 3 to 4; tergite 4 sometimes dark-brown posteriorly; tergite 5 fully dark-brown; tergite 6 yellow to tawny, sometimes with brown markings; or fully tawny to brown.

HEAD. Ratio of head width/thorax width dorsally 1.36 to 1.5. Ratio of frontal vitta width at level of lunula/width at vertex level 0.6 to 0.74. Ratio of gena height/eye height 0.13 to 0.17. Wing. Ratio of wing length/wing maximum width 2.41 to 2.8.

LEGS. Hind femur with row of short anterodorsal setae very weak; hind tibia with row of longer feather-like setae covering apical 0.77 to 0.84 of tibia, length of longest feather-like seta 1.42 to 1.76 times tibial width.

ABDOMEN. Ratio of abdomen width/thorax width 1.3 to 1.49. Ratio of abdomen length/abdomen width 1.43 to 1.57.

### **Variation in the small-yellow form (Fig. 11)**

BODY LENGTH. 5.8–7.2 mm (n = 5).

COLORATION. Fronto-orbital plate with light-golden to silver pruinosity. Presutural scutum covered with light-golden to silver pruinosity. Postpronotal lobe with light-golden to silver pruinosity. Wings with infusate band always well defined, hyaline border wider. Abdomen yellow, sometimes fully, or yellow with brown markings: brown to dark-brown median line from tergites 3 to 5 or 4 to 5, varying in intensity; tergite 4 with small markings and tergite 5 with larger markings, sometimes almost entirely brown; one specimen with all abdomen covered with brown markings; all variations can have silver pruinosity on tergites 5 and 6.

THORAX. Postpronotal lobe sometimes with 1 seta.

WING. Elliptical, anal lobe sometimes not large. Ratio of wing length/wing maximum width 2.62 to 2.85. Lower calypter external lobe sometimes less enlarged.

LEGS. Hind femur with row of short anterodorsal setae on apical half, sometimes not differentiated or very weak, and row of weak posteroventral setae on apical third sometimes very weak; length of longest feather-like seta 1.51 to 2.14 times tibial width.

ABDOMEN. Elliptical, sometimes narrower (ratio of abdomen width/thorax width 1.22 to 1.38), slightly longer (ratio of abdomen length/thorax length 1.46 to 1.64), less dorsoventrally flattened.

### **Female (Fig. 10)**

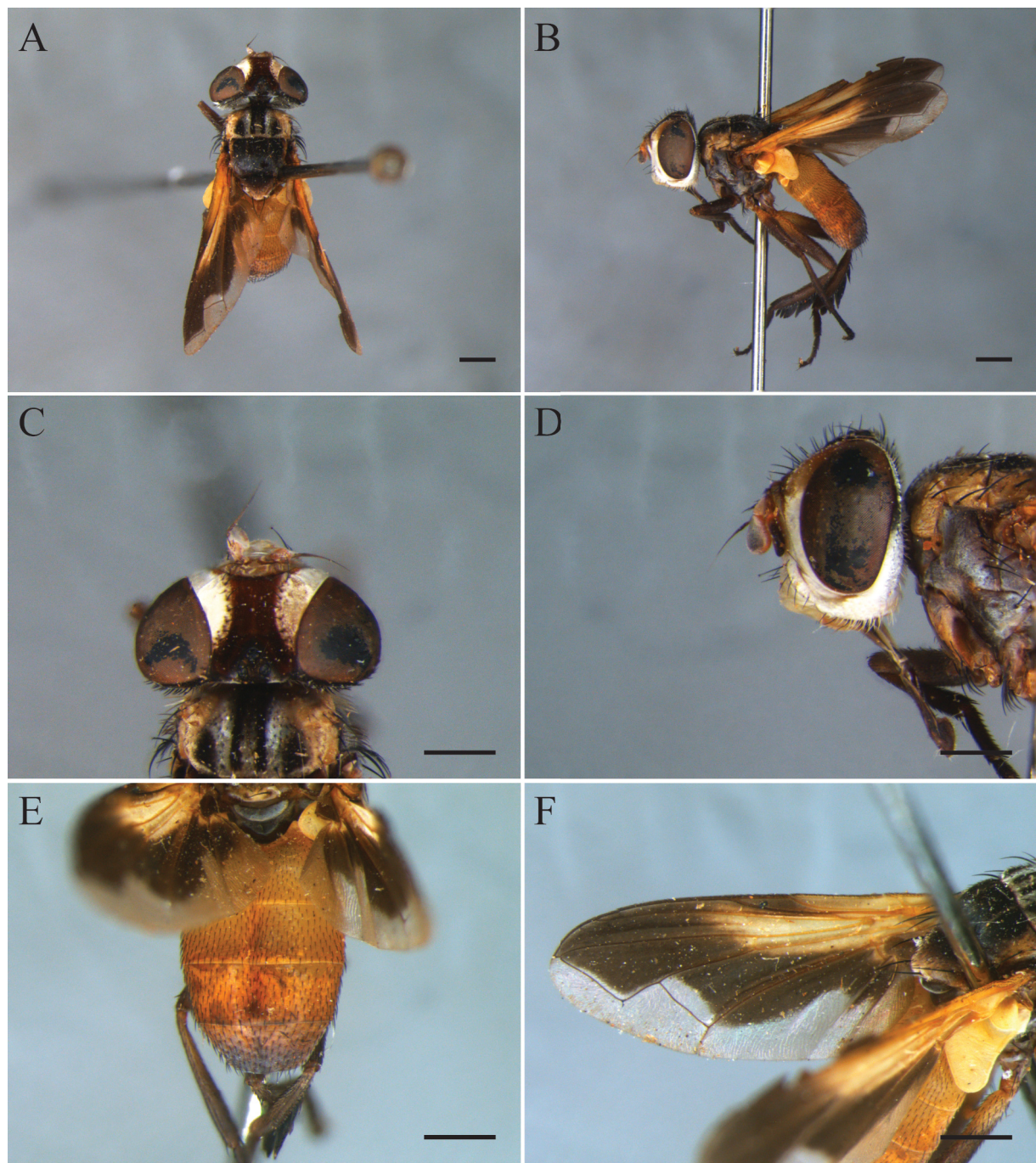
The female is almost entirely similar to the small, yellow male form, differing from it as follows:

BODY LENGTH. 5.9–7.0 mm (n = 5).



**COLORATION.** Abdomen with tergite 3 sometimes with brown markings posteriorly; tergite 4 with small triangular median posterior markings or all infused with brown varying in intensity; tergite 6 brown to black, rarely light tawny; rarely abdomen almost fully yellow.

**ABDOMEN.** Sometimes slightly ovate.



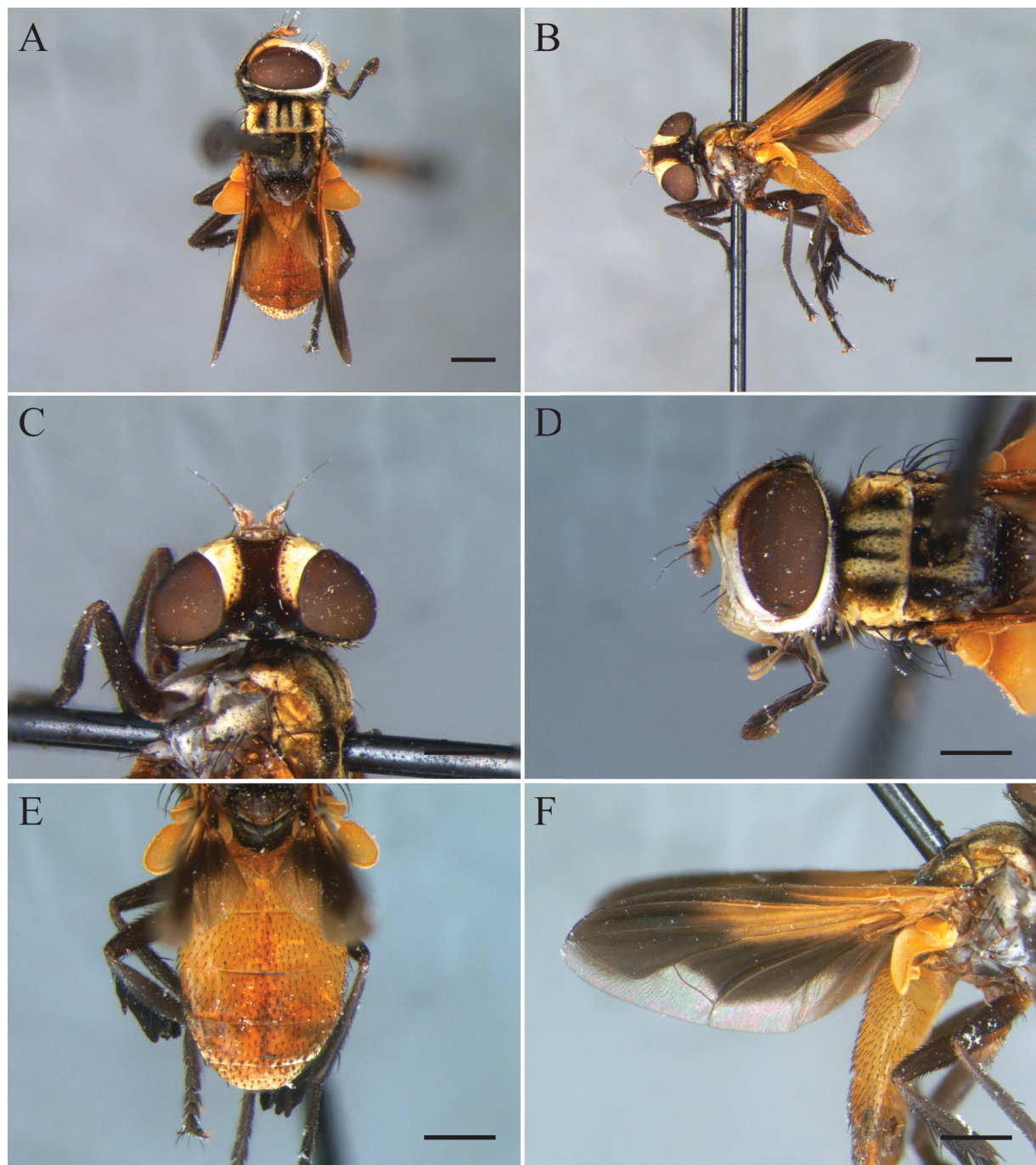
**Fig. 10.** *Ectophasiopsis ypiranga* sp. nov., ♀, paratype, Brazil, Passos, DZUP. **A.** Dorsal view. **B.** Lateral view. **C.** Head, dorsal view. **D.** Head, lateral view. **E.** Abdomen, dorsal view. **F.** Wing, dorsal view. Scale bars: 1 mm.



TERMINALIA (Fig. 3B). Sternite 8 short, slightly slenderer and longer than in *E. gradata* comb. nov., rounded distally, with small membranous invagination ventrally.

**Distribution** (Fig. 4)

Brazil (Mato Grosso, Goiás, Minas Gerais, Mato Grosso do Sul, Rio de Janeiro, São Paulo), and Argentina.



**Fig. 11.** *Ectophasiopsis ypiranga* sp. nov., ♂, paratype, Brazil, Maracajú, USNM. **A.** Dorsal view. **B.** Lateral view. **C.** Head, dorsal view. **D.** Head, lateral view. **E.** Abdomen, dorsal view. **F.** Wing, dorsal view. Scale bars: 1 mm.

## Remarks

This species exhibits polymorphism and two male forms are recognizable: 1) a large and dark form, with darker abdomen and wings, wings slightly larger; and 2) a smaller and paler form, which resembles the females, with light abdomen and wings, and wings as in females. To avoid any further confusion concerning the identity of this species, the holotype designated here was selected among a male representative of the large-dark form, with the description based on the dark-large male form, and the small-yellow male form is described in the ‘Variation’ section. The male polymorphism observed in *E. ypiranga* sp. nov. is better discussed in the Discussion section of this publication.

## Ectophasiopsis host list

Below we present an updated list of records found during the course of this revision since Guimarães (1977), as well as new records:

### *Ectophasiopsis arcuata*

Hemiptera: Pentatomidae:

*Acledra albocostata* (Spinola, 1852): Guimarães (1977).

*Acledra dimidiaticollis* (Spinola, 1852): Guimarães (1977).

*Nezara viridula* (Linnaeus, 1758): Jones (1988) (Chile); Ripa *et al.* (1995) (Easter Island).

### *Ectophasiopsis gradata* comb. nov.

Hemiptera: Coreidae:

*Athaumastus haematicus* (Stål, 1860): Guimarães (1977); Liljesthröm (1992) (Argentina, Buenos Aires).

Hemiptera: Pentatomidae:

*Dichelops furcatus* (Fabricius, 1775): new record (Brazil, Rio Grande do Sul; Uruguay, Paysandú).

*Dichelops melacanthus* (Dallas, 1851): new record (Brazil, Paraná).

### *Ectophasiopsis ypiranga* sp. nov.

No host records.

## Discussion

Considering the fact that *Ectophasiopsis* was so far known by its original description (Townsend 1915) only, the detailed descriptions and illustrations provided in this revision, after 101 years, will improve our understanding of this obscure genus and closely related taxa. With the present revision, two species (a new combination and a new species) are added to the previously monotypic genus *Ectophasiopsis*. Its systematic placement was controversial, but now is allocated in the tribe Gymnsomatini, close to the former genera of Trichopodini, mainly based on characters of male and female terminalia: the characteristic fused cerci and the asymmetric, complex distiphallus in the male, and the plate-like cerci and characteristic weakly sclerotized sternite 8 in the female, common features in many species of Trichopodini. Male and female terminalia had not been described before for *Ectophasiopsis*, although Verbeke (1962: plate XIV, fig. 3) illustrated the male terminalia of “*Trichopoda* sp.” that is probably a misidentification, as the characteristic ring-like plate of *Ectophasiopsis* is noticeable.

*Ectophasiopsis* shares some characteristics with *Trichopoda*, but also has some distinct features as mentioned in the identification key (in head structure and coloration, wing venation and color pattern, and claw coloration), in addition to differences in the male terminalia (mainly related to the ring-shaped distiphallus). Considering these distinctive features, we consider *Ectophasiopsis* to be a valid genus. Additional sampling from different places in South America will quite probably produce more species of *Ectophasiopsis*. Moreover, further phylogenetic studies using a wide range of characters (morphological



and molecular) and including a more representative Neotropical sampling of Gymnosomatini, where most genera and species occur, will contribute towards a better understanding of the supra-generic relationships and generic delimitations.

Here, we also report a possible male polymorphism for *Ectophasiopsis ypiranga* sp. nov., one of the first reports in Tachinidae. Dimorphism in males has been observed in more than 200 insect species of 11 different orders, and in some species male dimorphism is related to the mating system and, therefore, related to sexual selection (Buzatto *et al.* 2014). In this scenario, the occurrence of alternative reproductive tactics could be expected, where one gender uses alternative ways, such as different behavior or sperm competition, to achieve fertilization (Taborsky *et al.* 2008). These alternative tactics could be related to the occurrence of alternative phenotypes. Alternative reproductive tactics are expected to evolve more often within males because of the higher investment from females (Taborsky *et al.* 2008). This question could be tested and better understood in further studies. The two forms of *E. ypiranga* sp. nov. are described as conspecific based on similarities in the male terminalia, while the female is very uniform throughout the distributional range of the species. On the other hand, it is possible that this species represents a complex of cryptic species, which may be better tested with molecular studies.

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