

## A new species of *Mesembrinella* (Diptera: Calliphoridae: Mesembrinellinae) from Colombia

Nueva especie de *Mesembrinella* (Diptera: Calliphoridae: Mesembrinellinae) para Colombia

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**Abstract:** *Mesembrinella* is a Neotropical genus with only three species reported for Colombia: *M. apollinaris*, *M. bicolor* y *M. umbrosa*. This paper describes a new species of the genus; *Mesembrinella patriciae* sp. nov. which is found in the departments of Antioquia, Caldas, Norte de Santander, Quindío, Risaralda and Santander (Central and Eastern Andean mountain range) between 1,900-2,800 masl. Identification key of the species of *Mesembrinella* and description of the male and female of the new species are provided along with illustrations of the terminalia.

**Key words:** Andean biodiversity. Neotropical Region. Taxonomy.

**Resumen:** *Mesembrinella* es un género neotropical con sólo tres especies reportadas para Colombia: *M. apollinaris*, *M. bicolor* y *M. umbrosa*. En este trabajo se describe una nueva especie del género; *Mesembrinella patriciae* sp. nov. que se encuentra en los departamentos de Antioquia, Caldas, Norte de Santander, Quindío, Risaralda y Santander (Cordillera Central y Oriental) entre 1.900 a 2.800 msnm. Se presenta la clave para la identificación de *Mesembrinella*, y la descripción del macho y la hembra de la nueva especie, con ilustraciones de la terminalia.

**Palabras clave:** Biodiversidad andina. Región Neotropical. Taxonomía.

### Introduction

*Mesembrinella* Giglio-Tos, 1893 is one of the nine genera of Mesembrinellinae Shannon, 1926, a Calliphoridae subfamily restricted to the Neotropical Region (Mello 1967; Toma and Carvalho 1995). The species of *Mesembrinella* are found in areas with undisturbed native vegetation, and are considered to be asynanthropic (Nourteva 1963), associated with decomposed animal and vegetable matter. There are 13 species described for this genus (Guimarães 1977), distributed from the south of Mexico to the north of Argentina (Peris and Mariluis 1984). Only three species of *Mesembrinella* have been reported for Colombia: *M. apollinaris* Seguy, 1925 from Villavicencio, Department of Meta; *M. bicolor* (Fabricius, 1805) and *M. umbrosa* (Aldrich, 1922) (Pape *et al.* 2004), from "Aguacatal River" Guimarães (1977), probably referring to the Department of Valle del Cauca.

Male and female of *Mesembrinella patriciae* sp. nov. are described based on specimens collected in the Cordillera Central and Cordillera Oriental (Central and Easter Andean mountain range). A key to identification the species of the genus *Mesembrinella* and illustrations of male genitalia of the new species and of *M. bicolor* (species closely related) are shown.

### Material and methods

Material examined is deposited in the Laboratorio de Colecciones Entomológicas de la Universidad de Antioquia, Colombia (CEUA). The specimens were collected in Antioquia, Caldas, Quindío and Risaralda (Central Andean mountain range), Norte de Santander and Santander (Eastern Andean mountain range), between 1,900 and 2,800 masl.

The type material of the new species is deposited in the Colección de Entomología de la Universidad de Antioquia (CEUA), Medellín, and Instituto de Investigación de Recursos Biológicos Alexander von Humboldt (IAvH), Villa de Leyva.

The morphological description used to diagnose and describe the male of the new species follows McAlpine (1981). Body length was recorded from the front to the apex of the abdomen, and the wing length was taken from the alar sclerite to the wing apex. To study the male genitalia, the abdomen was submerged in 10% potassium hydroxide (KOH) at room temperature for 24 hours, rinsed in acetic acid for 10 minutes, followed by distilled water for 10 minutes, and finally placed in ethanol 70% with glycerin (9:1) until dissection of genitalia.

For description and illustration purposes, the genitalia were dissected using an Olympus® SZ60 microscope. The photos were taken using a Leica® M205c stereomicroscope. All the dissected structures were preserved in 200 µL plastic tubes with glycerin; any remaining parts of the specimen were mounted using insect pins.

### Taxonomy

*Mesembrinella* Giglio-Tos, 1893: 4. Type species, *Musca quadrilineata* Fabricius, 1805 original description; misidentification = *Mesembrinella (Mesembolia) bellardiana* Aldrich, 1922; Giglio-Tos 1895: 11; Wulp 1826: 300; Hough 1899: 64; Aldrich 1905: 518; 1922:10; 1925: 22,12; Surcouf 1919: 72; Shannon 1926: 120; Hall 1948: 64; Mello 1967: 47; James 1970: 3; Guimarães 1977: 16; Peris and Mariluis 1984: 253; Mariluis 1987: 107; Maes *et al.* 1994: 16; Toma and Carvalho 1995: 136; Vargas and Wood 2010: 1299; Marinho *et al.* 2012: 842.

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**Diagnosis**

*Mesembrinella* (according to Guimarães 1977) differs from the other genus of Mesembrinellinae in the following combination of characters: humeral callus with three setae; post humerals present; two or three katepisternal setae and remigium from ciliate to bare.

**Monophyly.** According to Toma and Carvalho (1995), there has not yet been any reported character that supports monophyly of this genus.

**Key to species of *Mesembrinella***

(Adapted from Guimarães 1977)

1. Basal section of stein vein (remigium) ciliate dorsally.... 2
- 1'. Basal section of stein vein (remigium) bare dorsally ..... 3
2. Subcostal sclerite ciliate.....*M. bellardiana* Aldrich
- 2'. Subcostal sclerite bare.....*M. peregrina* Aldrich
3. Supra-alar setae 3 or 4; abdomen densely with tomentum and with clothing setulae arising from a small shining spot...  
.....*M. batesi* Aldrich
- 3'. Supra-alar setae 3; abdomen densely with tomentum and without clothing setulae arising from a small shining spot. 4
4. Subcostal sclerite bare..... 5
- 4'. Subcostal sclerite ciliate ..... 8
5. Mesonotum black..... 6
- 5'. Mesonotum reddish brown to orange yellow ..... 7
6. Two post-alar setae; postpronotal lobe yellow .....  
.....*M. flavicrura* Aldrich
- 6'. Three post-alar setae; postpronotal lobe black .....  
.....*M. xanthorrhina* (Bigot)
7. Wings with internal margin of the inferior calypter truncated, projecting towards the scutellum; superior calypter slightly infuscated around it (Figs. 2H-N).....*M. bicolor* (Fabricius)
- 7'. Wings with internal margin not truncated, not projecting towards the scutellum; both calypteres with margin infuscated .....  
.....*M. patriciae* sp. nov.
8. Acrostichal setae 1:1.....*M. semihyalina* Mello
- 8'. Acrostichal setae different (2:1, 2:2, 2:3) ..... 9
9. Big species (body length 13mm or more); wings with distance between veins R4 + 5 and M more than half the distance between veins R2+3 and R4+5..... 10
- 9'. Medium to small-sized species; distance between veins R4 + 5 and M less than half the distance between veins R2+3 and R4 + 5 ..... 13
10. Facial ridge with brown to black cilia above vibrissae; wing strongly infuscated or with spot around veins; head silvery tomentum ..... 11
- 10'. Facial ridge with orange yellow cilia above vibrissae; wings hyaline, with a strong black spot along costa, not around others veins; head golden tomentum .....  
.....*M. currani* Guimarães
11. Face, facial plate and palpi yellow-orange..... 12
- 11'. Face, facial plate and palpi chestnut (black-brown) .....  
.....*M. apollinaris* Séguy
12. Wings strongly infuscated on apical half and around veins; abdominal T3 –T4 with row of marginal setulae; post-alar setae 2; paraphallus without denticles.....  
.....*M. pictipennis* Aldrich
- 12'. Wings faintly infuscated; abdominal T3-T4 without row of marginal setulae; post-alar setae 3; paraphallus with denticles .....  
.....*M. umbrosa* Aldrich
13. Femur pale (yellow orange); abdomen with tomentum

- over all tergites, T4 and T5 with oblique bands..... 14
- 13'. Femur dark (chestnut – red-chestnut ), with the apical ¼ pale (yellow); abdomen with tomentum only at the T1+2 and T3 .....*M. brunripes* Surcouf
14. Male with a pair of reclinate orbitals setae in front ocellus.....*M. abaca* (Hall)
- 14'. Male without reclinate orbitals setae.....  
.....*M. townsendi* Guimarães

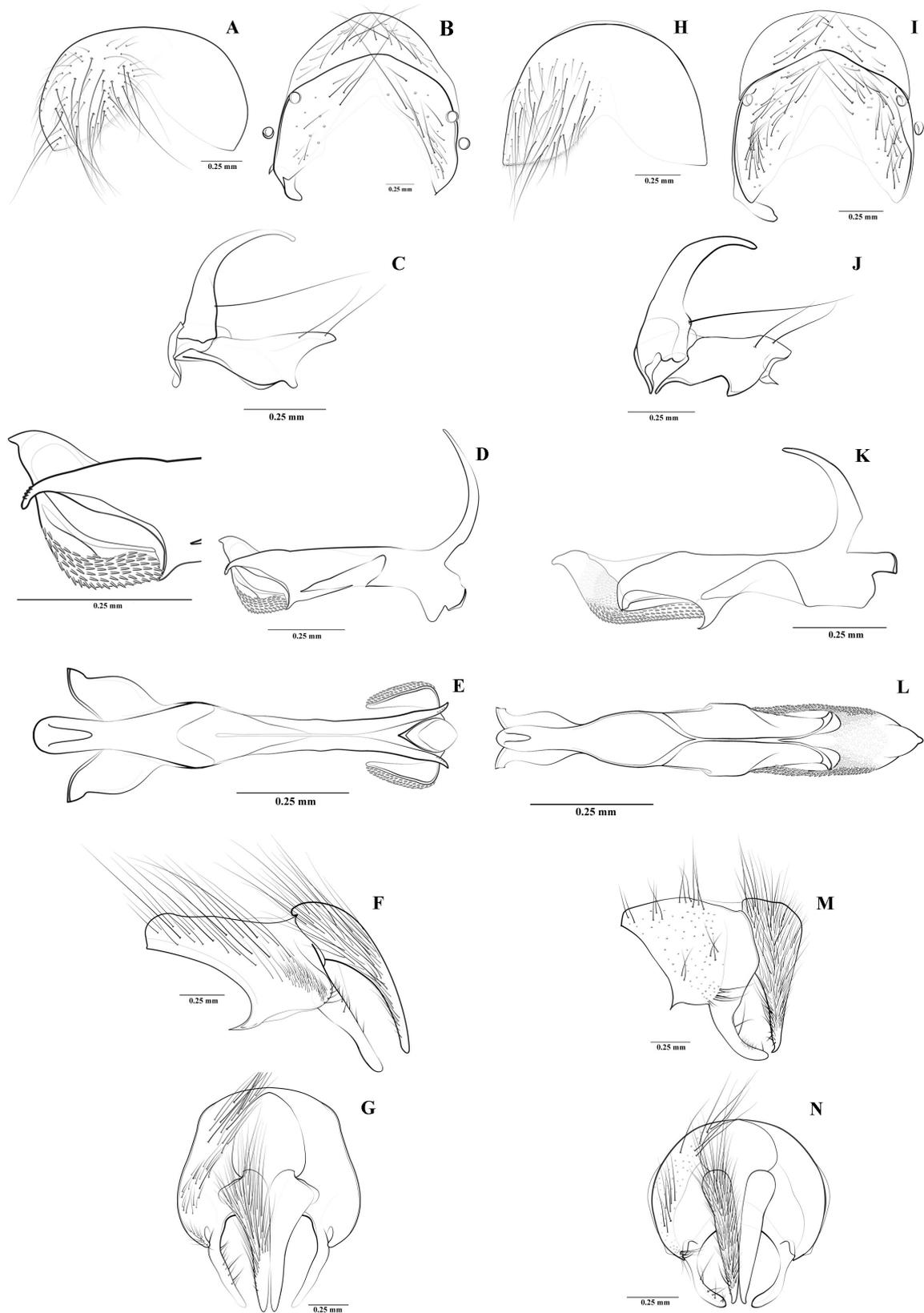
***Mesembrinella patriciae* sp. nov.** (Figs. 1, 2A-G)

**Diagnosis.** Medium to large flies; male holoptic; lower calypter narrow, rounded posteriorly, with anteromedian angle distinctly lateral to base of scutellum, not directed towards the scutellum; subcostal sclerite and basal section of stein vein bare (remigium); apical tip of paraphallus with denticles.

**Description male.** Head: holoptic, frontal vitta obliterated, chestnut color, widened when reaching the lunule, in the more slender portion with approximately 1/2 diameter of the anterior ocelli; parafrontal and parafacialia yellow with silver tomentum and bare; gena yellow with silver tomentum, postgena and occiput white tomentum, with thin and long hairs; face and clypeal membrane pale; ocellar triangle chestnut; scape, pedicel, flagellomere and palp orange in color. Chaetotaxy: ocellar setae 2 pair parallel and proclinate; postocellar setae 1 pair parallel; outer vertical setae 1 pair parallel; inner vertical setae 1 pair crossed; para-vertical 1 pair convergent; post-ocular seta black homogeneously distributed up to the gena; inter-frontal and orbital proclinate absent; facial carina slightly prominent with few short black setulae at base, above vibrissae; vibrissae crossed; subvibrissae approximately ½ length of vibrissae. Thorax: Mesonotum red chestnut, with white tomentum and defined longitudinal testaceous bands; pleura and humeral callus orange with fine white tomentum; anterior and posterior spiracles pale yellow; legs with coxae, trochanters and femora orange, mid and posterior femora with apexes dark chestnut; mid femur with three apical posterodorsal setae and one antero-medial setae. Chaetotaxy: postpronotal lobe 3; post-postpronotal 1;



**Figure 1.** Habitus of *Mesembrinella patriciae* sp. nov. Paratype male: 1, lateral view. Scale bar = 2 mm.



**Figure 2.** Male terminalia of *Mesembrinella patricia* sp. nov., Paratype, male: **A.** Sternite 5, dorsal view; **B.** Sternite 6, dorsal view; **C.** Posgonite and pregonite, right lateral view; **D.** Aedeagus, right lateral view; **E.** Aedeagus, right dorsal view; **F.** Epandrium, surstylus and cercus, left lateral view; **G.** Epandrium, surstylus and cercus, posterior view. Male terminalia of *Mesembrinella bicolor*: **H.** Sternite 5, dorsal view; **I.** Sternite 6, dorsal view; **J.** Posgonite and pregonite, right lateral view; **K.** Aedeagus, right lateral view; **L.** Aedeagus, right dorsal view; **M.** Epandrium, surstylus and cercus, posterior view; **N.** Epandrium, surstylus and cercus, left lateral view. Scale bars: 0.25 mm.

acrostichal 2:3; dorso-central 2:3; intra-alar 1:2, supra-alar 3; pre-sutural 1; post-alar 3, apical-scutellar 1, discal-scutellar 1, prebasal-scutellar 1 thin, subapical-scutellar 3; proepimeron 2; anepisternum 6; katapisternum 2+1; meron-setae as an inverted "L"; post-alar wall with few black setulae; suprasquamal bridge naked. Wings: Hyaline, with a brown spot restricted to r-m; tegula and basicosta orange; subcostal sclerite and remigium naked; meeting point of R2+3 and R4+5 with three or five setulae. Distance between apex of R4+5 and M much less than half the length between apex R2+3 and R4+5. Calypteres with dark edge; lower calypter with lobular internal margin, not directed towards the scutellum. Abdomen: Bluish to green purplish metallic, except base of T1+2 which is yellow; T1+2 without lateral discal setae parallel to tergite; T1+2 and T3 with two marginal lateral setae; T4 and T5 with complete marginal setae. Terminalia: St 5 with round lobes (Fig. 2A); T6 partially melted to T7+8 (Fig. 2B); pregonite apically truncated (Fig. 2C); apical tip of paraphallus with dorsal line of denticles (Figs. 2D-E); hypophallus less than the length of paraphallus; epiphallus long and thin (Fig. 2D); cercus and surstyli in lateral view slightly curved (Figs. 2F-G).

**Measurement.** Body length 9 to 10 mm (n = 55).

**Female differs from male as follows.** Head: Dichoptic, front wide chestnut color. Chaetotaxy: a pair of interfrontal setae, outer vertical setae slightly divergent; a pair of upper orbital setae slightly divergent; two pairs of lower orbital proclinate.

**Measurement.** Body length 10 mm (n = 114).

### Discussion

This species is closely related to *M. bicolor* (Fabricius) (Figs. 9-15) differing by the lower calypter with lobular internal margin, not directed towards the scutellum; calypteres with dark edge; surstyli in lateral view slightly curved and apical tip of paraphallus with dorsal line of denticles.

**Distribution.** Colombia: Departments of Antioquia, Caldas, Norte de Santander, Quindío, Risaralda, and Santander [Sistema Andino, Cordilleras Central and Oriental (Central and Eastern Andean mountain range)].

**Etymology.** The name is a tribute to my friend and colleague Entomologist Patricia Duque Velez, field researcher, for her countless contributions to the insect collections of Colombia.

**Material examined.** Holotype male: Co [Colombia] / Qui [Quindío] / Filandia / Granja Experimental Bengala / native forest, 2020 msnm [meters above level sea], 04°41'10"N; 75°37'2"W, T-vsr pez [Trampa vansomer pez], 13-19-Nov-2010, G. Entomología [Grupo de Entomología] CEUA (48390).

**Paratypes:** (58♂♂, 112♀♀). **COLOMBIA.** **Antioquia,** Jardín-Támesis, Reserva Natural Cuchilla, Bosque nativo, 2.700-2.800 m, Manual, 19-May-2006, G. Entomología [Grupo de Entomología], [CEUA]; 1♂ dissected, **Caldas.** Manizales, Vereda La Florida, Reserva Rio Blanco, Bosque

nativo, 2.592 m, Manual, 04-abr-2005, Grupo de Entomología, [CEUA]; 1♀. Other specimens with the same label information, except for: Trampa vansomer pez, [CEUA]. 3♀♀, **Norte de Santander.** Cucutilla, Carrizal Sisavita, Bosque nativo, 1.900 m, 7°28'16,6"N 72°49'48"O, Trampa vansomer pez, 19-ago-2001, P. Duque & A. Vélez, [CEUA]. 1♀, **Quindío.** Salento, Vereda Cana, Finca El Embrujado, Bosque nativo, 1.700 m, Trampa vansomer pez, 15-nov-2009, A. Vélez & A.L. Montoya, [CEUA]; 1♂, Filandia, Granja Experimental Bengala, Bosque nativo, 2.020 m, 04°41'10"N 75°37'2"O, Trampa vansomer pez, 13-19-nov-2010, P. Duque & A. Vélez, [CEUA]. 31♂♂, 32♀♀. **Risaralda.** Pereira, SFF Otún Quimbaya, Santuario Fauna y Flora Otún Quimbaya, Bosque nativo, 1.900 m, Trampa vansomer pez, 07-may-2001, Grupo de Entomología, [CEUA]; 5♂♂, 36♀♀. Pereira, SFF Otún Quimbaya, Santuario Fauna y Flora Otún Quimbaya, Bosque nativo, Cuchilla camino, 4°44'N 75°35'O, 1.960 m, Trampa Malaise, 15-sept-2004, G. López, [IAvH 5039]; 7♂♂, 14♀♀. **Other specimens with the same label information, except for:** 12-jul-2004, G. López, [IAvH 5041]; 1♂, 2♀♀. 28-jul-2004, G. López, [IAvH 5043], 1♂. Robledal, 4°44'N 75°35'O, 1.980 m, Trampa Malaise, 16-jul-2004, G. López, [IAvH 5055], 2♂♂, 2♀♀. 27-Nov-2003, G. López, [IAvH 4185], 3♀♀. 22-dic-2003, G. López, [IAvH 4186], 3♀♀. 7-feb-2004, G. López, [IAvH 4769], 1♂. 26-may-2004, G. López, [IAvH 4773], 2♀♀. Urapanera, 1.960 m. 12-jul-2004, G. López, [IAvH 5035], 5♂♂, 2♀♀. Quimbaya, Kerman-Panaca, Bosque nativo, 1.339 m, Trampa vansomer pez, H. Vargas, [CEUA]. 1♀, **Santander.** El Carmen de Chucurí, Alto de Cascajales, Finca Rasgón, Bosque nativo, 2.200 m, Trampa vansomer pez, 21-oct-2000, Grupo de Entomología, [CEUA]; 1♂, 2♀♀. Pie de Cuesta, Vereda Cristalina, Bosque nativo, 2.390 m, Trampa vansomer pez, 05-ago-2001, P. Duque & A. Vélez, [CEUA]; 1♂, 8♀♀. Betulia, Palma de oro, Bosque nativo, 1.900 m, Trampa vansomer pez, 12-oct-2001 A. Vélez & P. Duque, [CEUA].

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