Scientific Note

# New geographical records of Mesembrinellidae (Diptera: Oestroidea) in Mexico

Nuevos registros geográficos de Mesembrinellidae (Diptera: Oestroidea) en México

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**Abstract.** Currently, the family Mesembrinellidae has 55 extant species restricted to the Americas. In this study, the distribution of 6 out of 55 species which corresponds to the Mexican species of the family is discussed. New geographical records are presented for *Laneella fuscosquamata* Whitworth, 2019, *Mesembrinella bicolor* (Fabricius, 1805), and *Mesembrinella socors* (Walker, 1861). Furthermore, a complete list of synonyms is provided for each species.

**Key words:** Blow flies; Neotropical region; species distribution; species list.

**Resumen.** Actualmente la familia Mesembrinellidae cuenta con 55 especies restringidas a las Américas. En este estudio la distribución de 6 de las 55 especies, las cuales corresponden a las especies mexicanas, es discutida. Se presentan nuevos registros geográficos para *Laneella fuscosquamata* Whitworth, 2019, *Mesembrinella bicolor* (Fabricius, 1805) y *Mesembrinella socors* (Walker, 1861). Además, se presenta una lista completa de las sinonimias para cada especie.

**Palabras clave:** Distribución de especies; listas de especies; moscas metálicas; región neotropical.

Family Mesembrinellidae Shannon, 1926 is a group of calliphorid-related Diptera, with a distribution restricted to the Neotropical region, the species are most abundant in tropical rain and cloud forests (Guimarães 1977; Vargas & Wood 2009; Whitworth & Yusseff-Vanegas 2019) and the distribution is recorded from southern Mexico to Argentina (Bonatto & Marioni 2005; Marinho *et al.* 2017). Currently, 55 species have been described (Aldrich 1922, 1925; Townsend 1931; Hall 1948; Mello 1967; Gimarães 1977; Bonatto 2001; Peris & Mariluis 1984; Toma & Carvalho 1995; Wolff 2013; Wolff *et al.* 2013, 2017; Marinho *et al*. 2017; Whitworth & Yusseff-Vanegas 2019).

Mesembrinellids were considered a subfamily of Calliphoridae, Guimarães (1977) was the first to propose the family status, however, most authors still considered them as a subfamily through the years (Pape 1992; Rognes 1997), other studies found it closely related to the family Tachinidae (Kutty *et al.* 2010), but recently Marinho *et al.* (2017) provided molecular data and Cerretti *et al*. (2017) provided additional fossil, morphological and molecular evidence that consequently support its monophyly as a separate family, being the sister group of Ulurumyiidae and the sister clade to the rest of the Oestroidea families (Sarcophagidae, Calliphoridae, Tachinidae, and Oestridae).

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There were 9 recognized genera of Mesembrinellidae, *Giovanella* Bonatto, 2005, *Eumesembrinella* Townsend, 1931, *Albuquerquea* Mello, 1967, *Huascaromusca* Townsend, 1918, *Henriquella* Bonatto, 2005, *Thompsoniella* Guimarães, 1977, *Laneella* Mello, 1967, *Mesembrinella* Giglio-Tos, 1893, *Souzalopesiella* Guimarães, 1977 (Guimarães 1977; Bonatto & Marinoni 2005; Wolff 2013; Wolff *et al*. 2013, 2014). Cerretti *et al.* (2017) described a fossil species of *Mesembrinella* and discussed the phylogeny of the family and recommended all genera should be synonymized as *Mesembrinella*, Marinho *et al.* (2017) proposed some synonymizing as well, finally, Whitworth & Yusseff-Vanegas (2019) accepted the synonymization proposed by Marinho *et al*. (2017) leaving the family with only 3 subfamilies (Laneellinae, Mesembrinellinae, Souzalopesiellinae) and 3 genera (*Laneella*, *Mesembrinella*, *Souzalopesiella*), with all the previous species synonymized in these genera and formed six species groups for the species in the genus *Mesembrinella* that is *M. latifrons* (Mello), *M. spicata* (Aldrich), *M. bolivar* (Bonatto), *M. aeneiventris* (Wiedemann), *M. bicolor* Fabricius, *M. anomala* Guimarães groups (*sensu* Whitworth & Yusseff-Vanegas 2019). So, in this work, we follow the classification of Whitworth & Yusseff-Vanegas (2019).

Following the most recent review of the family (Whitworth & Yusseff-Vanegas 2019) only 6 of the 55 valid species are distributed in Mexico namely, *Laneella fuscosquamata* Whitworth, 2019; *Mesembrinella mexicana* Whitworth, 2019; *M. bicolor* (Fabricius, 1805); *M. spicata* Aldrich, 1925; *M. xanthorrhina* (Bigot, 1887); *M. socors* (Walker, 1861) (Guimarães 1977; Kosmann *et al.* 2013; Wolff & Kosmann 2016; Marinho *et al*. 2017; Whitworth & Yusseff-Vanegas 2019). However, the species *M. bellardiana* Aldrich, 1922 is mentioned by some authors to be distributed in Mexico (James 1970; Kosmann *et al*. 2013; Wolff & Kosmann 2016) on the contrary Marinho *et al*. (2017) and Whitworth & Yusseff-Vanegas (2019) mention the distribution of this species to be restricted to South America and they do not list Mexico in the distribution. As no material is available for examination and the records listed for Mexico do not have a specific locality, the species is not considered as part of the Mexican fauna until further evidence proves otherwise.

All species were identified using the key from Whitworth & Yusseff-Vanegas (2019). Last abdominal segments of male specimens were dissected, cleared in NaOH 10% for 24 hours, rinsed in distilled water and stored in micro vials with 1:1 glyceryl-ethanol and pinned with specimen.

**Collections visited.** Colección Entomológica, Instituto de Ecología, Veracruz, Xalapa, Mexico (IEXA); Colección Nacional de Insectos, Instituto de Biología, Universidad Autónoma de Mexico, Ciudad de Mexico, Mexico (CNCI).

**List of Mexican species of Mesembrinellidae**

### *Laneella fuscosquamata* Whitworth, 2019
(Fig. 1A)

*Laneella fuscosquamata* Whitworth, 2019 in Whitworth & Yusseff-Vanegas 2019: 27.

**Distribution.** Guatemala, Mexico (Ciudad de Mexico, Chiapas (Whitworth & Yusseff-Vanegas 2019)). **New records**: Tlaxcala, Veracruz.

**Material examined.** 1 male, 1 female. Mexico, Veracruz, Municipio Xalapa, Santuario de Bosque de Niebla, Cloud Forest. 11-05-2016, Squid baited trap. Santiago Jaume, col. [IEXA]. 1 female. Mexico, Tlaxcala, Nanacamilpa, ANP Bosque Mágico de Piedra Canteada, Oak-Pine Forest, 2831 masl. Malaise trap. Marquez Y. & Contreras A., col. [CNCI].

### *Mesembrinella bicolor* (Fabricius, 1805)

*Musca bicolor* Fabricius, 1805; important reference: Wiedemann 1830 (review and description of other characters).
*Calliphora socors* Walker, 1860; James 1970 says it's a synonym of *M. bicolor* (Fabricius).
*Mesembrinella bicolor* Giglio-Tos, 1893; Giglio-Tos 1895; Surcouf 1919; Aldrich 1922, 1925; Townsend 1931 (Reviewed type of Fabricius); Engel 1931; James 1970.
*Ochromyia bicolor* (Fabricius): Surcouf 1919 (reviewed type of Fabricius) and determined the synonymy of *Musca bicolor* (Fabricius).
*Mesembrinella aeneiventris* van der Wulp, 1896; van der Wulp 1903.
*Mesembrinella transposita* Séguy, 1925; synonymy determined by Guimarães (1977) and Peris & Mariluis (1984).
*Huascaromusca bicolor* Hall, 1948; synonymy determined by Guimarães (1977).

**Distribution.** Bolivia, Brazil, Costa Rica, Ecuador, El Salvador, French Guiana, Guatemala, Honduras, Mexico, Panama, Peru, Suriname, Trinidad, Venezuela. Mexico (Tamaulipas, Whitworth & Yusseff-Vanegas (2019)). This is the **first record** for Morelos and Veracruz.

**Material examined.** 2 males, 24-VIII-2017. Chicken carrion baited trap. Mexico, Morelos Yautepec. Low deciduous forest. 1 male 15-XI-2017. Chicken carrion baited trap. 1 male, 1 female 17-XI-2017, beef carrion baited trap. 1 male 25-VII-2018, chicken carrion baited trap, Mexico, Veracruz, Xalapa. Montane cloud forest. Santiago Jaume, col. [IEXA]

### *Mesembrinella mexicana* Whitworth, 2019

*Mesembrinella mexicana* Whitworth, 2019 in Whitworth & Yuseff-Vanegas 2019: 54.

**Distribution.** Mexico (Oaxaca) (Whitworth & Yuseff-Vanegas 2019).

### *Mesembrinella spicata* Aldrich, 1925

*Mesembrinella spicata* Aldrich 1925: 13.
*Henriquella spicata* Bonatto & Marinoni 2005: 888.
*Mesembrinella spicata* Aldrich: Ceretti *et al*. 2017; Whitworth & Yusseff-Vanegas 2019.

**Distribution.** Costa Rica, Mexico, Panama. Mexico (Chiapas) (Whitworth & Yuseff-Vanegas 2019).

### *Mesembrinella xanthrorrhina* (Bigot, 1887)

*Calliphora xanthorrhina* Bigot 1887: 153 (lectotype Mexico, Brauer 1899: 32; Aldrich 1922: 23).
*Somomyia xanthorrhina* Bigot 1887: 602.
*Mesembrinella spicata* Aldrich 1925: 13 (holotype: Costa Rica); James 1970: 4.
*Huascaromusca spicata* Hall 1948: 79.

**Distribution.** Mexico (The exact locality is unknown, refer to Whitworth & Yusseff-Vanegas 2019).

**Remarks.** Only the female is described, the male remains unknown.

***Mesembrinella socors* (Walker, 1861)**
(Fig. 1B)

*Calliphora socors* Walker 1861: 311.

**Distribution.** Brazil, Colombia, Costa Rica, Ecuador, Guatemala, Mexico, Nicaragua, Panama. Mexico (no exact locality is known for the type, see Whitworth & Yusseff-Vanegas 2019). This is the **first record** for Chiapas.

**Material examined.** 3 males, 3 females, Mexico, Chiapas, Ocosingo, Reserva Montes Azules. 28-IV-1986-5-V-1986. col. F. Arias, R. Barba, L. Cervantes [CNCI].

All species present in Mexico are restricted to the central-south part of the country according to James (1970), *M. bicolor* is present in Nayarit at approximately 21° N being the northernmost record of this Neotropical family. All species can be properly identified using the keys provided by Whitworth & Yusseff-Vanegas (2019).

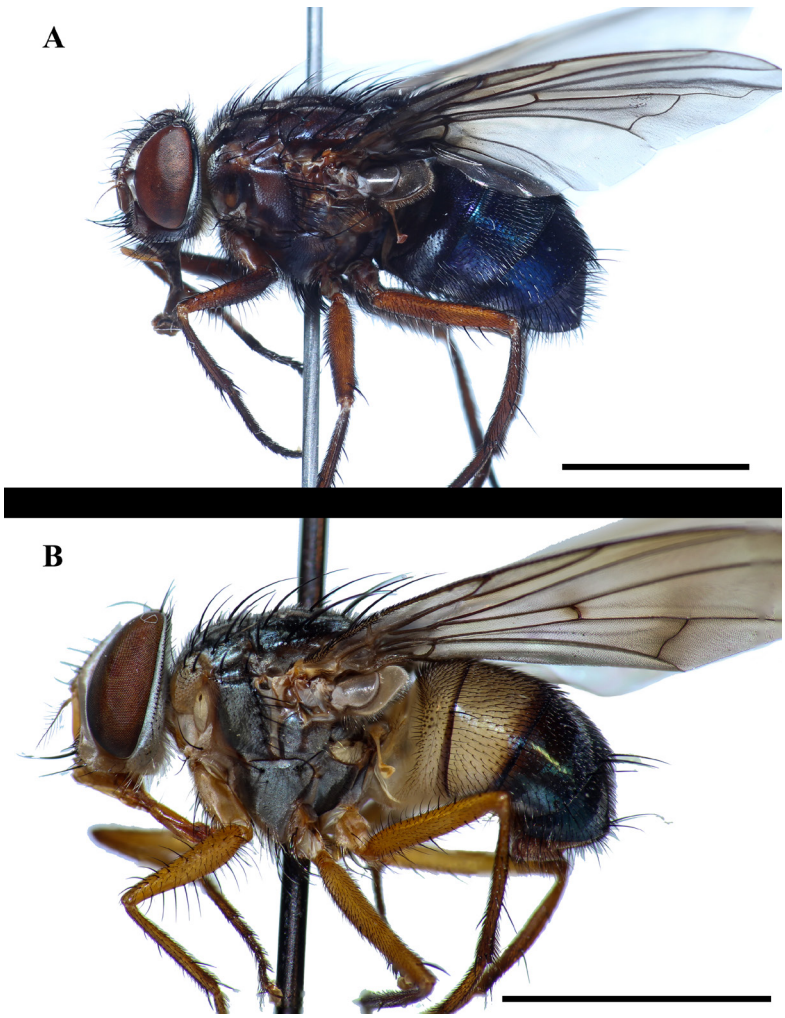


**Figure 1**. A. *Laneella fuscosquamata* adult female, habitus. B. *Mesembrinella socors* adult female, habitus. Scale bars: 5 mm. / A. *Laneella fuscosquamata* hembra adulta, hábito. B. *Mesembrinella socors* hembra adulta, hábito. Escala: 5 mm.

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