

# Catalogue of Rangomaramidae (Diptera: Bibionomorpha) types housed in the collection of the Museu de Zoologia da Universidade de São Paulo, Brazil

Rafaela Lopes Falaschi<sup>1,4</sup>; Edna Maria Amaral<sup>1,5</sup> & Carlos José Einicker Lamas<sup>2,3</sup>

<sup>1</sup> Universidade Estadual de Ponta Grossa (UEPG), Departamento de Biologia Estrutural, Molecular e Genética, Programa de Pós-Graduação em Biologia Evolutiva. Ponta Grossa, PR, Brasil.

<sup>2</sup> Universidade de São Paulo (USP), Museu de Zoologia (MZUSP). São Paulo, SP, Brasil.

ORCID: <http://orcid.org/0000-0002-7750-590X>. E-mail: [einicker@usp.br](mailto:einicker@usp.br)

<sup>3</sup> Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq), fellowship.

<sup>4</sup> ORCID: <http://orcid.org/0000-0002-3046-5744>. E-mail: [rffalaschi@gmail.com](mailto:rffalaschi@gmail.com) (corresponding author)

<sup>5</sup> ORCID: <http://orcid.org/0000-0002-3981-2693>. E-mail: [ednmaral@gmail.com](mailto:ednmaral@gmail.com)

**Abstract.** This paper provides a catalogue of the type specimens of Rangomaramidae (Diptera: Bibionomorpha) held in the collection of the Museu de Zoologia da Universidade de São Paulo, Brazil (MZUSP). Label data and the condition of 26 type-specimens (three holotypes and 23 paratypes) of four Neotropical species are provided.

**Key-Words.** Nomenclature; Scientific collections; Taxonomy; Type material.

## INTRODUCTION

Brazil is one of the most biodiverse countries in the world in terms of the species richness of its fauna and flora. The Brazilian most important scientific collection for animal diversity is the Museu de Zoologia da Universidade de São Paulo (MZUSP), São Paulo, Brazil. The MZUSP collection houses more than 8,000 fly species and six hundred thousand mounted specimens, being the largest and most important depository of Neotropical Diptera in Brazil and in South America. Additional information on the collection is available at [www.mz.usp.br](http://www.mz.usp.br).

The family Rangomaramidae was erected by Jaschhof & Didham (2002) for five New Zealand species of the genus *Rangomarama* Jaschhof & Didham. The concept of the family was revised by Amorim & Rindal (2007), who recognized four main clades ranked as subfamilies in Rangomaramidae. These subfamilies encompass genera that for quite long had an uncertain position within the Mycetophiliformia (*sensu* Amorim & Rindal, 2007 = Sciaroidea). A monophyletic Rangomaramidae, as can be seen by Amorim & Rindal's (2007) discussion, is still not to be taken

for granted. Having them gathered corresponds, however, to one of the most parcimonious solutions for the problem of the relationship between four main sciaroid clades-Rangomaraminae, Ohakuneinae, Heterotrichinae and Chiletrichinae- and allowed to gather most of the genera that were unplaced in the Sciaroidea.

Six genera and twenty species of Rangomaramidae have been recorded so far for the Neotropical region, that belong to the genera *Chiletricha* Chandler, *Eratomyia* Amorim & Rindal, *Ohakunea* Edwards, *Colonomyia* Colless, *Cabamofa* Jaschhof and *Rogambara* Jaschhof (Amorim & Falaschi, 2012). Catalogues of the Neotropical fauna of Rangomaramidae were presented, respectively, by Amorim & Falaschi (2012), Falaschi & Amorim (2016) and Falaschi (2019). There is information about an undescribed species of *Ohakunea* from southeastern Brazil (D.S. Amorim, *pers. com.*).

The present paper provides a catalogue with information on 26 type-specimens (three holotypes and 23 paratypes) of four Neotropical species of two of the genera of the family Rangomaramidae held in the collection of the MZUSP (Table 1), following a recommendation of the International Code of Zoological Nomenclature (ICZN, 1999: 72F.4).

Pap. Avulsos Zool., 2020; v.60: e20206015

<http://doi.org/10.11606/1807-0205/2020.60.15>

<http://www.revistas.usp.br/paz>

<http://www.scielo.br/paz>

Edited by: Marcelo Duarte

Received: 02/09/2019

Accepted: 13/01/2020

Published: 19/03/2020

ISSN On-Line: 1807-0205

ISSN Printed: 0031-1049

ISNI: 0000-0004-0384-1825



**Table 1.** Type specimens of Rangomaramidae held in the MZUSP, in alphabetical order of subfamily, genus and species epithet, with reference to the number of specimens, males, and females, for each type category.

Species list	Holotype	Paratypes
<b>Subfamily Chiletrichinae Amorim &amp; Rindal, 2007</b>		
<i>Eratomyia magnifica</i> Amorim & Rindal, 2007	1♂	
<i>Eratomyia risaralda</i> Amorim & Falaschi, 2010		1♀
<b>Subfamily Ohakuneinae Amorim &amp; Rindal, 2007</b>		
<i>Colonomyia brasiliiana</i> Amorim & Rindal, 2007	1♂	4♂
<i>Colonomyia freemani</i> Amorim & Rindal, 2007	1♂	13♂, 5♀

## MATERIALS AND METHODS

The list given below is in alphabetical order of subfamily, genus, and epithet. Names, combinations, and spellings follow the available catalogues of Rangomaramidae Amorim & Falaschi (2012), Falaschi & Amorim (2016) and Falaschi (2019).

The standard for reproducing the information on the labels follows previous catalogues of general Diptera and Bibionomorpha housed in other major museums collections of Neotropical fauna (e.g., for the Museu de Zoologia da Universidade de São Paulo, in Yamaguchi & Lamas, 2009; Fachin & Lamas, 2015; Falaschi *et al.*, 2016; Mello & Lamas, 2011). All types listed here are dry-pinned or slide-mounted specimens. Herein we present some slide photos, but high-resolution photographs will be subsequently provided for most primary types at MZUSP's homepage ([www.mz.usp.br](http://www.mz.usp.br)).

Acronyms used for the depositories:

**IAvH:** Alexander von Humboldt Biological Resources Research Institute, Bogota;

**MZUSP:** Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil.

### Family Rangomaramidae Jaschhof & Didham, 2002

#### Subfamily Chiletrichinae Amorim & Rindal, 2007

##### Genus *Eratomyia* Amorim & Rindal, 2007

##### *Eratomyia magnifica* Amorim & Rindal, 2007

(Fig. 1)

Amorim & Rindal, 2007: 14 (original description), figs. 7 (head), 8 (thorax), 9 (apex of anterior tibia), 10 (wing), 11-15 (male terminalia). Ref. – Amorim & Falaschi, 2012: 3 (catalogue).

**Type locality:** Ecuador, Quito-Baeza, E. Papallacta. Distr. – Neotropical: Ecuador (Quito-Baeza). Holotype ♂, MZUSP.

**Holotype ♂ with labels:** (1) printed on white paper: "Ecuador, Quito-Baeza | E. Papallacta | 2.900 m / 12-15-ii-1971 | L.G. Peña [Luís Cláudio Peña] col. ♂"; (2) printed with handwritten inscriptions on red paper: "*Eratomyia magnifica* | Amorim & Rindal | HOLOTYPE"; (3) printed on white paper: "MZ004529".

**Condition of holotype:** On slide. Missing parts: None.

### *Eratomyia risaralda* Amorim & Falaschi, 2010

Amorim & Falaschi, 2010: 56 (original description), figs. 1 (wing), 2-3 (male terminalia), 4 (female terminalia). Ref. – Amorim & Falaschi, 2012: 3 (catalogue); Falaschi & Amorim, 2016: 48 (catalogue).

**Type locality:** Colombia, Risaralda SFF, Otún Quimbaya, El Molinillo. Distr. – Neotropical: Colombia (Risaralda). Holotype ♂, IAvH.

**Paratype ♀ with labels:** (1) printed on white paper: "MZ004530"; (2) printed on white paper: "*Eratomyia risaralda* | Amorim & Falaschi 2010"; (3) printed on white paper: "Colombia, Risaralda SFF | Otún Quimbaya El Molinillo | 04°43'N, 75°34'W 2220 m | Malaise 17.ii-04.iii.2003 | G.López Leg. M.3696 ♀"; (4) printed on yellow paper: "Paratype".

**Condition of paratype:** On slide. Missing parts: Antennae and three undetermined legs.

### Subfamily Ohakuneinae Amorim & Rindal, 2007

#### Genus *Colonomyia* Colless, 1963

##### *Colonomyia brasiliiana* Amorim & Rindal 2007

(Fig. 2)

Amorim & Rindal, 2007: 15 (original description), figs. 20 (thorax), 21 (male terminalia). Ref. – Amorim & Falaschi, 2012: 4 (catalogue).

**Type locality:** Brazil, São Paulo, Salesópolis, Boracéia. Distr. – Neotropical: Brazil (São Paulo). Holotype ♂, MZUSP.

**Holotype ♂ with labels (Fig. 2):** (1) printed on white paper: "BR-S.P.: Salesópolis | (Boracea) | 14-VIII-1947 | E.Rabello & Trav.F. [Lauro Pereira Travassos Filho]"; (2) printed on white paper: "MZ004519"; (3) printed with handwritten inscriptions on red paper: "*Colonomyia brasiliiana* | Amorim & Rindal | Holotype".

**Condition of holotype:** On slide. Missing parts: Undetermined wing.

**Paratype ♂ with labels:** (1) handwritten on white paper: "VIII-47 | S. Paulo | Boracea [Boracéia] | J. Lane. col"; (2) printed with handwritten inscriptions on yellow paper: "Paratype | *Colonomyia brasiliiana* | D.S. Amorim det. | 2007"; (3) printed on white paper: "MZ004520".

**Condition of paratype:** Pinned, terminalia on slide pinned with the specimen. Missing parts: Both antennae, left wing, abdomen and fore and hind legs.

**2 Paratypes ♂ with labels:** (1) handwritten on white paper: "VII-49 | S. Paulo | Boracea [Boracéia] | Lane & Coher"; (2) printed with handwritten inscriptions on yellow paper: "Paratype | *Colonomyia brasiliiana* | D.S. Amorim det. | 2007"; (3) printed on white paper: "MZ004521".

**Condition of paratypes:** Both pinned, terminalia on slide pinned with the specimens. Missing parts: Right antennae, undetermined wing, abdomen and all legs broken at one specimen; the second one: abdomen broken.

**Paratype ♂ with the same labels above, except:** (1) handwritten on white paper: "VII-49 | S.Paulo | Boracea [Boracéia] | Lane, Coher".

**Condition of paratype:** Pinned, left wing on slide pinned with the specimen. One entire and the other with

right wing on slide pinned. Missing parts: Both antennae, right wing, abdomen and terminalia.

***Colonomyia freemani* Amorim & Rindal, 2007  
(Fig. 3)**

Amorim & Rindal, 2007: 16 (original description), figs. 22 (head), 23-24 (wing), 25 (thorax), 26 (male terminalia), 27 (female terminalia). Ref. – Amorim & Falaschi, 2012: 21 (catalogue).



Figure 1. *Eratomyia magnifica* Amorim & Rindal, 2007, Holotype male, slide.



Figure 2. *Colonomyia brasiliiana* Amorim & Rindal, 2007, Holotype male, slide.



Figure 3. *Colonomyia freemani* Amorim & Rindal, 2007, Holotype male, slide.



**Type locality:** Chile, Dalcahue, I. Chiloé. Distr. – Neotropical: Chile (Dalcahue). Holotype ♂, MZUSP.

**Holotype ♂ with labels (Fig. 3):** (1) printed on white paper: “Dalcahue, I. Chiloé | Chile | IV-1968 | L.E. Peña [Luís Cláudio Peña] col.”; (2) printed on white paper: “MZ004522”; (3) printed with handwritten inscriptions on red paper: “*Colonomyia* | *freemani* | *Amorim* & *Rindal* | Holotype”.

**Condition of holotype:** On slide, right antenna broken. Missing parts: None.

**Paratype ♀ with labels:** (1) printed on white paper: “Dalcahue, I. Chiloé | Chile | IV-1968 | L.E. Peña [Luís Cláudio Peña] col.”; (2) printed on white paper: “MZ004523”; (3) printed with handwritten inscriptions on yellow paper: “Paratype | *Colonomyia* | *freemani* | D.S. Amorim det. | 2007”.

**Condition of paratype:** On slide. Missing parts: None.

**3 Paratypes ♀ with the same labels above, except:** (2) printed on white paper: “♀”; (4) printed with handwritten inscriptions on yellow paper: “MZ004523”.

**Condition of paratypes:** All pinned. Missing parts: None.

**8 Paratypes ♂ with the same labels above, except:** (2) printed on white paper: “♂”.

**Condition of paratypes:** All pinned. Missing parts: None.

**4 Paratypes ♂ and 1 Paratype ♀ with the same labels above, except:** (1) printed on white paper: “Dalcahue, I. Chiloé | Chile | I-1962 | L.E. Peña [Luís Cláudio Peña] col.”.

**Condition of paratypes:** All pinned, one very damaged. Missing parts: damaged exemplar without antennae, right wing, abdomen, left legs and fore and mid right legs.

**Paratype ♂ with the same labels above, except:** (1) printed on white paper: “Dalcahue, I. Chiloé | Chile | II-1967 | L.E. Peña [Luís Cláudio Peña] col.”.

**Condition of paratype:** Pinned. Missing parts: None.

## ACKNOWLEDGMENTS

We are thankful to Camila Conti and Paula Rodrigues (Museu de Zoologia da Universidade de São Paulo, São

Paulo, Brazil) for help with information on some type specimens of Rangomaramidae, and three anonymous referees for their careful reading of the manuscript and helpful suggestions. Along the preparation of this paper, RLF benefited from FAPESP grant (2013/16524-9) and by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior – Brasil (CAPES – Finance Code 001), EMA by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior – Brasil (CAPES – Finance Code 001) and CJEL from CNPq (304512/2016-8).

## REFERENCES

- Amorim, D.S. & Falaschi, R.L. 2010. Second known species of *Eratomyia* Amorim & Rindal (Diptera, Rangomaramidae, Chilettrichinae), from Colombia. *Zootaxa*, 2641: 55-61.
- Amorim, D.S. & Falaschi, R.L. 2012. Catalogue of Neotropical Diptera. Rangomaramidae. *Neotropical Diptera*, 21: 1-7.
- Amorim, D.S. & Rindal, E. 2007. A phylogenetic study of the Mycetophiliformia, with creation of the subfamilies Heterotrachinae, Ohakuneinae, and Chilettrichinae for the Rangomaramidae (Diptera, Bibionomorpha). *Zootaxa*, 1535: 1-92.
- Colless, D.H. 1963. New species of *Ohakunea* Edwards and related new genus with notes on the relationships of *Heterotracha* Loew (Diptera). *Proceedings of the Linnean Society of New South Wales*, 87: 303-308.
- Fachin, D.A. & Lamas, C.J.E. 2015. A catalogue of the types of Stratiomyidae (Diptera: Brachycera) in the collection of the Museu de Zoologia da Universidade de São Paulo, Brazil. *Zootaxa*, 3918(3): 406-414.
- Falashi, R.L. 2019. Rangomaramidae. In: *Catálogo Taxonômico da Fauna do Brasil*. PNUD. Available at: <http://fauna.jbrj.gov.br/fauna/faunadobrasil/2358>. Access in: 22/07/2019.
- Falashi, R.L. & Amorim, D.S. 2016. Family Rangomaramidae. *Zootaxa*, 4122: 46-49.
- Falashi, R.L.; Oliveira, S.S. & Lamas, C.J.E. 2016. Catalogue of Anisopodidae (Diptera: Bibionomorpha) types housed in the collection of the Museu de Zoologia da Universidade de São Paulo, Brazil. *Revista Brasileira de Entomologia*, 60: 24-29.
- International Commission of Zoological Nomenclature (ICZN). 1999. *International Code of Zoological Nomenclature*. 4.ed. London, The International Trust for Zoological Nomenclature, The Natural History Museum. xxx + 306p.
- Jaschhof, M. & Didham, R.K. 2002. Rangomaramidae fam. nov., from New Zealand and implications for the phylogeny of the Sciaroidea (Diptera: Bibionomorpha). *Studia dipterologica, Supplement*, 11: 1-60.
- Mello, R.L. & Lamas, C.J.E. 2011. A catalogue of types of Conopoidea, Diopsoidea, Nerioida and Tephritoidea (Diptera, Schizophora) in the collection of the Museu de Zoologia da Universidade de São Paulo. *Revista Brasileira de Entomologia*, 55(2): 187-205.
- Yamaguchi, C. & Lamas, C.J.E. 2009. A Catalogue of the types of Asiloidea (Diptera) in the collection of the Museu de Zoologia da Universidade de São Paulo, Brazil (Part 1: Bombyliidae and Mydidae). *Zootaxa*, 2146: 35-52.