

Catalogue of Syringogastridae (Diptera, Diopsoidea)

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Abstract. The catalogue of the Syringogastridae is updated, including now 21 extant species and two fossil records, all belonging to the genus *Syringogaster* Cresson. References to all known bibliography are given, totaling 27 records. A full list of the type-series and distribution records are also presented.

Key-Words. List of species; Neotropical region; Taxonomy; Type material.

INTRODUCTION

The Syringogastridae Prado comprises only a single genus of ant-like flies, *Syringogaster* Cresson (Fig. 1), with 21 described extant species and two fossils. Syringogastrids occur throughout tropical areas of the Neotropical Region – with exception of the Antilles, from which they are known only by the fossil – reaching from borders of neotropics in Mexico (*S. subnearctica* Feijen) south to Misiones, Argentina (an unassociated female similar to *S. carioca* Prado). The species can be found in lowland tropical forests from sea level to medium elevations (800 m), but occasionally they may be found up to 1,450 m (Marshall *et al.*, 2009).

Syringogastrids flies can be recognized by the petiolate abdomen, the long and collar-like prothorax, a swollen and spinose hind femur, and reduced head chaetotaxy (Marshall *et al.*, 2009; Marshall & Buck, 2010) (Fig. 1). The biology is basically unknown. Some species were observed in presumably mating aggregations on the upper surfaces of broadleaved foliage and feeding in extrafloral nectaries – females observed had swollen abdomens, possibly replete with honeydew (Marshall *et al.*, 2009). Papavero (1964) described syringogastrids on leaves walking and moving similar to ants of the genus *Pseudomyrmex* Lund occurring on the same leaf surfaces, and Marshall & Buck (2010) noticed syringogastrids occurring in foliages with *Globopeza* Marshall and *Metasphen* Frey (Micropezidae), all three myrmecomimicring. No elaborated courtship is known occurring in the family. Feijen (1989) and Meier & Hilger (2000) provided some information about egg morphology, but larva and pupa still remain unknown.

The systematics of the family follows: Cresson (1912) erected *Syringogaster* to two species and placed the genus within the Psilidae. Curran (1934) classified *Syringogaster* tentatively in the Megamerinidae, an opinion shared by Brues & Melander (1932), Brues *et al.* (1954) and Hennig (1958). Prado (1969), based in the principles of the phylogenetic systematics, erected the family Syringogastridae for *Syringogaster* and described six species from Brazil, a view shared by later authors (Griffiths, 1972; Hennig, 1973; J. McAlpine, 1989; D. McAlpine, 1997). Feijen (1983, 1989) described one species and placed Syringogastridae as sister-group of Centrioncidae (*sensu* Feijen), but this viewpoint was strongly rejected based in morphological and molecular data (D. McAlpine, 1997; Meier & Hilger, 2000) – in truth, Syringogastridae is the sister-group of Diopsidae [Diopsinae + Centrioncinae] (Marshall, 2012). Marshall *et al.* (2009) reviewed the entire family under a systematic approach and added 11 extant species and two fossils. Rafael *et al.* (2011) added one extant species more.

The family is currently classified in groups and subgroups according the phylogenetic relationships (Marshall *et al.*, 2009; Rafael *et al.*, 2011): *brunnea*-group, with *brunnea*-subgroup [*S. brunnea* Cresson, *S. carioca* Prado and *S. subnearctica* Feijen], *brunneina*-subgroup [*S. brunneina* Marshall & Buck, *S. cressoni* Prado, *S. lopesi* Prado, *S. palenque* Marshall & Buck and *S. sharkeyi* Marshall & Buck] and *S. nigrithorax* Marshall & Buck; the fossil *craigi*-group [*S. craigi* Gaimari and *S. miocenecus* Gaimari]; *figurata*-group, with *figurata*-subgroup [*S. atricalyx* Marshall & Buck, *S. figurata* Marshall & Buck, *S. plesioterga* Marshall & Buck and certainly *S. amazonensis* Prado] and *S. dacty-*



Figures 1-2. *Syringogaster papaveri* Prado, holotype: (1) habitus; (2) labels.

lopleura Marshall & Buck; *rufa*-group, with *lanei*-subgroup [*S. lanei* Prado and *S. papaveri* Prado] and *rufa*-subgroup [*S. apiculata* Marshall & Buck, *S. brachypecta* Marshall & Buck, *S. rufa* Cresson and *S. tenuipes* Marshall & Buck] and *S. fapeam* Rafael, Câmara & Holanda.

This catalogue updates the previously of Prado (1975, 8 spp.) including now 23 species names in total, till the deadline of August 1st of 2017.

MATERIAL AND METHODS

The abbreviations and symbols used in the text follow: cat. (catalogue), char. (characterization); desc. (de-

scription), fig./figs. (figure/figures), ICZN (International Code of Zoological Nomenclature), phyl. (phylogeny), pl./pls. (plate/plates), orig. des. (by original designation), redesc. (redescription), Refs. (references), † (fossil species). The type-series is listed in full. Taxonomic and systematics literature are given. Distribution records are listed by country, in alphabetical order, with respective provinces, departments and states in parentheses.

The acronyms of the museums and collections cited are: **AMNH** – American Museum of Natural History, New York, New York, USA; **ANSP** – Academy of Natural Sciences, Philadelphia, Pennsylvania, USA; **CAS** – California Academy of Sciences, San Francisco, California, USA; **CBFC** – Colección Boliviana de Fauna, La Paz, Bolivia; **CNCI** – Canadian National Collection of Insects and Arachnids, Ottawa, Ontario, Canada; **CSCA** – California State Collection of Arthropods, Sacramento, California, USA; **DEBU** – University of Guelph Insect Collection, Guelph, Ontario, Canada; **FIOC** – Fundação Instituto Oswaldo Cruz, Rio de Janeiro, Brazil; **INBC** – Instituto Nacional de Biodiversidad, Santo Domingo de Heredia, Costa Rica; **INPA** – Instituto Nacional de Pesquisas da Amazônia, Manaus, Brazil; **LACM** – Natural History Museum of Los Angeles County, Los Angeles, California, USA; **MUSM** – Museo de Historia Natural, Universidad Nacional Mayor de San Marcos, Lima, Peru; **MZUSP** – Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil; **QCAZ** – Universidad Católica del Ecuador, Quito, Ecuador; **ROME** – Royal Ontario Museum, Toronto, Ontario, Canada; **SMTD** – Staatliches Museum für Tierkunde, Dresden, Germany; **UASC** – Museo de Historia Natural Noel Kempff Mercado, Santa Cruz, Bolivia; **USNM** – National Museum of Natural History, Washington D.C., USA; **UWIC** – Insect Collection of the Department of Biological Sciences, University of the West Indies, St. Augustine, Trinidad.

This catalogue follows the alphabetic order to species and references to groups and subgroups are listed after them.

Catalogue

Syringogastridae Prado, 1969

Syringogastridae Prado, 1969: 4 (desc.), 23 (taxonomy, relationships), 31 (phylogenetic scheme). *Type-genus*: *Syringogaster* Cresson, 1912. Refs. – Griffiths, 1972: 168-169 (systematics), 268 (key); Hennig, 1973: 15 (key), 53 (diagnosis); Prado, 1975: 1-2 (cat.); Feijen, 1983: 3-137 (systematics, sister-group of Centroncidae *sensu* Feijen); Feijen, 1989: 1-122 (systematics, char.); J. McAlpine, 1989: 1431 (fig. 116.2, cladogram), 1432-1436 (systematics); D. McAlpine, 1997: 167-194 (systematics), 184 (key); Meier & Hilger, 2000: 1-36 (systematics, sister-group of Diopsidae); Prado & Papavero, 2002: 1 (cat., Amazon); Marshall *et al.*, 2009: 1-80 (review); Buck *et al.*, 2009: 137 (key); Marshall & Buck, 2010: 843-846 (manual); Marshall, 2012: 346-348 (char.), 590 (key); Rung, 2016: 558-560 (cat., Colombia).

Syringogaster Cresson, 1912

Syringogaster Cresson, 1912: 392. Type-species: *S. rufa* Cresson, 1912 (orig. des.). Refs. – Cresson, 1912: 392 (desc., in Psilidae); Brues & Melander, 1932: 328 (fig.), 329 (key, in Megamerinidae); Curran, 1934: 26 (key), 373 (in Megamerinidae; figs.); Brues *et al.*, 1954: 368 (fig.), 369 (key, in Megamerinidae); Hennig 1958: 568 (systematics, in Megamerinidae); Hennig, 1965: 51-52 (notes); Roback, 1969: 522 (cat.); Prado, 1975: 1 (cat.); D. McAlpine 1997: 190-194 (figs.); Marshall *et al.*, 2009: 15 (redesc.); D. McAlpine, 2011: 148-149 (figs.); Rung, 2016: 558-560 (cat.).

amazonensis Prado, 1969: 12. *Type locality*: Brazil, Pará, Estrada Belém-Bragança, km 100. Distr. – Brazil (Pará). Holotype ♀, FIOC. Refs. – Prado, 1969: 6 (key), 9 (fig.), 12 (desc.), 13 (fig.); Prado, 1975: 1 (cat.); Prado & Papavero, 2002: 1 (cat.); Marshall *et al.*, 2009: 18 (key, notes), 19 (distr. map).

apiculata Marshall & Buck, 2009: 20 (in Marshall *et al.*, 2009). *Type locality*: Ecuador, Departamento Orellana, near Yasuní National Park, Tiputini Biodiversity Station, 00°37'55"S, 76°08'39"W, 220-250 m. Distr. – Brazil (Amazonas), Ecuador (Napó, Orellana), Peru (Madre de Dios). Holotype ♂, USNM. Refs. – Marshall *et al.*, 2009: 18 (key), 19 (distr. map), 20 (desc.), 21 (figs.), 58 (pl.); Rafael *et al.*, 2011: 32 (new records), 33 (fig., phyl.).

atricalyx Marshall & Buck, 2009: 22 (in Marshall *et al.*, 2009). *Type locality*: Bolivia, La Paz, Heath River Wildlife Centre, 12°40'S, 68°42'W. Distr. – Bolivia (Cochabamba, La Paz), Brazil (Acre, Amazonas, Pará), Ecuador (Napó, Orellana, Pastaza, Sucumbíos), Peru (Huánuco, Loreto, Madre de Dios). Holotype ♂, UASC. Refs. – Marshall *et al.*, 2009: 13 (fig., phyl.), 18 (key), 19 (distr. map), 22 (desc.), 23 (figs.), 34 (pl.), 58 (pl.), 67-68 (pls.); Rafael *et al.*, 2011: 32 (new records), 33 (fig., phyl.); Marshall, 2012: 475 (fig.).

brachypecta Marshall & Buck, 2009: 25 (in Marshall *et al.*, 2009). *Type locality*: Ecuador Napó, Jatun Sacha Reserve, 6 km E Misahuallí, 450 m, 01°04'S, 77°37'W. Distr. – Ecuador (Napó, Orellana, Sucumbíos), Peru (Madre de Dios). Holotype ♂, QCAZ. Refs. – Marshall *et al.*, 2009: 18 (key), 19 (distr. map), 25 (desc.), 26 (figs.), 58 (pl.), 67-68 (pls.); Rafael *et al.*, 2011: 33 (fig., phyl.).

brunnea Cresson, 1912: 394. *Type locality*: Costa Rica, Peralta Station. Distr. – Colombia (Valle del Cauca), Costa Rica (Cartago, Heredia, Puntarenas), Ecuador (Guayas), Guatemala (Izabal), Panama (Panamá, Coclé). Holotype ♀, ANSP. Refs. – Cresson, 1912: 394 (desc.); Roback, 1969: 530 (cat., type material); Prado, 1969: 22 (notes); Prado, 1975: 1 (cat.); Buck *et al.*, 2009: 128 (fig.); Marshall *et al.*, 2009: 13 (fig., phyl.), 17 (key), 19 (distr. map), 28 (redesc.), 29 (figs.), 34 (pl.), 45 (pl.); Marshall & Buck, 2010: 843 (fig.); Rafael *et al.*, 2011: 33 (fig., phyl.); Rung, 2016: 559 (cat.).

brunneina Marshall & Buck, 2009: 30 (in Marshall *et al.*, 2009). *Type locality*: Trinidad, Arima, Windblow Ridge, Simla House, 2000. Distr. – Colombia (Amazonas, Caldas, Córdoba, Valle del Cauca), Costa Rica (Cartago,

Higuito, Limón, Puntarenas, San José), Guatemala (Izabal), Nicaragua (Matagalpa), Panama (Chiriquí, Colón, Panamá Oeste), Suriname (Commewijne), Trinidad and Tobago (Trinidad), Venezuela (Carabobo, Miranda, Sucre). Holotype ♂, DEBU. Refs. – Marshall *et al.*, 2009: 13 (fig., phyl.), 17 (key), 19 (distr. map), 30 (desc.), 33 (figs.), 34 (pl.), 45 (pl.), 67 (pl.); Marshall & Buck, 2010: 844 (figs.); Rafael *et al.*, 2011: 33 (fig., phyl.); Marshall, 2012: 475 (fig.); Rung, 2016: 559 (cat.).

carioca Prado, 1969: 20. *Type locality*: Brazil, Rio de Janeiro, Grajaú. Distr. – Brazil (Rio de Janeiro, São Paulo), Ecuador (Esmeraldas, Napó), Peru (Huánuco, Ucayali), Suriname (Sipaliwini), Venezuela (Monagas). Holotype ♂, FIOC. Refs. – Prado, 1969: 6 (key), 9 (fig.), 20 (desc.), 21 (figs.); Prado, 1975: 1 (cat.); Marshall *et al.*, 2009: 17 (key), 19 (distr. map), 35 (redesc.), 36 (figs.), 45 (pl.), 74 (pl.); Rafael *et al.*, 2011: 33 (fig., phyl.).

† **craigi** Grimaldi, 2009: 75 (in Marshall *et al.*, 2009). *Type locality*: Dominican Republic [amber] (specific locality unknown). Distr. – Dominican Republic (Miocene). Holotype ♂, AMNH. Refs. – Marshall *et al.*, 2009: 75 (desc.), 76 (figs.), 77 (fig.), 78 (pl.); Rafael *et al.*, 2011: 33 (fig., phyl.).

cressoni Prado, 1969: 18. *Type locality*: Brazil, Pará, Fazenda Velha. Distr. – Bolivia (La Paz), Brazil (Pará), Ecuador (Morona-Santiago, Napó), Peru (Cuzco, Huánuco, Lima), Suriname (Sipaliwini). Holotype ♂, FIOC. Refs. – Cresson, 1914: 26 (male desc., fig.); Hennig, 1958: 542 (fig., as *S. brunnea*); Prado, 1969: 6 (key), 9 (fig.), 17 (figs.), 18 (desc.); Prado, 1975: 1 (cat.); Prado & Papavero, 2002: 1 (cat.); Marshall *et al.*, 2009: 17 (key), 19 (distr. map), 37 (redesc.), 38 (figs.), 45 (pl.); Rafael *et al.*, 2011: 33 (fig., phyl.).

dactylopleura Marshall & Buck, 2009: 40 (in Marshall *et al.*, 2009). *Type locality*: Bolivia, La Paz, Arroyo Tuhiri, 5 km W Mapiri, 508 m, 15°17.8'S, 68°15.6'W. Distr. – Bolivia (La Paz), Ecuador (Napó, Orellana), Peru (Huánuco, Madre de Dios). Holotype ♂, CBFC. Refs. – Marshall *et al.*, 2009: 13 (fig., phyl.), 17 (key), 19 (distr. map), 40 (desc.), 42 (figs.), 58 (pl.), 67-68 (pls.); Rafael *et al.*, 2011: 33 (fig., phyl.); Marshall, 2012: 475 (fig.).

fapeam Rafael, Câmara & Holanda, 2011: 27. *Type locality*: Brasil, Amazonas, Barcelos, Rio Paduaui, Comunidade Ararinha, 00°30'18"N, 64°03'30"W. Distr. – Brazil (Amazonas). Holotype ♂, INPA. Refs. – Rafael *et al.*, 2011: 27 (desc.), 28 (figs.), 29 (key), 33 (phyl.).

figurata Marshall & Buck, 2009: 43 (in Marshall *et al.*, 2009). *Type locality*: Costa Rica, Puntarenas, Osa Península, 2.5 km S Rincón, ~50 m, 08°42'01"N, 83°30'50"W. Distr. – Costa Rica (Higuito, San José, Puntarenas). Holotype ♂, INBC. Refs. – Marshall *et al.*, 2009: 18 (key), 43 (desc.), 44 (figs.), 50 (distr. map), 58 (pl.), 74 (pl.); Rafael *et al.*, 2011: 33 (phyl.).

lanei Prado, 1969: 6. *Type locality*: Brazil, São Paulo, Barueri. Distr. – Bolivia (La Paz), Brazil (São Paulo). Holotype ♂, MZUSP. Refs. – Prado, 1969: 6 (key, desc.), 7 (fig.), 9 (fig.), 11 (figs.); Griffiths, 1972: 166 (notes); Prado, 1975: 1 (cat.); Marshall *et al.*, 2009: 17 (key), 19 (distr. map), 47 (redesc.); Mello & Lamas, 2011: 188 (cat., type-material); Rafael *et al.*, 2011: 33 (phyl.).

lopesi Prado, 1969: 14. *Type locality*: Brazil, Bahia, Salvador. Distr. – Bolivia (La Paz), Brazil (Bahia, Pernambuco). Holotype ♂, FIOC. Refs. – Prado, 1969: 6 (key), 7 (fig.), 9 (fig.), 14 (desc.), 15 (figs.); Prado, 1975: 1 (cat.); Marshall *et al.*, 2009: 17 (key), 45 (pl.), 48 (redesc.), 50 (distr. map); Mello & Lamas, 2011: 189 (cat., type-material); Rafael *et al.*, 2011: 33 (phyl.).

† **miocenecus** Grimaldi, 2009: 71 (in Marshall *et al.*, 2009). *Type locality*: Dominican Republic [amber] (specific locality unknown). Distr. – Dominican Republic (Miocene). Holotype ♀, AMNH. Refs. – Marshall *et al.*, 2009: 71 (desc.), 73 (figs.), 77 (figs.), 78 (pl.); Rafael *et al.*, 2011: 33 (phyl.).

nigrithorax Marshall & Buck, 2009: 50 (in Marshall *et al.*, 2009). *Type locality*: Ecuador, Departamento Orellana, near Yasuní Natl. Pk., Tiputini Biodiversity Station, 00°37'55"S, 76°08'39"W, 220-250 m. Distr. – Ecuador (Orellana). Holotype ♂, USNM. Refs. – Marshall *et al.*, 2009: 17 (key), 50 (fig.), 52 (figs.); Rafael *et al.*, 2011: 33 (phyl.).

palenque Marshall & Buck, 2009: 53 (in Marshall *et al.*, 2009). *Type locality*: Ecuador, Provincia Pichincha, 47 km S Sto. Domingo, Río Palenque Biological Station, 250 m. Distr. – Colombia (Córdoba), Ecuador (Guayas, Pichincha). Holotype ♀, DEBU. Refs. – Marshall *et al.*, 2009: 17 (key), 19 (distr. map), 45 (pl.), 54 (figs.); Rafael *et al.*, 2011: 33 (phyl.); Rung, 2016: 559 (cat.).

papaveroi Prado, 1969: 10. *Type locality*: Brazil, São Paulo, Barueri. Distr. – Brazil (Rio de Janeiro, São Paulo). Holotype ♂, MZUSP (Figs. 1-2). Refs. – Prado, 1969: 6 (key), 7 (figs.), 9 (fig.), 10 (desc.), 13 (figs.), 23 (fig.); Prado, 1975: 1 (cat.); D. McAlpine, 1997: 191-192 (figs.), 194 (fig.); Marshall *et al.*, 2009: 18 (key), 50 (distr. map), 55 (notes); Mello & Lamas, 2011: 189 (cat., type-material); Rafael *et al.*, 2011: 29 (key, redesc.), 30 (figs.), 33 (phyl.). *Remarks*: *Syringogaster papaveroi* was described as *Stylogaster papaveroi*, a *lapsus calami* (article 32.5, ICZN; Feijen, 1989). The species was correctly spelled on pages 1, 6, 7, 9, 12, 13 and 23 (Marshall *et al.*, 2009), in Prado (1975) and so on.

plesioterga Marshall & Buck, 2009: 56 (in Marshall *et al.*, 2009). *Type locality*: Ecuador, Pto. Orellana, Río Tiputini, 00°38.2'S, 76°08.9'W. Distr. – Ecuador (Napó, Orellana), Peru (Huánuco, Madre de Dios, Pasco). Holotype ♂, USNM. Refs. – Marshall *et al.*, 2009: 18 (key), 50 (distr. map), 56 (desc.), 57 (figs.), 58 (pl.), 67-68 (pls.); Rafael *et al.*, 2011: 33 (phyl.).

rufa Cresson, 1912: 393. *Type locality*: Costa Rica, Surubres River, Bonnefil farm, 800'. Distr. – Costa Rica (Alajuela, Heredia, Puntarenas), Panama (Panamá Oeste), Ecuador (Pichincha). Holotype ♀, ANSP. Refs. – Cresson, 1912: pl. XIX (figs.), 393 (desc.); Papavero, 1964: 109-113 (notes); Roback, 1969: 555 (cat., type-material); Prado, 1969: 22 (notes); Griffiths, 1972: 290 (fig.); Prado, 1975: 1 (cat.); Buck *et al.*, 2009: 150 (fig.); Marshall *et al.*, 2009: 13 (phyl.), 18 (key), 34 (pl.), 50 (distr. map), 58 (pl.) 59 (redesc.), 60 (figs.), 67 (pl.), 68 (pl.); Rafael *et al.*, 2011: 33 (phyl.).

sharkeyi Marshall & Buck, 2009: 62 (in Marshall *et al.*, 2009). *Type locality*: Peru, Departamento Huánuco,

Río Lullapichis, right tributary of Río Pachitea, Station "Panguana" (of H.-W. Koepcke), 09°36'53"S, 74°55'57"W, 220 m. Distr. – Ecuador (Napó), Peru (Huánuco). Holotype ♂, DEBU. Refs. – Marshall *et al.*, 2009: 17 (key), 50 (distr. map), 62 (desc.), 63 (figs.); Rafael *et al.*, 2011: 33 (phyl.).

subnearctica Feijen, 1989: 119. *Type locality*: Mexico, San Luis Potosí, Tamazunchalo. Distr. – Costa Rica (Guanacaste, Higuito, Puntarenas), El Salvador (San Salvador), Guatemala (El Progreso), Mexico (Chiapas, San Luis Potosí, Tabasco, Veracruz). Holotype ♂, CAS. Refs. – Feijen, 1989: 119 (desc.), 120 (figs.), 121 (fig.); Marshall *et al.*, 2009: 17 (key), 45 (pl.), 50 (distr. map), 64 (redesc.), 65 (figs.); Rafael *et al.*, 2011: 33 (phyl.).

tenuipes Marshall & Buck, 2009: 69 (in Marshall *et al.*, 2009). *Type locality*: Bolivia, La Paz, Heath River Wildlife Centre, 12°40'S, 68°42'W. Distr. – Bolivia (La Paz), Ecuador (Napó), Peru (Madre de Dios). Holotype ♂, UASC. Refs. – Marshall *et al.*, 2009: 13 (phyl.), 18 (key), 34 (pl.), 50 (distr. map), 69 (desc.), 70 (figs.); Rafael *et al.*, 2011: 33 (phyl.).

Groups and subgroups references

brunnea-group. Refs. – Marshall *et al.*, 2009: 11 (char., *brunnea*- and *brunneina*-subgroup), 12-13 (figs), 16 (key).

craigi-group. Refs. – Marshall *et al.*, 2009: 11 (char.), 12 (figs.).
figurata-group. Refs. – Marshall *et al.*, 2009: 11 (char., *figurata*-subgroup), 12-13 (figs.).

rufa-group. Refs. – Marshall *et al.*, 2009: 11 (char., *lanei*- and *rufa*-subgroup), 12-13 (figs.), 18 (key); Rafael *et al.*, 2011: 29 (key).

Additional type material (paratypes)

apiculata Marshall & Buck; Paratypes: 1♂, DEBU; 1♂, MUSM; 1♂, USNM.

atricalyx Marshall & Buck; Paratypes: 2♂♂ 3♀♀, AMNH; 7♂♂ 1♀, CBFC, CSCA and USNM; 2♂♂ 2♀♀, CBFC and USNM; 3♂♂ 2♀♀, CNCI; 1♀, CSCA; 15♂♂ 10♀♀, DEBU; 5♂♂ 4♀♀, DEBU and MUSM; 5♂♂ 4♀♀, DEBU and UASC; 6♂♂ 1♀, ROME; 42♂♂ 22♀♀, USNM.

brachypecta Marshall & Buck; Paratypes: 5♂♂ 7♀♀ DEBU and QCAZ; 1♂, LACM; 6♂♂ 12♀♀, USNM.

brunnea Cresson; Paratype: ♂, ANSP.

brunneina Marshall & Buck; Paratypes: 4♂♂ 4♀♀, AMNH; 11♂♂ 10♀♀, DEBU; 3♂♂ 3♀♀, DEBU and UWIC; 2♂♂ 3♀♀, CNCI; 2♂♂ 2♀♀, CSCA; 21♂♂ 26♀♀, INBC; 3♂♂, LACM; 4♂♂ 2♀♀, ROME; 13♂♂ 14♀♀, USNM.

cressoni Prado; Paratype: ♂, FIOC.

dactylopleura Marshall & Buck; Paratypes: 2♂♂ 2♀♀ CBFC, CSCA and USNM; 1♀, CNCI; 6♂♂ 2♀♀, DEBU; 5♂♂ 4♀♀, USNM.

fapeam Rafael, Câmara & Holanda; Paratypes: 4♂♂ 4♀♀, INPA; 1♂ 1♀, MZUSP.

figurata Marshall & Buck; Paratypes: 3♂♂ AMNH; 1♂, CNCI; 1♂ 2♀♀, DEBU; 8♂♂ 7♀♀, INBC; 43♂♂ 43♀♀, USNM.

lanei Prado; Paratypes: 4♂♂ 3♀♀, MZUSP.

- lopesi** Prado; Paratypes: 1♂ 3♀♀, FIOC; 1♂, MZUSP. *Remarks*: one paratype originally designated to be in FIOC is in MZUSP.
- nigrithorax** Marshall & Buck; Paratype: 1♂, USNM.
- palenque** Marshall & Buck; Paratypes: 1♀, DEBU; 1♂, AMNH; 1♀, USNM.
- papaveroi** Prado; Paratypes: 2♂♂ 11♀♀, MZUSP; 3♂♂ 3♀♀, FIOC. *Remarks*: there are 2♂♂ 11♀♀ paratypes in MZUSP instead the 3♂♂ 20♀♀ originally designated to be.
- plesioterga** Marshall & Buck; Paratypes: 1♂, CNCI; 1♂, CSCA; 1♂, ROME; 1♀, SMTD; 8♂♂ 26♀♀, USNM.
- rufa** Cresson; Paratypes: 2♂♂, ANSP.
- sharkeyi** Marshall & Buck; Paratype: 1♀, CNCI.
- tenuipes** Marshall & Buck; Paratypes: 1♀, CNCI; 1♂ 1♀, DEBU; 1♂ 3♀, CNCI and DEBU.

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REFERENCES

- Brues, C.T. & Melander, A.L. 1932. Classification of insects: a key to the known families of insects and other terrestrial arthropods. *Bulletin of the Museum of Comparative Zoology at Harvard University*, 73: 1-672. www.biodiversitylibrary.org/page/2800225#page/5/mode/1up.
- Brues, C.T.; Melander, A.L. & Carpenter, F.M. 1954. Classification of insects: keys to the living and extinct families of insects, and to the living families of other terrestrial arthropods. *Bulletin of the Museum of Comparative Zoology at Harvard University*, 108: 1-917. www.biodiversitylibrary.org/item/21151#page/5/mode/1up.
- Buck, M.; Woodley, N.E.; Borkent, A.; Wood, D.M.; Pape, T.; Vockeroth, J.R.; Michelsen, V. & Marshall, S.A. 2009. Key to Diptera families – adults. In: Brown, B.V.; Borkent, A.; Cumming, J.M.; Wood, D.M.; Woodley, N.E. & Zumbado, M.A. (Eds.). *Manual of Central American Diptera*. Ottawa, NRC Research Press. v. 1, p. 95-156.
- Cresson, E.T. 1912. Descriptions of several new neotropical acalyptrate Diptera. *Entomological News*, 23(9): 389-396. www.biodiversitylibrary.org/item/84972#page/7/mode/1up.
- Cresson, E.T. 1914. The male of *Syringogaster brunnea* Cresson, from Peru (Dipt.). *Entomological News*, 25(1): 26. www.biodiversitylibrary.org/item/20329#page/62/mode/1up.
- Curran, C.H. 1934. *The families and genera of North American Diptera*. New York, Ballou Press. 512p. + 2 pls. [DOI](http://www.biodiversitylibrary.org/item/20329#page/62/mode/1up)
- Feijen, H.R. 1983. Systematics and phylogeny of Centroniidae, a new afro-montane family of Diptera (Schizophora). *Zoologische Verhandlungen*, 202: 3-137. www.repository.naturalis.nl/document/149145.
- Feijen, H.R. 1989. Diopsidae. In: Griffiths, G.C.D. (Ed.). *Flies of the Nearctic Region*. Stuttgart, Schweizerbarth'sche. v. 9, 1-122.
- Griffiths, G.C.D. 1972. *The phylogenetic classification of the Diptera Schizophora with special reference to the structure of the male postabdomen*. The Hague, W. Junk. 340p. (Series Entomologica 8). [DOI](http://www.biodiversitylibrary.org/page/33512937#page/7/mode/1up)
- Hennig, W. 1958. Die Familien der Diptera Schizophora und ihre phylogenetischen Verwandtschaftsbeziehungen. *Beiträge zur Entomologie*, 8(5-6): 505-688. [DOI](http://www.biodiversitylibrary.org/page/33512937#page/7/mode/1up)
- Hennig, W. 1965. Die Acalyptratae des Baltischen Bernsteins und ihre Bedeutung für die Erforschung der phylogenetischen Entwicklung dieser Dipteren-Gruppe. *Stuttgarter Beiträge zur Naturkunde*, 145: 1-215. www.biodiversitylibrary.org/page/33512937#page/7/mode/1up.
- Hennig, W. 1973. 31. Diptera (Zweiflügler). In: Helmcke, J.-G.; Starck, D. & Wermuth, H. (Eds.). *Handbuch der Zoologie. Eine Naturgeschichte der Stämme des Tierreichs. IV. Band: Arthropoda – 2. Hälfte: Insecta. Zweite Auflage, 2, Teil: Spezielles*. Berlin, W. De Gruyter. p. iii + 1-337.
- Marshall, S.A. 2012. *Flies: the natural history and diversity of Diptera*. Richmond Hill, Firefly Press Ltd. p. 1-616.
- Marshall, S.A. & Buck, M. 2010. Syringogastridae (Syringogastrid flies). In: Brown, B.V.; Borkent, A.; Cumming, J.M.; Wood, D.M.; Woodley, N.E. & Zumbado, M.A. (Eds.). *Manual of Central American Diptera*. Ottawa, NRC Research Press. v. 2, p. 843-846.
- Marshall, S.A.; Buck, M.; Skevington, J.H. & Grimaldi, D. 2009. A revision of the family Syringogastridae (Diptera: Diopsoidea). *Zootaxa*, 1996: 1-80.
- McAlpine, D.K. 1997. Gobryidae, a new family of acalyptrate flies (Diptera: Diopsoidea), and a discussion of relationships of the diopsoid families. *Records of the Australian Museum*, 49: 167-194. [DOI](http://www.biodiversitylibrary.org/page/33512937#page/7/mode/1up)
- McAlpine, D.K. 2011. Observations on antennal morphology in Diptera, with particular reference to the articular surfaces between segments 2 and 3 in the Cyclorrhapha. *Records of the Australian Museum*, 63: 113-166. [DOI](http://www.biodiversitylibrary.org/page/33512937#page/7/mode/1up)
- McAlpine, J.F. 1989. Phylogeny and classification of the Muscomorpha. In: McAlpine J.F. & Wood, D.M. (Eds.). *Manual of Nearctic Diptera*. Ottawa, Research Branch, Agriculture Canada. v. 3, p. 1397-1518. (Monograph 32). <http://publications.gc.ca/site/eng/9.817751/publication.html>.
- Meier, R. & Hilger, S. 2000. On the egg morphology and phylogenetic relationships of Diopsidae (Diptera: Schizophora). *Journal of Zoological Systematics and Evolutionary Research*, 38(1): 1-36. [DOI](http://www.biodiversitylibrary.org/page/33512937#page/7/mode/1up)
- Mello, R.L. & Lamas, C.J.E. 2011. A catalogue of types of Conopoidea, Diopsoidea, Neriopsoidea 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. www.scielo.br/pdf/rbent/v55n2/AOP1811.pdf.
- Papavero, N. 1964. Notes on the myrmecomimicry of *Syringogaster rufa* Cresson (Diptera, Acalyptratae, Megamerinidae). *Papéis Avulsos de Zoologia*, 16(12): 110-113.
- Prado, Â.P. do. 1969. Syringogastridae, uma nova família de dípteros Acalyptratae, com a descrição de seis espécies novas do gênero *Syringogaster* Cresson. *Studia Entomologica*, 12(14): 1-32.
- Prado, Â.P. do. 1975. Family Syringogastridae. In: Papavero, N. (Ed.). *A Catalogue of Diptera of the Americas South of the United States*. São Paulo, Departamento de Zoologia, Secretaria da Agricultura. n. 51, p. 1-2. <http://www.biodiversitylibrary.org/page/50660667>.
- Prado, Â.P. do & Papavero, N. 2002. Insecta – Diptera – Syringogastridae. *Fauna da Amazônia Brasileira*, 4: 1.
- Rafael, J.A.; Câmara, J.T. & Holanda, M.J.A. 2011. A new species of Syringogastridae (Diptera, Acalyptratae) from the Amazon Basin and new records for Brazil. *Zootaxa*, 3014: 26-34.
- Roback, S.S. 1969. The genera, subgenera and species described by E.T. Cresson, Jr. 1906-1949. *Transactions of the American Entomological Society*, 95: 517-569.
- Rung, A. 2016. Family Syringogastridae. *Zootaxa*, 4122(1): 558-560.