

## Scientific Note

## New parasitoid associations and geographical range extensions of *Sceliphron* Klug, 1801 (Hymenoptera: Sphecidae) in Brazil

Nuevas asociaciones de parasitoides y extensión del rango geográfico de *Sceliphron* Klug, 1801 (Hymenoptera: Sphecidae) en Brasil

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**Abstract.** We record for the first time the Darwin wasp species *Photocryptus nigrosignatus* (Kriechbaumer, 1901) parasitizing nests of the solitary wasp *Sceliphron fistularium* (Dahlbom, 1843) in the Amazonas state, Brazil, and provide new distribution records for them and *S. asiaticum* (Linnaeus, 1758), the other species registered to Brazil. Additionally, we also report the emergence of solitary wasp *Pachodynerus nasidens* Latreille, 1817 (Vespidae), and parasitoid wasps *Leucospis* sp. (Leucospidae) and *Photocryptus* sp. in *S. fistularium* nests.

**Key words:** Clay nest; Darwin wasp; Neotropical; parasitoid wasp; solitary wasp.

**Resumen.** Registramos por primera vez a la avispa de Darwin *Photocryptus nigrosignatus* (Kriechbaumer, 1901) parasitando nidos de la avispa solitaria *Sceliphron fistularium* (Dahlbom, 1843) en el estado de Amazonas, Brasil, y proporcionamos nuevos registros de distribución para ellas y *S. asiaticum* (Linnaeus, 1758), la otra especie registrada en Brasil. Adicionalmente, también reportamos la emergencia de la avispa solitaria *Pachodynerus nasidens* Latreille, 1817 (Vespidae), y las avispas parasitoides *Leucospis* sp. (Leucospidae) y *Photocryptus* sp. en nidos de *S. fistularium*.

**Palabras clave:** Avispa de Darwin; avispa parasitoide; avispa solitaria; neotropical; nido de arcilla.

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The genus *Sceliphron* Klug, 1801 (Hymenoptera: Sphecidae) is represented by 35 valid species in the New World, and only four species in South America: *S. asiaticum* (Linnaeus, 1758), *S. caementarium* (Drury, 1770), *S. curvatum* (Smith, 1870), and *Sceliphron fistularium* (Dahlbom, 1843) (Amarante 2002; Compagnucci and Roing-Alsina 2008; Barrera-Medina and Sepúlveda-Osorio 2014; Fernández and Castro-Huerta 2014; Ceccolini 2021). In Brazil, only *S. asiaticum* and *S. fistularium* are present (Rosa and Muniz 2022).

*Sceliphron* builds its nests exposed, fixed on stems or any other substrate, gathering mud pellets with its mandibles, flying to the nest site, and applying it with its mouthparts and legs. About 30 to 40 loads of mud are needed to build a single cell, and the completed nest consists of four to 10 parallel cells that are coated with more mud posteriorly (Shafer 1949; Evans and West-Eberhard 1970).

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*Sceliphron* females exclusively capture spiders to feed their offspring. The wasps use the sting to paralyze the spider, then transport the prey to the nest, where they will lay a single egg on the abdomen of one of the spiders, which will then be consumed by the larva (ML Oliveira, obs. pers.). On the other hand, *Sceliphron* species can be hosts of several parasitoids, and in Brazil, the most commonly reported belong to the families Bombyliidae (Diptera), Eulophidae, Chrysididae, and Ichneumonidae (Hymenoptera) (Fowler 1987; Camilo 2002; Aguiar and Santos 2009).

The objectives of this paper are to describe the associations that occurred in *S. fistularium* nests, report its new associations with parasitoids and solitary wasps, and provide new distribution records to *S. fistularium* and *S. asiaticum* based on specimens housed in Invertebrate Collection at the Instituto Nacional de Pesquisas da Amazônia – INPA, Brazil.

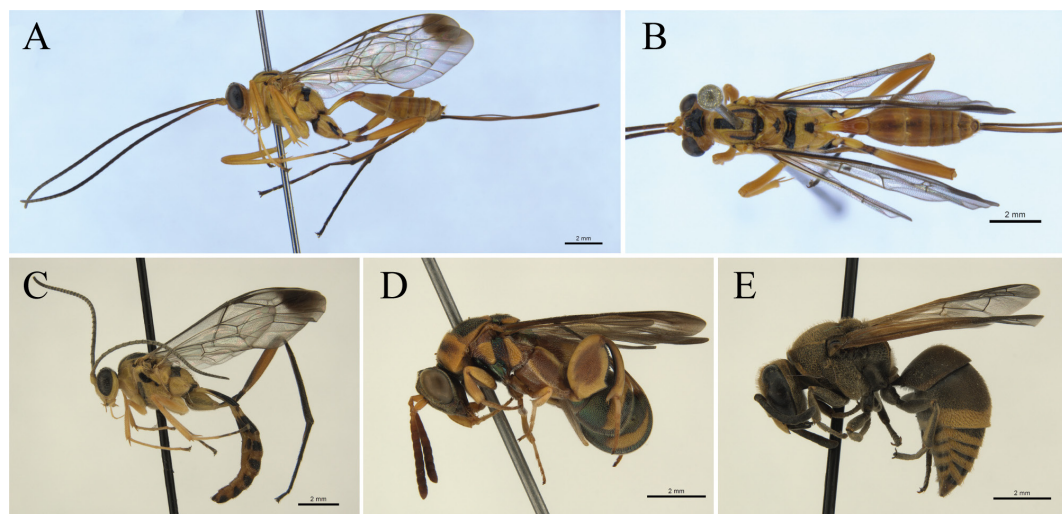
In this study, eight nests of *S. fistularium* were collected in different places in Amazonas state, Brazil: the nests I, II, III, IV, and VIII were collected in the Sítio Santa Maria, a small rural property situated next to semi-preserved portions of the Amazon rainforest, near the municipality of Iranduba (03°06'S, 60°19'W); the nest V in Parque Nacional do Jaú, Seringalzinho village (01°50'27"S, 61°35'35"W), a small rural property situated inside a well-preserved Amazon rainforest; the nest VI in Manaus, at the Instituto Nacional de Pesquisas da Amazônia (INPA), Campus II (03°05'50"S, 59°59'43"W); and the nest VII in Manaus (03°04'03"S, 59°59'43"W), both situated in urban areas but with some remnants of Amazon rainforest. The nests I, II, III, IV, and VIII were destroyed in this study to verify if there were still dead individuals inside. In addition to the nests, we also examined all specimens deposited in the Invertebrate Collection at INPA, Manaus, Amazonas, Brazil.

Digital images of wasps were taken at Invertebrate Collection (INPA) using a Leica DMC4500 digital camera attached to a Leica M205A stereomicroscope and combined using the software Helicon Focus 5.3 Pro. Digital image of the nest was taken using a Nikon digital camera D5600 with a lens Nikon AF-S Micro Nikkor 105 mm 1:2.8G ED. Species distributions were assembled in a dataset using label data from specimens deposited in the Invertebrate Collection at INPA (see supplementary material).

We record for the first time the Darwin wasp species *Photocryptus nigrosignatus* (Kriechbaumer, 1901) parasitizing nests of the solitary wasp *Sceliphron fistularium* (Dahlbom, 1843) in the Amazonas state. The Darwin wasp *Photocryptus* Viereck, 1913 is a Neotropical genus (from Mexico to Paraguay) (Aguiar and Santos 2009). The genus comprises 10 species and are parasitoids of four families and seven genera, all aculeate Hymenoptera: Vespoidea (Pompilidae and Vespidae) and Apoidea (Crabronidae and Sphecidae) (Yu *et al.* 2016). In Brazil, the genus is represented by seven species (Fernandes *et al.* 2022), and for two of them, there are no host records (Yu *et al.* 2016).

*Photocryptus nigrosignatus* (Kriechbaumer, 1901) (Figs. 1A-B) is characterized by the body in general yellow, with shades of black and white, except metasoma (brownish-orange); fore wings hyaline with a distinct subapical black spot; and females with ovipositor sheath 1.8 times longer than the posterior tibia (Kriechbaumer 1901). This species is distributed in Colombia (Putumayo department) and Brazil, and its hosts were unknown (Aguiar and Santos 2009; Yu *et al.* 2016). This species is recorded to Amazonas and Pará states (Aguiar and Santos 2009; Fernandes *et al.* 2022). There are records of other species of *Photocryptus* parasitizing Vespoidea and Apoidea (see Tab. 1). This is the first record of *S. fistularium* as host of *P. nigrosignatus*.

Records of *Photocryptus nigrosignatus* parasitizing *Sceliphron fistularium* appear to be more common than previously documented. Our findings and the literature review support that Darwin wasp genera may have a close relationship with Aculeata Hymenoptera, and no other taxa of the order. However, further experimentation or analysis has yet to be conducted to formally document whether this is an interspecific relationship.



**Figure 1.** Parasitoid and solitary wasps emerged in *Sceliphron* nests. **A.** *Photocryptus nigrosignatus* (Kriechbaumer, 1901) (Ichneumonidae), female, lateral view. **B.** *P. nigrosignatus*, female, dorsal view. **C.** *Photocryptus* sp., male, lateral view. **D.** *Leucospis* sp., female (Leucospidae), lateral view. **E.** *Pachodynerus nasidens* (Latreille, 1812) (Vespidae), male, lateral view. / **A.** *Photocryptus nigrosignatus* (Kriechbaumer, 1901) (Ichneumonidae), hembra, vista lateral. **B.** *P. nigrosignatus*, hembra, vista dorsal. **C.** *Photocryptus* sp., macho, vista lateral. **D.** *Leucospis* sp., hembra (Leucospidae), vista lateral. **E.** *Pachodynerus nasidens* (Latreille, 1812) (Vespidae), macho, vista lateral.

Two undetermined males of *Photocryptus* (Fig. 1C) emerged from the *S. fistularium* nests (I and IV), the nest I observed the emergence (from the entrance of brood cell) of one parasitoid wasp (16 days after the nest was collected; in 12.XI.2021). Both show a different pattern of metasoma color than that found in females of *P. nigrosignatus* from nests I, II, III, and IV. This species was described by Kriechbaumer (1901) only based on females (see Tab. 1), thus, it was decided not to associate males with females, since previous studies indicate the possibility of the coexistence of more than one species of *Photocryptus* in *S. fistularium* nests (Aguiar and Santos 2009). On the other hand, Aguiar and Santos (2009) associated *Photocryptus testaceoniger* (Taschenberg, 1876) with *S. fistularium* nests, however, this species is only known from males (Tab. 1). To fully elucidate this fact, a more extensive review of the taxonomy of the group is necessary, which is not the aim of this work.

In nest VIII an undetermined female of *Leucospis* Fabricius, 1775 (Fig. 1D) from *S. fistularium* nest. Leucospidae are parasitoids of solitary and subsocial aculeate bees and wasps (Cooperband *et al.* 1999), and the most common host parasitized by *Leucospis* are the species of Megachilidae bees (Bouček 1974; Noyes 2019). Few species of Sphecidae are recorded as hosts of *Leucospis* (Noyes 2019). Rasplus (1987) comments that in Africa, *Leucospis reversa* Bouček, 1974 acts as a parasitoid or hyperparasitoid of *Sceliphron* sp. (*spirifex* species-group). Although the specimen emerged from the nest of *S. fistularium*, no other evidence was found that this parasitoid is directly associated with this species. Thus, further studies are needed to confirm the association of *Leucospis* sp. with *S. fistularium*.

The single male specimen that emerged from the nest I is a solitary wasp *Pachodynerus nasidens* Latreille, 1817 (Fig. 1E). This species can easily be recognizable in the genus, characterized by the pubescence goldish, distinct punctuation on the scutum and tergum I without a yellow apical band. Is one of the most common and widely distributed species of the genus, occurring from the southern United States to Argentina and southern Brazil, and the Antilles. In *Pachodynerus* Saussure, 1870 there is nesting plasticity, occurring fossorial species ("borrowers"), species that dig their nests in the ground ("builders"), and those that

use pre-existing cavities for their nests (“renters”). *Pachodynerus nasidens* can build its nests, as well as occupy pre-existing nests. According to Willink and Roig-Alsina (1998), *Sceliphron* and *Trypoxylon* Latreille, 1796 nests have already been used by *Pachodynerus* species.

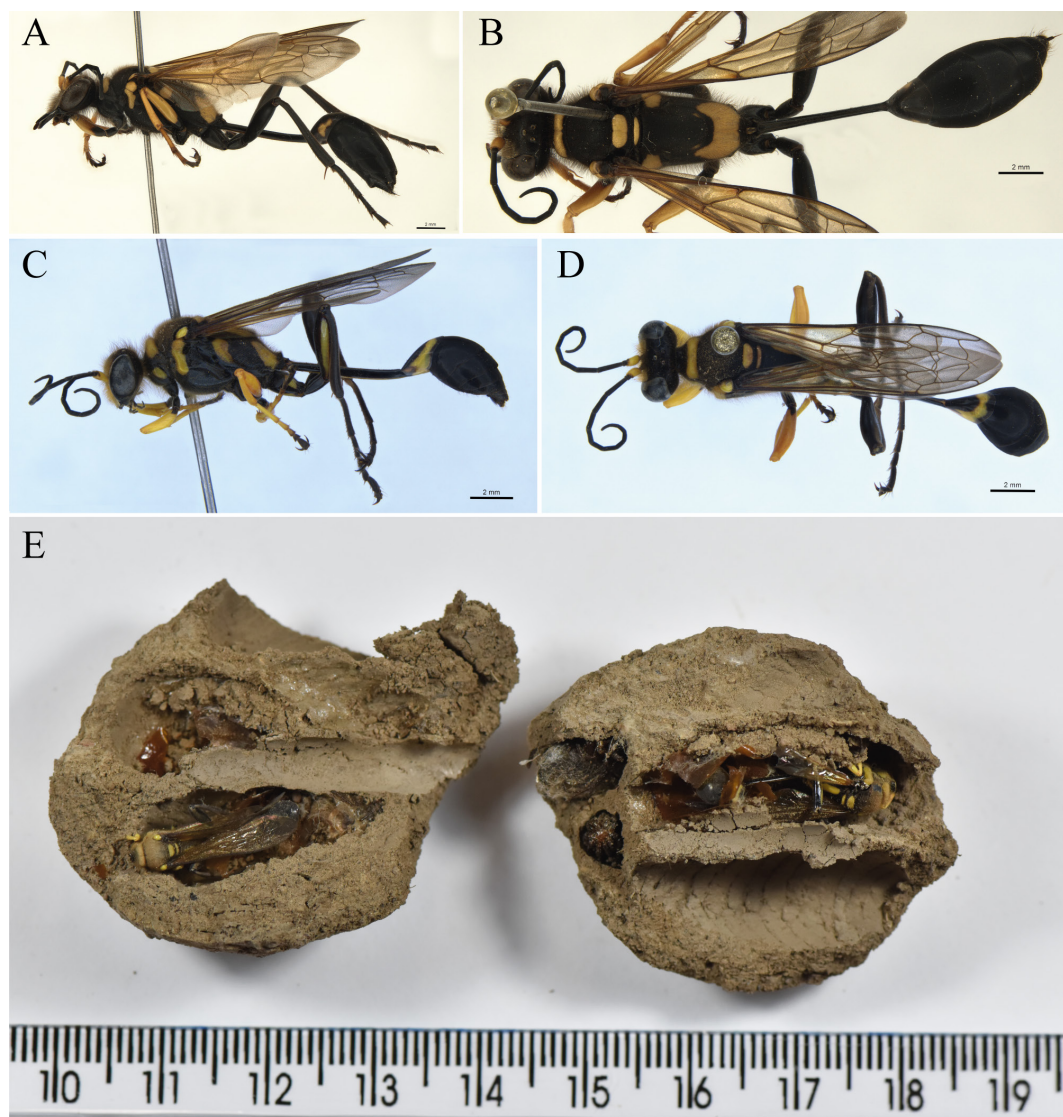
**Table 1.** Species de *Photocryptus* (Viereck, 1913) (Hymenoptera: Ichneumonidae: Cryptinae) and their hosts (Hymenoptera). / Especies de *Photocryptus* (Viereck, 1913) (Hymenoptera: Ichneumonidae: Cryptinae) y sus hospedantes (Hymenoptera).

<i>Photocryptus</i> Viereck, 1913	Sex	Host(s)	Reference(s)
<i>P. concinnus</i> (Brullé, 1846)	female and male	<i>Auplopus militaris</i> (Lynch-Arribalzaga, 1873) (Pompilidae)	Aguiar & Santos (2009)
		<i>Sceliphron assimile</i> (Dahlbom, 1843) (Sphecidae)	Aguiar & Santos (2009)
		<i>Trypoxylon maidli</i> Richards, 1934 (Crabronidae)	Aguiar & Santos (2009)
<i>P. fumatus</i> (Hancock, 1926)	female and male?	<i>Santamenes novarae</i> (Saussure, 1867) (Vespidae)	Hancock (1926)
		<i>Sceliphron assimile</i> (Dahlbom, 1843) (Sphecidae)	Aguiar & Santos (2009)
<i>P. nigrosignatus</i> (Kriechbaumer, 1901)	female	<i>Sceliphron fistularium</i> (Dahlbom, 1843) (Sphecidae)	This study
<i>P. pachymenae</i> (Cresson, 1874)	female and male	<i>Pachymenes</i> sp. (Vespidae)	Aguiar & Santos (2009)
		<i>Sceliphron fistularium</i> (Dahlbom, 1843) (Sphecidae)	Aguiar & Santos (2009)
<i>P. photomorphus</i> Viereck, 1913	female	<i>Sceliphron</i> sp. (Sphecidae)	Aguiar & Santos (2009)
<i>P. testaceoniger</i> (Taschenberg, 1876)	male	<i>Sceliphron fistularium</i> (Dahlbom, 1843) (Sphecidae)	Aguiar & Santos (2009)
		<i>Sceliphron fistularium</i> (Dahlbom, 1843) (Sphecidae)	Aguiar & Santos (2009)
<i>P. testaceus</i> (Taschenberg, 1876)	female and male	<i>Trypoxylon nitidum</i> (Smith, 1856) (Crabronidae)	Aguiar & Santos (2009)
		<i>Trypoxylon albitarse</i> Fabricius, 1804 (Crabronidae)	Aguiar & Santos (2009)

For the geographical range extensions of *Sceliphron*, a total of 132 specimens were analyzed (see supplementary material):

(1) *Sceliphron asiaticum* (Linnaeus, 1758) (Figs. 2A-B) is recorded in Brazil for Amazonas, Amapá, Bahia, Ceará, Distrito Federal, Goiás, Minas Gerais, Mato Grosso do Sul, Pará, Paraíba, Pernambuco, Piauí, São Paulo, Santa Catarina, Rio de Janeiro, Rio Grande do Sul (Taschengerg 1869; Fox 1897; Ducke 1910; Nascimento and Overal 1980; Amarante 1993; Garcia and Adis 1995; Amarante 2002; Buys 2009, 2011; Carvalho *et al.* 2014; Silvestre *et al.* 2014; Dollfuss 2016; Trad and Silvestre 2017; Rafael *et al.* 2020; Pulawski 2022); (2) *Sceliphron fistularium* (Dahlbom, 1843) (Figs. 2C-D; 1E nest) has its Brazilian distribution for Acre, Amazonas, Amapá, Espírito Santo, Mato Grosso, Mato Grosso do Sul, Pará, Pernambuco, São Paulo, Santa Catarina, Rio de Janeiro, Rio Grande do Sul, Rio Grande do Norte, Rondônia,

Roraima (Taschengerg 1869; Fox 1897, 1899; Nascimento and Overall 1980; Amarante 2002; Aguiar and Santos 2009; Buys 2009, 2011; Rodrigues and Buys 2013; Buys and Rodrigues 2014; Silvestre *et al.* 2014; Trad and Silvestre 2017; Pulawski 2022). In this study, we recorded for first time this species to Maranhão and Rondônia states.



**Figure 2.** *Sceliphron* spp. (Sphecidae). **A.** *Sceliphron asiaticum* (Linnaeus, 1758), female, lateral view. **B.** *Sceliphron asiaticum*, female, dorsal view. **C.** *Sceliphron fistularium* (Dahlbom, 1843), male, lateral view. **D.** *Sceliphron fistularium*, male, dorsal view. **E.** *Sceliphron fistularium* nest. / **A.** *Sceliphron asiaticum* (Linnaeus, 1758), hembra, vista lateral. **B.** *Sceliphron asiaticum*, hembra, vista dorsal. **C.** *Sceliphron fistularium* (Dahlbom, 1843), macho, vista lateral. **D.** *Sceliphron fistularium*, macho, vista dorsal. **E.** Nido de *Sceliphron fistularium*.

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## Supplementary material

### Sphecidae

#### *Sceliphron asiaticum* (Linnaeus, 1758)

(Figs. 2A-B)

**Material examined.** Brazil, Amazonas, Careiro, Lago de Janauacá, 26.III.1988, José C. Hurtado leg., 1 female, [INPA]; idem, but Manaus, Conjunto 31 de Março, Japiim, 09.IV.1990, J.A.O. Guerra leg., 1 female, [INPA]; idem, but Conjunto Vista Bela, 20.II.1986, M.G. Paes leg., 1 male, [INPA]; idem, but Presidente Figueiredo, UHE Balbina, 19-29.III.2013, Collected by hand, A. Somavilla leg., 1 female, [INPA]; idem, but Rio Solimões, Ponta do Catalão, 08.VI.1991, M.V. Garcia leg., 2 females and 1 male, [INPA]; idem, but Itacoatiara, ICET, Campus II, 03°05'37"S, 58°27'31"W, Malaise Trap, 27.I.2018, F. P. Figueiredo leg., 1 female, [INPA]; Goiás, Araguacema, 26-29.I.1983, Malaise Trap, J.A. Rafael leg., 1 female, [INPA]; Pernambuco, Fernando de Noronha, Praia do Leão, 20-27.II.2020, J.A. Rafael; P.C. Grossi & F. Limeira-de-Oliveira leg., 1 female, [INPA].

#### *Sceliphron fistularium* (Dahlbom, 1843)

(Figs. 2C-D; 2E nest)

**Material examined.** Brazil, Roraima, ESEC Maracá, 11.XII.2015, M.L. Oliveira & P.R. Bartholomay leg., 1 female, [INPA]; idem, but 12.XII.2015, 2 females, [INPA]; FLONA Roraima, Rio Mucajá, 18-21.XII.2017, M.L. Oliveira & F.F. Xavier-Filho leg., 2 females, [INPA]; Ilha de Maracá, Projeto Maracá, SEMA/RGS, XII.1987, [unknown collector], 1 female, [INPA]; Pacaraima, Ramal do Miang, 941m, 18.VII.2009, M.L. Oliveira; O. Mielke & M. Casagrande leg., 1 female, [INPA]; Rio Uraricoera, Ilha de Maracá, 02-13.V.1987,



Malaise Trap, J.A. Rafael; J.E.B. Brasil & L.S. Aquino leg., 4 females, [INPA]; idem, but 18-28.VIII.1987, J.A. Rafael; L.S. Aquino; J.F. Vidal & E. Binda leg., 1 female, [INPA]; idem, but 21-30.XI.1987, (fogging), J.A. Rafael and team leg., 3 females, [INPA]; Uiramutã, Parque Nacional do Monte Roraima, Terra Indígena Raposa Serra do Sol, Etnoregião Ingaricó, Comunidade Karumampaktei, 1000 alt., 05°07'41"N, 60°35'90"W, 03-17.XII.2019, F.F. Xavier-Filho; M. Oliveira & S. Lima, small Malaise Trap, 1 female, [INPA]; Amazonas, 26 km NE Manaus, Reserva Ducke, VIII.1981, Malaise Trap, J.A. Rafael leg., 1 female, [INPA]; idem, but AM 10, Km 31, EMBRAPA, 12.XII.1990, Shannon Trap (Isc. Fruta: C. Cacau), L.P. Albuquerque & J.E. Binda leg., 1 female, [INPA]; idem, but 18.IX.1990, undetermined sex, #0019517, [INPA]; Barcelos, Rio Demeni, Jalauaca, VIII.2008, Malaise Trap, Terra firme (floresta), A. Silva & R. Machado leg., 1 female, [INPA]; idem, but Pirico, Collected by hand, 2 females, [INPA]; idem, but Beruri, Lago Ayapuá, VIII.2007, J.G. Rabello leg., 6 females, [INPA]; FLOREST Canutama, Terra Firme, 07.V.2013, Oliveira & Somavilla leg., 4 females, [INPA]; Ipixuna, Rio Gregório, Comunidade Lago Grande, 18-23.V.2011, Suspended Trap, J.A. Rafael; J.T. Câmara; R.F. Silva; A. Somavilla; C. Gonçalves & A. Agudelo leg., 2 females, [INPA]; idem, but Malaise Trap, J.A. Rafael; J.T. Câmara; R.F. Silva; A. Somavilla & C. Gonçalves leg., 1 female, [INPA]; idem, but Rio Liberdade, Estirão da Preta, 11-15.V.2011, Collected by hand, J.A. Rafael; J.T. Câmara; R.F. Silva; A. Somavilla & A. Agudelo leg., 1 female, [INPA]; Iranduba, AM 070, Km 28, Ramal do Assutuba, Sítio Santa Maria, [Nest IV], 07.VIII.2017, M. Oliveira leg. 1 female and 1 male, [INPA]; idem, but [Nest III], 20.VII.2018, 1 male, [INPA]; idem, but 25-26.IX.2021, M. Oliveira & M. Aragão leg., 1 female, [INPA]; Lábrea, Ramal Apaeral, Km 09, Sítio São Raimundo, VI.2006, Collected by hand, F.F. Xavier-Filho leg., 1 female, [INPA]; Manaus, 24.VI.1982, Centro Universitário, Malaise Trap, J.A. Rafael leg., 1 female, [INPA]; idem, but 29.VI.1982, [unknown collector], 1 female, [INPA]; idem, but Conjunto Tiradentes, 07.IV.2004, Entomological Net, G.M. Ogawa leg., 1 female, [INPA]; idem, but Manaus, Nest VII, 30.VIII.2003, J.A. Cunha leg., 3 females, [INPA]; idem, but EMBRAPA, 11.X.2012, Malaise Trap, K. Schoeninger leg., 1 female, [INPA]; idem, 1 female, [INPA]; idem, but INPA, 28.IV.1988, S.S. Leite leg., 1 female, [INPA]; idem, but Bosque da Ciência, Entomological Net, 20-24.V.2013, D.W.A. Marques leg., 1 female, [INPA]; idem, but INPA, emerged in Nest VI, 07.IX.2019, M.L. Oliveira leg., 2 females and 1 male, [INPA]; idem, but Reserva Ducke, 10-16.VIII.2010, A. Somavilla; M.T. Torres & V. Linnard leg., 1 female, [INPA]; idem, but 23.IX.1986, Luis-Ulysses leg., 2 females, [INPA]; idem, but 24.IX.1982, Malaise Trap, J.A. Rafael leg., sex?, [INPA]; idem, but 30.IV.1982, 1 female, [INPA]; idem, but 30.XI.1981, 1 female, [INPA]; idem, but 05.X.1981, 1 female, [INPA]; idem, but L5-1500, Malaise Trap (48h), IX.2014, S.S. Azevedo leg., 1 female, [INPA]; idem, but L6-500, Malaise Trap, X.2014, 1 female, [INPA]; idem, but Rua Otávio Cabral, Petrópolis, 08.IV.2012, T. Becker leg., 1 female, [INPA]; idem, but ZF-03, Km 23, Res. 1112, Fazenda Esteio, Malaise Trap, 14.I.1986, Bert Klein leg., 1 female, #0068662, [INPA]; idem, but 19.III.1985, 1 female, #0001089, [INPA]; Marã, 22.IX.2004, M.L. Oliveira & F.F. Xavier-Filho leg., 1 male, [INPA]; Maués, Rio Abacaxis, 26-28.V.2008, Suspended Trap 35m, J.A. Rafael and team leg., 2 females, [INPA]; idem, but 27-29.V.2008, Collected by hand, 3 females, [INPA]; idem, but Campina, Pacamiri, 30-31.V.2008, Suspended Trap, 1 female, [INPA]; Médio Purus, 25.VI.1979, J. Campbell leg., 1 female, [INPA]; Novo Aripuanã, Malaise Trap, IX.2004, Henriques, Silva & Pena leg., 1 female, [INPA]; idem, but Guariúba, 19-24.VIII.1999, Malaise Trap, Vidal & Augusto leg., 1 female, [INPA]; Parque Nacional do Jaú, Seringalzinho, emerged in nest [Nest V], 10-24.XI.2003, M.L. Oliveira leg., 1 male, [INPA]; Presidente Figueiredo, UHE Balbina, 09.X-02.XII.2012, D. Storck-Tonon leg., 3 females, [INPA]; idem, but X.2012, Collected by hand, A. Somavilla leg., 5 females, [INPA]; idem, but 19-29.III.2013, 1 male, [INPA]; idem, but Resex Unini, Lago Galomãha, Terra Firme, 13-28.VII.2004, Collected by hand, M.L. Oliveira; L. Aquino & A. Silva-Filho leg., 3 females, [INPA]; idem, but Rio Aracá, Campina, 24.VII.2007,

Collected by hand, M.L. Oliveira & A.S. Filho leg., 1 female, [INPA]; idem, but Rio Demei, Comunidade Bacabal, 16.VII.2007, M. L. Oliveira leg., 2 females, [INPA]; São Gabriel da Cachoeira, Querari, 01°04'51,3"N, 69°50'32,1"W, 09-15.V.2017, Entomological Net, M.L. Oliveira & T. Mahlmann leg., 1 female, [INPA]; Pará, Alter do Chão, 15-18.II.1992, Malaise Trap, J.A. Rafael leg., 1 female, #0018949, [INPA]; Belém, 30.X.1975, Inocêncio leg., 1 male, [INPA]; Óbidos, Fazenda Pajurá, 05-11.IX.2001, Malaise Trap, J.A. Rafael & J.F. Vidal leg., 1 female, [INPA]; Oriximiná, Rio Trombetas, Aleoa Mineração, Cruz Alta, Malaise Trap, 14.X.1981, J.A. Rafael leg., 1 female, [INPA]; Rio Trombetas, Lago Caetano, 10.III.1986, Equipe Apoidea leg., 2 females, [INPA]; idem, but 09.III.1986, 1 female, [INPA]; Tracuateua, 23.XI.1975, I.S. Gorayeb leg., 1 female, [INPA]; Belterra, Flona Tapajós, Igarapé do Maguari 13, 02°47'23.5"S, 55°01'14.9"W, 17-25.IX.2016, Malaise Trap, A.M. Pes et al. leg., 6 females, [INPA]; idem, but Igarapé Pinim, 03°07'47.6"S, 55°06'39"W, 16-24.IX.2016, 2 females, [INPA]; Rondônia, Itapuã do Oeste, Flona Jamari, III.2007, 9°15'36"S 62°54'46"W, Malaise Trap, Z.F.M. Silva & J.A. Rafael leg. – Rede BIA, 1 female, [INPA]; Nova Mamoré, Parque Estadual Guajará-Mirim, Rio Formoso, Malaise Trap, 20-27.X.1995, J. Vidal & L.S. Aquino leg., 5 females, [INPA]; Vilhena, 25.IV.2006, Malaise Trap, J.A. Rafael & F.F. Xavier-Filho leg., 1 female, [INPA]; Mato Grosso, Aripuanã, Reserva Humbolt, 03.X.1975, L.P. Albuquerque & J.B. Moraes leg., 1 female, #0145, [INPA]; idem, but Estrada Codesat [sic], 03.XI.1975, J.B. Moraes leg., 1 female, #0176, [INPA]; Maranhão, Viana, MA-014, 20.IX.1999, Malaise Trap, J.A. Rafael & F.L. Oliveira leg., 3 females, [INPA]; Rio de Janeiro, Itatiaia, 700 m., Estação Biológica, 10.II.1933, W. Zikán leg., 1 male, [INPA].