

## Taxonomy and Systematic / Taxonomia e Sistemática

# New distribution records of Sclerogibbidae (Hymenoptera: Chrysidoidea) in Brazil

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**Abstract.** Here we present new geographical records for *Probethylus callani* Richards, 1939 and *Probethylus schwarzi* Ashmead, 1902 in Brazil.

**Keywords:** Amazon; Caatinga; Neotropics; Pantanal; *Probethylus*.

### Novos dados de distribuição de Sclerogibbidae (Hymenoptera: Chrysidoidea) no Brasil

**Resumo.** Novos registros de distribuição geográfica são apresentados para *Probethylus callani* Richards, 1939 e *Probethylus schwarzi* Ashmead, 1902 no Brasil.

**Palavras-Chave:** Amazônia; Caatinga; Neotrópico; Pantanal; *Probethylus*.

Sclerogibbidae (Hymenoptera: Chrysidoidea) is a small family of ectoparasitoids on Embioptera (Ross 2000). It is widespread over the warm-temperate regions of the world, where 22 species (Ross 2000; OLMÍ 2006) are distributed in three genera: *Caenosclerogibba* Yasumatsu, 1958, *Probethylus* Ashmead, 1902 and *Sclerogibba* Riggio & Stefani-Perez, 1888 (OLMÍ 2005).

*Probethylus* is the only genus of Sclerogibbidae known to occur in the Neotropics, its distribution ranging from Mexico to Argentina (OLMÍ 2005; SCHÜEPP & OLMÍ 2012). In Brazil there are occurrence records for *Probethylus callani* Richards, 1939 and *Probethylus schwarzi* Ashmead, 1901 (OLMÍ 2005; FERNANDES 2016). PENTEADO-DIAS & VAN ACHTERBERG (2002) reported the genus in Brazil for the first time, in the states of São Paulo and Minas Gerais, and later, OLMÍ (2005) extended its distribution for Amazonas, Ceará, Pernambuco, Bahia, Espírito Santo, Rio de Janeiro, Paraná and Santa Catarina. Herein we provide notes on range extensions in Brazil for *P. callani* and *P. schwarzi*.

### MATERIAL AND METHODS

This study was based on material deposited in the following institutions:

INPA - Coleção de Invertebrados do Instituto Nacional de Pesquisas da Amazônia, Manaus, Amazonas, Brazil, (Curator: M.L. Oliveira).

LRRP - Coleção Entomológica do Laboratório de Sistemática e Bioecologia de Parasitoides e Predadores da APTA Ribeirão Preto, Ribeirão Preto, São Paulo, Brazil, (Curator: N.W. Perioto).

MZSP - Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil, (Curator: C.R.F. Brandão).

Species distributions in Brazil were assembled in a dataset and incorporated into distribution maps. Geographic coordinates of the species records were found using the GeoLoc tool, available at CRIA's website (<http://splink.cria.org.br>). The map was elaborated using the Quantum GIS (<http://www.qgis.org>).

Supplementary data in material examined section is given within brackets [].

### RESULTS AND DISCUSSION

*Probethylus callani* Richards, 1939

**Material examined:** (65 males) BRAZIL, Alagoas: Quebrangulo, Reserva Biol[ógica] Pedra Talhada, (09°19'S / 36°28'W), Malaise-bosque, pto. 6, 08-11.IX.2002, Penteado-

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Dias *et al.*, 1 male (MZSP – 53307); same data except, Malaise-trilha, pto. 6, 11-14.IX.2002, Pentead-Dias *et al.*, 1 male (MZSP – 53306); **Bahia**: Jequié (13°86'18.6"S / 40°15'79.5"W), Distrito de Irrigação da Fazenda Velha (Dirfav), Malaise trap, 9.VII.2005, J. T. Santos, 1 male (LRRP); same data except, 19.XI.2005, 1 male (LRRP), 23.II.2006, 1 male (LRRP), 22.VI.2006, 1 male (LRRP); **Espírito Santo**: Santa Teresa, Est[ação] Biol[ógica] S[an]ta Lúcia, 638 m, (19°58'25.2"S / 40°31'44.6"W), 10.IV.2001, varredura (A35) [sweeping net], C. O. Azevedo *et al.*, 1 male (MZSP – 8219); **Mato Grosso do Sul**: Corumbá, SISBIOTA – Pantanal, Malaise 2, 1.I.2012, C. Araújo, 1 male (MZSP); same data except, 16.I.2012, 1 male (MZSP), Malaise 3, 31.I.2012, 2 males (MZSP), 1.XII.2011, 1 male (MZSP), Malaise 3, 17.XII.2011, 3 males (MZSP), Malaise 2, 15.II.2012, 2 males (MZSP), Malaise 3, 01.I.2012, 5 males (MZSP); **Paraná**: S[ão] José [dos] Pinhais, Ser[ra] [do] Mar, BR 277, Km 54, 13.VI.1988, Lev. Ent. PROFAUPAR MALAISE, 1 male (MZSP – 8222); **Rio Grande do Norte**: Mossoró, Faz[enda] S[anta] Júlia, Caatinga (05°01'10"S / 37°22'56"W), Malaise trap, 14.IV.2008, D.R.R. Fernandes *et al.*, 2 males (LRRP); same data except, 6.III.2007, 5 males (LRRP); Mossoró, Campus da UFERSA, Caatinga (05°11'S / 37°20'W), Malaise trap, 4.I.2007, D.R.R. Fernandes *et al.*, 1 male (LRRP); **Rondônia**: Itapuã do Oeste, Flona Jamari, Trilha Pedra Grande (09°11'39.4"S / 63°04'55.3"W), Malaise, 8.X.2014, J.A. Rafael *et al.*, 2 males (INPA); same data except, 6.X.2014, 4 males (INPA); **São Paulo**: Teodoro Sampaio, Parque Est[adual] Morro do Diabo, (22°36'18.4"S / 52°18'10.2"W), Malaise trap (point 5), 17.II.2011, N.W. Perioto *et al.*, 2 males (LRRP); Ribeirão Grande, Parque Estadual Intervalles (24°16'23.6"S / 48°25'21.8"W), Malaise trap (point 1), 23.VIII.2010, N.W. Perioto *et al.*, 1 male (LRRP); same data except, (24°16'28.0"S / 48°25'14.8"W), Malaise trap (point 5), 22.X.2010, 1 male (LRRP); São Luís do Paraitinga, P.E.S.M. [Parque Estadual da Serra do Mar]-Núcleo Santa Virginia, (23°19'27.2"S / 45°05'38.5"W), Malaise trap (point 2), 23.XI.2009, N.W. Perioto *et al.*, 3 males (LRRP); same data except, (23°19'24.8"S / 45°05'40.1"W), Malaise trap (point 3), 2 males (LRRP), 22.XII.2009, 1 male (LRRP), (23°19'27.2"S / 45°05'38.5"W), Malaise trap (point 2), 22.VII.2010, N.W. Perioto *et al.*, 1 male (LRRP), (23°19'24.8"S / 45°05'40.1"W), Malaise trap (point 3), 1 male (LRRP), (23°19'16.9"S / 45°05'46.6"W), Malaise trap (point 1), 22.IX.2010, 1 male (LRRP), (23°19'24.8"S / 45°05'40.1"W), Malaise trap (point 6), 22.IX.2010, 1 male (LRRP), (23°19'17.9"S / 45°05'42.9"W), Malaise trap (point 7), 22.XI.2010, 1 male (LRRP), (23°19'24.8"S / 45°05'40.1"W), Malaise trap (point 3), 20.V.2011, 1 male (LRRP), (23°19'24.8"S / 45°05'40.1"W), Malaise trap (point 3), 20.VI.2011, 5 males

(LRRP), (23°19'17.9"S / 45°05'42.9"W), Malaise trap (point 4), 20.VII.2011, 5 males (LRRP); Salesópolis, Estação Biológica de Boracéia, (23°39'05.1"S / 45°53'51.8"W), Trilha dos Pilões, Malaise, 26.II.2005, 07:00-08:00, A.P. Aguiar & L.K. Nogueira, 1 male (MZSP – 8225).

**Comments:** In Brazil, OLMÍ (2005) recorded *P. callani* in the states of Amazonas, Bahia, Ceará, Espírito Santo, Minas Gerais, Paraná, Pernambuco, Rio de Janeiro, Santa Catarina and São Paulo. Here, we add new state records for Alagoas (Quebrangulo), Mato Grosso do Sul (Corumbá), Rio Grande do Norte (Mossoró) and Rondônia (Itapuã do Oeste), and new locality records for Bahia (Jequié), Espírito Santo (Santa Teresa), São Paulo (Ribeirão Grande, Salesópolis, São Luís do Paraitinga and Teodoro Sampaio) and Paraná (São José dos Pinhais) (Figure 2).

**Distribution.** Distribution. Angola, Argentina, Belize, Bolivia, Brazil, Central African Republic, Colombia, Congo, Costa Rica, Dominican Republic, Ecuador, Guatemala, Honduras, Kenya, Mexico, Nicaragua, Nigeria, Panama, Peru, South Africa, Tanzania, Trinidad, USA, Venezuela and Yemen (OLMÍ 2005; OLMÍ & COPELAND 2011; SCHÜEPP & OLMÍ 2012; OLMÍ *et al.* 2015, 2016).

*Probethylus schwarzi* Ashmead, 1902

**Material examined:** (353 males) **BRAZIL, Amazonas:** Manaus, EMBRAPA, Guar[aná] orgânico [*Paullinia cupana* Kunth] – Mata, Malaise, 26.X.2012, K. Schoeninger, 1 male (INPA); same data except, 28.IX.2012, 1 male (INPA); **Bahia:** Jequié (13°86'18.6"S/40°15'79.5"W), Distrito de Irrigação da Fazenda Velha (Dirfav), Malaise trap, 23.IV.2005, J.T. Santos, 8 males (LRRP); same data except, 11.VI.2005, 21 males (LRRP), 18.VI.2005, 13 males (LRRP), 30.VI.2005, 22 males (LRRP), 9.VII.2005, 35 males (LRRP), 16.VII.2005, 1 male (LRRP), 23.VII.2005, 15 males (LRRP), 30.VII.2005, 7 males (LRRP), 9.VIII.2005, 20 males (LRRP), 12.VIII.2005, 6 males (LRRP), 16.IX.2005, 23 males (LRRP), 8.X.2005, 16 males (LRRP), 19.XI.2005, 3 males (LRRP), 10.XII.2005, 3 males (LRRP), 17.XII.2005, 1 male (LRRP), 7.I.2006, 28 males (LRRP), 20.I.2006, 13 males (LRRP), 29.I.2006, 4 males (LRRP), 10.II.2006, 5 males (LRRP), 17.II.2006, 10 males (LRRP), 23.II.2006, 6 males (LRRP), 3.III.2006, 1 male (LRRP), 18.III.2006, 5 males (LRRP), 22.IV.2006, 4 males (LRRP), 29.IV.2006, 1 male (LRRP), 8.V.2006, 5 males (LRRP), 19.V.2006, 1 male (LRRP), 10.VI.2006, 1 male (LRRP), 22.VI.2006, 6 males



Figure 1. Male of *Probethylus callani* Richards, 1939 (Hymenoptera: Sclerogibbidae).



Figure 2. Map of Brazil with locality records of *Probethylus callani* Richards, 1939 (Hymenoptera: Sclerogibbidae).





Figure 3. Male of *Probethylus schwarzi* Ashmead, 1902 (Hymenoptera: Sclerogibbidae).



Figure 4. Map of Brazil with locality records of *Probethylus schwarzi* Ashmead, 1902 (Hymenoptera: Sclerogibbidae).

(LRRP), 7.VII.2006, 3 males (LRRP), 15.VII.2006, 5 males (LRRP), 22.VII.2006, 10 males (LRRP), 29.VII.2006, 8 males (LRRP), 5.VIII.2006, 10 males (LRRP); **Mato Grosso do Sul**: Corumbá, SISBIOTA – Pantanal, Malaise 3, 16.I.2012, C. Araújo, 1 male (MZSP); same data except, Malaise 1, 17.XII.2011, 1 male (MZSP), Malaise 3, 01.I.2012, 1 male (MZSP); **Paraíba**: João Pessoa, Mata do Buraquinho, (07°08'25"S / 34°51'38"W), Malaise trap T1, 28-31.VII.2002, S.T.P. Amarante *et al.*, 1 male (MZSP – 8220); **Piauí**: 10 Km N Corrente, Faz. Maracujá, Malaise trap, 23-27.XI, 1991, C.R.F. Brandão, 1 male (MZSP – 8221); **Rio Grande do Norte**: Mossoró, Faz[enda] S[anta] Júlia, Caatinga (05°01'10"S / 37°22'56"W), Malaise trap, 14.IV.2008, D.R.R. Fernandes *et al.*, 7 males (LRRP); same data except, 6.III.2007, 2 males (LRRP), 25.XII.2005, Moericke trap, 9 males (LRRP); Mossoró, Campus da UFERSA, Caatinga (05°11'S / 37°20'W), Malaise trap, 4.I.2007, D.R.R. Fernandes *et al.*, 2 males (LRRP); **São Paulo**: Salesópolis, Estação Biológica de Boracéia, (23°39'18.2"S / 45°53'18"W), Trilha do Divisor, Malaise, 25.II.2005, 10:00-11:00, R.S.M. Feitosa & A.P. Aguiar, 1 male (MZSP – 8223); same data except, Trilha dos Pilões, Malaise, 23.II.2005, 06:00-18:00, A.P. Aguiar & L.K. Nogueira, 1 male (MZSP – 8224); Ubatuba, P[ar]que Est[adual] da Serra do Mar, Nucleo Picinguaba, (23°21'43"S / 44°49'22"W), Malaise trap T2, 24-27.I.2002, N.W. Perioto *et al.*, 2 males (MZSP – 8226 and 8227); same data except, Malaise trap T5, 1 male (MZSP – 8228); Jundiá, R. B. da Serra do Japi, (23°13'54.1"S / 46°56'22.6"W), Malaise IV, 03.X.2009, A.S. Soares *et al.*, 1 male (MZSP – 53308).

**Comments:** In Brazil, OLMI (2005) cited *P. schwarzi* in the states of Bahia, Ceará, Espírito Santo, Minas Gerais, Paraná, Rio de Janeiro, Santa Catarina and São Paulo. Here, we add new state records for Amazonas (Manaus), Mato Grosso do Sul (Corumbá), Paraíba (João Pessoa), Piauí (Corrente) and Rio Grande do Norte (Mossoró), and new locality records for São Paulo state (Jundiá, Salesópolis and Ubatuba) (Figure 4).

**Distribution.** Argentina, Bolivia, Brazil, Colombia, Cuba, French Guyana, Guatemala, Panama, Paraguay, Peru, Puerto Rico, Mexico, Trinidad, USA and Venezuela (OLMI 2005).

## DISCUSSION

BRANDÃO *et al.* (2002) consider Sclerogibbidae as rare in entomological collections in Brazil, which most likely would reflect the low frequency of occurrence of the group in surveys. For instance, AZEVEDO & SANTOS (2000) stated that Sclerogibbidae

is uncommon in inventories of parasitic Hymenoptera. The low frequency was also observed by AZEVEDO *et al.* (2003) and ALENCAR *et al.* (2007) in the Atlantic Rain Forest, and FERNANDES *et al.* (2014) in Caatinga.

Most of the material studied here was obtained in a three-years survey in one area of Brazilian Dry Forest “Caatinga” in Jequié, Bahia (317 specimens), using Malaise traps (LUCENA *et al.* 2012). We believe long-term studies and successive sampling in the same area to be an effective strategy for Sclerogibbidae inventories. This pattern was also observed in other groups of Hymenoptera believed uncommon [see LUCENA *et al.* (2012) for Chrysididae, VERSUTI *et al.* (2014) for Dryinidae, LARA & PERIOTO (2014) for Pelecinidae, and PERIOTO *et al.* (2016) for Monomachidae].

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