

Scientific Note/Comunicação Científica

New records of social wasps (Hymenoptera: Vespidae: Polistinae) in Alagoas state, Brazil

Registered on ZooBank: urn:lsid:zoobank.org:pub:1FA43F86-966C-4FA4-8DF2-E088A7EB13C1

Bruno Corrêa Barbosa[✉], Tatiane Tagliatti Marciel & Fábio Prezoto

Laboratório de Ecologia Comportamental e Bioacústica – LABEC, Universidade Federal de Juiz de Fora.

EntomoBrasilis 11 (1): 56-59 (2018)

Abstract: In this study, the social wasps *Mischocyttarus rotundicollis* (Cameron) and *Polybia bistrata* (Fabricius) were recorded for the first time in Alagoas state, including a brief description of the species.

Keywords: Atlantic forest; Distribution; Diversity; Northeastern Brazil; Urban fragment.

Novos registros de vespas sociais (Hymenoptera: Vespidae: Polistinae) no estado de Alagoas, Brasil

Resumo: Neste estudo, foram registradas as vespas sociais *Mischocyttarus rotundicollis* (Cameron) e *Polybia bistrata* (Fabricius) pela primeira vez no estado de Alagoas e foi incluída uma breve descrição de espécies.

Palavras-Chave: Distribuição; diversidade; Fragmento urbano; Floresta atlântica; Nordeste do Brasil.

Belonging to the Polistinae subfamily, social wasps play a remarkable role in balancing ecosystems by preying on herbivore insects, pollinating and serving as environmental indicators (PREZOTO *et al.* 2008; ELISEI *et al.* 2010; SOUZA *et al.* 2010; CLEMENTE *et al.* 2012; BARBOSA *et al.* 2014), and the research effort on these insects' fauna has therefore been increasing. However, some Brazilian biomes are still understudied, which favors the decrease in the number of protected areas and a resulting increase in local and global extinction rates (SOUZA & ZANUNCIO 2012). There is, therefore, a need to study biodiversity in every region of the country.

Among all Brazilian biomes, the Neotropical Forests are considered the richest and more diverse in the planet, also making up the biome with the greatest territorial extension in the country. The Atlantic Forest, in turn, is framed along the Brazilian Atlantic coastline and, despite its degradation and fragmentation, still presents high biodiversity and endemism rates, being the most well-studied Brazilian domain (PINTO *et al.* 2000).

The fauna of the Northeastern Atlantic Forest, present in the Borborema province, an area of rainforest that covers part of the states of Alagoas, Paraíba, Pernambuco, Rio Grande do Norte and Ceará, is still not properly known, especially regarding social wasps, despite considerable scientific effort made towards it (MAYO & FEVEREIRO 1982; CORREIA 1996; MOURA

1997; FERRAZ *et al.* 1998; TAVARES *et al.* 2000; NASCIMENTO 2001). Among the challenges for the conservation of this scenario, a lack of taxonomic and local species distribution data stands out (LEWIS 2006). The Linnean and Wallacean Shortfalls stand for, respectively, the deficit of information on the species' ecology and distribution (CARDOSO *et al.* 2011; BINI *et al.* 2006; WHITTAKER *et al.* 2005), creating gaps in the knowledge on certain animal groups. Therefore, this study aims to report and describe two newly recorded species on the social wasp fauna in an urban fragment of Atlantic forest for Alagoas state, Brazil.

Wasps were sampled with entomological nets in the Parque Municipal de Maceió city park in 2016 (9°36'37.66" S, 35°45'51.21" W), area characterized as novel ecosystem (MACIEL & BARBOSA 2015) (Figure 1). All specimens were deposited in Laboratório de Ecologia Comportamental e Bioacústica (LABEC) of Universidade Federal de Juiz de Fora. For identification, we used dichotomous keys proposed by RICHARD (1978) and SILVEIRA (2008). We also consulted the previous studies on diversity carried out in Brazil in order to validate the new distribution records (RICHARDS 1978; Barbosa *et al.* 2016). The software DIVA-GIS 7.5.0 was used to draw the maps.

Two species of social wasps were sampled for the first time in Alagoas state, being a single *Mischocyttarus rotundicollis* (Cameron) colony and four *Polybia bistrata* (Fabricius) colonies.

Edited by:

Wesley Dáttilo

Article History:

Received: 12.vii.2017

Accepted: 11.xi.2017

✉ Corresponding author:

Bruno Corrêa Barbosa

✉ barbosa.bc@outlook.com

🌐 <http://orcid.org/0000-0003-2421-6239>

Funding agencies:

↪ CNPq, CAPES

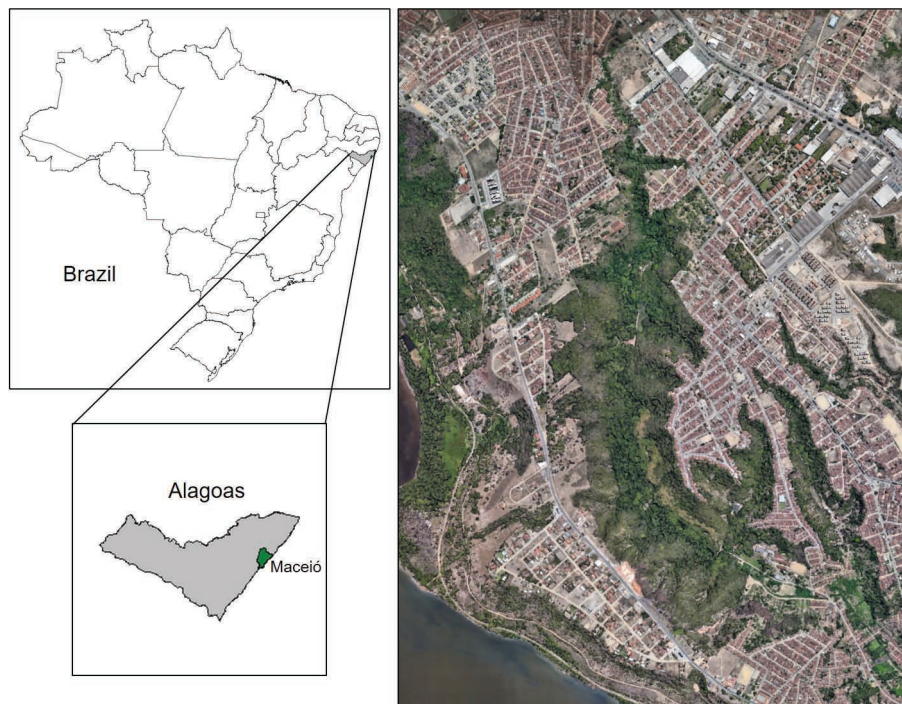


Figure 1. Localization of the Parque Municipal de Maceió city park, Alagoas state, Brazil.

Mischocyttarus is the single genus in Mischocyttarini tribe and also the largest genus among eusocial wasps (Polistinae), with 245 species included in nine subgenera, 139 of which being found in Brazil. It can be seen in Central and South America, with a few species occurring north of Mexico (RICHARDS 1978; SILVEIRA 2008; CARPENTER & ANDENA 2013).

Briefly describing *M. rotundicollis* (Figure 2-A and 2-B), this species is known by its relatively medium size with a characteristically almost uniform brown coloration, 12.5-17 mm wing-length and a weak pronotal keel, dying away very gradually at the sides and interrupted in the center. Metasomal tergum I is more petiolate than in *Mischocyttarus drewseni* Saussure (RICHARDS 1978). New state record: Brazil (Alagoas). Previous records: Brazil (Amazonas, Bahia, Distrito Federal, Espírito Santo, Goiás, Mato Grosso, Minas Gerais, Pará, Paraná, Rio de Janeiro, Rondônia, Rio Grande do Sul, Santa Catarina, São Paulo).

The *Polybia* is a genus of swarm-founding social wasps comprising 58 described species in 11 subgenera, ranging from the south of United States to the north of Argentina. In Brazil, 45 species have been described, four of which being endemic (RICHARDS 1978; CARPENTER & DAY 1988; CARPENTER *et al.* 2000). Some species were recorded in associations with other animals like birds and ants (MENEZES *et al.* 2014; VIRGINIO *et al.* 2015).

Briefly describing *P. bistriata* (Figures 2-C and 2-D), this species is small sized and usually shows brown coloration (rarely black) with well-defined yellow markings, rarely showing paler forms in which no yellow spots are defined behind the ocelli (RICHARDS 1978). Males are not yet described or known. New state records: Brazil (Alagoas). Previous records: Brazil (Acre, Amazonas, Espírito Santo, Goiás, Mato Grosso, Minas Gerais, Pará, Paraná, Rio de Janeiro, São Paulo).

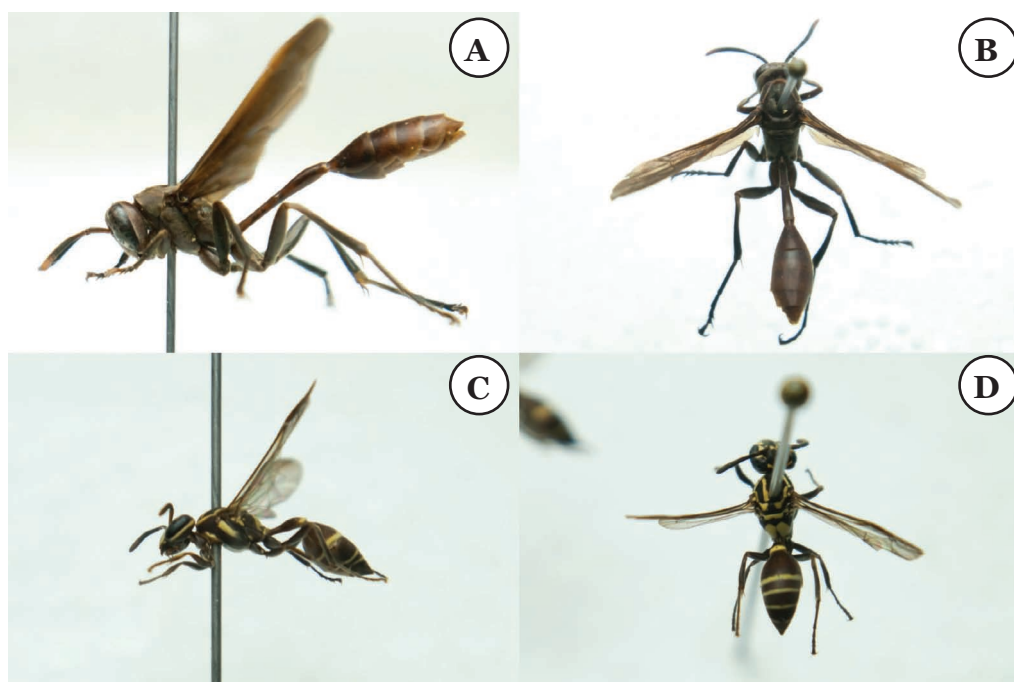


Figure 2. A: lateral view of an individual of *Mischocyttarus rotundicollis*; B: dorsal view of an individual of *Mischocyttarus rotundicollis*; C: frontal view of an individual of *Polybia bistriata*; D: lateral view of mesosoma of *Polybia bistriata*.

By analyzing both species' occurrence records, we can observe the differences between RICHARDS (1978) and the diversity studies compiled by BARBOSA *et al.* (2016) and MACIEL *et al.* (2016). *P. bistriata* is generally recorded in diversity studies only for the Northern and Northeastern regions, other records (Acre, Espírito Santo, Goiás, Mato Grosso, Minas Gerais, Paraná, Rio de Janeiro e São Paulo) coming from collections cited by RICHARDS (1978). Same goes for *M. rotundicollis*, recorded for Distrito Federal, Espírito Santo, Goiás, Mato Grosso, Pará, Paraná, Rondônia and Santa Catarina in collections cited by RICHARDS (1978).

Generally, both species are distributed through all the national territory (Figure 3), and yet the inexistence of records of this

species in Northeastern Brazil can be explained by a lack of studies on social wasp diversity in this region (see BARBOSA *et al.* 2016). This gap underestimates species richness, increases the Shortfalls in the knowledge on these insects and overlooks the need to preserve areas in this region (OLIVEIRA *et al.* 2000).

Aside from building knowledge on social wasps in the Northeastern region, these new records emphasize the need to study all Brazilian phytophysiological domains. We must also highlight that different types of environments must be sampled, since urban fragments have shown to be important refuges for the fauna in degraded areas.

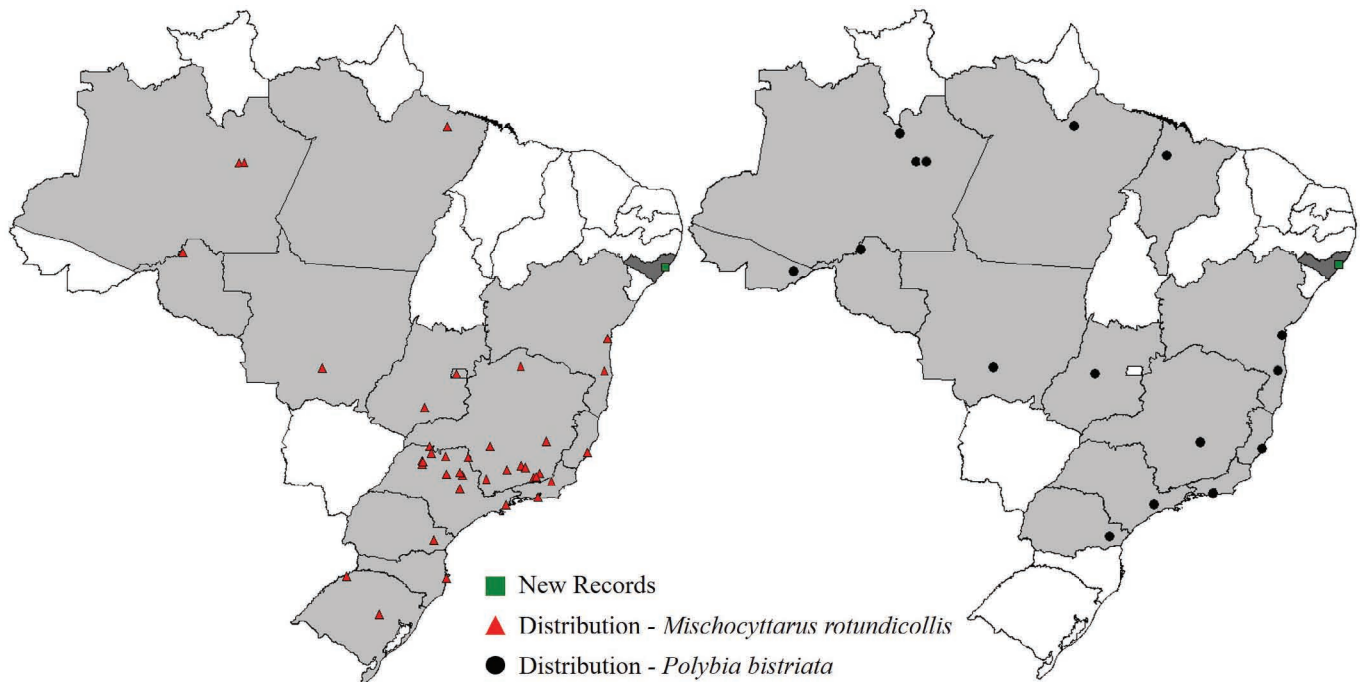


Figure 3. Distribution of *Mischocyttarus rotundicollis* and *Polybia bistriata* through Brazil according to Richards (1978) and Barbosa *et al.* (2016) including the new distribution area reported.

ACKNOWLEDGMENTS

This work was supported by Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) and Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES).

REFERENCES

Barbosa, B.C., M. Paschoalini & F. Prezoto, 2014. Temporal Activity Patterns and Foraging Behavior by Social Wasps (Hymenoptera, Polistinae) on Fruits of *Mangifera indica* L. (Anacardiaceae). *Sociobiology*, 61: 239-242. DOI: <https://doi.org/10.13102/sociobiology.v61i2.239-242>.

Barbosa, B.C., M. Detoni, T.T. Maciel, & F. Prezoto, 2016. Studies of social wasp diversity in Brazil: Over 30 years of research, advancements and priorities. *Sociobiology*, 63, 858-880. DOI: <https://doi.org/10.13102/sociobiology.v63i3.1031>.

Bini, L.M., J.A.F. Diniz-Filho, T.F.L.V.B. Rangel, R.P. Bastos & M.P. Pinto, 2006. Challenging Wallacean and Linnean shortfalls: knowledge gradients and conservation planning in a biodiversity hotspot. *Diversity Distribution*, 12: 475-482. DOI: <https://doi.org/10.1111/j.1366-9516.2006.00286.x>.

Cardoso, P., T.L. Erwin, P.A.V. Borges & T.R. New, 2011. The seven impediments in invertebrate conservation and how to overcome them. *Biological Conservation*, 144: 2647-2655. DOI: <https://doi.org/10.1016/j.biocon.2011.07.024>.

Carpenter, J.M. & M.C. Day, 1988. Nomenclatural notes on Polistinae (Hymenoptera: Vespidae). *Proceedings of the Entomological Society of Washington*, 90: 323-328.

Carpenter, J.M. & S.R. Andena, 2013. The vespidae of Brazil, Manaus, Instituto nacional de Pesquisa da Amazônia, 42 p.

Carpenter, J.M., J. Kojima & J.W. Wenzel, 2000. *Polybia*, Paraphyly and Polistine phylogeny. *American Museum Novitates*, 3298: 1-24. DOI: [https://doi.org/10.1206/0003-0082\(2000\)298<0001:PPAPP>2.0.CO;2](https://doi.org/10.1206/0003-0082(2000)298<0001:PPAPP>2.0.CO;2).

Clemente, M.A., D. Lange, K. Del-Claro, F. Prezoto, N.R. Campos & B.C. Barbosa, 2012. Flower-visiting social wasps and plants interaction: Network pattern and environmental complexity. *Psyche: A Journal of Entomology*, 1-10. DOI: <https://doi.org/10.1155/2012/478431>.

Correia, M.S., 1996. Estrutura da Vegetação da Mata Serrana de um Brejo de Altitude de Pesqueira – PE. Dissertação de Mestrado. Universidade Federal de Pernambuco, Recife. 56 f.

Elisei, T., J.V.E. Nunes, C. Ribeiro Junior, A.J. Fernandes Junior & F. Prezoto, 2010. Uso da vespa social *Polybia versicolor* no controle de desfolhadores de eucalipto. *Pesquisa Agropecuária Brasileira*, 45: 958-964. DOI: <https://doi.org/10.1590/S0100-204X2010000900004>.

Ferraz, E.M.N., M.J.N. Rodal, E.V.S.B. Sampaio & R.C.A. Pereira, 1998. Composição florística em trecho de vegetação de Caatinga e Brejo de Altitude na região do Vale do Pajeú, Pernambuco. *Revista Brasileira de Botânica* 21, 7-15.

Lewis, O.T., 2006. Climate change, species area curves and the extinction crisis. *Philosophical Transactions of the Royal Society London Biological*, 361, 163-171. DOI: <https://doi.org/10.1098/rstb.2005.1712>.

- Maciel, T.T. & B.C. Barbosa, 2015. Áreas Verdes Urbanas: História, Conceitos e Importância Ecológica. CES Revista, 29: 30-42.
- Maciel, T.T., B.C. Barbosa & F. Prezoto, 2016. Armadilhas Atrativas como Ferramenta de Amostragem de Vespas Sociais (Hymenoptera: Vespidae): Uma Meta-Análise. EntomoBrasilis, 9: 150-157. DOI: <http://dx.doi.org/10.12741/ebrasilis.v9i3.644>.
- Mayo, S.J. & V.P.B. Feveireiro, 1982. Mata de Pau de Ferro – A Pilot Study of the Brejo Forest of Paraíba, Brazil, Royal Botanic Gardens, London, 29 p.
- Menezes, J.C.T., B.C. Barbosa & F. Prezoto, 2014. Previously unreported nesting associations of Yellow-Olive Flycatcher (*Tolmomyias sulphurescens*) (Aves: Tyrannidae) with social wasps and bees. Ornithologia Neotropical, 25: 363-368.
- Moura, F.P.B., 1997. Fitossociologia de uma Mata Serrana Semidecídua no Brejo de Jataúba, PE. Dissertação de Mestrado. Universidade Federal Rural de Pernambuco, Recife. 56 f.
- Nascimento, L.M., 2001. Caracterização Físico-estrutural de um Fragmento de Floresta Montana no Nordeste do Brasil. Dissertação de Mestrado. Universidade Federal Rural de Pernambuco, Recife. 61 f.
- Oliveira, U., A.P. Paglia, A.D. Brescovit, C.J. Carvalho, D.P. Silva, D.T. Rezende, F.F. Leite, J.A.N. Batista, J.P.P.P. Barbosa, J.R. Stehmann, J.S. Ascher, M.F. Vasconcelos, P. Marco, P. Lowenberg-Neto, P.G. Dias, V.G. Ferro & A.J. Santos, 2016. The strong influence of collection bias on biodiversity knowledge shortfalls of Brazilian terrestrial biodiversity. Diversity and Distributions, 22: 1232-1244.
- Pinto, L.P., L.C. Bede, M. Fonseca, I. Lamas, C.A. Mesquita, A. Paglia & T.P. Cisalpino, 2012. Mata Atlântica, p. 16-55. In: Scarano, F.R., Santos, I., Martins, A.C.I., Silva, J.M.C., Guimarães, A., Mittermeier, R.A. (Eds.) Biomas Brasileiros: Retratos de um País Plural. Casa da Palavra, Conservação Internacional, Rio de Janeiro, 325 p.
- Prezoto, F., S.A.O. Cortes & A.C. Melo. 2008. Vespas: de vilãs a parceiras. Ciência Hoje, 48: 70-73.
- Richards, O.W., 1978. The social wasps of the Americas excluding the Vespinae. London, British Museum (Natural History), 580 p.
- Silveira, O.T., 2008. Phylogeny of wasps of the genus *Mischocyttarus* de Saussure (Hymenoptera, Vespidae, Polistinae). Revista Brasileira de Entomologia, 54: 510-549. DOI: <https://doi.org/10.1590/S0085-56262008000400004>.
- Souza, M.M. & J.C. Zanuncio, 2012. Marimbondos Vespas sociais (Hymenoptera: Vespidae). 1. ed. Viçosa: UFV, 79 p.
- Souza, M.M., J. Louzada, J.E. Serrão & J.C. Zanuncio. 2010. Social wasps (Hymenoptera: Vespidae) as indicators of conservation degree of riparian forests in southeast Brazil. Sociobiology, 56: 1-10.
- Tavares, M.C.G., M.J.N. Rodal, A.L. Melo & M.F.A. Lucena, 2000. Fitossociologia do componente arbóreo de um trecho de floresta montana do Parque Ecológico João Vasconcelos Sobrinho, Caruaru, Pernambuco. Naturalia, 25: 243-270.
- Virgínio, F., T.T. Maciel & B.C. Barbosa, 2015. Nidificação de *Polybia rejecta* (Fabricius) (Hymenoptera: Vespidae) Associada à *Azteca chartifex* Forel (Hymenoptera: Formicidae) em Ecótono de Bioma Caatinga/Mata Atlântica, no Estado do Rio Grande do Norte EntomoBrasilis, 8: 242-245. DOI: <https://doi.org/10.12741/ebrasilis.v8i3.503>.
- Whittaker R.J., M.B. Araujo, P. Jepson, R.J. Ladle, J.E.M. Watson & K.J. Willis, 2005 Conservation biogeography: assessment and project. Diversity Distribution, 11: 3-23.

Suggestion citation:

Barbosa, B.C., T.T. Maciel & F. Prezoto, 2018. New records of social wasps (Hymenoptera: Vespidae: Polistinae) in Alagoas state, Brazil. EntomoBrasilis, 11 (1): 56-59.

Available on: [doi:10.12741/ebrasilis.v11i1.728](https://doi.org/10.12741/ebrasilis.v11i1.728)

