



## ECOSYSTEMS

# Expansion of the area of occurrence of the genus *Anochetus* Mayr 1861 (Hymenoptera: Formicidae)

JULIANA S. CARVALHO, ANA C.R. DE LIMA, JUNIR A. LUTINSKI & FLÁVIO R.M. GARCIA

**Abstract:** The study was carried out on an agroecological property located in Cologne São Manoel, 8th district of Pelotas, RS, Brazil. *Anochetus neglectus* Emery, 1894 was collected in an area of peach orchard that has been under an agroecological system for 18 years. This record expands the area of occurrence and distribution of this rare species in the Neotropical Region.

**Key words:** Agroecological orchards, *Anochetus neglectus*, ant, biodiversity, geographical distribution.

## INTRODUCTION

The ants of the poneromorph group mainly with preference for tropical forests and can vary greatly in size. Predators are important, being considered “primitive” huntresses, exert a regulatory function in the populations of many other groups of arthropods, and can act as indicators of the diversity of the same. Between the subfamilies of ants, the Ponerinae ants occupy the fourth place in richness, with approximately 1,195 species in 47 genera, with a cosmopolitan distribution, but mainly tropical (Delabie et al. 2015).

The ants of the genus *Anochetus* Mayr 1861 built small colonies with less than 100 workers, although there is a record of colonies with 400 individuals. They build their nests under rocks, fallen logs, and leaf litter and seek food slightly (Fernández et al. 2019). The genus draws attention by presenting linear elongated jaws used as traps to capture insects and also used as a mechanism of leakage. During foraging the jaws are opened at an angle of 180° and are immediately closed when a possible prey is detected, in the case of escape from predators,

the jaws are closed quickly toward the ground, resulting in a strong impulse that projects the ant away from the threat (Baccaro et al. 2016).

This genus is 112 described species distributed in the Americas, with emphasis on the Neotropical region with 26 species. Occur in northern Mexico to northern Argentina and in some Caribbean islands (Baccaro et al. 2016, Fernandes 2017).

In Brazil there are records of this genus in the states of Santa Catarina, Paraná, São Paulo, Rio de Janeiro, Espírito Santo, Bahia, Pará, Mato Grosso do Sul, Mato Grosso, Minas Gerais, Acre, Amapá, Rondônia, Roraima, Amazonas and Goiás (Bolton 2020), however for the state of Rio Grande do Sul no species had been recorded.

## MATERIALS AND METHODS

The specimen was collected in the *Colônia São Manoel* (31° 26' S and 52° 33'), 8th district of Pelotas, Rio Grande do Sul state, Brazil, in an area of peach orchard [*Prunus persica* (L.) BaTsch] Granada cultivar, which has been under the agroecological system for 18 years. The region is

located in the *Serra do Sudeste*, which features natural vegetation classified as area of training pioneer with fluvial influence and Seasonal Semideciduous Forest (IBGE 1992) and climate according to Köppen climate classification is Cfa (type C: warm temperate climate with an average temperature of the coldest month between 3 and 18° C; f: in any month precipitation is less than 60 mm; temperature of the hottest month is superior to 22° C).

The gathering took place in March 2017 using pitfall traps (Bachelier 1963), which consisted of a plastic pot with a capacity of 1 L, buried in the soil at the time of the opening of the same, being protected by a clay tile supported by a wooden stake. On the inside of each trap was added a solution of 200mL, 5% hydrated glycerin, 22% distilled water, and 73% ethanol 96 %. The specimen was removed from the trap and wrapped in a plastic bottle of 80 mL of ethanol 70 %.

## RESULTS

The identification was performed following the keys proposed by Fernandes (2017) and Baccaro et al. (2015). The classification was based on Bolton (2019).

In Brazil were described 13 species in the genus were in several states, being *Anochetus altisquamis* Mayr, 1887 the closest species recorded in Santa Catarina (Bolton 2020), and *Anochetus neglectus* Emery, 1894, found in nearby countries such as Paraguay, Argentina, and Uruguay (Bolton 2020), however no species had been recorded for the state of Rio Grande do Sul. An individual of *A. neglectus* was collected in agroecological Property Schiavon (31° 25' 43" S and 52° 33' 26") (Figure 1).

The genus has a global distribution, occurring in tropical, subtropical, and temperate. Ants are poneromorph and some species have



**Figure 1.** *Anochetus neglectus* Emery, 1894, dorsal view. Scale bar = 0.5mm.

biology par excellence arboreal, which means the location of the nest and foraging is restricted to the vegetation (Delabie et al. 2015).

The presence of some genera of Ponerinae ants including the genus *Anochetus*, are described in the literature as bioindicators in undisturbed areas (Ramos et al. 2003, Dias et al. 2008, Rabello et al. 2015). The copy of *Anochetus* may have been collected due to the proximity of the peach orchard area to a native forest since the soil in the area of the orchard never is discovered. In the summer comes spontaneous vegetation and in winter is performed sowing of vetch (*Vicia sativa* L.), oat (*Avena sativa* L.), and l ryegrass (*Lolium multiflorum* Lam.), providing shelter and provision of resources for the survival of these organisms.

However, there are still few records of this genus in the country, especially in the state of Rio Grande do Sul, thus, this first record highlights the importance of conducting further work with ants in Rio Grande do Sul, because there are regions and environments not yet sampled and little knowledge about the distribution of ants in the example of the genus *Anochetus*.

## Acknowledgments

Mr. Nilo Schiavon farmer authorized the survey on your property. The Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES) Brazil - Pnpd/CAPES

through research funding. To CNPq for the fellowship of productivity of FRMG.

## REFERENCES

BACCARO FB, FEITOSA RM, FERNANDEZ F, FERNANDES IO, IZZO TJ, SOUZA JLP & SOLAR R. 2015. Guia para os gêneros de formigas do Brasil. Manaus: Editora INPA, 388 p.

BACHELIER G. 1963. La vie animale dans les solo. Paris: ORSTOM, 279 p.

BOLTON B. 2019. Synopsis and classification of Formicidae. Gainesville: Am Entomol Inst, 370 p.

BOLTON B. 2020. An Online Catalog of the Ants of the World. <http://antcat.org>. (Acessado em 16 de abril de 2020).

DELABIE JHC, FEITOSA RM, SERRÃO JE, MARIANO CSF & MAJER JD. 2015. As formigas poneromorfas do Brasil- Ilhéus. Bahia: Editus, 477 p.

DIAS NS, ZANETTI R, SANTOS MS, LOUZADA J & DELABIE J. 2008. Interaction between forest fragments and adjacent coffee and pasture agroecosystems: responses of the ant communities (Hymenoptera, Formicidae). *Sér Zoo* 98: 136-142.

FERNANDES IO. 2017. Análise filogenética de *Anochetus* Mayr, 1861 e *Odontomachus* Latreille, 1804 (Hymenoptera: Formicidae: Ponerinae) e revisão taxonômica de *Anochetus* para a região Neotropical. Manaus: INPA, 305 p.

FERNÁNDEZ F, GUERRERO RJ & DELSINNE T. 2019. Hormigas de Colombia. Bogotá: Universidad Nacional de Colombia, 1198 p.

IBGE - INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA. 1992. Manual técnico da vegetação Brasileira. Série manuais técnicos em geociências. Rio de Janeiro, 92 p.

RABELLO AM, QUEIROZ ACM & RIBAS CR. 2015. Poneromorfas como indicadoras de impacto pela mineração e de reabilitação após mineração. In: As formigas poneromorfas do Brasil. Ilhéus: Editus, p. 425-436.

RAMOS LD, FILHO RBZ, DELABIE JHC, LACAU S, SANTOS MFS, NASCIMENTO IC & MARINHO CGS. 2003. Ant communities (Hymenoptera: Formicidae) of the leaf litter in cerrado "stricto sensu" areas in Minas Gerais, Brazil. *Lundiana* 4: 95-102.

## How to cite

CARVALHO JS, LIMA ACR, LUTINSKI JA & GARCIA FRM. 2023. Expansion of the area of occurrence of the genus *Anochetus* Mayr 1861 (Hymenoptera: Formicidae). *An Acad Bras Cienc* 95: e20200605. DOI 10.1590/0001-3765202320200605.

*Manuscript received on April 28, 2020;  
accepted for publication on June 18, 2021*

## JULIANA S. CARVALHO<sup>1</sup>

<https://orcid.org/0000-0002-5652-3463>

## ANA C.R. DE LIMA<sup>1</sup>

<https://orcid.org/0000-0001-9036-8199>

## JUNIR A. LUTINSKI<sup>2</sup>

<https://orcid.org/0000-0003-0149-5415>

## FLÁVIO R.M. GARCIA<sup>3</sup>

<https://orcid.org/0000-0003-0493-1788>

<sup>1</sup>Programa de Pós-Graduação em Sistemas de Produção Agrícola Familiar, Universidade Federal de Pelotas, Departamento de Solos, Campus Universitário, s/n, 96160-000 Capão do Leão, RS, Brazil

<sup>2</sup>Programa de Pós-Graduação em Ciências da Saúde, Universidade Comunitária da Região de Chapecó, Rua Beija-Flor, 709/710, Efapi, 89809-760 Chapecó, SC, Brazil

<sup>3</sup>Universidade Federal de Pelotas, Instituto de Biologia, Departamento de Ecologia, Zoologia e Genética, Avenida Duque de Caxias 250, 96010-900 Pelotas, RS, Brazil

## Authors contributions

JSC, ACRL, JAL, and FRMG: conceived and planned the experiments, planned and carried out the experiments, contributed to sample preparation, contributed to the interpretation of the results. JSC took the lead in writing the manuscript and carried out the experiments. All authors provided critical feedback and helped shape the research, analysis and manuscript.

