

## New Records of Social Wasps (Hymenoptera, Vespidae) in the Brazilian Tropical Savanna

by

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### ABSTRACT

Although very diversified and abundant in Brazil, there is little knowledge on distribution of social wasps in the major part of Brazil. Here we report the first records for eight species of social wasps in Minas Gerais state: *Mischocyttarus araujo* Zikán, *M. funerulus* Zikán, *M. tricolor* Richards, *M. confusus* Zikán, *M. cerberus styx* Richards, *M. artifex* (Ducke), *Polistes pacificus flavopictus* Ducke and *Polybia striata* (Fabricius). These species occurred in tropical savanna and semi deciduous forest.

Key words: *Mischocyttarus* spp., *Polistes* sp., *Polybia* sp., inventory, diversity.

In a recent perspective, biodiversity should be viewed and evaluated not only in terms of numbers of species, but also in aspects of interactions and species distribution, to facilitate a better preservation of natural ecosystems (Del-Claro 2004). In this sense, wasps, due to their biological characteristics, abundance, distribution and richness of interactions, are considered as a special group. Social wasps have important ecological functions, mainly acting as predators (Prezoto & Machado 1999; Carpenter & Marques 2001) or pollinators (Hunt *et al.* 1991). Additionally, they have been used as models for the study of the evolution of social behavior (Wilson 1971; Reeve 1991).

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However, despite the enormous abundance of social wasps in Brazil, not much is known about species distribution and ecology in this country (Richards 1978; Carpenter & Marques 2001). Studies have occurred, but are mainly restricted to some specific areas of Southeast Brazil (Richards 1978; Rodrigues & Machado 1982; Diniz & Kitayma 1994; Santos 1996; Raw 1998; Lima *et al.* 2000; Silveira 2002; Silva-Pereira & Santos 2006; Souza & Prezoto 2006; Elpino-Campos *et al.* 2007). The state of Minas Gerais is one of the most diverse in terms of landscapes, including vegetal physiognomies of Atlantic forest, Savanna, Caatinga and the Rupestre fields (Oliveira & Marquis 2002; Drummond *et al.* 2005; Souza 2006). The aim of this study was to provide additional information about social wasp occurrences in this area.

The study was conducted between September/2003 and September/2007 in two municipalities of Minas Gerais State: Barroso and Uberlândia. The study areas present a characteristic climate of tropical savannas with a hot and rainy season (October to March) and a dry season (April to September) (Napoleão 1979; Oliveira & Marquis 2002; Rosa *et al.* 1991). The field collections were performed in two different vegetal physiognomies: cerrado (tropical savanna) and semi-deciduous forest (Neto *et al.* 2004). In Barroso, the samples were taken at Mata do Baú (21°11'S, 43°58'W; altitude 950 m; 4000 m<sup>2</sup>) and in Uberlândia, in the Reserva Ecológica do Clube de Caça e Pesca Itororó (CCPIU) (15°57'S, 48°12'W; altitude 863m; 640 ha); Estação Ecológica do Panga (EEP), of the Universidade Federal de Uberlândia (UFU), (IBAMA - RPPN) (19°09'S, 48°23'W; altitude 840m; 400 ha); in the Fazenda Experimental do Glória (UFU) (1000 m<sup>2</sup> study area); and also in a savanna fragment inside the urban perimeter (19°11'S, 48°27'W, 1000 m<sup>2</sup>).

Four capture methodologies were used in Barroso (N = 40 samples): active search, quadrants, attractive traps and the punctual method. In Uberlândia (N = 69 samples) we used the active search and the point sampling method, according to the methodology proposed by Souza & Prezoto (2006). The captured specimens were transported to the Laboratório de Ecologia Comportamental from Universidade Federal de Juiz de Fora (UFJF), for preparation and identification through comparisons with other collections and also using the identification keys proposed by Richards (1978) and Carpenter & Marques (2001). Voucher specimens were deposited in the collection of the Museu Emílio Goeldi, Belém-PA; in the Department of Zoology of

Universidade Estadual Paulista (UNESP), Rio Claro, SP; and in the collection of the Museu de Biodiversidade do Cerrado, Instituto de Biociências of Universidade Federal de Uberlândia.

Results showed that Barroso, where semi deciduous forest is the main vegetal physiognomy, has higher diversity than Uberlândia, where the predominant vegetation type is savanna. In Barroso, 42 social wasp species were registered but only 29 in Uberlândia (Elpino-Campos *et al.* 2007). However, among these species, eight are new records to Minas Gerais State:

*Mischocyttarus (Monocyttarus) araujoii* Zikán. Registered geographical distribution: Rio de Janeiro, Santa Catarina and São Paulo States (Richards 1978; Colomo & Berta 2005). Colonies (N = 2) were found in semi deciduous forest and in the savanna field (N = 1), in the rainy and hot seasons.

*Mischocyttarus (Kappa) funerulus* Zikán. Registered geographical distribution: Rio de Janeiro State (Richards 1978; Colomo & Berta 2005). One colony occurred in the semi-deciduous forest, at the beginning of the rainy period.

*Mischocyttarus (Haplometrobium) tricolor* Richards. Registered geographical distribution: Mato Grosso State (Richards 1978). One individual was collected in the end of the dry season in the savanna.

*Mischocyttarus (Haplometrobium) confusus* Zikán. Registered geographical distribution: Rio de Janeiro State (Richards 1978; Colomo & Berta 2005). Colonies (N = 16) were observed in all vegetation types during all seasons.

*Mischocyttarus (Haplometrobium) cerberus styx* Richards. Registered geographical distribution: Goiás, Mato Grosso and São Paulo States (Richards 1978; Giannotti 1999). This species is typical of savanna, constituting 12.8% of all specimens captured in Uberlândia nesting in *Caryocar brasiliense* Cambess (Caryocaraceae).

*Mischocyttarus (Haplometrobium) artifex* (Ducke). Registered geographical distribution: Pará State (Richards 1978). One colony was observed in semi-deciduous forest in Barroso.

*Polistes (Epicnemius) pacificus flavopictus* Ducke. Registered geographical distribution: Bahia, Espírito Santo, Rio de Janeiro and São Paulo States (Richards 1978). Several individuals were captured in semi-deciduous forest in Barroso, but we never found a nest.

*Polybia (Polybia) striata* (Fabricius). Registered geographical distribution: Acre, Amazonas, Espírito Santo, Goiás, Maranhão, Mato Grosso, Pará, Rondônia, Rio de Janeiro and São Paulo States (Richards 1978; Silveira 2002). This species was collected once, during the dry season in the savanna of Uberlândia.

The Brazilian tropical savanna previously covered 25% of Brazilian territory, but nowadays it is an endangered ecosystem, with cities, pasture and agricultural areas taking its place (Oliveira & Marquis 2002; Del-Claro 2004). Despite the proximity of this vegetation to large scientific centers, the knowledge of its arthropod fauna is relatively poor (e.g. Del-Claro & Torezan-Silingardi 2009; Del-Claro & Tizo-Pedroso 2009). The new records here presented, added to the new data about wasp diversity and biology in Minas Gerais state (Souza & Prezoto 2006; Elpino-Campos *et al.* 2007) suggest that this Brazilian province can provide a great opportunity for the development of new and more elaborate studies on wasp natural history in the remaining areas of Cerrado domain.

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