

Notes and Comments

## ***Polybia erythrothorax* (Hymenoptera: Vespidae): first record of occurrence in the Cerrado biome of northeastern Brazil**

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The original area of the Cerrado biome occupied about 30% of the Brazilian territory in nine states and the Federal District of this country as a biodiversity hotspot (Myers et al., 2000). This biome is one of the most threatened in the world, due to the intensification of agricultural practices (Colli et al., 2020) and with few studies on sampling social wasps (Souza et al., 2020a).

The western region of Bahia is the agricultural hub of this state with conversion of areas of native vegetation into agriculture practices. The suppression of native forest in the municipality of Angical, Bahia state, Brazil, aims to establish pastures for cattle raising, increasing the need for faunal surveys to know and preserve local diversity.

Social wasps are pollinators, predators and indicators of environmental quality (Aguiar and Santos, 2007; Prezoto et al., 2019). The constant increase in the area occupied by agriculture reinforces the need to carry out studies on social wasps due to the importance of these insects in the environment (Souza et al., 2020a).

Species of the genus *Polybia* are social wasps of the tribe Epiponini, subfamily Polistinae, widely distributed, with twenty-seven of them in the Cerrado biome (Souza et al., 2020a) from a total of fifty-one in Brazil (Somavilla et al., 2021). The neotropical social wasp, *Polybia erythrothorax* Richards, 1978 (Hymenoptera: Vespidae), has been recorded in Cerrado areas in the states of Goiás and Mato Grosso, eastern Brazil (Diniz and Kitayama, 1994; Raw, 2016; Souza et al., 2020a), and in the Atlantic Forest in Minas Gerais, Rio de Janeiro and São Paulo states, Brazil (Souza et al., 2020b).

The nests of *P. erythrothorax* (Figure 1A) are similar to those of *Polybia occidentalis* Olivier, 1792 (Hymenoptera: Vespidae), with a piriform or bell shape, generally with leaves and/or branches attached to them (Richards, 1978). Black body with red and some yellow spots, clypeus and

the base of the antennae red or reddish characterize the wasp *P. erythrothorax* (Richards, 1978) (Figure 1B, C, D).

The limited knowledge on the distribution and biology of *P. erythrothorax* increases the need to study this wasp in different biomes. The objective was to report the first record of *P. erythrothorax* in the Cerrado biome of Bahia state, northeastern Brazil.

Social wasps were collected by active searching and attractive traps in riparian forest, forest/pasture and native Cerrado forest with tree and shrub species (cerradão) (Santos et al., 2009) in the municipality of Angical (12° 0' 25" S; 44° 41' 38" W; altitude 466m), Bahia state, Brazil from November 2020 to January 2021.

The attractive traps were made of 500 ml transparent “PET” bottles with three lateral triangular openings (2 × 2 × 2 cm) 15 cm from the base of the bottle. Sixty meter transects were delimited in areas of riparian forest, forest/pasture and native forest. Ten traps were installed monthly in each transect, 30 meters apart from each other and at 1.5 meters above the ground. These traps remained in the field for five consecutive days and were removed in the morning, starting at 8:00 A.M. with a sampling effort of 360 hours. Five of these traps were baited each with 150 ml of industrial mango juice and another five with the same volume of passion fruit juice (Maciel, 2017).

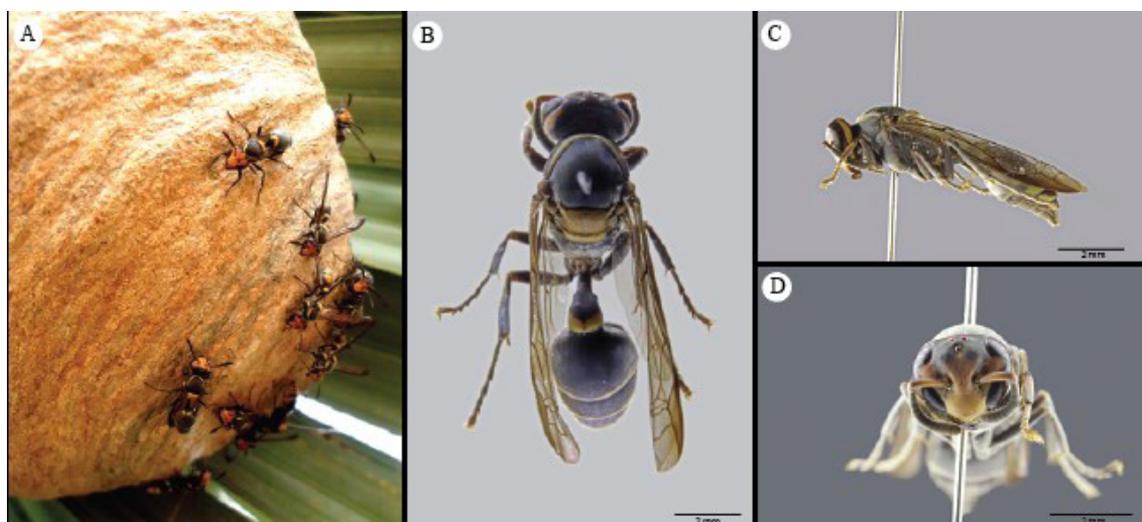
The active search was carried out monthly with an entomological net, between 08:00 A.M and 05:00 P.M, in the days of installation and removal of the attractive traps with a sampling effort of 36 hours. Wasps foraging on rocky outcrops, cavities in tree trunks and canopies were collected. The wasps were identified by Dr. Marcos Magalhães de Souza of the Zoology Laboratory of IFSULDEMINAS, Campus Inconfidentes and deposited in the CBVS collection of this institution (registration number 06442 to 06461-2021).

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**Figure 1.** Nest (A), dorsal (B), lateral (C) and frontal (D) views of *Polybia erythrothorax* (Hymenoptera: Vespidae).

Sixteen individuals of *P. erythrothorax* were collected, eight by active search and eight others with attractive traps, being four were with passion fruit juice and four with mango juice. Five, one and ten individuals of this wasp were collected in the gallery forest, bush/pasture and reserve areas, respectively. The sixteen individuals of *P. erythrothorax* collected corroborate the largest number of records of this wasp in forest area (cerradão) in Mato Grosso state, Brazil (Richards, 1978). The diversity and architecture of the vegetation in this type of phytophysognomy may contribute to the nesting and foraging of this species. This wasp has been reported in the central-west, north (Pará) and southeast (Minas Gerais, Rio de Janeiro and São Paulo) regions (Souza et al., 2020b; Somavilla et al., 2021) and in the Cerrado of the states of Goiás and Mato Grosso (Diniz and Kitayama, 1994; Raw, 2016; Castro et al., 2021), Brazil. The collection methods may have contributed to record this wasp in the western region of Bahia, as it was collected by active search for nests in Mato Grosso, Brazil (Diniz and Kitayama, 1994), by active search in the state of Goiás (Raw, 2016), and in an agriculture environment in the state of Minas Gerais (Jacques et al., 2015), Brazil. This reinforces the adaptation of *P. erythrothorax* to the Cerrado biome, as it has been previously reported in Cerrado *sensu stricto* and campo sujo, in the hot and humid period, and in gallery forest, forest edges, cerradão and dry forests (Richards, 1978; Diniz and Kitayama, 1994; Raw, 2016).

The eight individuals of *P. erythrothorax* collected in attractive traps with passion fruit and mango juices reinforce the effectiveness of this method to collecting social wasps (Souza et al., 2015). The capture of these wasps by attractive traps may be related to the proximity of their colonies, as these insects are attracted by the odour released from the attractive substrate, with passion fruit juice being one of the most efficient (Brugger et al., 2019). The total of ten individuals of *P. erythrothorax*, in the reserve area of this study with about 20 hectares of native forest, may be related to its preservation and because it is further away from pasture areas. The distance from the

reserve area to a water source is another factor that may have contributed to this result, as the attractive substrates are excellent sources of food and water for temperature regulation in the nests (Brugger et al., 2019).

The first record of *P. erythrothorax* for the northeast region of Brazil, in the Cerrado of Bahia, highlights the need to expand the sampling effort of the social wasp fauna in this biome with a large territorial extension.

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