Nesting of *Pachyramphus* cf. *polychopterus* (Passeriformes: Tityridae) associated with *Polybia fastidiosuscula* de Saussure, 1854 (Hymenoptera: Vespidae) in an anthropized area of Atlantic Forest, southeastern Brazil

Nidificação de *Pachyramphus* cf. *polychopterus* (Passeriformes: Tityridae) associada a *Polybia fastidiosuscula* de Saussure, 1854 (Hymenoptera: Vespidae) em área antropizada de Mata Atlântica do Sudeste brasileiro

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Abstract: The nesting of birds associated with social wasps is well reported among different species, but there are few records of this interaction for the species *Pachyramphus polychopterus* (Tityridae). Therefore, the aim of our study was to report on the nesting of *Pachyramphus cf. polychopterus* with the social wasp *Polybia fastidiosuscula* de Saussure, 1854, in southeastern Brazil. According to previous studies and considering the distribution of both species, it is likely that the nesting of this bird associated with social wasp colonies is not occasional and isolated. However, further studies are still needed for a better understanding of the promoting and regulating factors, as well as to measure the supposed protection offered by the vespid wasps.

Keywords: Polistinae. Ethology. Social wasp.

Resumo: A nidificação de aves associada a vespas sociais é estabelecida entre diferentes espécies, porém há poucos relatos dessa interação para a espécie *Pachyramphus polychopterus* (Tityridae). O objetivo aqui foi registrar a nidificação de *Pachyramphus* cf. *polychopterus* com a vespa social *Polybia fastidiosuscula* de Saussure, 1854, no Sudeste do Brasil. Considerando a distribuição de ambas as espécies e outros estudos, é provável que a nidificação desta ave associada a colônias de vespas sociais não seja ocasional e isolada, mas ainda são necessários mais estudos para melhor compreensão dos fatores promotores e regulares, bem como para mensurar a suposta proteção oferecida pelos vespídeos.

Palavras-chave: Polistinae. Etologia. Vespa social.

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In the Neotropical region, many bird species nest associated with colonies of social wasps (Hymenoptera, Polistinae) (Barbosa et al., 2021; Carvalho et al., 2023). It is believed that these associations have been motivated by a supposed protection by the wasps to the bird nests, which could reduce the likelihood of predation on these vertebrates (Joyce, 1993). Although this interaction is classified as commensal, with benefits only for the birds and neutral for the social wasps, there are cases where the insects can also benefit (Bologna et al., 2007; Barbosa et al., 2021).

There are records of supposed interactions between birds of the Tityridae family and social wasps in the Neotropical region, especially those of the genus Pachyramphus Gray, 1840 (see Skutch, 1969; Whittaker, 1995; Bodrati & Cockle, 2017), such as Pachyramphus polychopterus Vieillot, 1818. This species is popularly known as the White-winged Becard, a bird with a size of 14 to 15.5 cm, where the male has a wide beak with a crown, black wings with visible white lines, and large white spots on the tail feathers; females have olive-green coloration, with rusty-colored edges on the tail and wings, as well as yellowish undersides (Sick, 1997). This species has a wide geographical distribution and occurs from Central America, the Guianas to Bolivia, and throughout Brazilian territory (Sick, 1997). Additionally, it was previously recorded nesting near social wasp colonies in Argentina (Bodrati & Cockle, 2017) and Nicaragua (Skutch, 1969). However, the species of social wasps were not identified in these records.

Therefore, the aim of this study was to add information about the occurrence of this interspecific relationship, with the record of the nesting of *Pachyramphus* cf. *polychopterus* with the social wasp *Polybia fastidiosuscula* de Saussure, 1854, in southeastern Brazil.

The record occurred by chance on April 15, 2024, in an anthropized area associated with fragments of Atlantic Forest and ponds at the school farm of the Federal Institute of Education, Science, and Technology of Southern Minas Gerais, municipality of Inconfidentes, Minas Gerais state, southeastern Brazil. The photographic record was performed at the time of the observation, along with the collection of specimens of the social wasp for subsequent identification. The taxonomic determination of the wasps was conducted by MMS in comparison with the biological collection of social wasps (CBVS) at IFSULDEMINAS, *Campus* Inconfidentes, and by dichotomous key (Richards, 1978). In its turn, the bird was identified by ASM, based on the geographical distribution and the architecture and size of the nest, as well as the material used for its construction (Sick, 1997; Crozariol, 2016).

We observed a nest of *P.* cf. *polychopterus* located about 20 cm (approximate distance, visually estimated) away from a colony of *P. fastidiosuscula*, approximately eight meters above ground level, on a Fabaceae tree (Figure 1).

Pachyramphus cf. polychopterus may benefit from a supposed decrease in nest predation pressure by associating it with the colony of *P. fastidiosuscula*. Species of wasps from the genus Polybia Lepeletier, 1836 can offer effective protection against potential nest predators within a radius of 1 meter from their colonies (Wunderle Jr. & Pollock, 1985), due to their aggressive behavior when disturbed (Somavilla et al., 2013). Species of Pachyramphus frequently nest in association with social wasp colonies, as indicated by the study of Bodrati and Cockle (2017), which conducted a long period of observations in Argentina. These authors observed that 22% of Pachyramphus spp. nests were associated with active colonies of these wasps, and in the same study, it was observed that *P. polychopterus* had 38% of nests nested near wasp colonies.

Although the association of birds from different families with wasps of the genus *Polybia* is common and widely reported (e.g. Almeida & Anjos-Silva, 2015; Milani & Souza, 2018; Carvalho et al., 2023; Silva et al., 2023; Oliveira et al., 2024a, 2024b), *P. fastidiosuscula* had previously been reported only in association with the bird *Tolmomyias sulphurecens* (Spix, 1825) (Tyrannidae) in the Brazilian Atlantic Forest (Menezes et al., 2014). This vespid has a wide occurrence in Brazil



Figure 1. A) Nest of *Pachyramphus* cf. *polychopterus* associated to the colony of *Polybia fastidiosuscula*; B) *P. fastidiosuscula*, in detail; C) Nest of *P. cf. polychopterus*, in detail. Photos: Marcos Magalhães de Souza (2024).

(Richards, 1978) and occupies different biomes (Souza et al., 2020; Francisco et al., 2023), as does the bird reported in our study (Sick, 1997).

It is likely that the nesting of these birds associated with social wasp colonies is not occasional and isolated. However, further studies are still needed to better understand the promoting and regulating factors, as well as to measure the supposed protection provided by the vespids.

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AUTHORS' CONTRIBUTION

M. M. Souza contributed to project administration, formal analysis, conceptualization, data curation, methodology, resources, validation, preview, and writing (original draft writing, review and editing investigation); A. S. Moura contributed to resources and writing (original draft, proofreading and editing); and G. C. S. Oliveira contributed to resources, conceptualization and writing (original draft, proofreading and editing).