

Scientific Note

First record of *Brachymeria pandora* (Crawford, 1914) and *Conura* aff. *flavicans* Spinola, 1837 (Hymenoptera, Chalcididae) in cocoon of *Rothschildia erycina* (Shaw, 1796) (Lepidoptera, Saturniidae): multiparasitoidism or hyperparasitoidism?

Gilcélia M. Lourido^{1,2✉}, Marcelo T. Tavares³, Amanda Galvão⁴, Marcio L. Oliveira^{1,5}

¹Instituto Nacional de Pesquisas da Amazônia, Manaus, AM, Brazil. ²Universidade Federal do Amazonas, Manaus, AM, Brazil.

³Universidade Federal do Espírito Santo, Vitória, ES, Brazil. ⁴Instituto Chico Mendes de Conservação da Biodiversidade, Brasília, DF, Brazil. ⁵Instituto Nacional de Biodiversidad, Quito, Ecuador.

✉Corresponding author: gilourido@yahoo.com.br

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Abstract. We report the first record of the parasitoid *Brachymeria pandora* (Crawford, 1914) (Hymenoptera, Chalcididae) emerging from a cocoon of *Rothschildia erycina* (Shaw, 1796) (Lepidoptera, Saturniidae). This interaction was observed on *Eriotheca candolleana* (K. Schum.) A. Robyns (Malvaceae), which also constitutes the first record of this plant as a host for *R. erycina*. These findings are from Alter do Chão, Santarém, state of Pará, Brazil. Additionally, a female of *Conura* aff. *flavicans* Spinola, 1837 (Hymenoptera: Chalcididae) was observed exhibiting oviposition behavior on the same cocoon, from which the pupa responded with a trembling defensive reaction, but no individuals of this species were obtained. However, no individuals of *C. aff. flavicans* emerged, and its role as a primary parasitoid of the moth or a hyperparasitoid of *B. pandora* is discussed.

Keywords: moths, Chalcidoidea, host-parasitoids interaction, foraging, Malvaceae.

Rothschildia erycina (Shaw, 1796) (Lepidoptera, Saturniidae) is a widely distributed species, with records from Mexico to Argentina (Bustos 2015; GBIF Backbone Taxonomy 2023). According to Mejia et al. (2020), its reported host plants include *Cenostigma macrophyllum* Tul. (Fabaceae), *Cinnamomum* Schaeff. (Lauraceae), *Antonia ovata* Pohl (Loganiaceae), *Psidium guajava* L. (Myrtaceae), *Ligustrum ovalifolium* Hassk., *Ligustrum vulgare* L., *Syringa vulgaris* L. (Oleaceae), *Rhizophora mangle* L. (Rhizophoraceae), *Prunus laurocerasus* L. (Rosaceae), *Allenanthes erythrocarpus* Standl., *Coffea* L., *Chiococca alba* (L.) Hitchc., *Chiococca belizensis* Lundell, *Coutarea hexandra* Schum., *Exostema mexicanum* A. Gray, *Exostema sanctae-luciae* (Kentish) Britten (Rubiaceae), *Casearia grandiflora* Cambess., *Casearia ramiflora* Vahl, *Salix caprea* L. (Salicaceae), and *Ailanthus altissima* (Mill) Swingle (Simaroubaceae).

In the district of Alter do Chão, municipality of Santarém, state of Pará, Brazil (-2.507045, -54.949528), 20 caterpillars of *R. erycina* were found on *Eriotheca candolleana* (K. Schum.) A. Robyns (Malvaceae), a plant species endemic to Brazil (Duarte & Yoshikawa 2025). The caterpillars' development was monitored on the host plant until the adult stage (Figs. 1A, 1B). Although most of the cocoons were preyed upon by squirrel monkeys [*Saimiri ustus* (Geoffroy, 1843), Primates, Cebidae], a female *Conura* aff. *flavicans* Spinola, 1837 was observed walking on a moth cocoon (Fig. 1C), seemingly attempting to oviposit on it. The pupa responded by trembling (see supplementary film S1), which was interpreted as a defensive reaction. However, when the cocoon was brought to the laboratory, seven males and ten females of *Brachymeria* (*Brachymeria*) *pandora* (Crawford, 1914) (Hymenoptera, Chalcididae) (Fig. 1D) emerged from it, and no individuals of *Conura* aff. *flavicans* were obtained.

The Lepidoptera was identified according to Lemaire (1978). The chalcidids were identified to genus and species using the keys and descriptions of Crawford (1914) and Andrade & Tavares (2009) for

Brachymeria Westwood, 1829, and Delvare (1992) for *Conura* Spinola, 1837. To confirm the identification of *B. pandora*, its type series was examined. The specimens of *B. pandora* were preserved in alcohol, with part of the material deposited in the invertebrate collection of the Instituto Nacional de Pesquisas da Amazônia (INPA) and the remainder at the Universidade Federal do Espírito Santo (UFES).

Brachymeria pandora is a gregarious primary parasitoid of Lepidoptera pupae (Gil-Santana & Tavares 2005) restricted to South America (Zaché et al. 2012). In Brazil, parasitoidism by *B. pandora* has been reported in *Argon lota* (Hewitson, 1877) (Hesperiidae) by Salgado-Neto et al. (2010), *Historis odius* (Fabricius, 1775) (Nymphalidae) by Gil-Santana & Tavares (2005), *Danaus erippus* (Cramer, 1775) (Nymphalidae) by Verza et al. (2024), and *Thyrineina leucoceraea* Rindge, 1961 (Geometridae) by Zaché et al. (2012). Tavares et al. (2013) mention *Brachymeria* (*Brachymeria*) *koehleri* Blanchard, 1935 (Hymenoptera, Chalcididae) as a hyperparasitoid of caterpillars of *Thagona tibialis* Walker, 1855 (Erebidae) through *Lespesia melloi* Gil-Santana, Nihei & Nunez, 2014 (Diptera, Tachinidae).

Conura Spinola, 1837 (Hymenoptera, Chalcididae) is a genus with complex systematics, comprising at least three subgenera, three species complexes, and 63 groups of species, representing the greatest diversity within the Chalcididae (Delvare 1992). This genus is almost exclusive to the New World, with 306 described species (Brotto & Tavares 2021; UCD Community 2023), including at least 155 species recorded in Brazil (Tavares 2025). *Conura* species are highly diverse in morphology, habits, and host range, but exhibit strong cohesion in these aspects among species within the same group (Pádua et al. 2022). In Brazil, *Conura morleyi* (Ashmead, 1904) has been reported parasitizing pupae of *Brassolis* sp. (Lepidoptera, Nymphalidae) by Tibcherani et al. (2016), and *Conura* sp. parasitizing pupae of *Tuta absoluta* (Meyrick, 1917) (Lepidoptera, Gelechiidae) (Marchiori et al. 2003). On the other hand, Tavares et al. (2019), when describing *Conura*



Figure 1. A- Adult of *Rothschildia erycina* (Shaw, 1796). B- Caterpillar of *R. erycina*. C- *Conura* aff. *flavicans* Spinola, 1837 (white arrow) on the cocoon of *R. erycina*. D- *Brachymeria (Brachymeria) pandora* (Crawford, 1914)

baturitei Tavares, Villanueva-Bonilla & Sobczak, 2019 (Hymenoptera, Chalcididae), reported it as a hyperparasitoid of spiders through the primary parasitoid *Zatypota riverai* Gauld, 1991 (Hymenoptera, Ichneumonidae). *Conura* aff. *flavicans* belongs to the maculata species group, which comprises many dozens of species that act as solitary or gregarious parasitoids of prepupae and pupae of many families of Lepidoptera (Delvare 1992). The same author stated that he knew only one species acting a secondary parasitoid of *Sibine* sp (Lepidoptera, Limacodidae) through *Casinaria* sp (Hymenoptera, Ichneumonidae).

In this study, we report the first record of *E. candolleana* as a host plant for *R. erycina*, as well as the first record of parasitoidism of *R. erycina* by *B. pandora*. However, the role of *Conura* aff. *flavicans* still remains uncertain. This species could be a primary parasitoid of this moth, which would represent a case of multiparasitoidism, or it could be a hyperparasitoid of *B. pandora*.

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Authors' Contributions

GML: Writing - original draft, Investigation, Writing - review & editing; MTT, AG: Investigation, Writing - review & editing; MLO: Investigation, Writing - review & editing, Supervision.

Conflict of Interest Statement

The authors declare that there are no conflicts of interest.

Supplementary Material

S1 (Film): Female *Conura* aff. *flavicans* Spinola, 1837 walking on *Rothschildia erycina* (Shaw, 1796) cocoon. Supplementary data for this article be accessed at doi: <https://doi.org/10.6084/m9.figshare.30535808>

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