

First Report of *Tachinobia Repanda* Boucek, 1977 (Hymenoptera: Eulophidae) in Brazil

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Abstract

This work reports the first occurrence of parasitoid *Tachinobia repanda* Boucek, 1977 (Hymenoptera: Eulophidae) in Brazil. The pupae were obtained by the flotation method. They were individually placed in gelatin capsules until the emergence of flies or their parasitoids. In the study, eleven pupae of *Oxysarcodexia* sp. (Diptera: Sarcophagidae) was obtained from a single pupa 10 parasitoids of the species *T. repanda* emerged. The percentage of parasitism was 9.1%.

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Introduction

The Cerrado biome is located in three of the largest hydrographic basins in South America, (Tocantins-Araguaia, São Francisco and Prata), which, in a way, favors its biodiversity (Magalhães 2021). The Cerrado is the second largest biome in South America and the second largest biome in Brazil, comprising about 22% of the Brazilian territory. It is characterized by being a savannah region, extending for about 200 million square kilometers [5]. It has a vegetal formation of great biodiversity and great aquifer potential, however, it is currently considered the second most threatened biome in Brazil [5].

The genus *Oxysarcodexia* is found widely associated with decaying vertebrate carcasses and is therefore considered of great forensic importance. Parasitoids (Insecta: Hymenoptera) are insects that have adapted to the parasitic way of life using nutritional resources limited by the immature or acquiring nutrients during adult [6]. Parasitoids are characterized in different ways, depending on the stage of the host they explore egg, larva pupa and adult [6].

Parasitoids are organisms that cause the death of their hosts to complete their development and act as parasites only in the larval stage, when they develop in only one host, with adults having a free life. Parasitoids are important regulators of insect populations and stand out as the main group of natural enemies in agricultural systems. Are dispersed in several families of insects and their adaptation to the parasitic mode of life is more diverse and abundant in Hymenoptera [2, 6].

Tachinobia species behave as gregarious parasitoid pupal endoparasitoid of Lepidoptera and Diptera. *Tachinobia repanda* Bouček, 1977 (Hymenoptera: Eulophidae) was described by Bouček from Papua New Guinea (PNG). The known distribution of this parasitoid wasp is Southeast Asia: PNG, Indonesia, Malaysia, India, Solomon Island and Thailand. It was also found in the southern United States and Cuba, where it is likely invasive [1].

The main objective of the study was to describe the first report of *T. repanda* in Brazil.

The study was conducted in a wooded area of the Park of the mountain range of Caldas Novas State

of Goiás, located in the vicinity of the city of Caldas Novas, State of Goiás (18°25'S – 49°13'W), Midwest region, Brazil (Figure 1). The flies were attracted to traps consisting of dark-colored cylindrical metal cans, measuring 19 cm height and 9 cm diameter, with two openings measuring 30 mm in width, located in the lower third of the can, to allow flies to enter. A more detailed description of the traps is given by [3] (Figure 2).

Human feces, fish, bovine liver, and chicken served as bait for attracting the flies. Four traps were used, spaced two meters apart. These were hung on trees at a height of one meter above the ground. Four traps were utilized for each type of bait. The collected insects were taken to the laboratory, sacrificed using ethyl ether and kept in 70% alcohol for further identification. The baits were removed from the traps and placed in plastic containers with a layer of sand to form the substratum for the larvae to pupate in. The sand was then sifted to collect the pupae. These were then placed individually in gelatin capsules (00 number) and kept until the emergence of the flies or their parasitoids.

The experiment was carried out fortnightly in the period From March to December 2015. *Tachinobia repanda* was identified by comparing morphological characters of specimens with the original description by [1] and using the keys to the genera of Tetrastichinae [4] and to the genera of Eulophidae [7].

The total percentage parasitism was calculated by means of the number of pupae parasitized, divided by the total number of pupae collected, and multiplied by 100.

In March 2009, 11 pupae were obtained from *Oxysarcodexia* sp. (Diptera: Sarcophagidae), and emerged from a pupal of *T. repanda*, respectively (Figures 3). The percentage of parasitism was 9.1%. When a parasitoid species has its host as an insect considered a pest, it becomes a potential biological control agent.

As the use of chemicals in insect control pest can cause damage to the environment and human health, the search for effective natural enemies may be a viable alternative to a control program.



Figure 1. Map of Brazil: and their regions - Midwestern Region green color.

Source: <https://www.preparaenem.com/geografia/mapa-do-brasil.htm>



Figure 2. General appearance of the trap.

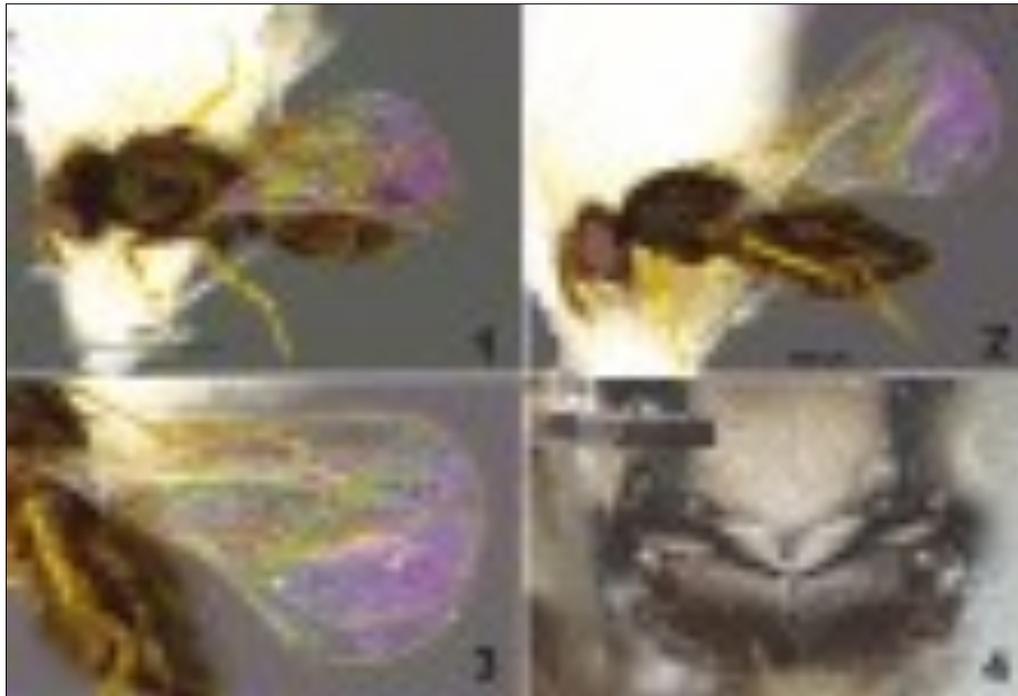


Figure 3. *Tachinobia repanda* Bouček (Hymenoptera: Eulophidae). (1) Female, dorsal view; (2) Female lateral view; (3) Forewing; (4) Lower part of scutellum+dorsellum+propodeum.

Source: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7583264/#!po=35.0000>

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