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Short communication

First report of the parasitoid *Hemencyrtus herbertii* Ashmead (Hymenoptera: Encyrtidae) in the central region Goiás, Brazil

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ABSTRACT

The flies included in the infra-order Muscomorpha have medical and veterinary importance, since they may produce myiasis and act in carrying pathogens to man and animals. They have been found to carry more than 100 species of disease-causing organisms such as bacteria, protozoa and helminthes. As a possibility to control these insects, the natural regulators can be used, such as parasitoids that are the responsible agents for the reduction of the insects pests populations. This paper report the first occurrence of parasitoid *Hemencyrtus herbertii* Ashmead (Hymenoptera: Encyrtidae) central region of Goiás. The pupae were obtained by the flotation method. They were individually placed in gelatin capsules until the emergence of flies or their parasitoids. Between November 2013 and January 2014, six pupae were obtained from *Sarcodexia lambens* (Wiedemann) (Diptera: Sarcophagidae) of which were collected two specimens *H. herbertii* in two pupae. The overall percentage of parasitism was observed in 33.3%. Parasitoids are responsible for reducing the populations of flies that proliferate on various substrates. Evaluation of these species for natural control over these insects is important for enabling studies that aim towards subsequent selection of species for use in biological control programs

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1. Introduction

The flies included in the infra-order Muscomorpha have medical and veterinary importance, since they may produce myiasis and act in carrying pathogens to man and animals. They have been found to carry more than 100 species of disease-causing organisms such as bacteria, protozoa and helminthes (Greenberg, 1971).

As a possibility to control these insects, the natural regulators can be used, such as parasitoids that are the responsible agents for the reduction of the insects pests populations (Vilela et al., 1999).

Parasitoids are responsible for reducing the populations of flies that proliferate on various substrates. Evaluation of these species for natural control over these insects is important for enabling studies that aim towards subsequent selection of species for use in biological control programs (Marchiori, 2002).

The objective of this research was to extend the knowledge of the geographical distribution of the parasitoid *Hemencyrtus herbertii* Ashmead (Hymenoptera: Encyrtidae) in Brazil.

2. Materials and methods

The flies were collected by using traps, made of dark cans (Figure 1) measuring 19 cm in height and 9 cm in diameter, with two openings resembling blinders, located in the lowest third of the can, to allow flies to enter. The top of the can was connected to a nylon funnel that was open at both ends, with the base pointing down. This was wrapped in plastic bags, so that when they were removed, the flies and parasitoids could be collected. The following items were used as bait: cattle kidneys which were placed inside the cans, over a layer of earth. Five traps were used and they were hung on trees at a height of one meter above the ground, two meters apart from each other.



Fig. 1. General appearance of the trap.

The insects collected were taken to the laboratory, sacrificed with ethyl ether and kept in 70% alcohol for further identification. To obtain the parasitoids, the contents of the traps were placed in plastic containers with a layer of sand for use as a substrate for transformation of the larvae into pupae. This sand was sifted after being in the fields for 15 days and the pupae were extracted from it and were individually placed in gelatin capsules (number 00) in order to obtain the flies and/or parasitoids.

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.

3. Results and discussion

Between November 2013 and January 2014, six pupae were obtained from *Sarcodexia lambens* (Wiedemann) (Diptera: Sarcophagidae) of which were collected two specimens *H. herbertii* (Figure 2) in two pupae.

The overall percentage of parasitism was observed in 33.3%. The parasitism successful rate can be influenced by the availability of resources, density hosts and to the searching capacity of the parasitoids.

Hemencyrtus herbertii behaves as parasitoid larvae, developing internally in the host body and emerging from the puparium (Noyes, 1980; Gauld and Bolton, 1988).

Sarcodexia lambens (Figure 3) was the fly had a higher percentage of parasitism, 29.4% (Rocha and Mendes, 1996). *Sarcodexia lambens* is widely distributed in the Americas, being found from the southern United States to Argentina (Lopes and Leite, 1989).

The resistance to insecticides shows the growing need to introduce alternative insect control programs, for instance the biological control. It is possible to control these insects, by using the natural regulators such as parasitoids, which are the responsible agents for the reduction of the insects pests populations (Marchiori et al., 2013).

Through this study, knowledge of the geographical distribution of parasitoids of dipterous in Brazil.



Fig. 2. General appearance of the parasitoid *Hemencyrtus herbertii*.

Source: www.pestnet.org.



Fig. 3. General appearance- Sarcophagidae.
Source: cookislands.bishhopmus.eum.org

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