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## Short Communication

# Parasitoid of Dipterous collected in Brazil

## Abstract

Parasitoids are important regulators of insect populations and stand out as the main group of natural enemies in agricultural systems. They are present in various orders of insects and their adaptation to a parasitic behavior is seen most diversely and abundantly in the order Hymenoptera. The objective of this study was to increase the knowledge of the biology of a species of dipterous parasitoid in Brazil. The pupae were obtained using the flotation method. They were individually placed in gelatin capsules until the emergence of adult dipterous insects or their parasitoids. The experiments were conducted from January 1998 to February 2014 in rural and urban areas. The total percentage parasitism was 3.1%. *Palaeosepsis* spp. (Diptera: Sepsidae) were the hosts from which more individuals emerged with 52.3%. *Spalangia drosophilae* Ashmead (1885) (Hymenoptera: Pteromalidae) shows how biological characteristics to be a parasitoid pupal, ectoparasitoid, solitary and idiobiont.

## Introduction

The muscoids dipterous are important to the study of their characteristics such as medical and veterinary vectors of etiological agents, such as protozoan cysts, helminthes eggs, pathogenic enterobacteria, viruses and fungi [1].

Parasitoids are important regulators of insect populations and stand out as the main group of natural enemies in agricultural systems. They are present in various orders of insects and their adaptation to a parasitic behavior is seen most diversely and abundantly in the order Hymenoptera [1].

*Spalangia drosophilae* Ashmead (1885) (Hymenoptera: Pteromalidae) shows how biological characteristics to be a parasitoid pupal, ectoparasitoid, solitary and idiobiont.

Parasitoid pupal oviposita in the pupa and the adult or adults emerge from the puparium.. Ectoparasitoid: larvae of parasitoids develop on the host: In them the larvae of the parasitoids develop inside the body of the host Solitary: is that a parasitoid out of each parasitized pupae. Gregarious species in a single host may occur the development of several individuals. Idiobiont: which inhibit any host activity and development at the time of parasitization [2-4].

The objective of this study was to increase the knowledge of the biology of a species of dipterous parasitoid in Brazil.

## Materials and Methods

Ten plates of dung were collected second methodology used for Marchiori et al., [5]. They remained exposed (five in the

pastures and five in the corrals) for 15 days. After this period, the dung were taken to the laboratory for extraction of pupae by means of the flotation method. The pupae were removed counted and individually stored in gelatin capsules until the parasitoids emerged.

The parasitoids were collected by using four traps [6]. The following items were used as baits: human feces, cattle kidneys, cattle liver and fish which were placed inside the cans, over a layer of earth. 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 [7,8]. The experiments were conducted from January 1998 to February 2014 in rural and urban areas.

## Results and Discussion

Between January 1998 and February 2014, 12.066 pupae of Diptera were collected, of which 371 were found to be parasitized by the parasitoid *S. drosophilae* (Table 1).

The total percentage (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) parasitism observed was 3.1% (Table 1).

*Palaeosepsis* spp. (Diptera: Sepsidae) were the hosts from which more individuals emerged with 52.3%, probably due to the seasonality factor presented by this species or by its density (Table 1). The percentage parasitism was probably influenced by variations in the quality and availability of resources and the host density.

The fact that *S. drosophilae* develops in several dipterous insects and substrates favors its continuing presence in the environment, thereby enhancing its potential as a biological agent keeper. Because of the multiplicity of environments that it exploits and the number of hosts that this species parasitizes, it has a promising place in control programs in Brazil [9].

These insects are considered bioindicators for the biodiversity of ecosystems, and are considered as key species for maintaining the equilibrium of the communities in which they are included. In addition, since they are natural enemies

of insects, they may be used in biological control programs of agricultural pests [10].

## Conclusion

The total percentage parasitism observed was 3.1%. *Palaeosepsis* spp. were the hosts from which more individuals emerged with 52.3%.

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**Table 1:** Parasitoid of dipterous collected in Brazil from January 1998 to February 2014. The experiments were conducted from January 1998 to February 2014 in rural and urban areas.

Taxonomic Group	Number of pupae collected	Number of parasitoid specimens ( <i>S. drosophilae</i> )	*Percentage of parasitism
<b>Fanniidae:</b>			
<i>Fannia pusio</i>	2316	08	0.3
<b>Muscidae:</b>			
<i>Brontaea debilis</i>	77	01	1.3
<i>Brontaea quadristigma</i>	265	03	1.1
<i>Cyrtoneurina paraescita</i>	21	07	33.3
<i>Musca domestica</i>	726	04	0.6
<b>Sarcophagidae:</b>			
<i>Oxysarcodexia thornax</i>	363	18	5.0
<i>Peckia chrysostoma</i>	395	71	18.0
<i>Sarcophagula occidua</i>	3769	60	1.6
<b>Sepsidae:</b>			
<i>Archiseopsis scabra</i>	495	14	2.8
<i>Palaeosepsis</i> spp.	3639	183	5.0
<b>Total:</b>	12066	371	-

\*The percentage parasitism of each parasitoid species was calculated by means of the number of pupae parasitized per species of parasitoid, divided by the total number of pupae from that host, and multiplied by 100.

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