

## Gnathopleura quadridentata (Wharton) (Hymenoptera: Braconidae: Alysiinae) as natural enemy of Sarcodexia Lambens (Wiedemann) (Diptera: Sarcophagidae) in Brazil

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### Abstract

The objective of the study is to report the first occurrence of the parasitoid *Gnathopleura quadridentata* (Wharton) (Hymenoptera: Braconidae) on pupae of *Sarcodexia lambens* (Wiedemann) (Diptera: Sarcophagidae). Human feces was used as bait to collect the insects. In the study, 50 pupae of *Sarcodexia lambens* were obtained, 28 of which yielded the parasitoid *G. quadridentata*. The prevalence of parasitism was of 56.0%. This note is to report the first occurrence of parasitoid *G. quadridentata* on pupae of *S. Lambens* in Brazil.

**Key-words:**  
Diptera  
Hymenoptera.  
Parasitoid.  
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*Gnathopleura*  
*quadridentata*.  
*Sarcodexia*  
*lambens*.

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Diptera is one of the largest order of insects, comprising abundant number of species as well as of individuals. Besides, these dipterous are of great medical and veterinarian importance since they may produce myiasis and may be vectors of microorganisms pathogenic to men and animals<sup>1</sup>. Flies have been found to carry diseases causing organisms such as bacteria, protozoa and helminthes<sup>1,2</sup>. Sarcophagidae are ovoviviparous insects or, rarely, viviparous<sup>3</sup>. There have been recognized 600 species of Sarcophagidae from Neotropical region<sup>4</sup>. This group of dipterous takes relevant importance in public health, for being the vehicle of pathogenic microorganism to human beings<sup>1</sup>. Fly control using insecticides usually selects resistant populations, being just a palliative. Mendes and Linhares<sup>5</sup> believed that research on new methods concerning fly control are needed. Natural regulators, such as parasitoids, are agents responsible for reduction of fly populations<sup>6</sup>.

The Hymenoptera is one of the largest orders of insects, and one of the most important groups of parasitoids that develop in or on immatures of other

arthropods. They are of considerable importance as control agents of insects pests<sup>7</sup>. Braconidae is one of the largest families with approximately 40000 species, divided in 45 subfamilies<sup>8</sup>. The most common hosts of braconids are larvae of Lepidoptera, Coleoptera and Diptera. The Alysiinae is a very large subfamily of Braconidae containing over 1000 described species worldwide. All alysiines are koinobiont endoparasitoids of cyclorrhaphous Diptera. They oviposit in larvae or eggs of the host and the adults emerge from the puparia<sup>9</sup>. The aim of this paper was to report the first occurrence for *Gnathopleura quadridentata* on pupae of *Sarcodexia lambens* in Brazil.

This study was conducted at Parque da Serra de Caldas Novas settled in the city of Caldas Novas, GO (18°25'S – 49°13'W), Brazil. The flies were attracted to traps built with 19x19cm opaque dark cans, with two openings like blinders located in the third inferior part to permit the entrance of the flies. Nylon funnels were coupled in the upper part the cans, opened in the ends, with bases pointing down and wrapped with plastic bags, enabling the collection of flies and parasitoids. Human feces were used as

baits inside the cans, over a layer of sand. Five traps hanging on eucalyptus trees one meter above the ground and two meters apart from each other, near domestic garbage cans were disposed. The collected insects were taken to the laboratory, killed with ethyl ether and kept in 70% ethanol for further identification. The contents of the traps were placed in plastic containers having a layer of sand to be used as a substratum for larvae to pupate. The sand was sifted after 15 days and pupae were extracted and placed individually in gelatine capsules (00 number) to obtain flies and/or the parasitoids. The prevalence of parasitism was calculated by the following formula:  $P = (\text{parasite pupae} / \text{total of pupae}) \times 100$ . The identification of the parasitoids and hosts were done according to Pentead-Dias<sup>10</sup> and McAlpine et al.<sup>6</sup> (1981), respectively. The collected material, under numbers 28 (parasitoid) and 29 (dipterous) were deposited in the Laboratory of Biology of Lutheran Institute of Superior Teaching.

During the period from April to May of 2004, 28 specimens of *Gnathoppleura quadridentata* (Wharton) (Hymenoptera: Braconidae) were collected in 28 out of 50 pupae of *Sarcodexia lambens* (Wiedemann) (Diptera: Sarcophagidae) showing 56.0% of parasitism. The prevalence of parasitism can also be related to capacity of search of the parasitoid and to the availability of recourses. *Gnathoppleura quadridentata* shown preference por Calyprate muscoids flies, especially sarcophagids. This parasitoid is solitary, and emerge from the puparium of host. *Gnathoppleura* have been and released for the biological control of sarcophagids and muscid<sup>10</sup>.

Pentead-Dias<sup>10</sup> collected three specimens of *Gnathoppleura* sp. from vegetation and reared seven of them from puparia of *Peckia chrysostoma* (Wiedemann) (Diptera: Sarcophagidae) obtained from a wet area near Miranda River, MS, Brazil. The aim of this note is to report the first occurrence for *G. quadridentata* on pupae of *S. Lambens* in Brazil.

### **Gnathoppleura quadridentata (Wharton) (Hymenoptera: Braconidae: Alysiinae) como inimigo natural de sarcodexia lambens (Wiedemann) (Diptera: Sarcophagidae) no Brasil**

#### **Resumo**

O objetivo do presente estudo é relatar a primeira ocorrência do parasitóide *Gnathoppleura quadridentata* (Wharton) (Hymenoptera: Braconidae) como inimigo natural de *Sarcodexia lambens* (Wiedemann) (Diptera: Sarcophagidae). Para coleta dos insetos foi utilizado como isca fezes humanas. Obtiveram-se 50 pupas de *S. lambens*, das quais 28 emergiram parasitóides pertencentes à espécie *G. quadridentata*. A prevalência de parasitismo foi de 56,0%. Esta nota relata a primeira ocorrência do parasitóide *G. quadridentata* em pupas de *S. lambens* no Brasil.

**Palavras-chave:**  
Díptera.  
Hymenoptera.  
Parasitóide.  
Mosca.  
*Gnathoppleura*  
*quadridentata*.  
*Sarcodexia lambens*.

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