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Chalcid wasp (*Brachymeria fonscolombei*) as natural enemy of *Lucilia sericata* (Diptera: Calliphoridae) in Pakistan

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Abstract

The objective of the study is to report the occurrence of the parasitoid *Brachymeria fonscolombei* (Chalcid wasp) on larvae of *Lucilia sericata* (Diptera: Calliphoridae). Fresh buffalo meat was used as bait to collect the insects. In the study, 30 pupae of *L. sericata* were obtained, 17 of which yielded the parasitoid *B. fonscolombei*. The prevalence of parasitism was of 56.66%. This note is to report the occurrence of parasitoid *B. fonscolombei* on larvae of *L. sericata* in Pakistan.

Keywords: Parasitoid, *Brachymeria fonscolombei*, *Lucilia sericata*

1. Introduction

Diptera is one of the largest orders 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 animals¹. Flies have been found to carry diseases causing organisms such as bacteria, protozoa and helminthes^[1, 2]. Calliphoridae are scavenger insects. There have been recognized about 1100 species of Calliphoridae out of which 228 from the Neotropics and a large number of species from the Africa and Southern Europe^[3]. This group of dipterous takes relevant importance in public health, for being the vehicle of pathogenic microorganism to human beings¹. Fly control using insecticides usually selects resistant populations, being just a palliative. Mendes and Linhares^[4] believed that research on new methods concerning fly control is needed. Natural regulators, such as parasitoids, are agents responsible for reduction of fly populations^[5].

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 insect pests^[6]. Chalcididae is one of the largest families with approximately 40000 species, divided in 45 subfamilies^[7]. The most common hosts of chalcididae are larvae of Lepidoptera, Coleoptera and Diptera. They oviposit in larvae or eggs of the host and the adults emerge from the puparia^[8]. The aim of this paper was to report the occurrence for *B. fonscolombei* on the larvae of *L. sericata* in Pakistan.

2. Materials and Method

This study was conducted at the Entomology Research Laboratory, The University of Agriculture, Peshawar, Pakistan during 2013. The specimens of *L. sericata* used in this study were originated from the eggs collected from the exposed sliced meat in a plastic dish near the buffalo intestine. Fresh meat was used as baits inside the container, over a layer of sand enabling the collection and rearing of flies and parasitoids. The collected insects were taken to the laboratory, killed with ethyl ether and kept in 70% ethanol for further identification while leaving the remaining contents in plastic containers having a layer of sand to be used as a substratum for larvae to pupate. The sand was shifted after 16 days and pupae were extracted and placed individually in gelatine capsules 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 collected material, under numbers 17 (parasitoid) and 13 (dipterous) were placed in the Entomology Research Laboratory, The University of Agriculture, Peshawar, Pakistan for further studies.

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3. Results

During the period from October to November of 2013, 17 specimens of *B. fonscolombi* were collected out of 30 pupae of *L. sericata* (Diptera: Calliphoridae) showing 56.66% of parasitism. The prevalence of parasitism can also be related to capacity of search of the parasitoid and to the availability of resources. The aim of this note was to report the occurrence for *B. fonscolombi* on larvae of *L. sericata* in Pakistan.

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