

Introduction to the biodiversity and heteronomy in Strepsiptera

Jeyaraney Kathirithamby

University of Oxford, Oxford, United Kingdom

Introduction: Since the use of molecular techniques for the study of Strepsiptera we have uncovered several interesting aspects in this group which remained a puzzle before. Aspects such as cryptic speciation are critical for the study of the biodiversity of this bizarre entomophagous parasitoids.

Heteronomy: Heteronomy is less common and often overlooked type of polymorphism and is found only in two lineages of insects: in the hymenopteran subfamily Coccophaginae (Aphelinidae), and in the strepsipteran family Myrmecolacidae. Walter (1983) introduced the term heterotropic heteronomy for the complex and extreme form of behaviour. In the aphelinid the mother (a hymenopteran) selects a totally different host for her male and female eggs. As a consequence the males develop in a different host to the female. The host relationships of the females are conserved and they develop as endoparasites of Sternorrhyncha (whiteflies) (Hemiptera) and males develop as primary endoparasites in eggs of Lepidoptera. The separation of male and female host differs from that in strepsipteran Myrmecolacidae, because in the aphelinid it is the mother which seeks the host to lay the egg of an appropriate sex.

In the strepsipteran family Myrmecolacidae, the males develop as primary parasites in ants (Formicidae: Hymenoptera), and the females as primary parasites in grasshoppers, mantids and crickets (Orthoptera: Tettigoniidae, Grillidae; Mantidae). Yet it is the first instars that encounter/seek the appropriate host. This is a unique form of heterotropic heteronomous life history, a polymorphism not found in any other insect parasitoid.