

# Parasitization behaviour and postembryonic development in the subfamily Gonatopodinae

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## Abstract

A digital versatile disc (DVD) on some aspects of Auchenorrhyncha-Gonatopodinae (Hymenoptera Dryinidae) relationships was prepared by the authors. In particular it presents some scenes showing some behavioural aspects: regarding host feeding, parasitization, female cleaning, postembryonic development and adult emergence.

**Key words:** Auchenorrhyncha, Chrysidoidea, *Gonatopus*, *Neodryinus*.

## Introduction

Dryinidae (Hymenoptera Chrysidoidea) are parasitoids of leafhoppers, planthoppers and treehoppers (Hemiptera Auchenorrhyncha) (Guglielmino and Olmi, 1997; 2006).

Papers on parasitization behaviour and postembryonic development are very few, in spite of the economic importance of the hosts and the use of some dryinid species in biological control programmes (for review see Olmi 1999; Guglielmino and Virla, 1998; Mangione and Virla, 2004; Guglielmino *et al.*, 2006).

As the parasitization behaviour and postembryonic development of dryinids are insufficiently known, the authors decided to prepare a digital versatile disc (DVD) about some aspects of Auchenorrhyncha-Dryinidae relationships, with particular reference to the subfamily Gonatopodinae.

## Materials and methods

The DVD shows some clips obtained from rearings of the following species of Gonatopodinae: *Neodryinus typhlocybae* (Ashmead), *Gonatopus albolineatus* Kieffer, *Gonatopus bartletti* Olmi, *Gonatopus camelinus* Kieffer, *Gonatopus clavipes* (Thunberg), *Gonatopus lunatus* Klug, *Gonatopus solidus* (Haupt).

The above species were reared in cages in the Department of Plant Protection, University of Tuscia, Viterbo, except *G. bartletti*, reared in the Department of Botany and Zoology, University of Guadalajara, Mexico.

To produce the DVD, analogic videocameras Sony RM-440 and Sony DXC-1850P connected to a Wild M690 stereomicroscope were used. Afterwards, the result was digitalized on Mini DV support and mounted by Pinnacle Studio 9 on Windows platform. Photos were realized by a Wild M400 photomicroscope, using Kodak Ektachrome film for artificial light; afterwards they were digitalized by Nikon Coolscan III and elaborated by Photoshop on Windows platform.

## Results and discussion

The DVD presents scenes showing some behaviour aspects regarding the host feeding, parasitization, female cleaning, postembryonic development and adult emergence.

The DVD shows the following clips: about host feeding behaviour, only the non-destructive type related to *N. typhlocybae*-*Metcalfa pruinosa* (Say) relationships; the parasitization of *Opsius lethierryi* Wagner by *G. albolineatus*; the *G. albolineatus* female cleaning; aspects of the postembryonic development of *G. clavipes* and *G. camelinus* (related to immature and mature larvae and pupa); the emergence of an adult of *G. camelinus* from a cocoon.

The DVD shows also drawings of *G. lunatus* female morphology and *G. solidus* chela, and some photos related to *G. bartletti* [the host, *Dalbulus maidis* (Delong et Wolcott), eggs, immature and mature larvae].

## References

- GUGLIELMINO A., OLMI M., 1997.- A host-parasite catalog of world Dryinidae (Hymenoptera: Chrysidoidea).- *Contributions on Entomology, International*, 2 (2): 165-298.
- GUGLIELMINO A., OLMI M., 2006.- A host-parasite catalog of world Dryinidae (Hymenoptera: Chrysidoidea): first supplement.- *Zootaxa*, 1139: 35-62.
- GUGLIELMINO A., VIRLA E., 1998.- Postembryonic development of *Gonatopus lunatus* Klug (Hymenoptera: Dryinidae: Gonatopodinae), with remarks on its biology.- *Annales de la Société Entomologique de France*, 34: 321-333.
- GUGLIELMINO A., BÜCKLE C., MOYA-RAYGOZA G., 2006.- Description of the larval instars of *Gonatopus bartletti* Olmi (Hymenoptera Dryinidae).- *Zootaxa*, 1226: 51-60.
- MANGIONE S., VIRLA E. G., 2004.- Morfología de los estados preimaginales de *Gonatopus bonaerensis*, y consideraciones sobre la morfología interna de sus larvas inmaduras (Hymenoptera Dryinidae).- *Acta zoológica lilloana*, 48 (1-2): 91-102.
- OLMI M., 1999.- *Hymenoptera: Dryinidae, Embolemidae*. Fauna d'Italia Vol. 37.- Calderini, Bologna, Italy.

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