



## Re-description and biology of *Parastethynium maxwelli* (Hymenoptera: Mymaridae), an egg parasitoid of *Zophiuma lobulata* (Hemiptera: Lophopidae), and description of a new species of *Parastethynium* from Indonesia

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### Abstract

Both sexes of *Parastethynium maxwelli* (Girault), a parasitoid of *Zophiuma lobulata* Ghauri eggs on coconut and oil palm in Papua New Guinea, are described and illustrated. The second known species in the genus *Parastethynium*, *P. hirsutum* Huber **sp. n.**, from Indonesia (Sulawesi) is also described. The latter represents the first record from the Oriental region. The basic biology of *P. maxwelli* is presented. Mean progeny produced per female was 57 with a female proportion of 0.59. Mean egg to adult development time was 11 days, at 24.5°C–29.7°C and 72–93% relative humidity. Survival time of females and males fed on honey and water was longer compared to males and differed significantly with those provided with water only or nothing at all.

**Key words:** biological control, Chalcidoidea, coconut palm, life cycle, oil palm, taxonomy

### Introduction

Mymarids or fairy flies are endoparasitoids of insect eggs except for two known larval parasitoids (Huber *et al.* 2006). Despite their importance and common occurrence in most terrestrial habitats and some aquatic ones only about one quarter of the genera have hosts reported for them. The most common documented hosts are Hemiptera, Coleoptera, Psocoptera, Diptera, and Orthoptera (Huber 1986; Lin *et al.* 2007). Hemiptera is the most common order of pests targeted with mymarid parasitoids in augmentative biological control programs (Crowder 2007).

Several mymarid egg parasitoids of potential use in biological control have been described or redescribed in the last two decades. Describing and naming the undescribed species has facilitated their potential and practical use for classical biological control (e.g., Triapitsyn *et al.* 2010). Correct naming and characterization of previously described species facilitates discussion of native species (e.g., Huber *et al.* 1997) or accidentally introduced species (Huber 2003) that might be used in mass release or conservation biological control programmes. Three classical biological control examples using Mymaridae are as follows. In South Africa and other countries with a Mediterranean climate, *Anaphes nitens* (Girault) from Australia was released to control *Gonipterus scutellatus* Gyllenhal (Coleoptera: Curculionidae), a pest of *Eucalyptus* (DeBach & Rosen 1991; Huber & Prinsloo 1990). In Israel, *Stethynium ophelimi* Huber and *S. breviovipositor* Huber from Australia (Huber *et al.* 2006) were considered for release to help control the eucalyptus gall wasp *Ophelimus maskelli* Ashmead (Hymenoptera: Eulophidae). In French Polynesia, *Gonatocerus ashmeadi* Girault from North America was introduced to control glassy-winged sharpshooter *Homalodisca vitripennis* (Germar) (Hemiptera: Cicadellidae), reducing the pest density by about 95% (Hoddle *et al.* 2006).