

# First record of the non-pollinating fig wasp *Odontofroggatia galili* Wiebes, 1980 from Malta (Hymenoptera, Chalcidoidea, Agaonidae)

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**ABSTRACT.** The fig wasp *Odontofroggatia galili* is reported for the first time from Malta. *Odontofroggatia* is a non-pollinating fig wasp genus associated with a narrow range of host plant species, among them *Ficus microcarpa*, a widespread ornamental tree native to Asia.

**KEY WORDS.** alien organism, urban area, southern Europe.

## INTRODUCTION

In the 19<sup>th</sup> century several species of *Ficus* trees were imported in Europe from Asia. Among them, *Ficus microcarpa* L., was successfully planted along urban roads and gardens in southern Italy and Malta. In these last twenty years, four species of Agaonidae were found in association with syconia of *F. microcarpa* in Italy, namely: *Eupristina verticillata* Waterston, 1921, *Odontofroggatia galili* Wiebes, 1980 (Sicily and Apulia: LO VERDE *et al.*, 1991; LO VERDE *et al.*, 2007), *Walkerella microcarpae* Bouček, 1933 and *Philotripes emeryi* Grandi, 1926 (Sicily: LO VERDE *et al.*, 2007), while another agaonid, *Josephiella microcarpae* Beardsley and Rasplus, 2001, a leaf gall-inducing species, was recorded in Sicily (LO VERDE, 2002). Following the discovery of *E. verticillata* in Italy, it became evident that fertile fruits (fig. 1a, b) were being produced inside syconia of *F. microcarpa* (DOMINA & MAZZOLA, 2002), and young plants were observed in fissures of walls, divaricating branches of ornamental trees and in crevices on palm stipes. This could be mainly due to the dissemination of the fertile seeds by birds (TRAVERSE, 1998). During a recent visit in the Maltese archipelago several syconia of *F. microcarpa* (fig. 1d) were collected in both Malta and Gozo, from which a species of Epichrysomallinae was bred (fig. 1e, f, g). The specimens were identified by the authors as *Odontofroggatia galili*.

## *Odontofroggatia galili* Wiebes, 1980

**Taxonomic notes:** *Odontofroggatia* is a non-pollinating fig wasp genus which currently accomodates five described species. *Odontofroggatia* spp. are associated with a narrow range of host plant species, namely *Ficus microcarpa* L. and *F. prasinicarpa* Elmer (ISHII, 1934; WIEBES, 1980; BOUČEK, 1988; FENG & HUANG, 2010).

Both males and females of *O. galili* are winged and of a light brown coloration. Diagnostic characters include: antennal formula 11063 (11053 in *O. quinifuniculus* Feng & Huang), bidentate mandible (tridentate in *O. ishii* Wiebes and *O. gajimaru* Ishii), petiole slightly longer than wide without tooth on lateral side (wider than longer in *O. ishii*, and *O. gajimaru* and *O. quinifuniculus*; longer than wide but with a strong acute ventral hook in *O. corneri* Wiebes), hind coxa with dorsal teeth (unarmed in *O. corneri*).

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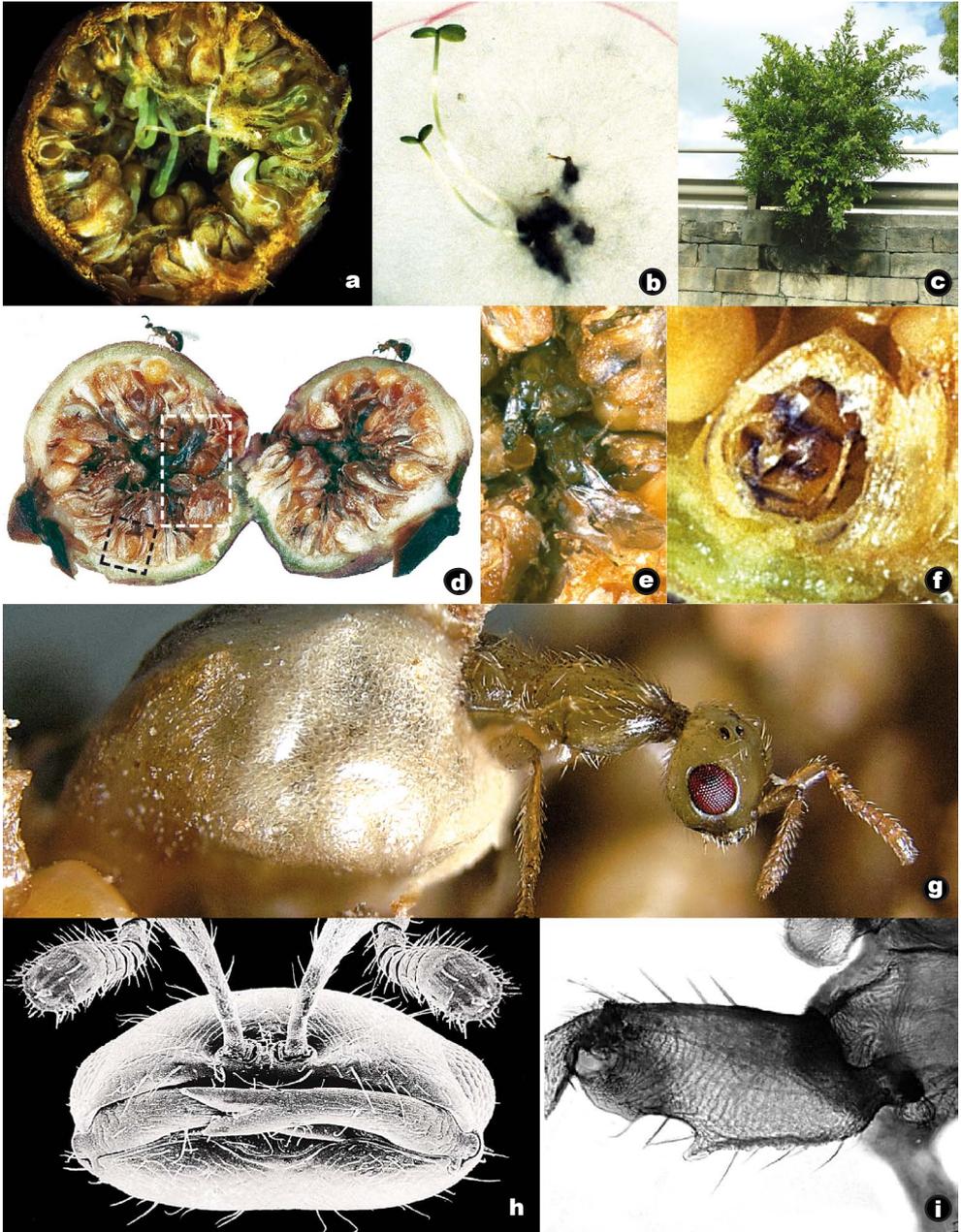


Figure 1: (a,b,c) *Ficus microcarpa* plantlets originating from fertilized flowers. Some sprout while still in syconia (a) but mostly grow alone (e.g. as observed under laboratory conditions in Petri dish) (b) or young plants which self-regenerate in remote areas (c). (d,e,f,g) Ripened but still hanging syconia hosting *Odontofroggattia galili* adults. Divided syconia inducing adults of *O. galili* to fly away (d), other individuals search for shelter among fruits (e) while others are still pupae inside fruits (f) until they eventually emerge (g). Male morphological details of *O. galili*: head from gnathal side (h) showing the long bidentate and overlapping mandibles and posterior femur (i).

**Material examined.** MALTA: Valetta, Mdina, Ta' Qali, Żejtun. GOZO: Fontana. 24 males and 32 females collected during February, May and August, 2009, *ex Ficus microcarpa* grown as ornamental.

**Distribution.** Australia, Bermuda, China (Hong Kong, Guangdong, Hainan, Taiwan), Israel, Japan, Malaya, Papua New Guinea, Southeast Asia, USA (California, Florida, Hawaii), Israel, Tunisia (BOUČEK 1988; KOBBI *et al.*, 1996; BEARDSLEY, 1998; YOKOYAMA & IWATSUKI, 1998; CHEN *et al.*, 1999). Introduced also in Europe: Greece (COMPTON, 1989), Italy (LO VERDE *et al.*, 1991; LO VERDE *et al.*, 2007).

**Ecology.** *O. galili* is strictly associated with *F. microcarpa*. Nevertheless, *O. galili* is not considered a true pollinator, as its presence alone does not guarantee the production of fertile seeds of the mentioned host plant. In some cases, the presence of non-pollinating fig wasps may be recorded prior to the arrival of the true pollinating species, as was the case in Brazil (NEVES & ISAIAS, 1987; RAMÍREZ & MONTERO 1988; DE FIGUEIREDO & MOTTA, 1993; DE FIGUEIREDO *et al.*, 1995). Taking into account the diversity of fig wasps associated with *F. microcarpa* and the events which occurred in Italy in the last twenty years, it is likely that the true pollinator, *E. verticillata* is already present in Malta, as shown by the self-regeneration of young fig trees (Fig. 1c) in remote areas.

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