

Leptocybe invasa Fisher & La Salle, 2004 and *Ophelimus maskelli* Haliday, 1844 - two new records of gall forming Eulophidae from Malta (Hymenoptera, Chalcidoidea)

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The Eulophidae (Hymenoptera, Chalcidoidea) currently accommodates more than 4,000 described species worldwide in some 300 genera (NOYES, 2003). In Europe, the family is represented by about 1,100 species (GAULD & BOLTON, 1988). Eleven species have previously been recorded from Malta in various scattered publications, but of these only two were reported as occurring in Malta in the Fauna Europaea database (MITROIU, 2004). The purpose of the present work is to add a further two new records of the family from Malta bringing the total number of species known from these islands to 13, and to bring together the previously recorded species in the form of a short annotated list with references.

Most species of Eulophidae are primarily solitary parasitoids of eggs, larvae or pupae of various phytophagous insects. Other species are known to be gall-formers and are mainly restricted to two groups, Ophelimini and Tetrastichinae (LA SALLE, 2005). The Ophelimini is a small tribe with species native to Australia and currently accommodates two genera: *Australsecodes* and *Ophelimus*. The latter genus contains some 50 described species, most of which seem to be associated with plant galls. Species within the subfamily Tetrastichinae exhibit a wide range of biology from parasitoids of a wide range of insects, spider egg sacks, mites and nematodes in galls (LA SALLE, 1994) to phytophagous species including some true gall inducers (LA SALLE, 2005). No species from these two groups were previously reported as occurring in Malta even though the Tetrastichinae are so numerous and widespread that several species are expected to occur.

Ophelimus maskelli (Ashmead, 1900) (Ophelimini)

Material examined. MALTA: Msida and Valetta, numerous females which emerged between the 20-26.iv.2006 from galls on *Eucalyptus camaldulensis*, leg. D. Mifsud.

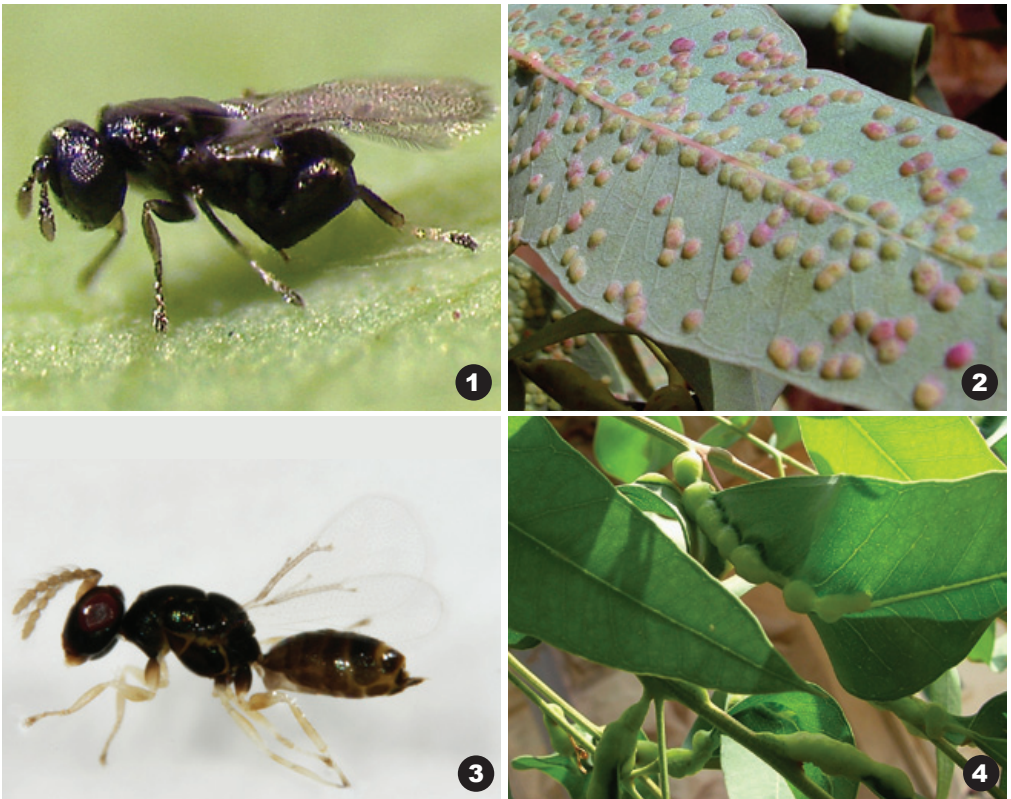
Notes. *Ophelimus maskelli* (Fig. 1) is native to Australia but has spread and established itself in various parts of Europe and the Mediterranean Region. It forms typical round flat button-shaped galls (Fig. 2) mainly on young leaves of several *Eucalyptus* species. Records of *Ophelimus eucalypti* have been mistakenly reported in the European literature (e.g. VIGGIANI & NICOTINA, 2001; LAUDONIA & VIGGIANI, 2004; PUJADE-VILLAR & RIBA-FLINCH, 2004) and these should refer to *O. maskelli* as pointed out by TILBURY & JUKES (2006) and PROTASOV *et al.* (2007). *Ophelimus maskelli* was first recorded in Europe from Italy where it was reported in 2000 (ARZONE & ALMA, 2000; BELLA & LO VERDE, 2002). It was subsequently recorded from Greece where it was first noted in 2002 (KAVALLIERATOS *et al.*, 2006), Spain (PUJADE-VILLAR & RIBA-FLINCH, 2004), south of France (EPPO, 2006), most likely in south-eastern England (TILBURY & JUKES, 2006), Portugal (BRANCO *et al.*, 2009) and Israel. The present is the first record of this alien invasive species from Malta, and is based on material reared from *Eucalyptus* galls in 2006.

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***Leptocybe invasa* Fisher & La Salle, 2004**
(Tetrastichinae)

Material examined. MALTA: Msida and Valetta, numerous females which emerged between the 2-14.x.2006 from galls on *Eucalyptus camaldulensis*, leg. D. Mifsud.

Notes. *Leptocybe invasa* (Fig. 3) is a relatively new pest of *Eucalyptus* of Australian origin. It was observed as causing severe injury to young foliage of *Eucalyptus* plantations by inducing galls mainly on rapidly growing shoots (MENDEL *et al.*, 2004). It forms typical bump-shaped galls on the leaf midribs (Fig. 4), petioles and stems of new growth of several *Eucalyptus* species. It was originally found in the Mediterranean Basin and the Middle East in 2000 with records from Algeria, France, Greece, Iran, Israel, Italy, Jordan, Morocco, Portugal, Spain, Syria and Turkey. It subsequently spread to Sub-Saharan Africa where it was first reported in 2002 from Kenya (MUTITU, 2003) and subsequently found in Ethiopia, Mozambique, South Africa, Tanzania, Uganda and Zimbabwe. It was then recorded from Southeast Asia with records from India, China, Taiwan, Thailand and Vietnam (e.g. CABI, 2007; WU *et al.*, 2009; TUNG & LA SALLE, 2010), Brazil (COSTA *et al.* 2008), and the USA (Florida) (GASKILL *et al.* 2009). The present is the first record of this alien invasive species from Malta, and is based on material reared from *Eucalyptus* galls in 2006.



Figures 1-2: *Ophelimus maskelli*; 1: Adult male; 2: Galls on *Eucalyptus*; **Figures 3-4:** *Leptocybe invasa*; 3: Adult male; 4: Galls on *Eucalyptus*.

Check-list of parasitic Eulophidae previously recorded from Malta

Aprostocetus nr. *toddaliae* (Risbec, 1958) recorded as parasitic on the Florida Wax Scale, *Ceroplastes floridensis* by FARRUGIA (1998);

Astichus bachmaieri Doğanlar, 1992 recorded as parasitic on the bark beetle, *Hypoborus ficus* by MIFSUD *et al.* (2012);

Chrysocharis pubicornis (Zetterstedt, 1838) recorded by HANSSON (1985);

Cirrospilus pictus (Nees, 1834) recorded as a parasite of the Citrus Leaf-miner, *Phyllocnistis citrella* by SCHAUFF *et al.* (1998);

Diglyphus isaea (Walker, 1838) recorded as a deliberately introduced leaf-miner parasite by MIFSUD (1997a);

Diglyphus minoeus (Walker, 1838) recorded as parasitic on the leaf-miner, *Chromatomyia horticola* (Goureau) by MIFSUD (1997a);

Euderomphale sp. recorded as parasitic on the whitefly, *Tetralicia ericae* by MIFSUD *et al.* (1995);

Pnigalio agraulis (Walker, 1839) recorded as parasitic on the olive fly, *Bactrocera oleae* by HABER & MIFSUD (2007);

Tamarixia pronomus (Walker, 1839) recorded as parasitic on the jumping plant-louse, *Bactericera crithmi* by MIFSUD (1997b);

Tamarixia tremblayi (Domenichini, 1965) recorded as parasitic on the jumping plant-louse, *Bactericera crithmi* by MIFSUD (1997b);

Tamarixia sp. recorded as parasitic on the jumping plant-louse, *Trioza chenopodii* by MIFSUD (1997b).

ACKNOWLEDGEMENTS

I would like to thank Dr John La Salle (Australia) for very kindly providing information and literature on the gall-inducing Eulophidae and for reading a draft of the manuscript. I also thank Dr Christer Hansson (Sweden) for correcting some errors in an earlier draft of this work, Prof. Zvi Mendel (Israel) for providing figure 1 and Dr Gene-Sheng Tung (Taiwan Forestry Research Institute) for providing figure 3.

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Received: February 20, 2012

Accepted: September 15, 2012