Zootaxa 1910: 1–20 (2008)
www.mapress.com/zootaxa/

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)

Taxonomy, biology, and efficacy of two Australian parasitoids of the eucalyptus gall wasp, *Leptocybe invasa* Fisher & La Salle (Hymenoptera: Eulophidae: Tetrastichinae)

IL-KWON KIM[1,2], ZVI MENDEL[3], ALEXEY PROTASOV[3], DANIEL BLUMBERG[3] & JOHN LA SALLE[1*]

[1]*CSIRO Entomology, GPO Box 1700, Canberra, ACT 2601, Australia E-mail: john.lasalle@csiro.au*
[2]*School of Botany and Zoology; The Australian National University, Canberra, ACT, 0200, Australia*
[3]*Department of Entomology, Agriculture Research Organization, The Volcani Center, Bet Dagan, 50250, Israel*

Abstract

Two species of Tetrastichinae (Hymenoptera: Eulophidae) from Australia are described as parasitoids of *Leptocybe invasa* Fisher & La Salle: *Quadrastichus mendeli* Kim & La Salle sp.nov. and *Selitrichodes kryceri* Kim & La Salle sp. nov. These parasitoids were introduced to Israel as part of a biological control program to counter the severe levels of damage caused by *L. invasa* to *Eucalyptus* plantations throughout the Mediterranean Basin. The biology of these species, as well as their potential as biological control agents, is discussed. Both species are now successfully established in Israel. The parasitoids were collected from *L. invasa* galls on 3–4 year old *Eucalyptus tereticornis* trees in central west Queensland, between Gympie and Hervey Bay, and on the Atherton Tableland. Both species are small (about 1 mm in length), solitary, and apparently ectoparasitic wasps. *S. kryceri* is biparental whereas *Q. mendeli* is uniparental. Maximum survival (~ 6 days at 25°C) for both species was obtained when they were fed with honey solution. *S. kryceri* and *Q. mendeli* successfully parasitized approximately 2.2 and 2.5 gall units per day, respectively. Both species developed on both young and mature host larvae. *L. invasa* may be considered as an early colonizer of regenerated young stands in Australia, which may imply that its parasitoids will display a similar fast-tracking behavior with respect to their host in its invasive range. The generic status of *Selitrichodes* is reinstated, with *Epomphaloides* and *Zagrammosomoides* placed as new synonyms of *Selitrichodes*.

Key words: Hymenoptera, Eulophidae, *Selitrichodes*, *Quadrastichus*, gall inducer, parasitoids, *Eucalyptus*

Introduction

Within the last decade, the invasive eucalyptus gall wasp, *Leptocybe invasa* Fisher & La Salle (Hymenoptera: Eulophidae) became established in the Mediterranean Basin (Arzone & Alma 2000; Viggiani *et al*. 2000; Aytar 2003; Mendel *et al*. 2004; Pujade-Villar & Riba-Flinch 2004; Ramadan 2004; Doğanlar 2005), and subsequently spread to SubSaharan Africa, India and Southeast Asia (CABI 2007) and quite recently Brazil (V.A. Costa, E. Berti-Filho, J.L. Stape, pers. comm., 2008). The gall inducer develops successfully on eucalyptus species of the section Exsertaria, among which *Eucalyptus camaldulensis* is particularly susceptible. *E. camaldulensis* is one of the best known eucalyptus trees outside Australia and economically is the most important hardwood species of the dry lowland areas in the entire Mediterranean and Middle East regions (FAO 1979). The wasp forms typical galls in the form of distinct swellings on the leaf midribs, petioles and stems on new foliage on trees of all ages, including nursery stock. Heavy galling causes the leaves to warp and in extreme cases it may stunt the growth of the tree (e.g., Mendel *et al*. 2004). Because of the severe damage caused by *L. invasa* to eucalyptus plantations worldwide, a search for its natural enemies was initiated in 2003.

Accepted by M. Buffington: 3 Aug. 2008; published: 20 Oct. 2008