Short Communication

First Record of *Leptocybe invasa* and *Ophelimus maskelli* Eucalyptus Gall Wasps in Tunisia

Samir Dhahri and Mohamed Lahbib Ben Jamaa, Unité de Gestion et de Valorisation des Ressources Forestières, INRGREF, Université 7 Novembre à Carthage, 2080 Ariana, Tunisia**, and Gabriella Lo Verde,** Dipartimento S.EN.FI.MI.ZO, sezione Entomologia, Università di Palermo, viale delle Scienze, 90128 Palermo, Italy

ABSTRACT

Dhahri, S., Ben Jamaa, M. L., and Lo Verde, G. 2010. First record of *Leptocybe invasa* and *Ophelimus maskelli* eucalyptus gall wasps in Tunisia. Tunisian Journal of Plant Protection 5: 231-236.

Two Australian gall wasps were detected for the first time in Tunisia on the foliage of *Eucalyptus camaldulensis* trees. *Leptocybe invasa* was detected in 2004, while *Ophelimus maskelli* in 2006. *L. invasa* makes galls on petioles, leaf midribs and young branches whereas *O. maskelli* induces galls on limbs. Vigilance is recommended when seedlings are carried to plantation.

Keywords: Eucalyptus, gall wasps, *Leptocybe invasa, Ophelimus maskelli*, Tunisia

The *Eucalyptus* plant genus, originating from Australia, is the most introduced as reforestation species in several parts of the world. In Tunisia, 117 species, planted in the different arboretums, were well acclimated to the Tunisian bioclimates (14) and about 31000 ha were planted in the North mainly by *E. camaldulensis* and *E. gomphocephala* (8). In 1962, the most dangerous pest of eucalyptus, *Phoracantha semipunctata*, was recorded in Tunisia (4) and its congeneric *P. recurva* was detected in 1999 (3). In the last years, two insects were detected on the foliage of *E. camaldulensis* trees: *Leptocybe invasa* and *Ophelimus maskelli* (Hymenoptera; Eulophidae), recorded in Tunisia in 2004 and 2006, respectively. These wasps are both gall inducers and cause damages mainly to eucalyptus seedlings in nurseries and young plantations.

Corresponding author: Mohamed Lahbib Ben Jamâa
Email: benjamaa.lahbib@iresa.agrinet.tn

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L. invasa (Fig. 1a), the Australian gall wasp, is present in the Mediterranean basin, the Middle East and Africa (17). It was detected in Italy on *Aprostocetus* sp. in 2000 (2, 24), in Portugal and Spain in 2003 (5, 24) and two years later in Turkey and Iran on *E. camaldulensis* leaves (9, 13). In December 2005, it was detected in the South of France (11). In Algeria, this pest was added at the alert list by the

OEPP in 2006 (12). Thelytokous parthenogenetic reproduction is typical of *L. invasa* female (Fig. 1a), 1.1-1.4 mm in length (17). It induces galls on petioles, leaf midribs and young branches of several *Eucalyptus* species such as *E. camaldulensis*, *E. tereticornis*, *E. rudis*, *E. grandis*, *E. globulus* and *E. viminalis* (Fig. 1b). Developmental stages of the wasp proceed into the gall of a mean length of 2.1 mm (17). Galls taken at the end of May 2007 from *E. camaldulensis* tree and cut up showed mature larva and nymph stages (Fig. 1c,d) and in the same day we noted the emergence of the adult (Fig.1e). Mendel *et al.* (17) indicated that under laboratory conditions, this wasp lasts 132.6 days from oviposition to adult emergence and may produce two or three generations annually. Intense infestations can lead to deformations of the leaves and young stems and to reduction of tree growth. In Middle East, Turkey and Italy two *Megastigmus* species are reported as parasitoids of *L. invasa* (21, 26).

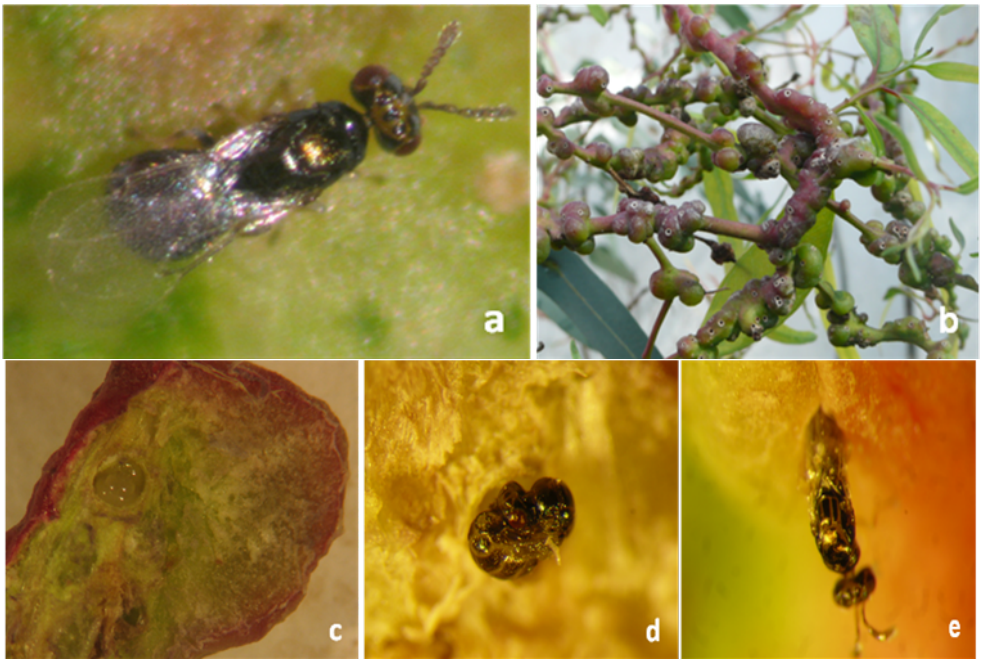

Fig. 1. Female of *L. invasa* (a), galls of *L. invasa* on *E. camaldulensis* (b), gall cut up showing mature larva (c), gall cut up showing nymph (d) and adult of *L. invasa* emerging from the gall (e).

Ophelimus maskelli (Fig. 2a) was reported in the last decade from many Mediterranean areas and was firstly identified, in Italy and Northeast Spain, as *O. eucalypti* (1, 22, 23, 26). In 2003, this pest was reported in the Middle East and Spain (19, 24). In 2005, it was reported from the South of France (11) and in 2006, in Portugal and Turkey (6, 10). This eulophid induces galls on the limb of leaves of several *Eucalyptus* species such as *E. camaldulensis*, *E. tereticornis*, *E.*

rudis, *E. grandis*, *E. cinerea, E. robusta*, *E. botyoides*, *E. viminalis*, and *E. saligna* (Fig. 2b). Female, of 0.83 to 1.07 mm in length lays about 100 eggs with a preference next to petiole, but in heavily attack all the leaf surface is covered with galls with a density reaching 36 galls/cm^2 (19).

The laying causes the beginning of the formation of galls containing only one larva (Fig. 2c). The larva pupates (Fig. 2d) inside the gall with a diameter of 0.9 to 1.2 mm (21), then the adult emerges. After emergence, heavily attacked leaves become desiccated and fall leading to a delay of development and a loss of the strength of the trees. For the biological control of this pest, the parasitoid *Closterocerus chamaeleon* (Hymenoptera; Eulophidae), was introduced in the Middle East (18) and in some Italian regions (6, 15, 23). This parasitoid was also detected in Turkey (10) and in Tunisia (16).

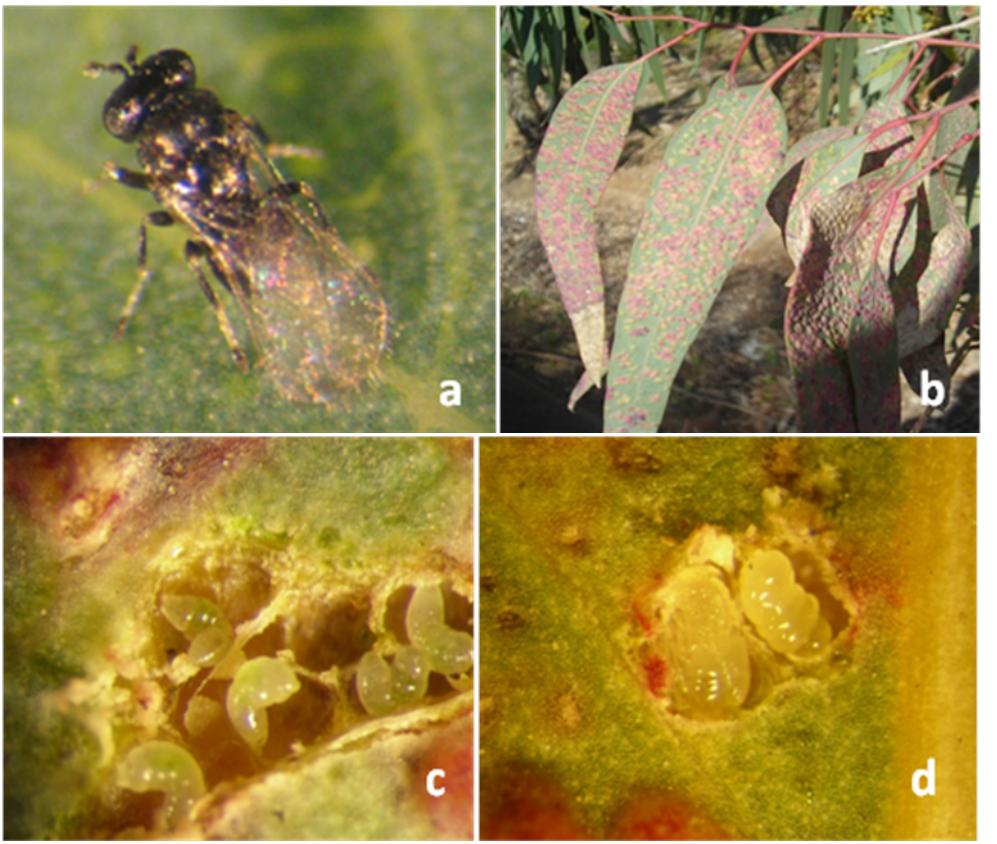

Fig. 2. Female *O. maskelli* laying eggs (a), galls of *O. maskelli* on *E. camaldulensis* leaves (b), galls cut up showing larvae of *O. maskelli* (c) and galls cut up showing pre-nymph (right) and nymph (left) (d).

E. camaldulensis seems to be more attacked than the other *Eucalyptus* species and heavy infestations, reaching 100% of attacked seedlings, were reported mainly

in young plantations and nursery seedlings of this species. Currently, no control measures are available against both species, even if the parasiting activity of *Closterocerus chamaeleon* seems to effectively reduce the infestation levels of *O. maskelli* (7, 25). However, more precautions would be needed when exchanging eucalyptus plants for planting, enhancing the level of monitoring and carried out research in arboretums to identify *Eucalyptus* species which resist to this gall wasp.

RESUME

Dhahri S., Ben Jamaa M. L. et Lo Verde G. 2010. Première observation de *Leptocybe invasa* et *Ophelimus maskelli* insectes gallicoles d'eucalyptus en Tunisie. Tunisian Journal of Plant Protection 5: 231-236.

Deux espèces australiennes d'insectes gallicoles ont été détectées pour la première fois en Tunisie sur le feuillage des arbres d'*Eucalyptus camaldulensis*: *Leptocybe invasa* observée en 2004 et *Ophelimus maskelli* en 2006. *L. invasa* provoque des galles sur les pétioles, la nervure principale de la feuille et les jeunes pousses tandis que *O. maskelli* induit des galles au niveau des limbes. Une vigilance est recommandée au niveau du transport des plants d'une région à une autre.

Mots clés: Eucalyptus, insectes gallicoles, *Leptocybe invasa*, *Ophelimus maskelli*, Tunisia

ملخص

ظاهري، سمير ومحمد لحبيب بن جامع وغابريالا لو فيردي. 2010. تسجيل أوّل لحشرتي الانتفاخ *Leptocybe invasa* و *Ophelimus maskelli* على أشجار الأوكالبتوس في تونس.

Tunisian Journal of Plant Protection 5: 231-236.

تم لأوّل مرّة في تونس تسجيل حشرتين أستراليّتين على أوراق أشجار *Eucalyptus camaldulensis*: *Leptocybe invasa* التي تمت مشاهدتها في سنة 2004 و *Ophelimus maskelli* شوهدت في سنة 2006. تسبب *L. invasa* انتفاخا على مستوى المعلاق والعرق الرئيسي للورقة وعلى مستوى الأغصان الحديثة. أمّا *O. maskelli* فإنها تحدث انتفاخا على النّصل. يجب أن تكون اليقظة المستمرة خاصة أثناء نقل الشتلات الغابية من مكان إلى آخر.

كلمات مفتاحية: أوكالبتوس، تونس، حشرات مسببة للانتفاخ، *Leptocybe invasa*، *Ophelimus maskelli*

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