

# The red gum lerp psyllid, *Glycaspis brimblecombei*, a new exotic pest of *Eucalyptus camaldulensis* in Italy

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## Abstract

*Glycaspis brimblecombei* Moore, the red gum lerp psyllid (Hemiptera Psyllidae) is reported for the first time from Italy, from several urban and rural sites of the Campania region, infesting *Eucalyptus camaldulensis* Dehnh.. The host plant is very common in Italy as ornamental and forestry plants. This note adds a new record to the eucalypt psyllid list in Italy. Preliminary observations on general biological aspects and distribution have been carried out. Generalist predators, such as ants, spiders and pirate bugs, were observed on infested trees attacked by *G. brimblecombei*, but no psyllid parasitoids were detected.

**Key words:** lerp psyllid, Italy, new record, *Eucalyptus*, invasive species.

## Introduction

*Glycaspis* Taylor, an Australian genus of jumping plant lice, contains 137 described species which are associated with *Eucalyptus* spp. (Hollis, 2004). One of the species, *Glycaspis brimblecombei* Moore (Hemiptera Psyllidae) the red gum lerp psyllid, is widespread in Australia, and in recent years is turning into an invasive pest. The species was first detected outside Australia in eucalyptus plantations in California in 1998 (Brennan and Gill, 1999). In a few years, from 2001 to 2008, *G. brimblecombei* has been recorded from Florida and Mexico, Chile, Brazil, Argentina, Ecuador, Peru, Hawaii, Mauritius and Madagascar (Burckhardt *et al.*, 2008). The first record of the red gum lerp psyllid in Europe is dated 2007, from Portugal and Spain (Valente and Hodkinson, 2009). The insect is at present spreading in the Iberian Peninsula (Borrajó *et al.*, 2009; Prieto-Lillo *et al.*, 2009).

The red gum lerp psyllid is considered a serious pest that causes severe defoliation and some tree mortality on some *Eucalyptus* spp., and has been included in the EPPO list of quarantine species since 2002.

*G. brimblecombei* feeds on several *Eucalyptus* species, mainly *E. camaldulensis* Dehnh., but also on other species including: *E. rudis* Endl., *E. globulus* Labill., *E. diversicolor* F. Muell., *E. sideroxylon* A. Cunn. ex Woolls, *E. nicholii* Maiden et Blakely, *E. lehmannii* (Schauer) Benth., in California; *E. blakelyi* Maiden, *E. nitens* H. Deane et Maiden, *E. tereticornis* Sm., *E. dealbata* A. Cunn. ex Schauer, *E. bridgesiana* R. T. Baker, *E. brassiana* S. T. Blake, *E. mannifera* Mudie, in Australia (Brennan and Gill, 1999; 2001; Moore, 1970).

In June 2010, several conical white coverings, known as lerps, of *G. brimblecombei*, under which the larvae develop, were found in Campania Region on *E. camaldulensis* (figure 1a). The aboriginal word "lerp" has been used by a number of authors to denote several different substances like exudations, associated with vegetable or insects, which are sweet to the taste. Sometimes they referred to these substances as "manna" (Phillips, 1992).

*G. brimblecombei* is not the only psyllid known to feed on *Eucalyptus* in Italy. In the last few decades three other exotics species were recorded on these host plants, namely *Ctenarytaina eucalypti* (Maskell) (Cavalcaselle, 1986), *Ctenarytaina spatulata* Taylor (Costanzi *et al.*, 2003) and *Blastopsylla occidentalis* Taylor (Laudonia, 2006).

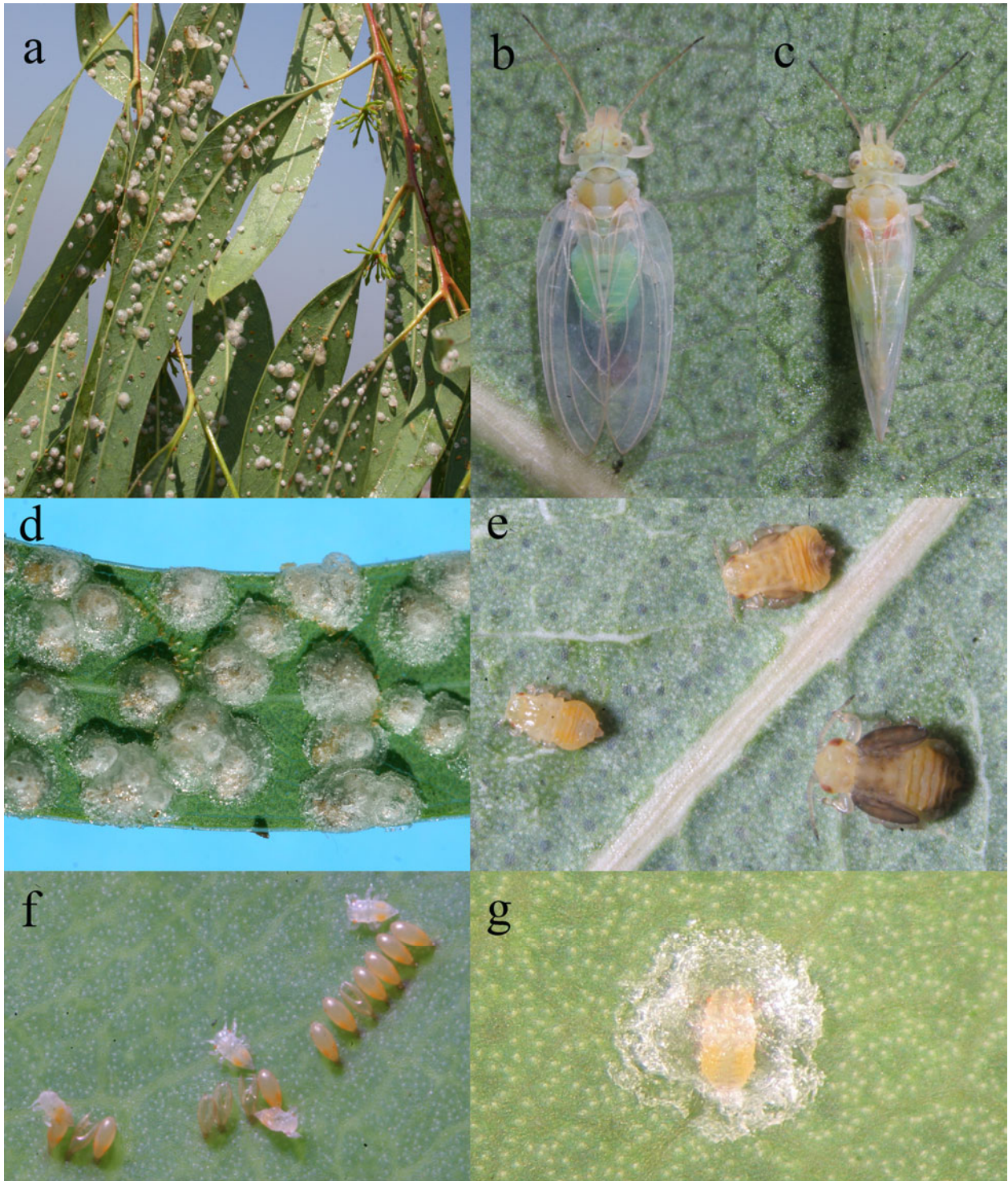
## Identification of *Glycaspis brimblecombei*

The adults are about 3 mm long, light green to brownish with orange and yellow patches and are easily recognizable by their very long genal processes and the dorsally flat thorax (figure 1b, 1c). The forewing is elongate with subparallel margins, and angular apically. Detailed descriptions of *G. brimblecombei* have been published by Moore (1964), Halbert *et al.* (2001) and Olivares *et al.* (2004).

Adults are highly mobile on foliage and do not live under lerp covers. Females deposit ovoid orange/yellowish, stalked eggs generally in loose groups on young-mature and succulent leaves (figure 1f).

Crawlers and young nymphs are essentially orange, while mature nymphs are reddish bronze with darker wing pads showing bright white spots (figure 1e). Both are located almost entirely on hide mature leaves. Adults, nymphs and crawlers are phloem feeders producing large amounts of honeydew. All nymphal instars construct white conical lerps using wax and honeydew secretions (figure 1d). Lerps on leaves look like armored scale covers. Nymphs feed and grow to adulthood under this cap of crystalline sugars (figure 1g), they enlarge it as they grow or they may move to form a new shelter. When nymphal development is complete, winged adults leave the protective lerp and fly to infest new host plants. In Australia, 2 to 4 generations per year are observed.

High populations of red gum lerp psyllids on infested leaves produce copious amounts of waxy secretions and honeydew, and the resulting sooty mould causes premature leaf drop. In some cases, extensive defoliation and subsequent crown thinning may weaken the trees which



**Figure 1.** Life stages of the red gum lerp psyllid, *G. brimblecombei*: a) colony on heavily infested *eucalyptus* tree, b) adult female, c) adult male, d) lerps on leaves of *E. camaldulensis*, e) nymphal stages, f) eggs and hatching crawlers, g) newly formed transparent, dome shaped lerp with a first-instar psyllid nymphs underneath.

become more vulnerable to attack by serious xylophagous pests like *Phoracantha recurva* Newman and *P. semipunctata* (F.), the Eucalyptus longhorn beetles. In Southern California, thousands of mature *E. camaldulensis* were killed within 2-3 years by uncontrolled populations of red gum lerp psyllid with millions of dollars of costs to remove the dead trees (Daane *et al.*, 2005).

**Key to the psyllids found on *Eucalyptus* in Italy**

To identify *G. brimblecombei* and to discriminate it from other species of psyllids living on eucalyptus in Italy, the following diagnostic dichotomous key, adapted from Halbert *et al.* (2001), may be used.

### Key to the psyllids found on *Eucalyptus* in Italy

- 1 - Metacoxae of adults without meracanthi (large spines) .....2  
 1' - Metacoxae of adults with meracanthi (*Ctenarytaina*) .....3  
 2 - Genal cones long, 0.8 x length of vertex or longer; forewings apically angulate, lerps present .....  
     .....*Glycaspis brimblecombei* Moore  
 2' - Genal cones shorter, less than 0.7 x length of vertex, forewings rounded apically .....*Blastopsylla occidentalis* Taylor  
 3 - Male proctiger with apical segment elongate, 2/3 or greater the length of basal segment; parameres elongate and broad, each as broad as proctiger in lateral view at widest points; head and thorax dorsally yellowish with brown spots. ....  
     .....*Ctenarytaina spatulata* Taylor  
 3' - Male proctiger with apical segment 0.5 times or less the length of the basal segment; parameres 2/3 or less the width of the proctiger at widest points; head and thorax dorsally dark brown to black .....*Ctenarytaina eucalypti* (Maskell)

### Distribution in Italy

*G. brimblecombei* has been collected in several places in Campania only on *E. camaldulensis* (table 1). All developmental stages of the insect pest have been found at each sampling site, some of them more than 100 km apart in north-south direction. The red gum lerp psyllid seems well established and is rapidly spreading.

### Natural control and management

Several entomophagous species attacking the red gum lerp psyllid are recorded throughout the world: birds, lady beetles, green lacewings (*Chrysoperla* spp.), syrphid flies, pirate bugs (*Anthocoris* spp.) and spiders. Based on literature, a potentially effective predator of *G. brimblecombei* might be *Anthocoris nemoralis* F. (Hemiptera Anthocoridae) (Valente and Hodkinson, 2009). Although predators do not provide complete biological control, they can reduce psyllid abundance. Among hymenopteran parasitoids, *Psyllaephagus bliteus* Riek (Hymenoptera Encyrtidae), which develops only in the red gum lerp psyllid (Paine *et al.*, 2000), has been employed in classical biological control programs. The parasitic wasp from Australia has been successfully introduced into several countries: California, Brazil, Mexico, Chile, where the species is established with increasing parasitisation rates (Berti-Filho *et al.*, 2003; Dahlsten *et al.*, 2005; Plascencia-González *et al.*, 2005; Ide *et al.*, 2006).

In Campania Region generalist predators, such as ants, spiders and pirate bugs have been observed on infested red gum trees attacked by *G. brimblecombei*, but no parasitoid species has been detected.

### Concluding remarks

*G. brimblecombei* has been collected in different localities of the Campania Region in a very short lapse of time (June - July 2010). The origin of the importation has not yet been elucidated. As the high susceptible red gum *E. camaldulensis* is very common as ornamental and forestry species in Italy and in the whole Mediterranean region, attention must be given to possible new occurrences

**Table 1.** Sampling sites of the red gum lerp psyllid, *G. brimblecombei* in Campania.

Date (2010)	Locality	Latitude N	Longitude E	Altitude
June 25	Eboli	40°30'00.45"	14°56'09.14"	2 m
June 28	Portici	40°48'37.05"	14°20'31.80"	41 m
June 30	Capua	41°06'06.58"	14°12'49.49"	23 m
July 1	Ercolano	40°49'26.34"	14°22'43.97"	265m
July 1	Teverola	41°00'25.13"	14°12'50.96"	21 m
July 2	Casoria	40°54'27.72"	14°19'11.93"	49 m
July 2	Salerno	40°39'51.12"	14°48'16.56"	5m

of the red gum lerp psyllid, which may become a serious pest of red gum trees in parks and urban areas as well in plantations. In order to control the increasing populations of *G. brimblecombei*, thus reducing the predictable negative impact of such invasive species, the specific natural enemy *P. bliteus* might be introduced into Italy.

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