Biodiversity Journal, 2011, 2 (1): 13-17

New corological and biological data of the Red Gum Lerp Psyllid, *Glycaspis brimblecombei* Moore, 1964 in Italy (Hemiptera, Psyllidae)

Francisco Javier Peris-Felipo[1], Gianpiera Mancusi[2], Giuseppe Fabrizio Turrisi[3] & Ricardo Jiménez-Peydró[1]

[1] Laboratorio de Entomología y Control de Plagas, Instituto Cavanilles de Biodiversidad y Biología Evolutiva, Universidad de Valencia, Apartado Oficial 22085 - 46071 Valencia, Spain. [2] Via Italia 3 - 85021, Avigliano, Potenza, Italy. [3] University of Catania, Cutgana, Nature Reserve Management, Via Terzora 8 - 95027, San Gregorio di Catania, Catania, Italy. Corresponding author: F.J. Peris-Felipo, e-mail: francisco.peris@uv.es.

ABSTRACT *Glycaspis brimblecombei* Moore, 1964 is a psyllid (Hemiptera: Psyllidae) pest of *Eucalyptus*, native to Australia and first recorded in Europe: Spain in 2008 and more recently (2010) in Italy. The present paper deals with recent research, carried out in central Italy, with new data on the distribution and biology of this species.

KEY WORDS Hemiptera, Psyllidae, new records, Italy.

Received 02.03.2011; accepted 03.03.2011; printed 30.03.2011

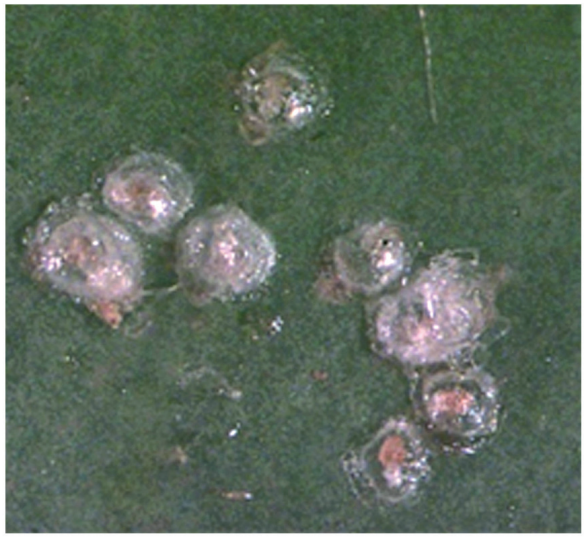
INTRODUCTION

The red gum lerp psyllid, *Glycaspis brimblecombei* Moore, 1964, is a sap-sucking insect of Australian origin (Moore, 1964) which currently shows a widespread distribution outside its native range due to frequent introductions. It was detected in California, U.S.A. in 1998 (Brennan et al., 1999), in Mexico in 2000 (Castillo, 2003), in the Hawaiian Islands in 2001 (Nagamine & Heu, 2001), in Chile in 2002 (Sandoval & Rothmann, 2003), in Brazil (Santana et al., 2003) and Mauritius (Sookar et al., 2003) in 2003, in Madagascar in 2004 (Hollis, 2004), in Argentina in 2005 (Bouvet et al., 2005), in Ecuador in 2007 (Onore & Gara, 2007), in Venezuela (Rosales et al., 2008), Peru (Burckhardt et al., 2008) and Iberian Peninsula (Hurtado & Reina, 2008; Valente & Hoodkinson, 2009; Prieto-Lillo et al., 2009) in 2008, and finally in Italy in 2010 (Laudonia & Garonna, 2010). Within Spain, it was only recorded at first in the provinces of Caceres, Cadiz, Huelva and Seville, but has subsequently also been recorded along the Mediterranean coast and in central regions (Peris-Felipo et al., 2009). *G. brimblecombei* is associated with a variety of species of *Eucalyptus* (Dahlsten & Rowney, 2000; Diodato & Venturini, 2007), but in the Mediterranean basin it associates mainly with red eucalyptus (*E. camaldulensis*), frequently used in urban and rural forestry programmes (Peris-Felipo et al., 2009). This psyllid can be distinguished from other species thanks to the length of the cephalic projections below the eyes, indicated as genal processes (Fig. 1) (Laudonia & Garonna, 2010). The adults of this species show a degree of sexual dimorphism based mainly on body size, with females slightly larger than males (size varying between 2.5 and 3.1 mm). The body colour is light green, sometimes with yellow spots. During oviposition, females lay eggs, ovoid in shape and yellow in colour, individually or in groups and without any protection (Fig. 2). Nymphs are yellowish orange with grey wing

1

2

3



4

Figures 1-4. *Glycaspis brimblecombei*: 1, adult; 2, eggs; 3, nymphs; 4, shields.

rudiments (Fig. 3). Nymphs secrete honeydew, which builds a white cover for protection until the adult stage is reached. This cover, also called a shield, is conic in shape and is built by several layers linked to each other. The nymph and the protective shield, which reaches a maximum size of 3.0 × 2.0 mm (Ide et al., 2006) (Fig. 4), grow at the same rate. After oviposition, which takes place on leaves, in the event of adverse weather, eggs enter a period of quiescence until conditions become favourable. After hatching, nymphs rapidly develop into pupal instars, producing the protective shield and readying the insect for final development into adulthood (Laudonia & Garonna, 2010). Once the adult stage is reached reproductive activity swiftly takes place, fertilized females oviposit and nymphs hatch a few days later, starting another cycle. *G. brimblecombei* may undergo a multivoltine cycle, but variations of the life cycle have been observed in different geographical contexts. For instance, in Australia and California there are two to four generations per year, while in Chile the life cycle is postponed for about one month during the spring-summer period (Hidalgo, 2005). The present paper deals with new chorological and biological data on this species, based on recent research carried out in central Italy (Latium).

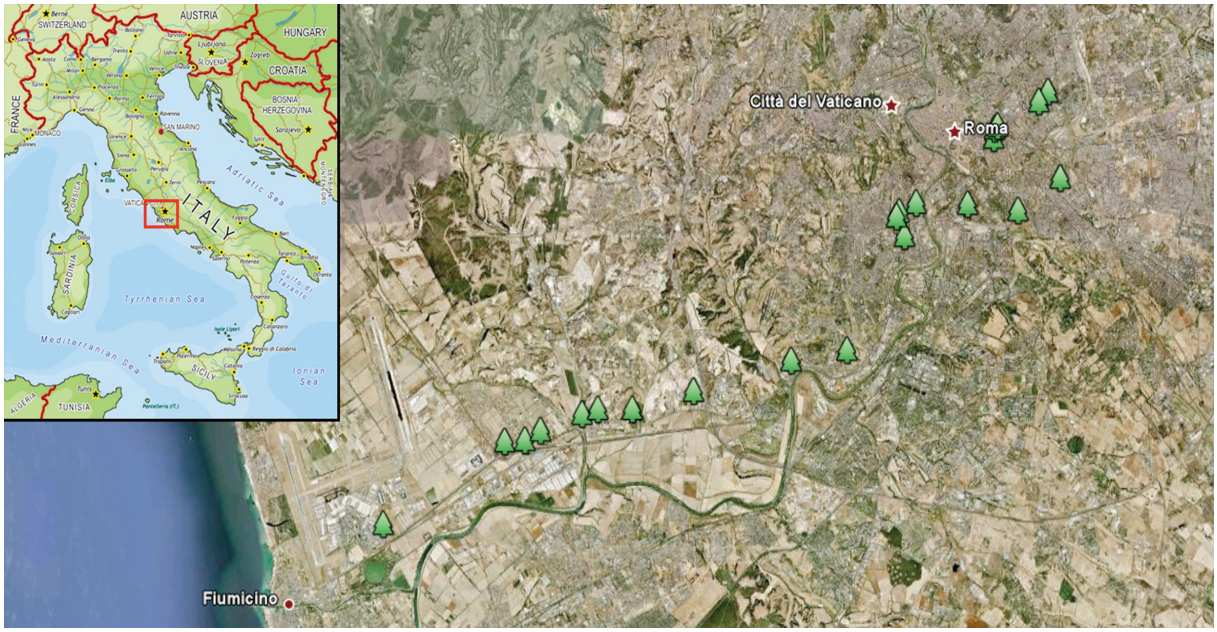


Figure 5. Distribution of *Glycaspis brimblecombei* in Italy.

MATERIAL AND METHODS

During investigations carried out between May and July 2010 in the city of Rome and its surroundings for the identification of possible pests in *E. camaldulensis*, most specimens were found to be infested with *G. brimblecombei*. The trees were checked weekly to ascertain the presence of the psyllid. Eucalyptus-trees showing positive presence were sampled, and leaves and insects collected. The samples were either hand-picked or collected with entomological nets. Leaves were taken to the laboratory for observation under light stereomicroscope. Additionally, local climatic data, specifically maximum-minimum temperatures, was also recorded for correlation with the life cycle of *G. brimblecombei*.

RESULTS AND DISCUSSION

The new record of *G. brimblecombei* increases our knowledge of its distribution in Italy confirming that this psyllid species is well established in Rome and its environs (Fig. 5; Table 1). Despite reported damage caused by the species on eucalyptuses around the world, our observations have not revealed any negative effects so far, though it should be noted that further research is required. Although our research has not identified any significant effect on the trees' health-status, the attack of this sucking insect can indeed leave large quantities of honeydew on leaves, facilitating subsequent attacks by fungi resulting in fumagina syndromes. Moreover, when trees support high population levels, some discoloration of leaves or, at least, the adoption of a yellowish green colour has been detected. In fact, as time progresses, these fungi attacks produce leaf discoloration, falling, stunted growth and general abatement of plant vigour. This general deterioration could facilitate further attacks by other insect pests or the death of branches or even whole trees, as shown by some published examples (Bouvert et al., 2005; Ide et al., 2006; Hurtado & Reina, 2008). The maximum and minimum temperatures recorded in Rome during the sampling period have permitted us to ascertain the values at which *G. brimblecombei* starts its activity. In May, specifically at the end of the month, with

Locality	UTM coordinates	Altitude (m)
Fiumicino	33T 272804, 4629886	3
Magliana	33T 282693, 4633479	14
Magliana	33T 285797, 4634282	22
Magliana	33T 287568, 4634537	17
Parco Leonardo	33T 276695, 4632179	6
Parco Leonardo	33T 277329, 4632195	2
Ponte Galeria	33T 277836,4632459	4
Ponte Galeria	33T 279158, 4632909	8
Ponte Galeria	33T 279658, 4633035	13
Ponte Galeria	33T 280747, 4633003	41
Rome	33T 289229, 4638359	22
Rome	33T 289317, 4638487	26
Rome	33T 289467, 4637794	16
Rome	33T 289859, 4638735	19
Rome	33T 291485, 4638662	28
Rome	33T 292361, 4640575	30
Rome	33T 292400, 4640830	49
Rome	33T 292489, 4640895	53
Rome	33T 293071, 4638438	23
Rome	33T 293813, 4641575	49
Rome	33T 294106, 4641852	39
Rome	33T 294425, 4639343	37

Table 1. Localities, UTM and altitude of *Glycaspis brimblecombei* findings in Italy.

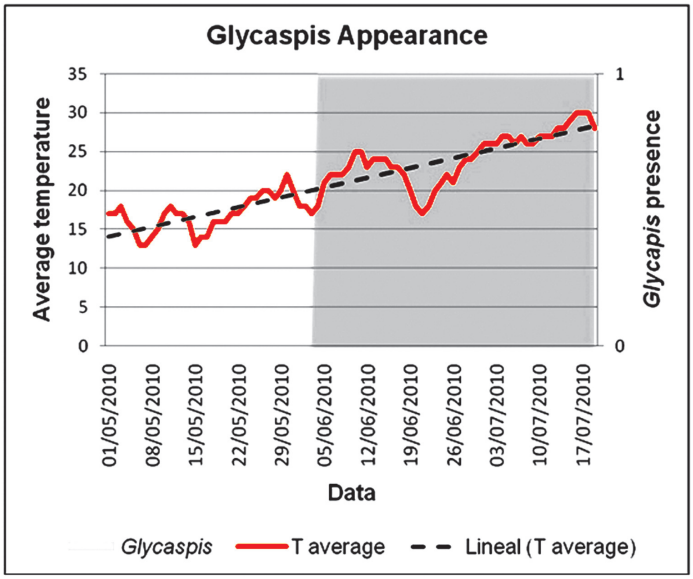


Figure 6. Temperatures and time of onset of *Glycaspis brimblecombei*.

temperatures above 20 ºC (favourable conditions), eggs leave the quiescent state and a new cycle takes place. Shields were first detected in early June and from that time *Glycaspis* populations increased significantly (Fig. 6).

The rapid colonization of Mediterranean countries by *G. brimblecombei* demands the conduction of organic studies aimed at obtaining a better knowledge of its distribution, population characteristics, possible impact and potential natural enemies. Once these aspects are clarified, appropriate control measures should be adopted to prevent significant damage on trees and economic loss.

REFERENCES

Bouvet J.P.R., Harrand L. & Burckhardt D., 2005. Primera cita de *Blastopsylla occidentalis* y *Glycaspis brimblecombei* (Hemiptera: Psyllidae) para la República Argentina. Revista Sociedad Entomológica Argentina, 64: 99-102.

Brennan E.B., Gill R.J., Hrusa G.F. & Weinbaum S.A., 1999. First record of *Glycaspis brimblecombei* (Moore) (Homoptera: Psyllidae) in North America: initial observations and predator associations of a potentially serious new pest of *Eucalyptus* in California. Pan-Pacific Entomologist, 75: 55-57.

Burckhardt D., Lozada P.W. & Diaz B.W., 2008. First record of the red gum lerp psyllid *Glycaspis brimblecombei* (Hemiptera: Psylloidea) from Peru. Bulletin de la Société entomologique Suisse, 81: 83-85.

Castillo J.V., 2003. Condición de insectos forestales de México. In: Proceedings of the 1st Joint Meeting of the 12th National Symposium on Forest Parasites and the 54th Eastern Forest Insect Work Conference, Guadalajara, Mexico, p. 61.

Dahlsten D. & Rowney D.L., 2000. The red gum lerp psyllid, a new pest of *Eucalyptus* species in California. University of California at Berkeley, College of natural Resources, Center for Biological Control. Available at http://www.cnr.berkeley.edu/biocon/dahlsten/rglp/Dahlsten-handout_rglp.pdf).

Diodato L. & Venturini M., 2007. Presencia del "psílido del escudo" (*Glycaspis brimblecombei*, Hemiptera, Psyllidae), plaga del *Eucalyptus*, en Santiago del Estero, Argentina. Quebracho, 14: 84-89.

Hidalgo F. O., 2005. Evaluación de la preferencia de *Glycaspis brimblecombei* Moore por diversos hospedadores del género *Eucalyptus* L'Herit. en la región metropolitana, Chile. Universidad de Chile, Chile.

Hollis D., 2004. Australian Psylloidea: Jumping plant lice and lerps insects. Australia Biological Resources Study, Canberra, Australia, XVI + 216 pp.

Hurtado A. & Reina I., 2008. Primera cita para Europa de *Glycaspis brimblecombei* Moore (Hemiptera: Psyllidae), una nueva plaga del eucalipto. Boletín Sociedad Entomológica Aragonesa, 43: 447-449.

Ide Mayoga S., Muñoz C., Beéche M., Moncada J., Jacques L., González P. & Goycoolea C., 2006. Detección y control biológico de *Glycaspis brimblecombei* Moore (Hemiptera: Psyllidae). Subdepartamento de Vigilancia y Control de Plagas Forestales y Exóticas Invasoras. Gobierno de Chile. Ministerio de Agricultura. S.A.G., Chile.

Laudonia S. & Garonna A.P., 2010. The red gum lerp psyllid, *Glycaspis brimblecombei*, a new exotic pest of *Eucalyptus camaldulensis* in Italy. Bulletin of Insectology, 63: 233-236.

Moore K.M., 1964. Observations on some Australian forest insects. 18. Four new species of *Glycaspis* (Homoptera: Psyllidae) from Queensland. Proceedings Linnean Society New South Wales, 89: 163-166.

Nagamine W. T. & Heu R. A., 2001. Red gum lerp psyllid *Glycaspis brimblecombei* Moore (Homoptera: Psyllidae). New Pest Advisory, 01-02. (http://hawaii.gov/hdoa/pi/ppc/npa-1/npa01-02_rpsyllid.pdf).

Onore G. & Gara R.L., 2007. First record of *Glycaspis brimblecombei* (Hemiptera: Psyllidae) in Ecuador, biological notes and associated fauna, pp. 41-42. Extended Abstracts of the 4th European Hemiptera Congress Ivrea, Turin, Italy.

Peris-Felipo F.J., Bernués-Bañeres A., Pérez-Laorga E. & Jiménez-Peydró R., 2009. Nuevos datos sobre la distribución en España de *Glycaspis brimblecombei* Moore, 1964 Hemiptera: Psyllidae), plaga de *Eucalyptus camaldulensis*. Boletín Asociación española Entomología, 33: 517-526.

Prieto-Lillo E., Rueda J., Hernández R. & Selfa J., 2009. Primer registro del psílido rojo del eucalipto, *Glycaspis brimblecombei* (Homoptera: Psyllidae), en la Comunidad Valenciana. Boletín Sanidad Vegetal Plagas, 35:277-281.

Rosales C.J., Lobosque O., Carvalho P., Bermúdez L. & Acosta C., 2008. *Glycaspis brimblecombei* Moore (Hemiptera: Psyllidae). "Red Gum Lerp". Nueva plaga forestal en Venezuela. Entomotropica, 23: 103-104.

Sandoval A. & Rothmann S., 2003. Detección del psílido de los eucaliptos rojos, *Glycaspis brimblecombei* Moore (Hemiptera: Psyllidae) en Chile. In: 24 Congreso Nacional de Entomología, Resúmenes. (http://www.udec.cl/insectos/resúmenes.html).

Santana D.L.Q., Mendezes A.O., Silva H.D., Bellote A.F.J. & Favaro R.M., 2003. O Psilideo de concha (*Glycaspis brimblecombei*) em eucalipto. Comunicaçao Técnica 105.

Sookar P., Seewooruthun S.I. & Ramkhelawon D., 2003. The red gump lerp psyllid, *Glycaspis brimblecombei*, a new pest of *Eucalyptus* sp. in Mauritius. AMAS, Food and Agricultural Research Council, Réduit, Mauritius.

Valente C. & Hodkinson I., 2009. First record of the red gum lerp psyllid, *Glycaspis brimblecombei* Moore (Hem.: Psyllidae), in Europe. Journal of Applied Entomology, 133: 315-317.