SAN DIEGO COUNTY
AGRICULTURAL COMMISSIONER'S OFFICE

New Agricultural Pest for Southern California
Red Gum Lerp Psyllid, *Glycaspis brimblecombei*

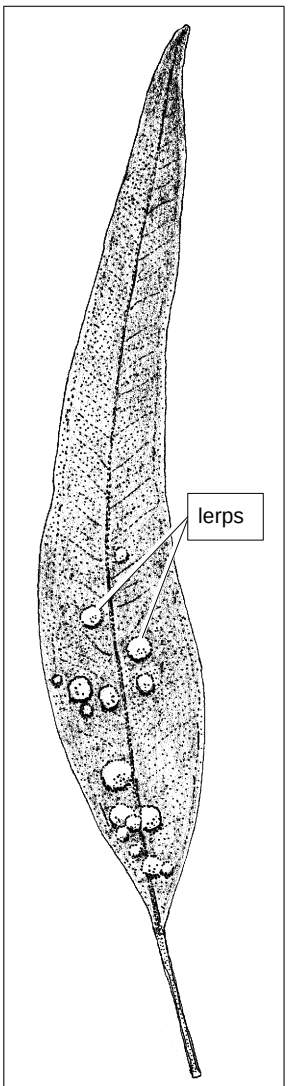

Fig. 1. *Eucalyptus camaldulensis* leaf with lerps of Redgum lerp psyllid (life size)

Introduction: On 17 June 1998, Los Angeles County Agricultural Inspector Cindy Werner gathered some leaves of Red Gum Eucalyptus from three heavily infested trees bordering the Interstate 10 Freeway across the street from the Los Angeles County Agricultural Commissioner's Office in El Monte. The leaves were covered with honeydew and curious, round, white mounds (Fig. 1). Staff Entomologist Rosser Garrison determined that the cones were lerps of a completely new psyllid unlike any known from California or the United States. Examination of various literature sources revealed that this species was one of many lerp-forming psyllids native to Australia. Garrison contacted Biosystematic Entomologist Ray Gill of the California Department of Food and Agriculture who later collected material at the site on 21 June and reported his findings by telephone to Garrison later that week.


Fig. 4. Close-up of Lerps

Gill identified the psyllid as *Glycaspis brimblecombei*, a species described in 1964 from Brisbane, Australia. Specimens were sent to Daniel Burckhardt, a psyllid specialist in Switzerland, for confirmation. This species, a new North American record, belongs to a large group of lerp-forming psyllids. RLP is only one of 127 species that occur only eucalyptus trees throughout Australia, however, 12 of these species attack *Melaleuca* spp. (Moore, 1970a).

Economic Importance: Red Gum Lerp Psyllid (RLP) is a major ornamental pest of eucalyptus in California. RLP heavily infests **Red Gum Eucalyptus**, *Eucalyptus camaldulensis*, but also occurs on sugar gum (*E. cladocalyx*), blue gum (*E. globulus*), *Eucalyptus rudis*, and three other species. RLP forms a "lerp." This is a mostly excretionary structure of crystallized honeydew produced by the larvae as a protective cover that closely resembles armored scale insects (Fig. 4). The psyllids produce large amounts of honeydew, which stains the ground beneath trees. A blackish sooty mold grows on the honeydew-covered surfaces. In severe infestations, thousands of lerps cover the ground and understory, giving the appearance of hail. The lerps and honeydew stick to shoes of pedestrians. Heavy infestations cause severe leaf drop. Extensive defoliation weakens trees and causes death. Thousands of Red gum eucalyptus have died as a result of this pest necessitating the removal of many of these trees throughout southern California.


Fig. 5. Red gum Lerp psyllid infestation on Red gum

In Australia RLP is known to feed on a localized population of the Red gum eucalyptus (Moore 1970b). According to Moore (1970a), RLP is also known to feed on *Eucalyptus dealbata, E. tereticornis, E. blakelyi, E. bridgesiana,* and *E. nitens.* RLP is implicated in serious outbreaks in native vegetation in Australia.

Distribution: RLP was originally described in 1964 from Brisbane, Australia (Moore 1964) but it has been found in central Queensland and in most of New South Wales (Moore 1970b). Since its initial findings in El Monte, RLP has spread throughout all of California except for the northern most counties.

Fig. 6. Adult Red gum lerp psyllid

Identification: The young larvae build a conical lerp by excreting gelatinous honeydew from their posterior end. The larger larvae are found beneath these lerps and resemble an armored scale insect. The conical lerps reach a size of about 3 mm wide and 2 mm high. The larvae (Fig. 3) are yellow, or yellow and brown. The adults (Fig. 2, 6) are 3 mm long, slender, pale green with areas of orange and yellow. They differ from other California psyllids in having long genal cones on the face.

Comments: If the lerp is removed from the leaf surface, the exposed full-grown larva begins constructing a new lerp. A matrix of new honeydew that will become a new lerp is formed over the larva. It moves in a circular direction in order to add to the cover. Some exposed larvae wither and die soon after their lerp is removed.

Garrison has observed several predators attacking RLP, including two introduced ladybeetles, the Asian lady beetle (*Harmonia axyridis*) and *Chilocorus bipustulatus*, particularly the former, which occurs in large numbers both in El Monte and Ardenwood. Other predators include spiders, mites, syrphid fly larvae, the lady beetles *Coccinella californica* and *Hippodamia convergens*, and the heteropteran *Zelus renardii.* Predators of other psyllids that might also feed on Red gum_lerp psyllid include minute pirate bugs (*Anthocoris* spp.), and larvae of green lacewings (*Chrysoperla* spp.) and brown lacewings (*Hemerobius* spp.). **None of these predators, however, has been shown to be an effective biological control agent.**

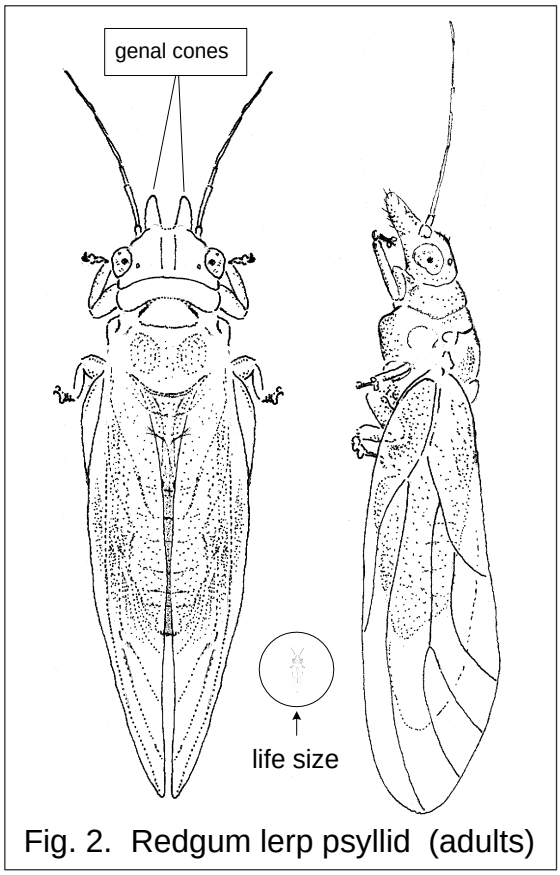

Fig. 2. Redgum lerp psyllid (adults)

The best chance of controlling RLP is through a classical biocontrol program. This involves studying which predators, parasites, and pathogens help to control a pest in its native habitat. After identifying which natural enemies are expected to be effective, a quarantine screening process is conducted to determine if these natural enemies can be safely introduced into California. Classical biological control has been effective against several other psyllids, including acacia psyllid and blue gum psyllid (Dahlsten *et al.* 1998), and it provides partial control of the eugenia psyllid (Dahlsten *et al.* 1995). Biological control is often influenced by pesticide use and cultural practices: effective biocontrol must be integrated with these activities.

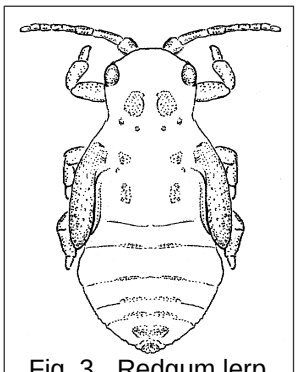

Fig. 3. Redgum lerp psyllid (larva)

Dr. Donald Dahlsten of the University of California, Berkeley, is currently investigating classical biological control for RLP. He successfully returned from a trip to Australia in August 1999 and on 7 June 2000 an initial release of a parasitic wasp of *Psyllaephagus bliteus* was conducted in Valley Village near Hollywood followed by other releases in Los Angeles County as well as within other areas within California. Although there is evidence that the parasitic wasp has become established, it has thus far not resulted in noticeable reductions of the psyllids. Investigations into biological control with this parasite and possibly other candidates are continuing and it is hoped that eventual control of RLP below damaging threshold levels will be realized. Parasitic wasps have been released in San Diego County in Scripps Ranch, Rancho Santa Fe, and Mission Bay. These wasps have become established in Scripps Ranch and Rancho Santa Fe. Further up-to-date announcements on the status of Dr. Dahlsten's progress can be accessed at **www.http://.cnr.berkeley.edu/biocon/dahlsten/rglp/index.htm**. Other information on RLP may be available from your computer with an internet connection by using one of the search engines (for example, Google.com) and typing in "Red gum lerp psyllid".

Life History: Like other psyllids, Red gum lerp psyllid develops through gradual metamorphosis, which includes egg, several increasingly larger larval stages, and adult. There is no pupal stage. Females lay eggs on succulent leaves and young shoots, so population increases often follow new plant growth. However, all psyllid life stages can occur on both new and mature foliage. In its native Australia the psyllid has 2 to 4 generations a year, and a similar number of generations would be expected in California. Development time from egg to adult varies from several weeks during warm weather to several months during prolonged cool temperatures. In mild coastal areas, all stages can be present throughout the year.

Cultural Control [Note: The following is modified from Dreistadt *et al.*, 1999.]**:** Minimize tree stress by providing eucalyptus with proper cultural care and protecting trees from injury. Nitrogen levels in foliage may increase when eucalyptus is stressed. Increased foliar nitrogen increases reproduction and survival of psyllids. Providing trees with supplemental water during periods of prolonged drought, such as during summer and fall in much of California when rain is infrequent or nonexistent may also cause increased new growth which is attractive to RLP.

When irrigating trees, apply water beneath the outer canopy, not near trunks. Avoid frequent, shallow watering that is often used for lawns. A general recommendation is to irrigate eucalyptus infrequently (possibly once a month during drought periods) but with sufficient amounts so that the water penetrates deeply into soil. This can be achieved by applying water slowly through drip emitters that run continuously for several days. The specific amount and frequency of water needed varies greatly depending on the site and tree species.

Avoid fertilizing eucalyptus. Use slow-release nutrient formulations if other plants near the drip line of eucalyptus require fertilization. Psyllid larvae and egg-laying females will occur on succulent new shoot growth stimulated by excess nutrients that occur following the application of quick-release fertilizer formulations. RLP attacks only certain species of eucalyptus: *some* eucalyptus species are avoided by this psyllid. Eggs laid on certain other eucalyptus species are unable to complete their development, so psyllid populations there do not build to bothersome levels. The number of eucalyptus species attacked may decrease later if this pest is brought at least partly under biological control.

Chemical Control: There are no selective insecticides that kill *only* psyllids. It is difficult to spray large urban trees without pesticide drift. The lerp covering may provide psyllid larvae with some protection from spray contact.

If honeydew is intolerable and foliar spraying is used, consider using a mixture of insecticidal soap (potassium salts of fatty acids) and horticultural oil (an insecticide labeled narrow-range, superior, or supreme oil). These low-hazard insecticides can be combined at one-half of the labeled rate or the full labeled rate (commonly 1%-2% active ingredient each). Unlike many other insecticides, oil can kill

psyllid eggs, in addition to other insect life stages. Insecticidal soap helps to wash-off honeydew and kill psyllids. **Thorough foliar coverage is essential, so effective spraying may be limited to smaller trees.** Soap or oil applications will likely provide only temporary control and application may need to be repeated after about two weeks.

One systemic insecticide has recently become available for home use. **Bayer® Advanced Garden Tree and Shrub Insect Control Concentrate** contains a 1.47% of the active ingredient Imidacloprid. According to the label, this soil drench pesticide provides 12-month insect protection from sucking insects such as aphids, psyllids, whiteflies and others. The pesticide may take from one week to three months to control these target pests depending on the size and health of the tree or shrub.

Warning on the Use of Chemicals: Pesticides are poisonous. Always read and carefully follow all precautions and safety recommendations given on the container label. Store all chemicals in the original labeled containers in a locked cabinet or shed, away from food or feeds, and out of the reach of children, unauthorized persons, pets, and livestock.

Confine chemicals to the property being treated. Avoid drift onto neighboring properties, especially gardens containing fruits and/or vegetables ready to be picked.

Dispose of empty containers carefully. Follow label instructions for disposal. Never reuse containers. Make sure empty containers are not accessible to children or animals. Never dispose of containers where they may contaminate water supplies or natural waterways. Do not pour down sink or toilet. Consult your county agricultural commissioner for correct ways of disposing of excess pesticides. Never burn pesticide containers.

Acknowledgements: Thanks are due to Ray Gill, CDFA for making the initial identification and sharing information and literature, and Steve Dreistadt, Univ. Calif., Davis and Donald Dahlsten, Univ. Calif., Berkeley, for sharing information on pest management and biological control of this species.

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