

EUCALYPTUS REDGUM LERP PSYLLID

Integrated Pest Management for Home Gardeners and Landscape Professionals

The redgum lerp psyllid (*Glycaspis brimblecombei*) was found in Los Angeles in 1998 and has spread throughout much of California. This insect from Australia also occurs in Arizona, Florida, Hawaii, and Mexico on a variety of eucalyptus species.

IDENTIFICATION AND LIFE CYCLE

Psyllids are plant-juice sucking homopterans in the insect family Psyllidae. Redgum lerp psyllid nymphs (immatures) form a cover called a “lerp,” which is a small white, hemispherical cap composed of solidified honeydew and wax. Lerp on leaves can be up to about 1/8 inch in diameter and 1/12 inch tall and resemble an armored scale (Fig. 1). Nymphs enlarge their lerp as they grow, or they move and form a new covering. The yellow or brownish nymphs resemble a wingless aphid, and spend most of their time covered beneath a lerp (Fig. 2).

Adults are about 1/8 inch long, slender, and light green to brownish with orangish and yellow blotches. Adults occur openly on foliage and do not live under lerp covers. Unlike other psyllids in California, redgum lerp psyllid adults have relatively long forward projections (called genal cones) on each side of their head below their eyes (Fig. 3). Females lay tiny, yellowish, ovoid eggs singly or in scattered groups.

Females prefer to lay eggs on succulent leaves and young shoots. Population increases often coincide with new plant growth. However, all psyllid life stages can occur on both new and mature foliage. Development time from egg to adult varies from several weeks during warm weather to several months during prolonged cool temperatures. This insect has several generations each year. All stages can be present throughout the year, although in lower num-

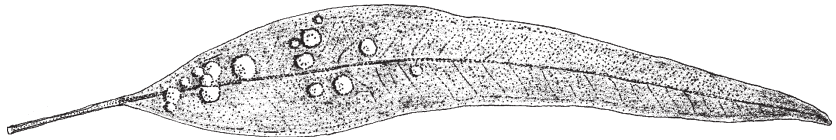


Figure 1. Lerp of redgum lerp psyllid on *Eucalyptus camaldulensis* leaf.

bers during the winter.

Damage

Psyllid nymphs and adults feed by sucking plant phloem sap through their strawlike mouthparts. High redgum lerp psyllid populations secrete copious honeydew and cause premature leaf drop. Sticky honeydew, the resulting dark sooty mold growth, and falling leaves foul surfaces beneath infested trees. Extensive defoliation weakens trees, can increase tree susceptibility to damage from other insects and diseases affecting eucalyptus, and contributes to premature death of some highly susceptible species. At some locations, abundant yellowjackets feeding on honeydew may annoy or threaten people.

Redgum lerp psyllid infests over two dozen *Eucalyptus* species. In California this psyllid prefers river red gum (*Eucalyptus camaldulensis*), flooded gum (*E. rudis*), and forest red gum (*E. tereticornis*). Certain *Eucalyptus* species are avoided or are not heavily infested by this psyllid (Table 1).

MANAGEMENT

The species of eucalyptus primarily determines whether psyllids will be abundant. Cultural practices and overall tree health also influence populations and the extent to which trees are damaged. Providing adequate irrigation and limiting nitrogen can reduce susceptibility to damage. An introduced, psyllid-specific parasitic wasp is providing substantial

biological control on coastal area trees. Systemic insecticides have sometimes provided control, but efficacy has been variable and sometimes disappointing.

Eucalyptus trees in California are attacked by at least 14 other introduced insects, including the bluegum psyllid (*Ctenarytaina eucalypti*), eucalyptus longhorned borers (*Phoracantha recurva* and *P. semipunctata*), and eucalyptus snout beetle or gumtree weevil (*Gonipterus scutellatus*), which are now under good biological control. Learn how management efforts may affect the other introduced eucalyptus pests before taking any control actions. In particular, consult the *Pest Notes* on eucalyptus longhorned borers, eucalyptus tortoise beetle, and psyllids listed in Suggested Reading.

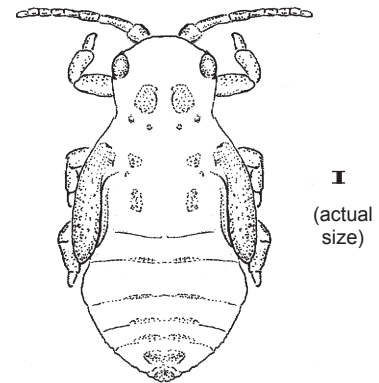


Figure 2. Redgum lerp psyllid nymph.

PEST NOTES

University of California
Agriculture and Natural Resources

Publication 7460

Revised January 2006

Table 1. Approximate Relative Susceptibility of *Eucalyptus* Species to Several Introduced Pests in California.

Common name (gum)	<i>Eucalyptus</i> species	Longhorned borers ¹	Redgum lerp psyllid	Tortoise beetle
Australian beech	<i>polyanthemos</i>	—	L	L
blue	<i>globulus</i>	H	I-L ²	H
dollar leaf	<i>cinerea</i>	—	L	—
flooded or desert	<i>rudis</i>	—	H	I
forest red	<i>tereticornis</i>	—	H	—
grand or rose ³	<i>grandis</i>	I	I	H
gray ironbark	<i>paniculata</i>	—	L	—
hybrid	<i>trabutii</i>	L	—	—
Karri	<i>diversicolor</i>	H	I	—
lemon	<i>citriodora</i>	L	I ⁴	L
long flowered	<i>macandra</i>	—	I	—
manna	<i>viminalis</i>	H	I	H
mountain	<i>dalrympleana</i>	L	—	—
narrow leaved	<i>spatulata</i>	—	L	—
Nichol's willow leaved	<i>nicholii</i>	—	I	—
red flowering	<i>ficifolia</i>	—	L	L
red ironbark	<i>sideroxylon</i>	L	I-L	L
river red	<i>camaldulensis</i>	L	H	H
round leaved/red flowered	<i>platypus/nutans</i>	H	I-L	—
shining	<i>nitens</i>	H	H-I	—
silver	<i>crenulata</i>	—	—	L
silver dollar	<i>pulverulenta</i>	—	L ²	—
spotted	<i>maculata</i>	—	— ⁴	L
sugar	<i>cladocalyx</i>	L	I-L	—
swamp mahogany	<i>robusta</i>	L	L	—
Sydney blue	<i>saligna</i>	H	L	—
white ironbark	<i>leucoxydon</i>	—	I	—

— = information not available
 H = highest susceptibility
 I = intermediate susceptibility
 L = less or least susceptible or reportedly not attacked

Redgum lerp psyllid = *Glycaspis brimblecombei*
 Tortoise beetle = *Trachymela sloanei*

- 1 Susceptibility ratings based on *Phoracantha semipunctata* species of longhorned borers, which is believed to be similar to the susceptibility to *P. recurva*.
- 2 Susceptible to bluegum psyllid (*Ctenarytaina eucalypti*), but this psyllid is generally under good biological control.
- 3 *E. grandis* is also called flooded gum.
- 4 Susceptible to spotted gum psyllid (*Eucalyptolyma maideni*) and lemongum lerp psyllid (*Cryptoneossa triangula*).

Adapted partly from: Brennan et al. 2001, Hanks et al. 1995.

Monitoring

Inspect valued eucalyptus regularly to detect problems with tree growing environment and care as well as psyllids and their natural enemies. Don't wait until infestations are severe to monitor trees because cultural practices such as changes in irrigation or nitrogen application are primarily preventive and must be applied early. Where severe psyllid infestations are intolerable, identify those trees, but consider delaying any pesticide application until the following winter or early spring. It may be unrealistic to

expect good control from actions taken after pests become abundant.

The number of lerp coverings is not a good indication of psyllid abundance. Some nymphs form multiple lerps and leave their old whitish covers empty. Other covers have small parasite emergence holes or harbor nymphs that are parasitized. Use yellow sticky traps to capture adult psyllids and parasitic wasps. Monitoring traps for adults is more efficient than inspecting foliage for immatures. There is a positive correlation between the number of psyllid

nymphs and eggs on leaves and adult female psyllids caught in yellow sticky traps. Yellow sticky traps provide a strong indication of seasonal changes in psyllid and parasite activity. Be sure to keep records of natural enemy activity. Avoid spraying trees with high psyllid-specific parasitization rates.

Biological Control

Redgum lerp psyllid is attacked by many predators including birds, the convergent lady beetle (*Hippodamia convergens*) and multicolored Asian lady beetle (*Harmonia axyridis*), larvae of green lacewings (*Chrysoperla* spp.) and syrphid flies, pirate bugs (*Anthocoris* spp.), and spiders. Dragonflies (Order Odonata) will hover near infested trees and catch adult psyllids in mid-air. Although predators do not provide complete biological control, they can reduce psyllid abundance. Whenever possible, select management efforts that have less adverse effects on these beneficial species.

A psyllid-specific parasitic wasp (*Psyllaephagus bliteus*) that feeds only on redgum lerp psyllid has been intro-

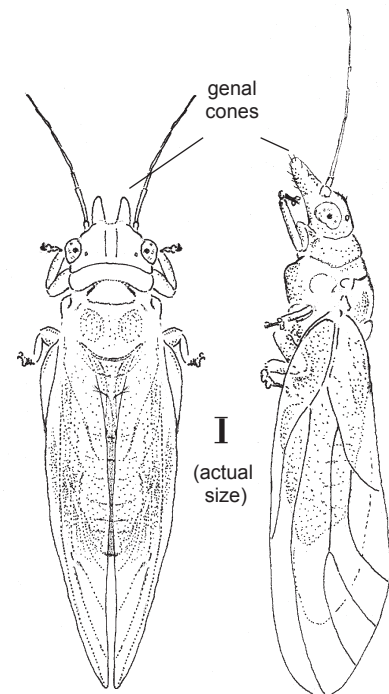


Figure 3. Adult redgum lerp psyllids.

duced from Australia. Adult *P. bliteus* are about 1/12-inch-long encyrtid wasps with metallic green bodies and yellowish legs. At moderate temperatures, female parasites lay on average over 100 eggs during their 2-month life span. Females lay eggs in psyllid nymphs of any age, usually in third and fourth instars. Parasite larvae feed and develop only when nymphs reach the fifth (last) instar. After killing their host, wasps pupate and emerge, leaving a roundish emergence hole in parasitized psyllid nymphs and their lerp covers. *Psyllaephagus bliteus* has significantly reduced psyllid populations at coastal locations, especially in southern California. At warmer interior locations in California's Central Valley, the parasite has not yet provided good biological control. For current information on psyllid biological control, see the Web site: <http://nature.berkeley.edu/biocon/dahlsten/dahlsten.htm>.

Cultural Control

Minimize tree stress by providing eucalyptus with proper cultural care and protecting them from injury. Consider providing trees with supplemental water during periods of prolonged drought, such as during summer and fall in much of California. Drought stress increases damage to trees from both lerp psyllids and eucalyptus longhorned borers. If 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 trees infrequently (possibly once a month during drought periods) but with sufficient amounts so that the water penetrates deeply into the soil (perhaps about 1 foot or more below the surface). This can be achieved by applying water slowly through drip emitters that run continuously for several days. In areas without an established irrigation system, a water tank truck can be used to temporarily flood soil. However, avoid prolonged waterlogging, especially around the root crown, because eucalyptus trees are susceptible to pathogens favored by wet soils, such as *Armillaria* and *Phytophthora* root rots. The specific amount and frequency of water needed varies greatly depending

on the site and tree species.

Avoid fertilizing eucalyptus. Psyllid nymphs and egg-laying females prefer the abundant, succulent new shoot growth stimulated by excess nitrogen. Eucalyptus rarely require nitrogen fertilization for good growth. A six-year study of river red gum found no significant affect on tree size or survival due to annual nitrogen application. If other plants within the drip line of the tree require fertilization, use slow-release nutrient formulations.

Consider pruning off limbs that overhang surfaces where dripping honeydew is especially intolerable. Be aware that pruning often stimulates new growth of succulent foliage, which is preferred by psyllids. Except for dead or hazardous branches, which should be removed whenever they appear, prune eucalyptus only during December or January (in southern California) or November through March (in northern California). Trees are usually less stressed at this time of the year and adult eucalyptus longhorned borers, which are attracted to fresh tree wounds, are not active. Do not prune too much during one season. If extensive limb removal is planned, space the trimming over several years so that trees maintain adequate foliage to produce food and extensive portions of previously shaded bark are not suddenly exposed to direct sunlight, which can result in sunburn cankers.

Pest-Resistant Eucalyptus. Choose eucalyptus species that are well adapted to the location, including tolerance to the prevailing moisture conditions. Although certain eucalyptus trees are drought-tolerant, other species are adapted to more moist conditions. It may not be apparent that eucalyptus trees are stressed due to drought or other factors until trees become affected by additional damaging influences, such as abundant insects.

Planting resistant species can prevent redgum lerp psyllid from being a problem, as only a few species become highly infested. When selecting new or replacement species, also consider their

susceptibility to other key pests. Consult Table 1 for a list of the approximate reported susceptibility to eucalyptus longhorned borers, redgum lerp psyllid, and tortoise beetle.

Chemical Control

Insecticide efficacy has been variable. Consider treating only those trees where the pest has been intolerable or tree health appears threatened by insects. Insecticides can adversely affect *Psyllaephagus bliteus* parasites and beneficial predators. Leave at least some nearby eucalyptus untreated to provide a refuge for natural enemies. Avoid treating trees in coastal areas where the natural enemy parasite is well established.

Foliar sprays generally are not recommended. The lerp helps protect psyllid nymphs from spray contact. There are no selective insecticides that kill only psyllids. It is difficult to spray large urban trees without pesticide drifting off-target. If honeydew is intolerable and trees are small enough to be thoroughly sprayed, 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 together at one-half of the labeled rate or the full labeled rate (commonly 1 to 2% active ingredient each). Oil and soap will kill some of the psyllid adults, eggs, and nymphs that are not covered by the lerp, and help to wash off honeydew. Oil and soap sprays are not highly effective against lerp psyllids and foliar spraying provides only temporary control.

The most effective materials for large trees are systemic insecticides such as imidacloprid (Imicide, Merit). Certain formulations of imidacloprid (Bayer Advanced Garden Tree & Shrub Insect Control and Pointer) are available to the home gardener. Limited research has been conducted on pesticide efficacy. Proper treatment timing is difficult to determine. It is not known why some users report good control with insecticide while others find disappointing results.

Systemic insecticides are available for application into trunks or roots or by spraying foliage. Imidacloprid is also available to both home gardeners and professionals for application on or into soil beneath trees. When using systemics, whenever possible consider making a soil application instead of injecting or implanting trees. Injecting or implanting trunks or roots injures trees, and it is difficult to repeatedly place insecticide at the proper depth. Especially avoid methods that cause large wounds, such as implants placed in holes drilled in trunks. Do not implant or inject roots or trunks more than once a year. Foliar sprays of broad-spectrum, persistent insecticides are not recommended because of drift and negative impacts on natural enemies.

Imidacloprid may be effective when applied to soil during late winter to early spring or before rainfall or irrigation are

For more information contact the University of California Cooperative Extension or agricultural commissioner's office in your county. See your telephone directory for addresses and phone numbers.

AUTHORS: T. D. Paine, Dept. of Entomology, UC Riverside; S. H. Dreistadt, UC IPM Program; and R. W. Garrison and R. J. Gill, Calif. Dept. Food Agric., Sacramento
TECHNICAL EDITOR: M. L. Flint
COORDINATION, DESIGN, & PRODUCTION: P. N. Galin
ILLUSTRATIONS: R. W. Garrison

Produced by IPM Education & Publications, UC Statewide IPM Program, University of California, Davis, CA 95616-8620

This Pest Note is available on the World Wide Web (<http://www.ipm.ucdavis.edu>)



This publication has been anonymously peer reviewed for technical accuracy by University of California scientists and other qualified professionals. This review process was managed by the ANR Associate Editor for Pest Management.

To simplify information, trade names of products have been used. No endorsement of named products is intended, nor is criticism implied of similar products that are not mentioned.

This material is partially based upon work supported by the Extension Service, U.S. Department of Agriculture, under special project Section 3(d), Integrated Pest Management.

expected to facilitate root absorption of the insecticide. Summer application to stressed, heavily infested trees is less likely to be effective and is not recommended. For more discussion and illustrations on using systemic insecticides, consult *Pest Notes: Hackberry Woolly Aphid* listed in Suggested Readings.

REFERENCES

Brennan, E. B., G. F. Hrusa, S. A. Weinbaum, and W. Levison. 2001. Resistance of *Eucalyptus* species to *Glycaspis brimblecombei* (Homoptera: Psyllidae) in the San Francisco Bay Area. *Pan-Pacific Entomologist* 77: 249–253.

Garrison, R. W. 1998. New agricultural pest for Southern California: Redgum lerp psyllid, *Glycaspis brimblecombei*. Los Angeles County Agricultural Commissioner's Office. 2 pp.

Gill, R. J. 1998. New state records: Redgum lerp psyllid, *Glycaspis brimblecombei*. *California Plant Pest and Disease Report*. 17(1-3): 7–8.

Hanks, L. M., T. D. Paine, J. G. Millar, and J. L. Hom. 1995. Variation among *Eucalyptus* species in resistance to *Eucalyptus* longhorned borer in southern California. *Entomologia Experimentalis et Applicata* 74: 185–194.

SUGGESTED READINGS

More publications by D. L. Dahlsten, including current information on psyll-

id biological control, may be found at the Center for Biological Control, Univ. Calif. Berkeley Web site <http://nature.berkeley.edu/biocon/dahlsten/dahlsten.htm>

Imported Parasitic Wasp Helps Control Red Gum Lerp Psyllid. 2005. D.L. Dahlsten, K. M. Daane, T. D. Paine et al. *Calif. Agric.* 59(4): 229–234.

Pest Notes: Eucalyptus Longhorned Borers. Jan. 2000. T. D. Paine, J. G. Millar, and S. H. Dreistadt. Oakland: Univ. Calif. Agric. Nat. Res. Publ. 7425.

Pest Notes: Eucalyptus Tortoise Beetle. Jan. 2003. J. G. Millar, K. Campbell, R. W. Garrison, and S. H. Dreistadt. Oakland: Univ. Calif. Agric. Nat. Res. Publ. 74104.

Pest Notes: Hackberry Woolly Aphid. 2005. A. W. Lawson and S. H. Dreistadt. Oakland: Univ. Calif. Agric. Nat. Res. Publ. 74111.

Pest Notes: Psyllids. May 2001. S. H. Dreistadt, and D. H. Dahlsten. Oakland: Univ. Calif. Agric. Nat. Res. Publ. 7423.

UC scientists apply IPM techniques to new eucalyptus pests. 2000. T. D. Paine, D. L. Dahlsten, J. G. Millar, M. S. Hoddle, and L. M. Hanks. *Calif. Agric.* 54(6): 8–13. ♦

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 or vegetables ready to be picked.

Do not place containers containing pesticide in the trash nor pour pesticides down sink or toilet. Either use the pesticide according to the label or take unwanted pesticides to a Household Hazardous Waste Collection site. Contact your county agricultural commissioner for additional information on safe container disposal and for the location of the Household Hazardous Waste Collection site nearest you. Dispose of empty containers by following label directions. Never reuse or burn the containers or dispose of them in such a manner that they may contaminate water supplies or natural waterways.

The University of California prohibits discrimination against or harassment of any person employed by or seeking employment with the University on the basis of race, color, national origin, religion, sex, physical or mental disability, medical condition (cancer-related or genetic characteristics), ancestry, marital status, age, sexual orientation, citizenship, or status as a covered veteran (covered veterans are special disabled veterans, recently separated veterans, Vietnam-era veterans, or any other veterans who served on active duty during a war or in a campaign or expedition for which a campaign badge has been authorized). University policy is intended to be consistent with the provisions of applicable State and Federal laws. Inquiries regarding the University's equal employment opportunity policies may be directed to the Affirmative Action/Staff Personnel Services Director, University of California, Agriculture and Natural Resources, 300 Lakeside Drive, 6th Floor, Oakland, CA 94612-3550, (510) 987-0096.