Paratachardina pseudolobata **System:** Terrestrial

Kingdom	Phylum	Class	Order	Family
Animalia	Arthropoda	Insecta	Hemiptera	Kerriidae

Common name lobate lac scale (English)

Synonym

Similar species

Summary

Paratachardina pseudolobata (lobate lac scale) is a tiny insect that only reaches 2mm in length. It has found its way to Florida and has been documented infesting over 300 plant species since 1999. Paratachardina pseudolobata form extremely dense infestations, which over a short period of time cause branch dieback and, in severe cases, highly infested shrubs and small trees have died. Control is difficult as there are no natural predators and the use of pesticides is not viable in the natural habitats this species infests.

view this species on IUCN Red List

Species Description

Mature *Paratachardina pseudolobata* (lobate lac scales) are 1.5-2mm long and the same width. The body has two pairs of prominent lobes. This species has an easily identifiable x-shaped appearance. The testa (resinous scale covering) is extremely hard and brittle, glossy and of a dark reddish brown colour. Older individuals frequently appear dull and black due to a coating of sooty mold. The authors state that, \"The first instars (crawlers) are elongate-oval, deep red, and about 0.4mm long. The characteristic lobate pattern develops in the second instar. *P. pseudolobata* is globose with four lobes, and young individuals generally appear more lobed than mature adults. The second instar female presumably molts to the adult female as in other lac insects. Mature females are wingless and rely on passive dispersal of the crawler stage *via* air currents. Phoresis (being carried by birds and other animals) may occur but to what extent is unknown. Movement of infested host plants from one locality to the next is a key factor in spreading scale insect pests in urban areas. Young individuals often appear like a \"bow tie.\" The resinous case conforms approximately to the shape of the insect inside. Exactly how the insect grows larger within such a rigid case is not understood entirely (Howard *et al.* 2004; and Hamon and Hodges, 2005).

Notes

Paratachardina lobata is no longer a valid name.

Lifecycle Stages

USDA-CSREES (Undated) state that, \"*Paratachardina pseudolobata* has four life stages: egg, first-instar (crawler), second-instar, and third-instar (adult). The biology and life cycle of this scale are not well understood. Literature suggests that there should be one generation per year, and research in Florida indicates that the life cycle can be as long as 8 months. Newly emerged crawlers typically disperse by crawling to the nearest available food source; however, they also may be dispersed by air currents or wind. Once crawlers have settled on a new host, they remain immobile, maintaining the same feeding site for the remainder of their life.\"

Habitat Description
Paratachardina pseudolobata (lobate lac scale) is found mostly infesting woody dicotyledonous plants. It resides on the woody portions of twigs and small branches and less frequently main stems of usually < 2cm in diameter, but usually not branches or main stems of > 2cm in diameter and has not been observed on foliage (Howard *et al*. 2004).

General Impacts
Howard *et al*. (2004) states that on highly susceptible hosts, *Paratachardina pseudolobata* (lobate lac scales) overcrowd the stem and form a contiguous mass that appears as a dark, lumpy crust. The scale has been found infesting more than 200 plant species in 55 families in south Florida (Pemberton, 2003). On highly susceptible hosts up to 42 mature females have been counted per 1cm segment of twig. Sooty mold then covers the branches, the insects themselves, and occurs in patches on the foliage. Dense infestations of the lobate lac scale are associated with branch dieback, and in severe cases, highly infested shrubs and small trees have died. Some plant species appear to tolerate dense infestations, but this may be illusory, as the long-term effects of such infestations are not yet known (Howard *et al*. 2004).
Howard *et al*. (2004) assert that, \"The potential for further spread of the lobate lac scale in the western hemisphere is especially high for warm areas into which there is significant movement of living plants from Florida, like Puerto Rico and other localities of the Caribbean Region, California, and Hawaii.\"

Management Info
USDA-CSREES (Undated) outlines six major reasons why management of the *Paratachardina pseudolobata* (lobate lac scale) is difficult: \"1) initial infestations are typically unnoticed due to their small size and the shape and colour of the scale; 2) scales live for a long time; 3) scales infest natural areas where pesticide use is prohibited; 4) scales have a broad host range; 5) the thick, resinous coat may make scales impervious to certain insecticides; and 6) lack of natural enemies in its introduced range.\"
Chemical: Howard *et al.* (2004) report unpublished results of an experiment conducted at the University of Florida, Fort Lauderdale Research & Education Center stated that, \"A root drench with the systemic insecticide imidacloprid effectively controlled lobate lac scale infesting large Benjamin fig trees. Further studies are being conducted to refine this method, and to test horticultural oils and additional chemical control methods.\"
Mannion (2004) suggests that one should monitor highly susceptible plants on a regular basis. For low population densities of the lobate lac scale, horticultural oil applied to the branches and twigs can effectively manage populations in areas of low scale populations and reduce the spread to other plants. Depending on the level of infestation and weather conditions, oil applications need to be reapplied every 7 to 10 days for 4 to 6 weeks (USDA-CSREES, UNDATED) but heavy infestations require the use of a systemic insecticide like Merit/Marathon (imidacloprid) or Flagship (thiamethoxam) (Mannion, 2004).
Biological: Pemberton (2003) believes that biological control is the best solution to lobate lac scale control. Currently, no parasitism has been detected in invasive lobate lac scale populations in Florida, but in its native range there should be a variety of parasites and predators that could possibly be introduced as means to control this species. Biological control is the favoured approach because intensive use of insecticides is problematic due to the cost of treating large residential and natural areas along with the potential for environmental damage. Other scale insect pests have been successfully managed through biological control (like the Florida red scale, *Chrysomphalus aonidum*) (Pemberton, 2003).
Pemberton (2003) explains that research has not been conducted which would identify parasitoids of the lobate lac scale. This research is the first step in the management of this species. The potential host range of candidate biological control insects should be predicted prior to their release to lessen the risk to native insects and introduced insects of value (Strong & Pemberton 2000). This can be accomplished by an evaluation of the well-known taxonomically limited prey specialization of some natural enemy taxa, and host-specificity testing research (Pemberton, 2003).
Three species, *Tachardiaephagus tachardiae* Howard (Encyrtidae), *Tetrastichus purpureus* Cameron (Eulophidae), and *Marietta leopardina* Nietner (Aphelinidae), are reported to attack the lobate lac scale but these are personal observations (Pemberton, 2003). There is also information on general diseases of lac scales. Most are fungi (primarily black molds) such as species of *Capnodium*, *Fumago*, and other species that grow on the honeydew secreted by the scales. These fungi can cause losses in lac yield because their growth inhibits the respiration, mating, larval emergence, and efficient use of the plant by the scale (Pemberton, 2003).
\r\nHoward *et al.* (2004) agrees with Pemberton (2003) and reports that because it is predicted that a very large percentage of trees and shrubs in both the urban and natural areas will become infested, that biological control is preliminarily being investigated as the only viable option for control in the long term.

Pathway
Movement of infested host plants from one locality to the next is a key factor in spreading scale insect pests in urban areas (Howard *et al.* 2004).

Principal source: Kondo & Gullan, 2007. Taxonomic review of the lac insect genus *Paratachardina* Balachowsky (Hemiptera: Coccoidea: Kerriidae), with a revised key to genera of Kerriidae and description of two new species. Zootaxa 1617: 1-41.
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Compiler: National Biological Information Infrastructure (NBII) & IUCN/SSC Invasive Species Specialist Group (ISSG)

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[1] ATLANTIC - WESTERN CENTRAL
[1] BAHAMAS
[1] CHRISTMAS ISLAND
[11] UNITED STATES

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