Gum-tree scale

Number 3
Revised July 1992
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Gum-tree scale (*Eriococcus coriaceus*) is a true scale or coccid; the female is fixed on the stem and the adult male is mobile and can fly.

Scale are very destructive insects which feed by sucking sap from the twigs and branches of the host tree. They infest all parts of the tree except the main trunk and large branches. They cluster together in colonies and conceal themselves beneath leathery coverings. Ants commonly attend the scale to collect honeydew (a sticky, sugary substance produced by the scale). The ants indirectly protect the scale from predation, as many predatory insects are deterred by the presence of ants.
The fungus disease sooty mould (*Fumago vagans*) is also often associated with outbreaks of scale insects. Eucalypts with blue-green juvenile foliage, such as the Tasmanian Blue Gum (*Eucalyptus globulus*), the Shining Gum (*Eucalyptus nitens*) and the South Australian Blue Gum (*Eucalyptus leucoxylon*) are favoured hosts for Gum-tree scale.

Description

Scale resemble round leathery globules densely clustered along the branches and stems of the host tree. The insects are completely encased in a thin, tough, white or reddish-brown covering (sac).

Small sacs (1-2mm in length) contain either an immature male or an immature female. Male sacs are white and much smaller and less numerous than those of the adult females (see later) and therefore less noticeable. They are often clustered together on leaves or

above the females on stems and branches.
The immature males under the sacs are flat, elongate, approximately 1mm in length and off-white in colour. Adult males are dark brown and winged. Immature females are similar in appearance to immature males.

Large sacs (3-4mm in length) contain a single adult female. These sacs are reddish-brown in colour. The female insect under the sac is a soft bodied insect, oval in shape, 2-3mm in length and buff to pinky-brown in colour. There is a small circular opening at the tip of the sac through which the young scale (crawlers) emerge. Newly hatched crawlers are minute – about the size of a pinhead. They are pale brown in colour and may be mistaken for mites crawling over the tree.

When squashed, Gum Tree Scale are found to contain a reddish-brown fluid.

Life History and Habits

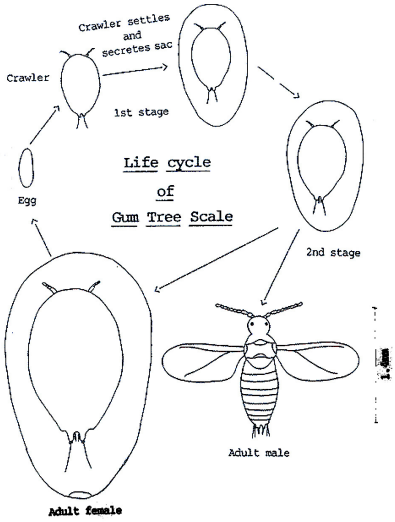
Gum-tree scale lay eggs. Some other scale produce live young. The eggs are laid singly under the sac of the mother scale. Each female may lay several hundred eggs. These hatch within a few minutes of being laid but the young crawlers remain under the sac for about 12 hours. They then leave the mother scale and actively crawl all over the host tree. At certain times of the year, millions of crawlers cover the branches of infested trees seeking a site on which to settle. Once settled, they insert their stylets into the tissue of the plant and begin feeding and secreting the protective sac. Secretion of honeydew on the leaves or stems is an indication that the crawlers have begun feeding.

Crawlers may be carried long distances by the wind and on the feet of birds thus enabling the scale to spread rapidly.

Immature males and females go through two stages before reaching the adult stage. At the beginning of each stage the insects leave their old sac and move around for a short time before settling in a new place to feed and secrete a new sac. Adult females are immobile and remain all their lives under the leathery sacs, attached to the plant by their mouthparts. Males emerge as winged adults, leaving the white remains of the sac behind on the tree. They have no mouthparts and live for only two or three days.

The generations are discrete – they do not overlap. In some areas, for instance Adelaide, there are five generations per year. In other areas there are only two generations per year, with crawlers being found in spring and autumn (ie October/November and March/April). The number of generations varies with temperature.

All stages are gregarious but males and females often congregate in separate groups.



Damage

Gum-tree scale are very serious pests of Eucalypts. Severe infestation may cause dieback or even death of trees. It has been recorded as causing a great deal of damage in *Eucalyptus globulus* plantations and killing young *E. nitens* trees. Less heavy infestations cause reduction in growth, weaken the trees and cause malformation of the terminal shoots and premature leaf fall. Small or stressed trees, or trees on poor sites are usually the most seriously affected.

Often the first indication that a Eucalypt is infested with scale is the appearance of many ants, flies and other insects on the tree. These come to feed on the honeydew that is secreted by the scale. Ants not only feed on the honeydew but often encourage its production by stroking the scale.

Damage is caused not only by the scale sucking the sap, but also by the honeydew. In severe infestations, honeydew completely covers the leaves and this affects photosynthesis. Honeydew often also covers the ground underneath the tree. Both the ground and the trees may appear black due to the abundance of the air-borne fungus, sooty mould, which grows on the honeydew. Leaves and branches completely coated with this sooty mould will die.

Control

Once established, scale can be very difficult to eradicate.

Natural Control:

Scale are attacked by a wide range of predators and parasites. Predators include small birds such as pardalotes, thornbills and silvereyes. Possums are attracted to the sugary honeydew and often squash many scale as they feed. Frogs prey on the insects feeding on the honeydew and may also destroy scale in the process. Insect predators include assassin bugs, lacewings, hoverflies, two or three species of ladybird beetles (*Rhizobius* spp) and caterpillars of the moths *Stathmopoda melanochra, Batrachedra arenosella* and *Catoblemma mesotaenia*.
Scale are parasitised by minute Chalcid, Encyrtid, Braconid and Ichneumonid wasps, as well as by several species of fly e.g. *Pseudaleucopis beneficia* and *P. flavitarsis.* They are also attacked by insect-attacking fungi.

Mechanical Control:

Scale on small trees may simply be brushed off, or the branch removed and the insects squashed or burnt. Adhesive bands to catch ants which deter would-be predators of scale (eg lacewing larvae), may be placed around the base of trees being attacked. If the ants are excluded, predators will have greater access to the scale and so a greater chance of controlling them. However banding is only suitable when infestations are slight as it is a relatively slow method of control.

Chemical Control:

Severe infestations, particularly in large plantations, can only be satisfactorily controlled by spraying. One of the more acceptable methods is to spray with white oil, though often several applications are necessary to kill the insects. However care is needed as it may damage soft young growth, especially in hot weather. Thus white oil should be used at half strength and be applied only when the air temperature is below 25°C. Combination sprays

of white oil and maldison are often more effective.
Other chemicals which may be used are dimethoate e.g. Rogor and demeton-s-methyl e.g Metasystox. Trunk injection of dimethoate may be used on large trees but is only recommended in extreme cases, or when valuable genetic material is at risk.
The best time to apply chemicals is when the crawlers are actively searching for a site on which to settle. This time varies with location and the number of generations per year in that location.
As with other health problems, all heavily infested trees should be given additional fertiliser to help restore vigorous growth.

Summary

When to look: Throughout the year, but particularly over the summer period when there are more generations.

Where to look: Gum-tree scale show a preference for two-year-old growth so look at small branches, stems and leaves of this age.However they may occur on any part of the tree.

What to look for: Sticky secretions on the tree and/or black sooty material (mould) on the branches, leaves or around the base of the tree.
Large white-reddish-brown globules attached to twigs and small branches which, when squashed, contain a reddish-brown fluid.
Smaller white globules on twigs, branches and leaves.
Tiny mite-like insects (crawlers) swarming all over the tree, especially on the twigs and branches. Crawlers are only around for a very short time and so may not be seen.

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