

Chrysomelid Beetles – *Chrysophtharta* spp. and *Paropsis* spp.

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Chrysomelid beetles are also called Tortoise beetles, Leaf beetles or Eucalypt beetles. They are native beetles, with approximately 700 different species. It is very difficult to distinguish between the species and to identify many of them. Both adult and larval stages feed on eucalypt leaves. They attack a wide range of eucalypts and are major pests in many parts of Australia. One example is *Chrysophtharta bimaculata* which is a major pest in Tasmania. Some species have also been introduced to and become pests in overseas countries where eucalypts are grown in plantations. An example is *Paropsis charybdis*, a serious pest in New Zealand.

Four species commonly found in South Australia are *Chrysophtharta obovata*, *C. nobilitata*, *Paropsis aegrota* and *P. atomaria*. All differ slightly in appearance, but have essentially the same habits and life cycles.



Chrysophtharta boovata adults



Paropsis aegrota adult



Chrysophtharta nobilitata adult



Paropsis atomaria adult

Description

Adults: Adult beetles are roundish, dome shaped beetles. They vary in size (even within species) from 0.5 cm to approximately 1.0 cm in length. There are also variations in colour and markings, both between and within species, with some species having different colour forms. All have relatively large "feet" and long antennae. When disturbed, they drop to the ground where they are well camouflaged.

In general, *C. obovata* adults are small beetles and have two forms, a greeny/brown form and a red form. Both forms have gold dots in rows over the back. *C. nobilitata* adults are small with red and gold metallic markings. *P. aegrota* adults are larger beetles, brown in colour with cream dots of various sizes scattered over the back. *P. atomaria* adults are light creamy/brown with faint darker markings.

Eggs(Pictured below): Eggs too vary according to species. Eggs of *C. obovata* and *C. nobilitata* are yellow and cylindrical in shape, tapering at both ends. They are laid in rows, (often overlapping) on the leaf surface. Eggs of *P. aegrota* are also cylindrical in shape and are a greeny/yellow colour but are laid on the edges of the leaves, sticking up like fingers. Eggs of *P. atomaria* are brownish and ridged and are laid in a rosette around stems and small shoots.

Chrysomelid Beetles Eggs



Chrysophtharta obovata



Chrysophtharta nobilitata



Paropsis aegrota



Paropsis atomaria



***Paropsis* spp.**

Larvae: Larvae differ, depending not only on the species but also on the stage of development i.e the instar. Some are pale yellow, some are black, some are spotted, some have humps, some are reddish in late instars while others have black stripes or markings

C. obovata larvae look black when first hatched, then become yellow with black heads and black on the tip of the abdomen, later developing black stripes. *C. nobilitata* larvae are pale yellow with pale yellow heads and do not change throughout their larval life. *P. aegrota* larvae are black when first hatched and turn an orangy-red as they grow. *P. atomaria* larvae are black when first hatched later becoming yellow with black head, pronotum (behind the head) and anal shield (end of the abdomen) and broad black stripes on each side and in the middle of the back.

However, all larvae, regardless of species, have there pairs of thoracic legs but no abdominal legs. Fully grown larvae may be 1.5-2.0 cm in length.

Each larva has a pair of cow-horn shaped glands which are thrust out from the abdomen if the larva is disturbed. These glands emit a secretion with a strong smell of eucalyptus which acts as a deterrent to would-be predators. Ants die on contact with it. It is believed to contain hydrocyanic acid.

Chrysomelid Beetle Larvae



***Chrysophtharta obovata* (early instars)**



***Chrysophtharta obovata* (final instar)**



Chrysophtharta nobilitata



Paropsis aegrota



Paropsis spp.



Paropsis spp.

Pupae: Larvae pupate in cells in the soil and are thus rarely seen. The pupae themselves are round, yellowish and often very hairy.

Life Cycle

Chrysomelid beetles overwinter as adults under bark or amongst leaf litter. They are active flyers and may be seen on warm winter days flying about or basking on leaves. They do not feed at this time and are not sexually mature. About the time the trees are producing fresh new growth in spring, the beetles become more active and begin feeding. After a few weeks they mate and start laying eggs. The eggs are laid on new growth on the terminal shoots of both adult and juvenile foliage (or in some species, around the stems). They are laid over several months, so it is common to find eggs and all larval stages present at any time throughout summer.

After hatching, the larvae feed first on the egg shells before eating the young terminal shoots and then spreading to older leaves. They are highly gregarious. There are four larval instars and when larvae are mature, they drop to the ground and burrow a short distance in to the soil before constructing cells in which they pupate.

There are two generations per year in South Australia.

Damage

Both adults and larvae feed on young foliage and shoots. Adults also feed on mature foliage. Damage by adults is very



characteristic - they chew round scallops out of the leaf margins.

All ages of eucalypts are attacked but young trees are preferred. Damage is particularly severe on these young trees, substantially reducing growth and in extreme cases, causing death. Heavy defoliation may cause up to 90% loss in height increment in a season. This also causes lateral shoots to develop, resulting in poor form. However, if defoliation occurs early, in the spring, then the trees usually recover and are able to put on some growth that season.

Most damage is done by the 3rd and 4th instars and the adults. Ninety percent of the total leaf area consumed by the larvae is consumed during these two instars.

Control

There are a number of predators and parasites which help regulate population numbers. Predators include birds, ladybirds (both adults and larvae), Mirid bugs (which feed on the eggs) and soldier beetles (Cantharidae) which feed on young larvae. Parasites include Tachinid flies and parasitic wasps.

Chemical control can be achieved using malathion, carbaryl or synthetic pyrethroids.

Spraying should be timed to coincide with the presence of the first two instars, as at this stage it is possible to assess the numbers present and still control the insect before major damage occurs.

In Tasmania much research has been done and is continuing, on the control of *C. bimaeculata* - the major pest species there. The Tasmanian approach has been an integrated one involving both chemical and biological methods together with the strict monitoring of population numbers and the use of genetics in breeding more resistant trees.

Summary

When to look: Look in spring, summer and autumn

Where to look: Look on new shoots and leaves for eggs and larvae.
Look also on older leaves for adults.

What to look for: Look for scalloped edges on adult leaves.
Look for egg batches.
Look for aggregations of larvae.
Look for round, dome-shaped beetles that drop to the ground when disturbed.

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