

Cockchafer Beetles

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Cockchafer beetles are also known as scarab beetles or spring beetles and their immature stages (larvae) are known as cockchafer, pasture, curl or white grubs. There are many different species, the larvae of which are well known in agriculture as serious pests of pastures. They are native insects and are generally found in areas where the annual rainfall is greater than 500mm.

Cockchafers can be divided into two groups, those whose adults feed on eucalypts and those whose adults do not feed at all. The larval stages of both groups are found in the soil, where most species feed on roots and other organic matter (an exception is the larvae of the Blackheaded pasture Cockchafer, *Aphodius tasmaniae*, which come to the surface to feed on green plant material). In most situations several species co-exist and expert advice is needed to tell the difference between them.



The cockchafers discussed in this sheet are those whose adult stages feed on eucalypts. The particular species discussed, *Heteronyx* spp. (pictured left) and *Liparetrus* spp., are known as Melolonthine beetles as they belong to the beetle subfamily Melolonthinae.

These two species can cause damage in two ways, by the larvae feeding on roots and by the adults feeding on eucalypt leaves. Usually the larval stages are not

regarded as pests of eucalypts since they normally feed on roots of grasses; however larvae of *Heteronyx* spp. have caused deaths of seedling eucalypts. The adults of both species eat eucalypt leaves and may cause defoliation of trees. High numbers of *Heteronyx* spp. are often associated with the presence of sorrel (*Rumex* spp.) which is a common weed both in pastures and in plantations.

Description

Adults: *Heteronyx* spp. range in size from 5-30mm and are a shiny, reddish-brown or tan colour. They are stout, robust, rounded beetles with wing covers (elytra) that are pitted but do not have distinct grooves or lines on them. The elytra do not completely cover the abdomen.

Liparetrus spp. (pictured right) are smaller than *Heteronyx* spp. and range from 4-13mm in length. They are roundish, hairy beetles, black in colour with bronze/orange elytra



edged with black. The elytra cover about 1/2 to 3/4 of the abdomen. Both species have clubbed antennae and relatively long back legs which characteristically trail out behind them.

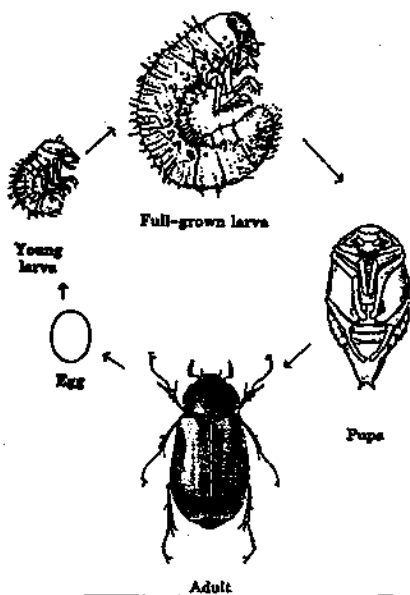
Eggs: Eggs are white and oval in shape. They are rarely seen as they are laid in the soil.

Larvae: Cockchafer larvae are all similar in appearance but differ in size depending on the species. Larvae have a characteristic "C" shape and curl up into a ball when disturbed. They are creamy white in colour with a prominent head (which differs in colour with different species) and three pairs of well developed thoracic legs. There are no abdominal legs. The rear part of the abdomen is often dark grey in colour as a result of the gut contents showing through the body wall.



Pupae: Pupae are creamy yellow in colour with distinct wing buds.

Life History and Habits

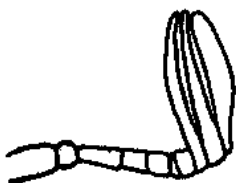


The life history of most Melolonthine beetles is not well known. Some species have a one year life cycle, others have a two year life cycle.

In general, eggs are laid in the soil in early summer. There are three larval stages - the first two occur over summer and autumn and by the end of autumn and early winter most larvae have reached stage three. Most feeding, and therefore damage, occurs in this stage. Larvae cease feeding in September or early October and pupate in cells in the soil. In most species the adults remain in the pupal cell until rain softens the soil, usually in November. In some species adults are very short-lived. In other species they are long lived and active all year with a peak of activity in the summer months.

Heteronyx spp. adults fly at dusk and at night and are attracted to light. In the daytime, they hide in the soil or under debris. Often, huge swarms occur particularly on warm calm evenings.

Liparetrus spp. are day fliers and can be found feeding on leaves in the daytime.



Antenna of adult cockshafer beetle

Damage

Damage by cockchafer beetles may be caused by both adults and larvae. Adult cockchafer beetles are usually regarded as minor pests of eucalypts and the larval stages are not generally considered as pests in forest situations. However, the larval stages feed on roots and organic matter in the soil and under certain conditions they may cause significant damage in newly established plantations by reducing growth and killing trees. This occurs in plantations established on land that has previously been sown to pasture and where complete or almost complete weed control has been achieved. With few weeds present, larvae feed on the roots of the eucalypts causing deaths over large and often patchy areas. Those trees that do survive may be attacked later by the adults when they emerge. In older plantations, adult cockchafer beetles are generally not a problem although on occasions they have been responsible for defoliating trees.

In summary, cockchafer beetles are only expected to be a problem at establishment or shortly thereafter and it is important that growers are aware of the potential problem of large numbers of cockchafer grubs in the soil.

Note: *Heteronyx* spp. have also been responsible for damage to seedling pine trees.

Control

Control of the larval stages of cockchafer beetles is difficult as chemicals will not penetrate the soil sufficiently to kill them. Notice should be taken of the number of grubs turned up when cultivating the soil in preparation for planting and if large numbers are present, consideration should be given to an application of insecticide to kill these grubs. Birds foraging in the soil after ploughing are often an indication of the presence of grubs in the soil.

Spraying adults with carbaryl or malathion should be considered if there are large numbers of beetles and the trees are small. If leaves are being eaten and there is nothing obvious on the tree then search in the soil around the base of the tree as *Heteronyx* beetles hide in the soil in the daytime.

Natural enemies include birds, parasitic flies, predatory insects and diseases but none exert any significant control.

Weather conditions have some influence on numbers as many eggs and larvae desiccate in dry conditions and many also die in very wet conditions.

Summary

When to look: Look for larvae in the soil when preparing ground for planting
Look for adults from November onwards

Where to look: Look for larvae in the soil
Look for adults on leaves and buds (*Liparetrus* spp.) and under debris or in the soil (*Heteronyx* spp.)

What to look for: Look for eaten leaves
Look for dead seedlings or seedlings that do not appear to be doing

well and when examined have few roots or no actively growing roots
Look for "C" shaped white larvae in the soil
Look for adult beetles

NOTE: It is VERY important to look for cockchafer larvae when the ground is being prepared for planting. Control of larvae at this stage will be much more effective than trying to control them after the seedling trees have been planted and damage has occurred.

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