

Gardennote

Pest snails and slugs of Western Australia

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Snails and slugs are molluscs and are classified with chitons, sea snails, clams, octopi and squids. Molluscs are primarily an aquatic and marine group of creatures but terrestrial snails and slugs have evolved to survive on land.

Although Australia has native snails and slugs, all the pest species are introduced, mainly from the Mediterranean region.

Pest snails and slugs can damage plant seeds, seedlings, underground tubers, leaves and fruit. The seedling stage is the most vulnerable and pest damage can often lead to major losses.



Figure 1 Infestations of common garden snails are a particular problem in citrus and fruit orchards and vineyards.

Common garden snail, *Cornu aspersum*

Common garden snails are large snails over 30 mm in shell diameter, with a brown shell, usually with alternating dark and lighter brown spiral bands (Figure 2). The body is dark grey. They are mainly found in cultivated and irrigated areas containing exotic plants. They are the main urban snail pest.



Figure 2 The common garden snail is the main urban pest snail in Western Australia and one of the popular edible snails in France.

Common garden snails damage a broad range of seedlings and vegetables and are a significant pest of citrus, damaging fruit, leaves and removing the bark from small branches. They also occur in vineyards and deciduous fruit tree orchards. They usually feed on leaves but occasionally also damage young fruit.

On the positive side, common garden snails are edible and are the snail most farmed by the French.

Green snail, *Cantareus apertus*

The green snail is a recently introduced pest, now firmly established in and around the Perth metropolitan area. Immature snails have a yellow-

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green shell and a creamy-coloured body (Figure 3). The shell of mature green snails can become dark brown, but this colour is uniform, without any bands of different colour. Green snails rarely exceed 25 mm in shell diameter.



Figure 3 *The green snail should be reported from rural Western Australia, but not from metropolitan areas.*

Green snails do not appear to be restricted to any particular soil or vegetation type and can damage most vegetables, cereals, lupins, grasses and some native Australian plants. They tend to be ground dwelling and thrive in open grasslands. They also inhabit areas of natural bush.

In spring, green snails burrow underground 25 to 150 mm and spend the dry summer months in an inactive state. They are re-activated by rainfall and falling temperatures in autumn.

If you live outside the metropolitan area and you suspect the presence of green snails on your property, contact the Department of Agriculture and Food to confirm their identity.

White Italian snail, *Theba pisana*

White Italian snails (Figure 4) are predominantly white, often with fine brown concentric lines of varying intensity. The body of the snail is creamy-white and the shell is usually less than 20 mm in diameter.

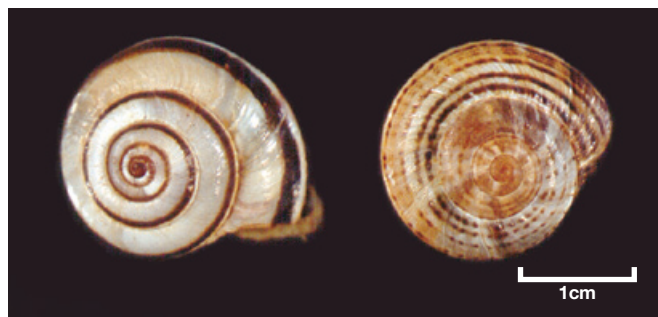


Figure 4 *Vineyard snail (left) and the white Italian snail (right).*

White Italian snails only thrive in areas of alkaline sandy soils with a high calcium content, mainly near the coast. They can be a pest to pastures,

cereal crops and grapevines. They prefer open grassland and can survive in areas of native bush. In pasture, they not only compete with farm animals for vegetative growth but can reduce its palatability to stock by contaminating it with their slime.

In late spring, white Italian snails climb up plants, posts, fences and other vertical surfaces to get away from the hot ground surface. They then seal themselves and spend the summer inactive until they are re-activated by rain in autumn.

Ironically, it is in this inactive state that they can cause the biggest problems. They seal themselves to the plants of cereal and other broadacre crops and are harvested along with the crop. The moisture and decay that ensues when snails are damaged during harvesting can spoil the product, which may then be downgraded. The snails can also contaminate vineyard dried fruit products.

Vineyard snail, *Cernuella virgata*

The vineyard snail closely resembles the white Italian snail in appearance (Figure 4 left) and in pest status. The spiral banding can be more pronounced and the 'umbilicus' (the hole about which the shell spirals) appears as a circular hole, not partly obscured as in the white Italian snail.

Small pointed snail, *Cochlicella barbara*

The small pointed snail (Figure 5) has a greyish-brown conical shell with brown bands of varying width. It is usually less than 10 mm long. It can be a minor crop and pasture pest. Occasionally, young vines can be seriously damaged.

During the day it seeks shelter under groundcover plants. Over summer it remains inactive under the shelter of ground debris or in crops where it can contaminate them during harvest.

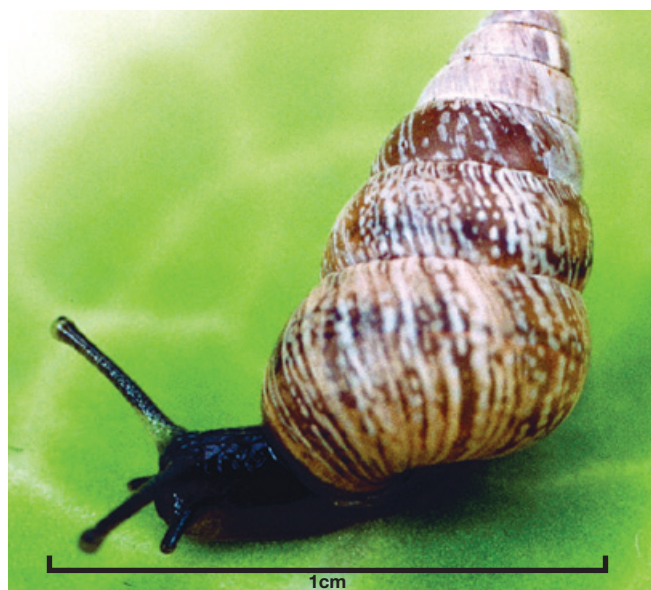


Figure 5 *The small pointed snail is a minor pest of crops and pastures.*

Pointed snails, *Prietocella barbara*

Pointed snails (not illustrated) are also conical and a similar colour to small pointed snails but they are larger (12 to 18 mm) and the shell spire is sharper. They are similar to the small pointed snail in pest status but are not usually as prolific.

Slugs of various species

Slugs (Figure 6) can be greatly underestimated as pests. They have no shell to withdraw into to prevent themselves drying out, so they seek shelter in cracks in the ground or under litter, rocks and other ground debris, where the relative humidity is 100 per cent. They are not usually visible during the day and therefore are often not suspected as the cause of damage.

Slugs are primarily pests of ground crops such as vegetables. They can damage potato tubers and cause losses in many seedling crops, including cereals and canola. Where unexplained damage is occurring, inspect the area after 10 pm on a mild, calm night to see if slugs are the problem, or put out lines of baits to monitor population densities.

Slugs prefer heavier soils, surviving over summer in cracks in the soil and under clods. They do not survive well in fine, light or compacted soils.



Figure 6 Slug (Family Limacidae)

Biology of snails and slugs

Pest snails and slugs have similar biologies. The obvious difference between snails and slugs is the possession of a shell by snails. The shell is composed almost entirely of calcium carbonate, covered by a thin outer protein coat which gives the colour and pattern particular to each species.

The outer surface of land molluscs remains moist and so they are very susceptible to dehydration. They also lose moisture by producing slime (mainly water and muco-proteins) as they move about. Slugs can lose up to 40 per cent of their body weight but they compensate by being able to absorb water easily.

Snails and slugs are active during periods of rain because they need moisture but they do not like

heavy rain or wind. Ideal conditions for them, and hence when they cause the greatest damage, are damp, mild (15 to 25°C) and calm periods.

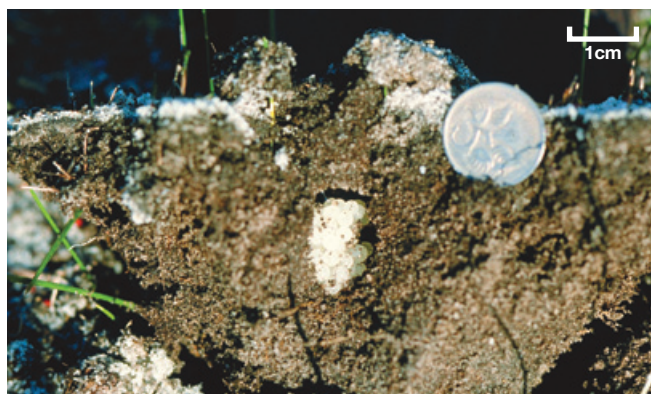


Figure 7 Snail eggs are laid into moist soil and cannot survive a hot dry summer

Snails and slugs are hermaphrodites and both members of a mating couple can lay eggs. Mating usually takes place from mid-autumn to mid-winter when favourable moist conditions return after summer.

Eggs are then laid into moist soil. The eggs cannot survive a hot, dry summer or lie dormant in the soil for years as some people believe.

Common garden snails, for example, excavate a small hole about 40 mm into moist ground, two to four weeks after mating, and lay 20 to 120 spherical pearl-white eggs, each about 4 mm in diameter (Figure 7).

The eggs hatch in two to four weeks.

Control methods

The effective control of snails and slugs involves a combination of measures including cultural, biological and chemical methods.

Further reading

Gardennote No. 12 Control of pest snails and slugs

Specimen identification requirements

When sending or delivering samples, the following information is required:

- Collector's name, location (where the specimen was found), full address, telephone number and e-mail address, description of the damage and date collected.

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