

## Cryptolaemus montrouzieri (395)

### Common Name

Mealybug ladybird, also known by the nickname 'mealybug destroyer'. In Oceania, Australia, Cook Islands, Fiji, Guam, New Caledonia, Papua New Guinea.

### Scientific Name

*Cryptolaemus montrouzieri*

### Distribution

Asia, Africa, North, South and Central America, the Caribbean, Europe, Oceania. It is native to Australia, and occurs in many Pacific island countries: Cook Islands, Fiji, Guam, New Caledonia, and Papua New Guinea. Documented distributions from Australia to other countries include New Zealand (many times between 1897 and 1924), Fiji (1924), and US (late 19th century).

*Cryptolaemus montrouzieri* is available from commercial biocontrol companies so it is likely to be in many countries of the world.

### Prey

The ladybird beetle feeds mainly on mealybugs (Pseudococcidae) and some soft scales (Coccidae), including the cottony cushion scale (see **Fact Sheet no. 343**). Aphids are also prey.

### Description & Life Cycle

Both larvae and adults eat mealybugs and scales at all stages - eggs, crawlers, larvae and adults. One beetle can eat about 250 mealybugs during its life.

The female lays up to 10 eggs a day (about 500 in total) among the egg masses of mealybugs and near scale insects. The larvae have yellowish-grey bodies covered in waxy filaments (long threads); they go through four stages and are up to 10 mm long when mature (Photos 1&2). The larva then pupates in a sheltered place on the stem. Adults are about 4 mm long with orange-brown heads, pronotum (the area behind the head), and on the tips of the wings (Photo 3). The wing covers are black, and the body is covered in fine, short, white hairs. There are no spots, typical of other ladybird beetles. The lifecycle takes 25-30 days, and the beetles live 1-2 months.

### Impact

An important predator of mealybugs and soft scales. The introduction of *Cryptolaemus montrouzieri* into the USA was to manage the citrus mealybug (*Planococcus citri*) that was decimating citrus production in California. However, the ladybird is primarily a tropical species and may fail to become permanently established in temperate climates where it does not overwinter. This was the experience in California, where it only overwintered in the warmer coastal areas. Ladybird beetles from California were later introduced into Florida. It is also released into greenhouses in the USA for the control of citrus and long-tailed mealybugs (*Pseudococcus longispinus*), and into the West Indies to control pink hibiscus mealybug (*Maconellicoccus hirsutus*).

### Detection & inspection

Look for larvae covered in long waxy filaments. Look for the characteristic colours of the adult: wing covers black, and head, area behind the head, and end of wing covers, orange-brown.



Photo 1. Larva of the mealybug ladybird, *Cryptolaemus montrouzieri*, showing long, white, waxy filaments.



Photo 2. Larva of the mealybug ladybird, *Cryptolaemus montrouzieri*, feeding on spiralling whitefly on guava.



Photo 3. Adult mealybug ladybird, *Cryptolaemus montrouzieri*, and its prey.



Photo 4. Larva of the mealybug ladybird, *Cryptolaemus montrouzieri*, avoiding contact with a white-footed ant.

## Management of Biocontrol Agents

### NATURAL ENEMIES OF *CRYPTOLAEMUS*

In Australia, a wasp, *Inkaka quadridentata*, is known to parasitise *Cryptolaemus*. The ladybird beetle is also taken by birds, spiders and some predatory insects. Ants tend mealybugs and some scales for their honeydew, and in the process protect them from predators (Photo 4).

### PEST RISK ASSESSMENT

*Cryptolaemus montrouzieri* is a generalist predator, and as such its introduction into countries where it is presently absent may have undesirable effects on non-target species. This needs to be considered carefully before introductions are made, and safety tests may be required.

### *CRYPTOLAEMUS* AND THE USE OF INSECTICIDES

If *Cryptolaemus* is present or has been introduced, avoid the use of organophosphate, carbamate and synthetic pyrethroid insecticides. If these pesticides have been used, leave at least 4 weeks before the ladybird beetles are released. Some insect growth regulators can be harmful too. Copper and nutritional sprays are generally not harmful and many miticides are also quite safe.

Also, stop using insecticidal soaps or oils (white or horticultural), as these may harm ladybird beetles; however, the residues of these products on the leaves are not likely to be toxic, and leaving a period before releasing the beetles should not be necessary.

### INCREASING NATURAL POPULATION OR INTRODUCTIONS

Sleeve cages can be very useful for protecting ladybird beetle populations initially. They can be used for native populations as well as introductions to protect them from parasitoids, predators and ants. The beetles are kept close to their prey where they can immediately start to feed and lay their eggs.

### ANT CONTROL

Some scale insects produce honeydew, and ants collect this as food. In the process they defend the ants from natural enemies, *Cryptolaemus* in particular. To prevent this, do the following:

- Use hot water at 47°C (and above) to kill the ants in their nests. Hot water up to 49°C will not damage plants.
- Use 'Tanglefoot'. This is a sticky inert substance that is applied over duct tape wrapped around the trunk of the tree. Replace when it becomes covered in debris or dead ants.
- Prune any low hanging branches or remove any weeds that allow ants to bridge the gap between ground and branches which might allow them to reach the scale insects on the trees.
- Use a bait.

In general, three types of chemicals are used in baits against ants: (i) stomach poisons. e.g., Maxforce® (fipronil), Amdro® (hydamethylnon), and borax (commercial products and home-made - add 4 teaspoons borax, 1 cup of sugar and 3 cups water); (ii) insect growth regulators (e.g., Engage® (methoprene), and Distance® (pyriproxyfen); and (iii) poisons that work on the nervous system, that is, neurotoxins, e.g., bifenthrin, fipronil, and imidacloprid. Stomach poisons kill all queens, intercastes and workers; insect growth regulators stop the queens from laying eggs, whereas neurotoxins disrupt insects' central nervous system. It is likely that future products will combine toxins that cause rapid death and insect growth regulators, e.g., Extinguish Plus® (hydamethylnon and methoprene).

**A note of caution:** Although it is possible to combine a lure (such as peanut butter, fish, sugar, etc.) with a pesticide as an ant bait, it is not recommended because of the danger in leaving concentrated pesticides unattended in the environment, including dwellings.

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Information from Swaine G (1971) *Agricultural Zoology in Fiji*. Her Majesty's Stationery Office, London; and Martin NA (2018) Mealybug ladybird - *Cryptolaemus montrouzieri*. New Zealand Arthropod Factsheet Series No. 50. (<https://nzfactsheets.landcareresearch.co.nz/factsheet/interestinginsects/Mealybug-ladybird---Cryptolaemus-montrouzieri.html>); and *Cryptolaemus montrouzieri*. Wikipedia. ([https://en.wikipedia.org/wiki/Cryptolaemus\\_montrouzieri](https://en.wikipedia.org/wiki/Cryptolaemus_montrouzieri)); and *Cryptolaemus montrouzieri* (mealybug destroyer) (2019) CAB Invasive Species Compendium. (<https://www.cabi.org/isc/datasheet/16393>); and from Pacific Invasive Ant Toolkit. (<http://piat.org.nz/index.php?page=getting-rid-of-ants/>). Photo 1 Sonya Broughton, Department of Agriculture & Food Western Australia, Bugwood.org. Photo 2 David Cappaert, Bugwood.org. Photo 4 Randy Thaman, University of the South Pacific, Fiji.

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