



Pacific Pests, Pathogens & Weeds - Fact Sheets

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Brown lacewing (406)

Relates to: **Biocontrol**



Photo 1. Adult brown lacewing, *Micromus tasmaniae*.



Photo 2. Translucent egg of brown lacewing, *Micromus tasmaniae*.



Photo 3. Eggs of brown lacewing, *Micromus tasmaniae*, fastened to a spider web.



Photo 4. Larva of a brown lacewing, *Micromus tasmaniae*. Note, the pincer-like mouth parts.



Photo 5. A pupa of a brown lacewing, *Micromus tasmaniae*.

Common Name

Brown lacewing

Scientific Name

Brown lacewings belong to the family Hemerobiidae. Green lacewings belong to the family Chrysopidae (see **Fact Sheet no. 270**). There are many genera and species; this fact sheet uses *Micromus tasmaniae* as an example (Photo 1).

Distribution

Worldwide. Asia, Africa, North, South and Central America, Europe, Oceania. Recorded from American Samoa. Australia, Fiji, New

Caledonia, New Zealand, Papua New Guinea, Samoa, and Vanuatu. Some species are widespread, but most are restricted to one of the eight major biogeographical regions (https://en.wikipedia.org/wiki/Biogeographic_realm).

Prey

Both adults and larvae prey on soft, sap-sucking insects and other foliage-dwelling insects (see under Impact). The jaws of adults are used for holding and chewing the prey, and the whole of the prey may be eaten. The jaws of the larvae are hollow; they are used to hold onto the prey and to suck up the body contents.

Impact

Brown lacewing larvae and adults prey mostly on aphids, but also attack scale insects, mealybugs, whiteflies, leafhoppers, thrips, psyllids, caterpillars, moth eggs, and many other small insects as well as mites. The larvae are fast moving and voracious feeders; depending on their size, larvae can eat up to 25 aphids a day, and adults can eat a similar number.

There are companies supplying brown lacewings for the control of pests, mostly aphids and psyllids (see under Management as Biocontrol Agents).

Detection & inspection

Look for the long, slender larvae with sickle-shaped mouth parts. Look for adults with long antennae and prominent eyes. The long delicate wings of adults are folded tent-like over the body, like an upside down 'V'.

Description & Life Cycle

Brown lacewings lay their white, oval-shaped eggs singly or in batches (Photos 2&3) on plant hairs or directly onto the underside of leaves. Eggs are about 0.7 mm long and are often laid near infestations of prey. They do not have stalks, unlike green lacewings. Females may lay hundreds of eggs and live for many weeks.

A long, mottled brown larva hatches from each egg. This first stage larva is about 1.8 mm long. The larvae moult several times and when mature, they have long (up to 10 mm) narrow flattened bodies (Photo 4). Larvae have pincers that protrude far in front of the head and are used to grip their prey; the pincers are hollow and, after injecting venom, are used to suck out the contents. After about 2 weeks, the larvae pupate for about 5 days (Photo 4).

The adults are light to dark brown, up to 10 mm long, and smaller than green lacewing (**see fact Sheet no. 270**). They have two pairs of wings that are about the same size, clear with networks of veins and cross veins; the wings are held tent-like over the body when at rest and reach beyond the end of the body (Photo 5). The black compound eyes are large for the size of the head, and the antennae of brown lacewings are characteristically long.

Management as Biocontrol Agents

Brown lacewings do not require a source of nectar to attract them to crops to help with biocontrol, because the adults are predaceous. The adults thrive near crops where there are grasses and other plants that harbour aphids and other insects that they feed on. The lacewings will then move into newly planted crops when they 'smell' that infestations of aphids and other sucking bugs are present.

Similarly, if they detect that there are aphids and other pests in heading vegetables, such as lettuces, they they will lay their eggs on the outer parts. Upon hatching, the small larvae are then capable of moving into the head to feed on the prey at the centre of the plant.

The Tasmanian brown lacewing, *Micromus tasmaniae*, is reared as a biocontrol agent in Australia and New Zealand, released mainly into greenhouses to help control aphids and psyllids in covered crops. Lacewings are very susceptible to insecticides and their residues. Therefore, use of broad-spectrum insecticides, should be avoided.

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Information from Hemerobiidae. Wikipedia. (<https://en.wikipedia.org/wiki/Hemerobiidae>), and Martin NA (2017) Tasmanian lacewing - *Micromus tasmaniae*.

(<https://nzacfactsheets.landcareresearch.co.nz/factsheet/interestingInsects/Tasmanian-lacewing--Micromus-tasmaniae.html>); and from Oswald JD (1993) Revision and cladistic analysis of the world genera of the family Hemerobiidae (Insecta: Neuroptera). Journal of the New York Entomological Society 101: 143-299. Photos 1-5 The New Zealand Institute for Plant & Food Research Limited

Produced with support from the Australian Centre for International Agricultural Research under project HORT/2016/185: *Responding to emerging pest and disease threats to horticulture in the Pacific islands*, implemented by the University of Queensland and the Secretariat of the Pacific Community.

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