

# The silverfly: A predator of cotton aphid

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The cotton aphid is attacked by many well-known predators. These include ladybirds, hoverflies, lacewings and a number of predatory bugs.

But there is another one — a fly, *Leucopis formosana* in the family Chamaemyiidae. Flies in this family are known as silverflies because the adults have a greyish or silvery appearance. Larvae of this fly have been found preying on cotton aphid in cotton crops at Emerald, on the Darling Downs and in the Namoi Valley, but the fly is probably widespread throughout all cotton regions.

If we are ever going to make practical use of predator sampling for making rational decisions about aphid management in cotton then we have to know some fundamental statistics about the important predators. Some of the data required include predator development rates and aphid prey consumption rates, and we can provide these for the silverfly.

The adult silverflies are small (about one mm long) and are greyish in colour.

In the glasshouse, courtship and mating took place at dusk, and it seems that fading light conditions may be required for suc-

cessful reproduction, as we have not had eggs produced in the laboratory.

Female silverflies lay white, sausage shaped eggs amongst aphid colonies. The eggs are minute (about 0.5 mm long and 0.15 mm wide). They hatch after about three days.

Silverfly larvae are very small when newly hatched and grow to about 2–2.5 mm during their development, which takes about a week. During this time they moult twice. The larvae look somewhat like small hoverfly larvae but can be distinguished by the two 'horns' at the rear end of the body.

Our studies have found that silverfly larvae consume about 20–30 aphids during their development. The number of aphids destroyed is considerably lower than other common predators such as larvae of hoverflies (≈200), white-collared ladybird larvae (≈700), white-collared ladybird adults (≈200 per day for 60 days) and brown lacewing larvae (≈400).

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Silverfly eggs. Photo: Nathaniel Parker.



An adult silverfly. Photo: Amanda Cleary.

When finished feeding, the larvae form into a hard brown pupa, about 2.0 mm long, which can easily be seen on a leaf. After eight or nine days the adults emerge.

The whole life cycle takes approximately three weeks.

Adults are not predatory and feed on aphid honeydew. The adults obtain honeydew which has fallen on the leaf surface but can also 'milk' it directly from aphids by tapping the aphids with their feet.


Silverfly larvae have also been found feeding on cotton aphids on other plant hosts including ornamental Hibiscus, cobbler's pegs, paddy's lucerne, bladder ketmia and Peruvian primrose bush. Silverflies overwinter by continued breeding on cotton aphids on these plants and also on some other aphid species on weeds such as scotch thistle and prickly lettuce.

We have collected over 100 silverfly larvae from cotton but have never found any parasitoids. So it seems that if they do have parasitoids, they are rare. This is in stark contrast to the situation with hoverfly larvae, which are often heavily parasitised.

Silverflies are a useful predator of cotton aphids though their usefulness is limited by their relatively low prey consumption rate and relatively long life cycle compared with that of the cotton aphid. But when silverfly populations are large enough they can have an impact and we have seen situations, such as in large field cages, where cotton aphid populations have been virtually wiped out by silverflies.

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**A silverfly larva feeding on an aphid. Note the two 'horns' at the rear end of the larva.**

Photo: Lawrence Smith.



**Two silverfly pupae.** Photo: Nathaniel Parker.