

MIST FLOWER GALL FLY

Procecidochores alani

The history of mist flower gall flies in New Zealand

Mist flower gall flies are native to Mexico and were first imported from Hawai'i by Landcare Research in 2000. This agent has helped to successfully control mist flower in Hawai'i (see *Biological control success stories*) and is also used as a biological control agent in Australia and South Africa. Mist flower gall flies have already been released widely throughout the regions worst-affected by mist flower (Northland and Auckland) and have established readily. Mist flower gall flies are expected to complement the white smut fungus (*Entyloma ageratinae*), which is also now widely established (see *Mist flower fungus*).

How would I find mist flower gall flies?

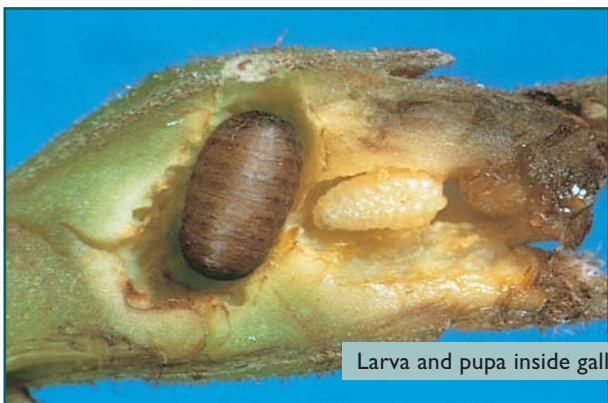
You may see adult flies resting on mist flower plants. They have boldly patterned wings and are similar in size (8-mm wing span) and appearance to several other introduced biological control agents such as the closely



Mist flower gall fly

related Mexican devil gall fly (*Procecidochores utilis*) and the thistle gall flies (*Urophora* spp.). The females use their black ovipositors to insert eggs into the apical or lateral growing points of mist flower plants. The eggs hatch after about 3–5 days and the larvae burrow into the tender buds. As the larvae feed and grow, the plant forms gall tissue around them, so you will start to notice small swellings, which increase in size to produce mature galls up to about 2 cm in diameter. This is the easiest stage to look for.

Larval development is completed in about 3 weeks. The larvae pupate in the gall, having first gnawed a thin 'window' through which the adult fly emerges 2-3 weeks later. Adults mate and lay eggs immediately, and live for about a fortnight. Under warm conditions the gall fly can breed continuously. We do not yet know how many generations it will complete per year in New Zealand. We expect the gall flies to stop breeding over the winter months and remain mostly dormant in the larval or pupal stage.



Larva and pupa inside gall



How do mist flower gall flies damage mist flower?

The plant is tricked into diverting valuable nutrients, which would normally be used for plant growth, into the galls to feed the developing fly larvae. Stem elongation is retarded, resulting in shorter mist flower plants with reduced vigour that can be more easily out-competed by desirable vegetation.

Will mist flower gall flies attack other plants?

No, mist flower gall flies are extremely unlikely to attack anything except mist flower (*Ageratina riparia*). Even the closely related Mexican devil weed (*A. adenophora*) is unlikely to be attacked. In confined laboratory tests mist flower gall flies very occasionally laid eggs on Mexican devil weed, but the larvae never survived and galls were never formed. Likewise the Mexican devil weed gall fly does not attack mist flower.

How effective are mist flower gall flies?

The impact of mist flower gall fly has not yet been measured in New Zealand. However, gall densities have been measured at one release site near Auckland and they were significantly higher than levels reported from a study in Hawaii, where the gall fly is considered to have contributed to the suppression of the weed.

How can I get the most out of mist flower gall flies?

If mist flower gall fly is not yet present in your area you can accelerate dispersal by shifting some from an established site.



How do I choose a release site?

Read *Guidelines for selecting release sites for biocontrol agents*.

How do I collect mist flower gall flies for release?

You need to collect large mature galls, without emergence holes, during summer and autumn. Aim to shift at least 100. Leave the galls on the ground at the new site.

How do I manage the release sites?

Avoid activities that will interfere with the mist flower gall fly's life cycle. Avoid mowing the thistles and grazing animals.

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