



Beneficial insects—how does it all work? A local case study.

All living things have enemies and parasites. Many of our most common garden pests also have their parasites and diseases that naturally keep populations in balance when grown in nature. Rarely do you see any plant completely dominated by an insect pest or disease when growing in the wild as natural predators keep things in balance. Good gardeners use natural predators to help control most problems in the garden.

A local horticulturist with a keen eye for entomology recently discovered a natural parasite of a common pest of Clivias, crinums and occasionally Agapanthus. Too-woomba's' **Ron May** produced the following article to explain his findings. It is a good example of how complicated yet organised an ecosystem really is!

Congratulations Ron!

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Observations of moth and parasitoid – Ron May

Brithys crini (Fab.) (Lepidoptera : Noctuidae) with the parasites *Compsilura concinnata* (Meigen) and *Winthemia sumathana* (Townsend) (Diptera : Tachinidae)

Australia has 140 families of moths (Zborowski & Edwards, 2007). Many of these are pests. One Lepidoptera which can destroy plants within the Amaryllidaceae family is the lily borer, *Brithys crini*.

In March 2011, when observing damaged plants of *Hymenocallis littoralis* (Spider Lily) (Fig. 1), larvae of *B. crini* were photographed in situ (Fig. 2). Six of these larvae and a section of the host plant were placed into a container, with approximately 5cm of soil, for pupation to take place. Figure 3a shows a pupa of *B. crini*. After 18 days one imago of *B. crini* emerged and was photographed (Fig. 3b). The other five failed to mature as adults.



Fig. 1. Damaged Spider Lily

Fig. 2. *Brithys crini* larva

Fig. 3a. *B. crini* pupa

Fig. 3b. *B. crini* adult

In April 2011, I collected three *B. crini* pupae from soil at the site of the damaged *H. littoralis*. These were then placed into a container with soil taken from that location. After some time had elapsed, two large tachinid flies emerged from their subterranean pupae, and were captured and photographed (Fig. 4). Days later four small tachinid flies appeared at the soil surface (Fig. 5).

It was evident, by examining the three *B. crini* exoskeletons and observing the tachnids that had emerged from the soil, that those flies had achieved 100% in parasitizing the three *B. crini*.





Fig. 4. *Winthemia sumatrana*



Fig. 5. *Compsilura concinnata*

In June 2011 the flies were sent to Bryan Cantrell for identification. Bryan advised me that the large tachinid was *Winthemia sumatrana* (Townsend) with the smaller specimen being *Compsilura concinnata* (Meigen).

Winthemia sumatrana females lay their eggs on the

outside of a host. The fly larva then chews its way through the host's cuticle.

Compsilura concinnata females have a piercing ovipositor with which they insert their eggs directly into the host (B. Cantrell pers. comm.).

Over 500 species of Tachinidae have been recorded in Australia (Colless, 1991) with limited use as biological control agents. It would be fair to say that in nature, these flies would play an important roll in controlling insects in orders such as Lepidoptera, Coleoptera, and Hemiptera, and possibly others.

Acknowledgements

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Photos Ron May

References

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