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## GUM LEAF SKELETONISER BIOLOGICAL CONTROL UPDATE

Gum leaf skeletoniser (*Uraba lugens*) is an Australian eucalypt pest that established in Auckland in 2001 and has spread to many parts of the upper North Island and Nelson. In New Zealand, hosts include the commercially grown *Eucalyptus nitens* and *E. fastigata*, and the valued amenity species *Eucalyptus nicholii*, *E. cinerea* (silver dollar gum) and *Lophostemon confertus*.

The parasitic wasp *Cotesia urabae* was introduced by Scion as a biological control agent for gum leaf skeletoniser. With the assistance of Auckland University student Gonzalo Avila *Cotesia urabae* was released in the Auckland Domain and the Manukau Memorial Gardens between January and June 2011. The sites were monitored closely following release. Establishment of *Cotesia urabae* has been confirmed at both these sites as well as successful self-dispersal to another site approximately 5 km away.

In addition to this Scion made two releases in Port Whangarei, Northland and Matapihi, Tauranga, Bay of Plenty in an effort to establish the parasitoid outside of Auckland. For these releases we piloted a novel method where host caterpillars which had been previously attacked by parasitoids were released. This is in contrast to traditional intensive methods which involve caging parasitoid cocoons or newly emerged parasitoid adults on infested foliage.

Recently the Northland Regional Council returned to the *Eucalyptus bosistoana* plantation near Port Whangarei and found new parasitoid cocoons, confirming that the parasitoid had established from the release of approximately 800 parasitoid attacked larvae made 14 months before.

Unfortunately at the Tauranga site the release tree had been pruned and we have failed to find any evidence of establishment.

Further releases of the wasp are planned for 2013/14. It is hoped that eventually *Cotesia urabae* will provide sustainable biological control of this serious pest of eucalyptus trees throughout New Zealand.

*Belinda Gresham and Toni Withers*



*Cotesia urabae* ovipositing in gum leaf skeletoniser larvae (Photo courtesy Geoff Allen)



Known distribution of gum leaf skeletoniser in NZ (June 2013)

## MITEY PROMISING BIOLOGICAL CONTROL AGENT FOR *PAROPSIS CHARYBDIS*?

A collaboration with Australian forest entomologist Dr Helen Nahrung from the University of the Sunshine Coast, Queensland, has yielded new information. Dr Nahrung and her husband Dr Owen Seeman (a mite taxonomist) have discovered podapolipid mites as sexually transmitted diseases in some Australian beetles. Dr Nahrung's research in the last few years has revealed that many species of Australian paropsine eucalypt feeding leaf beetles are infected with their own species of external mite. The sexually transmitted mite, *Chrysomelobia pagurus*, which is believed to be host specific to *Paropsis charybdis* was previously only known from mainland Australia has now also been collected in Tasmanian populations. These sexually transmitted mites only infect leaf beetles that have over-lapping generations. Transmission of the infection occurs in *P. charybdis* when some of the more long lived overwintering beetles live long enough to be able to mate with the spring generation beetles that appear about December each year. In addition to *C. pagurus* two other potentially new species

of mites were also identified from *P. charybdis* beetles in Tasmania, one living under the elytra and the other in the spiracles. Invasion ecology theory suggests that when a new incursion takes place, the small founder population has a greater chance of arriving in the new country free of external or internal parasites. We hypothesized a low probability that *P. charybdis* brought any of these mites to New Zealand with it when it first settled in Lyttelton in the 1910s, and after inspecting almost 90 beetles that Scion collected from the Central North Island in December 2012, this hypothesis has been provisionally confirmed. New Zealand beetles appear to be mite free. We have another 50 beetles collected from Southland that still have to be checked for the presence of mites. Infections of podapolipid mites are probably relatively harmless while the adult beetles are active, but mortality of infected beetles has been found to increase during overwintering. Fecundity may also be reduced. There is therefore some potential that *C. pagurus* or the other two newly discovered mites could be investigated as potential biological control agents. They will be added to a list of potential biological control agents that could be considered in the arsenal against *P. charybdis* in the future.

Those of you with a bent for the classics might be interested to know that the author of the specific name *pagurus* says that it is "Latin for 'crab' and alludes to the host *Paropsis charybdis*, whose specific epithet is the sea-monster of The Odyssey".<sup>1</sup>

Toni Withers

<sup>1</sup>The Latin for crab is cancer. *Pagurus* is a genus of hermit crabs and it seems more likely that the etymology of *pagurus* alludes to the mite's habit of sheltering under the beetle's elytra much in the same way that hermit crabs use empty seashells as "portable homes". – Editor.



The Whangarei and Tauranga parasitoid releases were made by attaching foliage with parasitoid-attacked larvae onto foliage with resident larvae close by.