

Observations on some coccinellids in New Zealand and their significance to the biological control of *Paropsis charybdis* (Coleoptera : Chrysomelidae)

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Abstract

Under laboratory conditions it was shown that some species of coccinellids established in New Zealand will eat egg batches of *Paropsis charybdis*.

Keywords: Coleoptera, Coccinellidae, Chrysomelidae, *Paropsis charybdis*, biological control, predation.

A recent paper by Tanton & Khan (1978) indicated that a number of species of coccinellids feed on eggs and larvae of *Paropsis atomaria* Olivier (Coleoptera: Chrysomelidae) in Australia. Their list includes *Cryptolaemus montrouzieri* Mulsant, *Harmonia conformis* (Boisduval), and *Rhizobius ventralis* Erichson, which have all long been established in New Zealand (Thomson 1922). It is surprising that none of these species have been found feeding on eggs or larvae of *Paropsis charybdis* Stål in this country. The natural prey of these coccinellids here are aphids, scale insects, or mealy bugs (Valentine 1967). The only predatory insects found attacking *P. charybdis* are *Cermatulus nasalis* (Westwood), *Oechalia schellenbergii* (Guerin-Meneville) (Pentatomidae), and *Vespula germanica* (F.) (Vespidae) (Valentine 1967).

The proposal to introduce an Australian coccinellid, *Cleobora mellyi* Mulsant, to New Zealand for the control of *P. charybdis* prompted a closer examination of the palatability of *P. charybdis* eggs to 6 species of coccinellids already present in the Rotorua area.

In 1978-79 a number of coccinellid species collected mainly from *Acacia* species, both in their larval and adult stages were tested in petri dishes for predation on eggs of *P. charybdis*. The results of the tests are presented in Table 1, and clearly show that a number of ladybirds established in New Zealand will feed on eggs of *P. charybdis*. Although the conditions of the experiment were highly artificial, the results, when coupled with the observations of Tanton & Khan (1978) and information that *H. conformis* feeds on paropsine eggs in Tasmania (D. de Little pers. comm.), suggest that these

Table 1. Species of Coccinellidae tested for feeding activity on eggs of *Paropsis charybdis* Stål. (—, no feeding response; + consumed eggs; N.T., not tested).

Species	Adults	Larvae
<i>Adalia bipunctata</i> L.	—	—
<i>Coccinella undecimpunctata</i> L.	—	—
<i>Harmonia antipoda</i> Mulsant	+	+
<i>Harmonia conformis</i> (Boisduval)	+	N.T.
<i>Orchus chalybeus</i> Boisduval	+	+
<i>Rhizobius ventralis</i> Mulsant	+	+

species may be predators of *P. charybdis* in this country. This hypothesis has yet to be proved by field observations, but I have seen damaged eggs similar to those in egg batches partly consumed by coccinellids in the laboratory.

During the course of the predation studies noted above, 50 specimens of *Harmonia antipoda* were collected from *Acacia* species in Whakarewarewa State Forest, where they appeared to be associated with infestations of psyllids. They readily fed on infestations of *Psylla acaciae-baileyanae* Froggatt on *Acacia baileyana* when confined in petri dishes. Previously *H. antipoda* has only been recorded feeding on *Ctenochiton* spp. (Coccidae) (Valentine 1967). The day after the insects had been captured and on subsequent days 8 parasites emerged from and pupated beneath the ladybirds. Adults emerging from the cocoons were identified as *Perilitus coccinellae* (Schrank) (Braconidae). This is believed to be the first record of this parasite from *H. antipoda*, having been found before only in *Coccinella undecimpunctata* in New Zealand (Valentine 1967).

No records are known of *P. coccinellae* from *Harmonia* in Australia, but in Tasmania it has been found (FRI, unpublished records) in *Cleobora mellyi*, an insect with considerable promise for biological control of paropsines (D. de Little pers. comm.). If *C. mellyi* is established in New Zealand it is expected that it will be parasitised by *P. coccinellae* and, consequently, its effectiveness as a predator on *P. charybdis* will be reduced. The low level of incidence of *P. coccinellae* in other coccinellids suggests, however, that this reduction is likely to be of little practical significance.

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