

Short Communication

Neopolycystus insectifurax Girault (Hymenoptera: Pteromalidae) is established in New Zealand, but how did it get here?

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Paropsis charybdis Stål (Coleoptera: Chrysomelidae), the eucalyptus tortoise beetle, is an important pest of eucalypts in New Zealand. Since the 1930s, biological control agents for this species have been sought in its native Australia, and a number of introductions have been made, one of these being an egg parasitoid identified as *Neopolycystus insectifurax* Girault.

In June 1987, the Forest Research Institute (FRI) received about 400 adult pteromalid wasps from Perth, Western Australia, identified at source as *N. insectifurax* Girault (Bain and Kay 1989). Field releases were made in the North and South Islands of New Zealand in the summer of 1987/1988, but Bain and Kay (1989), Kay (1990) and Tribe (2000) all reported this species had not been recovered.

Incorrect record

Noyes (1998) recorded *N. insectifurax* as present in New Zealand (as well as in 5 states in Australia: WA, QLD, NSW, ACT, VIC). This record is based on Kay (1990), who states only that *N. insectifurax* was released, and specifically notes that at the time of writing the species had not been recovered. The New Zealand Arthropod Collection (NZAC, Auckland), Australian National Insect Collection (ANIC, Canberra), and Natural History Museum Collection (NHML, London), have all been searched for specimens of *N. insectifurax* from New Zealand and none has been found (J. LaSalle, J. S. Noyes: pers. comms).

Establishment of *Neopolycystus insectifurax* in New Zealand

In February 2002, a species of *Neopolycystus* was reared from eggs of *Paropsis charybdis* collected on *Eucalyptus nitens* from Poronui Station, east of Taupo by B. Murphy. Additional specimens from the Taupo area were compared with ANIC specimens of *N. insectifurax* identified by Ian Naumann (ex-CSIRO), and were found to be conspecific. Thus *N. insectifurax* is recorded here as established in New Zealand for the first time.

Identity of the *Neopolycystus* species released in New Zealand

No voucher specimens from the 1987 importation of *Neopolycystus* from Australia have been located. The only material found was taken from the breeding colony held in quarantine at FRI, derived from the specimens imported from Western Australia. They are labelled as follows: "FRNZ, 1988, M. Kay, *Neopolycystus insectifurax*".

These 1988 specimens were compared with the specimens of *N. insectifurax* recently reared in New Zealand and also with the identified specimens from ANIC. The 1988 specimens were determined to be a different species of *Neopolycystus*, not *N. insectifurax*. Seven species of *Neopolycystus* are known from Australia and one more from Papua New Guinea (Bouček 1988), but since only two – *N. insectifurax* Girault and *N. abdominalis* Girault & Dodd – are described, it would be difficult to determine the specific identity of the 1988 *Neopolycystus* specimens without further taxonomic work. Specimens of both species are deposited in the NZAC and the National Forest Insect Collection (FRNZ, Rotorua).

Key character state differences between the two species discussed above – 1) *N. insectifurax* from New Zealand and Australia and 2) 1988 specimens from FRI – are listed in Table 1. A further difference has been noted: observations of *P. charybdis* eggs just before emergence of *Neopolycystus* adults suggest the colour in the basal portion of the parasitised egg is less deep (yellow) than in the 1988 specimens, which were recorded as a deep orange (B. Murphy, pers. obs.).

Table 1: Key character state differences between two species of *Neopolycystus* in NZAC

Character	<i>Neopolycystus insectifurax</i>	<i>Neopolycystus</i> sp. (1988 specimens)
Hind coxa	ca. 0.75 x length of petiole	ca. 0.5 x length of petiole
Forewing	distinct basal hairline	basal hairline absent
Petiole	unsculptured	with medial longitudinal carina
T1 of gaster	slightly emarginate medially	not emarginate medially
Egg colour (basal)	yellow-orange	deep orange

Thus the identity of the species of *Neopolycystus* imported into New Zealand from Australia is under question. The only material existing from the 1988 importation represents a different species to that believed to have been imported.

If this material does represent the only *Neopolycystus* species introduced into New Zealand (i.e. assuming the consignment was not mixed), a further question is: if *N. insectifurax* was in fact not introduced into New Zealand deliberately in 1987/1988, how did it get here?

Bain & Kay (1989) report that *N. insectifurax* was also imported into New Zealand in 1934, but was not released. There are no other known records of *N. insectifurax* having been deliberately introduced.

It is possible that *N. insectifurax* has established accidentally, the most probable route being inside eggs of its host on plant material. This mode of entry appears to be far from uncommon for parasitoids. Berry (in press) documents a number of instances that suggest that founder members of pest species came into New Zealand complete with their own parasitoid complement.

This example demonstrates the importance of retaining voucher specimens representing exotic invertebrates introduced into New Zealand. A special collection and a database of voucher specimens of agents introduced into New Zealand for the biological control of weeds and invertebrate pests is maintained as a part of the NZAC.

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