

April's *Forest Health News* takes a look at some intriguing and complex interactions between insects and eucalypts, in relation to forestry and forest health. In particular, we report on two recently detected insect introductions that may significantly influence the impact of the eucalyptus tortoise beetle, *Paropsis charybdis*, on eucalypt plantations in this country. We also background a current quarantine issue regarding the importation of live plant material, and this month's edition concludes with the usual register of new pest and pathogen records.

- **NEW INSECT THREATENS CONTROL OF EUCALYPTUS TORTOISE BEETLE**

Two new egg parasitoids associated with the eucalyptus tortoise beetle, *Paropsis charybdis*, have been discovered in New Zealand. This insect causes substantial damage to a number of eucalypt species by browsing on their foliage. The new insects are expected to influence significantly the current programme that uses the introduced parasitoid *Enoggera nassau* as a biological agent to control this undesirable eucalypt pest (*FHN* 100:2).

The first new species has been identified¹ as *Baeoanisia albifunicle*. It is a tiny Australian wasp known to be an obligate hyperparasitoid (a parasitoid of a parasitoid) of the biological control agent *Enoggera nassau*, also a wasp. *B. albifunicle* first invades the eggs of *P. charybdis*, but is unable to develop further until the egg is attacked in turn by *E. nassau*. When this occurs, *B. albifunicle* consumes the larva of *E. nassau* and eventually emerges as an adult wasp. Eggs of *P. charybdis* not attacked by *E. nassau* are able to hatch normally, even if *B. albifunicle* is present. Because of its behaviour, there is a risk that *B. albifunicle* may check the population development of *E. nassau* and prevent it from multiplying as rapidly as it has in past seasons. This is likely to have serious consequences, since until now *E. nassau* has been the only biological control agent effective against *P. charybdis* in this country.

That was until the discovery of the second insect, also a tiny wasp. Identified¹ as *Neopolycystus* sp., this species, like *E. nassau*, is a primary parasitoid of eucalypt leaf beetles such as *Paropsis* in Australia. Another species of *Neopolycystus*, *N. insectifurax*, was originally also released in New Zealand as a potential control agent, but unlike *E. nassau* it failed to become established. It appears that the new species is not *N. insectifurax*, but another recent introduction. The identity of the insect parasitising the eggs of *P. charybdis* can be diagnosed from their external appearance. Eggs invaded by *E. nassau* become covered in a characteristic pattern of small black dots, while those parasitised by the new *Neopolycystus* species acquire a distinctive three-band pattern. One end contains an orange-brown plug, the central area has bands of white, and the opposite end appears black.



Eggs of *Paropsis charybdis* parasitised by *Enoggera nassau*



Eggs of *Paropsis charybdis* parasitised by *Neopolycystus* sp.

The future of *E. nassau* as an effective biological control agent of *P. charybdis* is now in doubt. However, there is hope that the new species of *Neopolycystus* may instead assume some of its regulatory role. Certain species of *Neopolycystus* are believed to be immune to attack by *B. albifunicle*. If this is also true of the new species, it will be free to assist in controlling the tortoise beetle and many other paropsines that may enter this country in the future. Both new species have so far been found only in the central North Island, but any tree growers with eucalypt species susceptible to *P. charybdis* should be vigilant for evidence of excessive defoliation in future seasons.

(Brendan Murphy, Forest Research)

¹Identifications confirmed, respectively, by Jo Berry (Landcare New Zealand) and John LaSalle (Australian National Insect Collection).

- **EUCALYPT PSYLLIDS PUT THEIR FEET UP**

The blue gum psyllid, *Ctenarytaina eucalypti*, fancies the juvenile leaves of its host, *Eucalyptus globulus*. It can eat and feed just as well on the adult foliage, yet it mates, lays its eggs, and generally prefers to hang about on the waxy juvenile leaves. But the eucalyptus psyllid, *Ctenarytaina spatulata*, also present in New Zealand, favours the adult foliage. It mates, lays its eggs, and by and large frequents only the adult leaves. If placed on waxy juvenile foliage, *C. spatulata* is unable to feed.



Ctenarytaina spatulata on adult leaf of *Eucalyptus saligna*

Now a Ph.D. student from University of California Davis, Eric Brennan¹, has discovered that the host foliage preferences of *Ctenarytaina* psyllids apparently depend on the size of their feet! He has found that per unit of body weight, *C. eucalypti* has a foot (pulvillus) area approximately ten times larger than does *C. spatulata*. He believes that the slippery epicuticular waxes present on the juvenile foliage prevent the psyllids with smaller feet from gripping the leaf surface. They are unable to maintain their hold, and simply fall off! The psyllids with the larger foot area can cope with the waxy leaf surface, and effectively live their lives with both feet planted firmly on the ground.

(Toni Withers, Forest Research)

¹Brennan, E.B.; Weinbaum, S.A. (2001): *Aust. J. Entomology* 40: 270-277.

• POST ENTRY QUARANTINE SERVICES FOR LIVE PLANT MATERIAL

On 25 March, 2002, a meeting was held at the Ministry of Agriculture and Forestry (MAF) in Wellington to discuss the lack of post entry quarantine (PEQ) glasshouse facilities in New Zealand. Until the early 1990s the provision of such a facility had been deemed to be a core function of government. MAF had provided such a facility at its Lynfield site in Auckland. However a review of MAF quarantine activities in 1994-5 recommended that many commercial services supplied by MAF Quality Management (MQM) would be better undertaken in a fully commercial environment. Following the release of a discussion document and public consultation Cabinet agreed "to gradually withdraw MAF from the delivery of a wide range of services which could be done better by the private sector, i.e., government had to stop doing things its citizens could do better themselves". As a result of the review many of the functions that had been core responsibilities of MQM were redefined as commercial, and were allocated as business-related activities to the newly segregated state owned enterprise (SOE), Agriquality New Zealand.

Agriquality New Zealand inherited the former MAF PEQ glasshouse at Lynfield and the mandate to operate it commercially. Attempts to do so were not successful and Agriquality New Zealand withdrew the provision of this service in 2000. As a result New Zealand no longer has an all-purpose PEQ glasshouse facility. MAF Biosecurity Authority has had discussions with the Minister of Agriculture and Biosecurity. They still consider the contestable model valid and that various sectors of the agricultural and horticultural industries have to work together to solve this problem.

At the Wellington meeting the current situation and government position was explained. There was a general consensus from industry that Government was rejecting its responsibility in this matter. There was also considerable

apprehension that the lack of a reasonably priced PEQ facility would result in the smuggling of plant material into New Zealand. There is some justification for this fear since the recent discovery of smuggled French grapevine cuttings in New Zealand (*New Zealand Herald* 7 March 2002). No substantial progress was made and the meeting agreed on the following statement: "Industry to explore with government the extent of public good and hence associated crown funding in this most important aspect of biosecurity". This is to be progressed by a committee chaired by Philip Manson (New Zealand Winegrowers) and to include a representative from the grape, kiwifruit, summer fruit, pip fruit, avocado, and nursery industries.

At present the lack of a general PEQ glasshouse in New Zealand has not had any serious repercussions in forestry due to the low volume and infrequent importation of tree material. However there is the potential for long term problems if breeding programmes are forced to wind down due to the difficulty in importing new genetic stocks because of the lack of a PEQ glasshouse.

(Geoff Ridley, Forest Research)

• NEW RECORDS

The following records reported by the Forest Health Reference Laboratory (*Forest Research*) result from a general surveillance programme comprising public enquires, and small block and risk site surveys, funded by the Ministry of Agriculture and Forestry. Members of the public are encouraged to submit to this laboratory any samples of pests or pest damage on trees or shrubs that they suspect might be new to New Zealand. This is a free service funded by Ministry of Agriculture and Forestry for the detection of new pest introductions.

New to New Zealand – Fungus: *Pseudocercospora lupini*; **Bioregion:** Wanganui; **Host:** *Lupinus arboreus*; **Coll:** BJ Rogan, 20/2/2000; **Ident:** U Braun, 1/3/2002; **Comments:** This specimen originally could only be identified to genus. However recent collaboration with Dr Braun in Germany has significantly extended our knowledge of this genus in New Zealand. Only one specimen of *Pseudocercospora lupini* is held by NZFRI-M.

New distribution record for New Zealand – Fungus: *Pseudocercospora sawadae*; **Bioregion:** Bay of Plenty; **Host:** *Lophostemon confertus*; **Coll:** L Renney, 25/2/2002; **Ident:** MA Dick, 27/2/2002; **Comments:** This species has only recently been identified as present in New Zealand (*FHN* 115: 2, Feb 2002). Examination of specimens held in NZFRI-M under *Pseudocercospora* sp. on *L. confertus* shows that the fungus was present in the Auckland and Taranaki bioregions as far back as 1994. Leaf spotting has not been sufficiently severe to cause defoliation.

New distribution record for New Zealand – Insect: *Anarsia trichodeta*; **Bioregion:** Gisborne; **Host:** *Acacia* sp.; **Coll:** C Barr, 26/2/2002; **Ident:** R Crabtree, 5/3/2002.

New distribution record for New Zealand – Insect: *Dicranosterna semipunctata*; **Bioregion:** Bay of Plenty; **Host:** *Acacia melanoxylon*; **Coll:** I Nicholas, 28/2/2002; **Ident:** C Appleton, 4/3/2002.

New distribution record for New Zealand – Insect: *Holocola* sp.; **Bioregion:** Gisborne; **Host:** *Acacia longifolia*; **Coll:** C Barr, 26/2/2002; **Ident:** R Crabtree, 5/3/2002.

New host record for New Zealand – Insect: *Holocola* sp.; **Bioregion:** Wanganui; **Host:** *Acacia longifolia* subsp. *sophorae*; **Coll:** BJ Rogan, 11/3/2002; **Ident:** R Crabtree, 20/3/2002.

New distribution record for New Zealand – Insect: *Trachymela sloanei*; **Bioregion:** Marlborough; **Host:** *Eucalyptus viminalis*; **Coll:** BH Doherty, 28/2/2002; **Ident:** C Appleton, 4/3/2002.

(Geoff Ridley, Forest Research)