A noteworthy Australian bug not previously known in New Zealand has been found on urban street trees in Auckland. This insect has the potential to be a pest on eucalypt trees, which are common throughout the country.

**BRONZE BUG, **THAUMASTOCORIS PEREGRINUS: A NEW EUCALYPTUS PEST IN NEW ZEALAND

*Thaumastocoris peregrinus* (Hemiptera: Thaumastocoridae), also known as the bronze bug, is a sapsucker that feeds on the leaves of a variety of *Eucalyptus* species. The bug is light brown with darker areas and has a flattened body about 3 mm in length (*Figures 1 and 2*). The black sculptured eggs are laid on leaves, either singly or in groups (*Figure 3*). Adults and nymphs may be found in large numbers on the leaves and their feeding results in the leaves turning from silver and spotted to rusty red (*Figures 4 and 5*). In severe infestations the foliage will wither and drop and this can lead to branch dieback (*Nadel et al.*, 2010).

On 10 March 2012 *T. peregrinus* was found on *Eucalyptus nicholii* during a routine survey conducted as part of the Ministry for Primary Industries (MPI; formerly MAF) High Risk Site Surveillance programme. The SPS Biosecurity Ltd surveyor who collected the specimens had seen *T. peregrinus* in an illustrated article on the New Zealand Farm Forestry Association website and suspected that the specimen might be this species. A sample was sent to Scion for identification, with an indication that it needed to be examined in their quarantine facility. Specimens were identified and validated by morphological examination at Scion and subsequently confirmed by molecular techniques at the Plant Health and Environment Laboratory (PHEL) in Auckland.

The family Thaumastocoridae consists of three subfamilies, none of which are represented in the New Zealand fauna. The subfamily Thaicorinae contains one genus from Thailand and the subfamily Xylastodorinae contains two genera from Central and South America. A further subfamily, the Thaumastocorinae, is represented by three genera native to Australia and one genus and species from India; these are phytophagous insects with a wide host range (*Nadel et al.*, 2010).

Little was known about *T. peregrinus* until damaging outbreaks occurred in its native range in the Sydney area, beginning in 2002. Following this initial outbreak, the bug was discovered in Pretoria, South Africa, in 2003. It was identified there as *T. australicus*, the species for which the genus was first erected (*Kirkaldy*, 1908). The name *Thaumastocoris* is of Greek origin and, ironically, translates as “wonderful bug”.

A noteworthly Australian bug not previously known in New Zealand has been found on urban street trees in Auckland. This insect has the potential to be a pest on eucalypt trees, which are common throughout the country.
In 2005 a very similar species was found near Buenos Aires in Argentina. However, morphological examination revealed unique characteristics that did not match any known species. It was described as a new species, *Thaumastocoris peregrinus*. The specific name means “foreigner” and it was presumed also to have been introduced from Australia. However, it was later revealed that this was in fact the same species that had been misidentified in South Africa and was also the dominant species in the Sydney area, with a population in Brisbane as well. This work was done by Nadel *et al.* (2010) who used DNA barcoding to demonstrate that at least two separate introductions had been made to South Africa, plus another discrete introduction to Argentina. Entry pathways remain unknown. More recently, *T. peregrinus* has also been found in Italy in 2011 (Laudonia & Sasso, 2012).

Once established in these new areas the bronze bug rapidly spreads to neighbouring countries, presumably by both wind and human-mediated dispersal. In Africa it has spread to Zimbabwe, Malawi and Kenya (Nadel *et al.*, 2010; Noak *et al.*, 2011). In South America during 2008 it was found in both Uruguay (Martinez-Crosa, 2008) and Brazil (Wilcken *et al.*, 2010), and it has also been reported in Chile (Noak *et al.*, 2011) and Paraguay (Solimon *et al.*, 2012).

About 30 species and hybrids of *Eucalyptus* are known hosts of *T. peregrinus*. In Australia, recognised hosts are *Eucalyptus botryoides*, *E. camaldulensis*, *E. dorrigoensis*, *E. globulus*, *E. grandis*, *E. largiflorens*, *E. microcorys*, *E. nicholii*, *E. punctata*, *E. saligna*, *E. scoparia*, *E. sideroxylon*, *E. tereticornis*, and *E. viminalis* (Noak *et al.*, 2011). The high populations in Sydney have mostly occurred on *E. nicholii* and *E. scoparia* (Noak *et al.*, 2009). At least a dozen more hosts have been reported in South Africa, including *E. nitens* and *E. smithii* (Nadel *et al.*, 2010). In addition to several of the hosts mentioned above, *E. urophylla* appears to be a favoured host in Brazil (Soliman *et al.*, 2012).
In New Zealand, an established population exists in East Tamaki, Auckland, where it was first detected. Twelve sites around east Auckland were inspected during the initial investigation, including the site of the first find. *E. nicholii* trees were found heavily attacked by *T. peregrinus* but other *E.* species close by were apparently unaffected. In April 2012 a survey was conducted around a 5 km radius from the initial detection site. This detected *T. peregrinus* on trees about 3.5 km apart (Figure 6). It is possible that *T. peregrinus* has spread further than this and MPI’s High Risk Site Surveillance programme continues to look for it at other locations in Auckland and further afield.

*T. peregrinus* is considered a serious pest in Australia, South Africa and South America. In Sydney significant numbers of highly infested trees have been removed, but some urban control has been achieved with systemic insecticides. Microinjections of imidacloprid [SilvaShield SL, 20 percent (AL)] at a rate of 3–5 mL/10 cm of dbh (diameter at breast height) effectively controlled *T. peregrinus* for two to three years on *E. scoparia* (Noak et al., 2009). As a long-term management option, semiochemicals (chemicals used in plant/insect and insect/insect communication) are suggested for use, along with other pest management strategies (http://www.nctforest.com).

No effective biological control agent is reported for the bronze bug. However, the egg parasitoid wasps *Cleruchoides noackae* (Hymenoptera: Mymaridae) and *Stethynium* sp. (Hymenoptera: Mymaridae) have been found to attack *T. peregrinus* eggs in Australia (Lin et al., 2007). Biological control using *C. noackae* is at present the main international focus of control efforts. This work was started in South Africa and is also being pursued in South America. In Chile, releases of the parasitoid were made in 2010 but it has not been determined as yet whether they were successful (Anon, 2010). The lacewing *Chrysoperla externa* (Neuroptera: Chrysopidae) is reported as a predator of *T. peregrinus* in Brazil (Wilcken et al., 2010).

In New Zealand this insect may not be eradicable as it appears to be well established, and there do not appear to be any effective eradication methods. Potential next steps are being considered.

REFERENCES


Figure 6: Known distribution of *T. peregrinus* in Auckland, April 2012.


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