

## First record of *Trioza vitreoradiata* (Maskell) (Hemiptera: Triozidae) in citrus

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### SUMMARY

The New Zealand native psyllid *Trioza vitreoradiata* (Maskell) (Hemiptera: Triozidae) can complete its lifecycle from egg to adult on grapefruit (*Citrus paradisi* Macfad.). This observation was made on a garden specimen in Christchurch, New Zealand, growing close to a psyllid-infested *Pittosporum* garden shrub.

**Index terms:** *Pittosporum* psyllid, *huanglongbing*.

### RESUMO

#### Primeiro registro de *Trioza vitreoradiata* (Maskell) (Hemiptera: Triozidae) em citros

O psilídeo nativo da Nova Zelândia, *Trioza vitreoradiata* (Maskell) (Hemiptera: Triozidae) pode completar seu ciclo de vida de ovo a adulto em pomelo (*Citrus paradisi* Macfad.). Esta observação foi feita em uma amostra de planta de quintal em Christchurch, Nova Zelândia, crescendo perto de um de arbusto do gênero *Pittosporum* infestado por psilídeos.

**Termos de indexação:** *Pittosporum* psyllid, *huanglongbing*.

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## COMMUNICATION

Psyllids are generally monophagous or narrowly polyphagous and breed almost exclusively upon angiosperms (White & Hodkinson 1985). *Trioza vitreoradiata* (Maskell) (Hemiptera: Triozidae) is a psyllid native to New Zealand and commonly found on various species of *Pittosporum* (Pittosporaceae), both naturally occurring and cultivated varieties. The psyllid species is quite variable and has a large number of synonyms. Although recorded primarily from *Pittosporum* species, it has also been found on *Discaria toumatou* (Rhamnaceae) and *Geniostoma ligustrifolium* (Loganiaceae) (Ferris & Klyver 1932; Maskell 1879). The nymphs produce a gall or blister on the leaf surface where they feed (Lamb 1960), excrete honeydew in the form of “sugars” and can occasionally become so numerous as to disfigure a plant (Carter 1949).

This psyllid species is now also recorded in England, Ireland and France where it is of some economic importance because of the permanent pit galls produced where the nymphs feed, as well as development of sooty mould on the sugary excreta (Mifsud *et al.* 2010). *Pittosporum* species from New Zealand and Japan are grown in Europe for the garden and floral trades.

Adult psyllids were noticed alighting and apparently probing a number of different plant species growing in a suburban garden in Christchurch, New Zealand, during late spring (November). Their presence on a small grapefruit *Citrus paradisi* Macfad. (Rutaceae) tree, particularly but not exclusively on young leaves, was noted for quite extended periods of time, suggesting feeding behavior (Figure 1). Further observation revealed the presence of a few nymphs from very small to fifth instar size. The larger nymphs



**Figure 1.** Recently emerged and mature adults on young and mature grapefruit leaves respectively (images cropped and digitally enhanced for clarity).



**Figure 2.** Dark and light forms of psyllid nymph developing on grapefruit leaves.

sometimes caused a pit gall in the leaf, on either lower or upper surfaces. Shaded nymphs were white or pale colored, while sun-exposed nymphs were darker in color (Figure 2). Psyllid sugar was occasionally noted on leaf surfaces near the nymphs.

Adult psyllids were collected and maintained at room temperature (approximately 20 – 22°C) in a cage on a fresh shoot from this tree, held in place by a piece of floral foam. The adults were observed to spend much of their time on the leaves and stem in one position, suggestive of feeding. A small quantity of psyllid sugar was noted on the floral foam surface, indicating feeding. Some adults survived to eight days, after which the plant shoot had wilted.

Nymphs were also collected and maintained in cages separated from the adults on fresh shoots from this tree. A small quantity of sugar was produced, indicating feeding. Emerged adults were collected and euthanized for identification.

Adults from the nymphs, collected from the grapefruit tree and from the *Pittosporum* tree were all identified as *T. vitreoradiata*, the common pittosporum psyllid native to New Zealand (Dale & Nielsen 2009; Martin 2010). This appears to be the first record of this species breeding on citrus. The African citrus psyllid *Trioza erytreae* (Del Guercio) (Hemiptera: Triozidae) has a number of native African Rutaceae breeding hosts (Aubert *et al.* 1988; Moran 1968). This psyllid is notable as the vector of huanglongbing, or citrus greening in Africa (Aubert *et al.* 1988). Since *Citrus* is not native to Africa (Gmitter & Hu 1990), the African citrus psyllid has clearly adapted to feeding and breeding on the domesticated *Citrus* species (Hollis D 1984). *Trioza litseae* (Bordage) is another species apparently able to use citrus species as a host (adults and nymphs have been reported), the native breeding host being *Litsea* species (Lauraceae) (Aubert & Quilici 1984; Halbert & Manjunath 2004). *Trioza citroimpura* (Yang & Li) is the third currently known *Trioza* species using *Citrus*, although in this case *Citrus* is regarded as the native host (Halbert & Manjunath 2004).

Relatively few adults and very few nymphs were noted on the tree, although the neighboring *Pittosporum* shrub supported high numbers. Adults were also commonly noted apparently feeding on other garden plants nearby (*Zantedeschia* and *Rhododendron*) and thus, this psyllid is behaving similarly to *T. litseae*,

which also feeds on a wide range of plants (Aubert & Quilici 1984). In spite of close observation, no nymphs were noted on these other plants. During dispersal of excess population, psyllids land and test feed on many plants. If these are suitable feeding hosts, then presumably they lay eggs where they are feeding, occasionally resulting in breeding on non-favored hosts (Mayhew 2001).

Psyllids are generally considered narrowly polyphagous (White & Hodkinson 1985), but this observation demonstrates a potential breeding population from one plant host to a very distantly related plant host and thus also presents the distinct potential for transfer of any microorganism associated with the psyllid to the new plant host.

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