

## Rapid Assessment of the need for a detailed Pest Risk Analysis for *Aleuroclava psidii* (Singh)

*Disclaimer: This document provides a rapid assessment of the risks posed by the pest to the UK in order to assist Risk Managers decide on a response to a new or revised pest threat. It does not constitute a detailed Pest Risk Analysis (PRA) but includes advice on whether it would be helpful to develop such a PRA and, if so, whether the PRA area should be the UK or the EU and whether to use the UK or the EPPO PRA scheme.*

### **STAGE 1: INITIATION**

#### **1. What is the name of the pest?**

*Aleuroclava psidii* (Singh) (Hemiptera: Aleyrodidae)  
Asian guava whitefly (Fera suggested common name)

#### **Synonymy:**

*Aleurotrachelus psidii* Singh 1931. Syntypes. India: on *Psidium guajava*.  
*Aleurotuberculatus psidii* (Singh); Takahashi 1932.  
*Aleuroclava psidii* (Singh); Martin 1999; Dubey & Sundararaj, 2005.

#### **2. What is the pest's status in the EC Plant Health Directive (Council Directive 2000/29/EC) and in the lists of EPPO?**

*Aleuroclava psidii* is not listed in the EC Plant Health Directive and is not recommended for regulation as a quarantine pest by EPPO, nor is it on the EPPO Alert List.

#### **3. What is the reason for the Rapid Assessment?**

*Aleuroclava psidii* has been detected on at least 46 occasions in England and Wales since 1997 on imported produce, mainly guava leaves used for packing fruit from India and Pakistan. A live puparium was recently detected on a bonsai Chinese bird plum tree (*Sageretia theezens* Brongn.) imported from Hangzhou, Zhejiang Province, China.

### **STAGE 2: RISK ASSESSMENT**

#### **4. What is the pest's present geographical distribution?**

*Aleuroclava psidii* was originally described from specimens collected from guava in India. It is native to Asia and is likely to be more widely distributed than indicated below and is under-recorded due to technical difficulties in identifying *Aleuroclava* spp..

Unlike other Asian whitefly species that have spread (for example *Dialeurodes citri*) *Aleuroclava psidii* has so far only been recorded in the Andaman and Nicobar Islands (David & Dubey, 2006) and within mainland Asia. This suggests that it may have limited ability to colonise new areas, even when it is carried to areas where hosts are available and the climate is suitable. *Aleuroclava psidii* has not demonstrated much capacity to invade new geographical areas.

North America: absent

Central America: absent.

South America: absent.

Caribbean: absent.

Europe: absent.

Africa: absent.

Middle East: absent.

Asia: Andaman and Nicobar Islands (India) (David & Dubey, 2006), Bangladesh (Fera unpublished record), China (Mound & Halsey, 1978), Hong Kong (Takahashi, 1941: 355), India (Singh, 1931: 61), Malaysia (Takahashi, 1942: 330), Taiwan (Takahashi, 1942: 330), Thailand (Takahashi 1942: 330).

Oceania: absent.

## 5. Is the pest established or transient, or suspected to be established/transient in the UK?

*Aleuroclava psidii* is absent from the UK.

It has been intercepted in England and Wales on 46 occasions with imported produce and once with a growing plant.

It is most commonly found on guava foliage that is used for packing guava fruit. It has been found with guava imported from India (1999, 2005 (4), 2006 (12), 2007 (6), 2008 (2), 2010), Pakistan (2005, 2006 (4), 2007 (4), 2008 (2)) and India/Pakistan (2007, 2008). The leaves were often heavily infested with live puparia. It has also been found on *Psidium* leaves imported illegally by post for medicinal purposes from the Philippines (2007 (2)); on lychee foliage imported from Bangladesh (1999); on Kaffir lime leaves from Thailand (2005); and on unspecified foliage from Bangladesh (1997, 2005) and Hong Kong (2010).

It is highly likely that live *A. psidii* are present in every consignment of guava fruit imported into the UK from India and Pakistan, where foliage is present. It has not been recorded developing on guava fruit but there is a small chance that it could (Malumphy, 2009).

It has also been found on one occasion on an imported bonsai *Sageretia theezens* imported from China.

## 6. What are the pest's natural and experimental host plants; of these, which are of economic and/or environmental importance in the UK?

Polyphagous, feeding on plants assigned to 13 families (see Table 1). It is the opinion of the authors that the host range is poorly known due to under recording.

**Table 1: Hosts plants of *Aleuroclava psidii***

Plant family	Host plant	Comment
Adoxaceae	<i>Sambucus formosana</i>	NHM, London
Cannabaceae	<i>Celtis sinensis</i> – Chinese hackberry	Takahashi, 1933
Lauraceae	<i>Cinnamomum camphora</i> - camphor tree	Takahashi, 1932
	<i>Cinnamomum camphora var nominale</i>	Takahashi, 1933
Moraceae	<i>Morus alba</i> – white mulberry	Takahashi, 1935
	<i>Streblus asper</i> – Siamese rough bush	
Myrsinaceae	<i>Maesa</i> sp.	Takahashi, 1932
Myrtaceae	<i>Eugenia jambos</i> – rose apple	Takahashi, 1933
Myrtaceae	<i>Psidium guajava</i> - guava	Takahashi, 1932
Phyllanthaceae	<i>Bridelia ovata</i>	Takahashi, 1932
Rhamnaceae	<i>Sageretia theezens</i> – Chinese bird plum	Fera interception
Rosaceae	<i>Prunus salicina</i> – Chinese plum	NHM, London
Rutaceae	<i>Citrus hystrix</i> – Kaffir lime	Malumphy, 2007
Saliaceae	<i>Salix</i> sp. - willow	Takahashi, 1932
Sapindaceae	<i>Dimocarpus longana</i> – longan fruit	Takahashi, 1932
	<i>Litchi chinensis</i> – lychee fruit	NHM, London

The host plant genus that is of most economic importance in Britain is *Prunus*, because of the fruit crops cherry and plum. *Aleuroclava psidii* also feeds on several genera grown as ornamentals in Britain: *Celtis*, *Citrus*, *Morus*, *Prunus*, *Salix* and *Sambucus*.

The host plant genus that is of most economic importance in Europe is *Citrus*, although there do not appear to be published records of *A. psidii* causing economic damage to citrus.

## 7. If the pest needs a vector, is it present in the UK?

*Aleuroclava psidii* does not need a vector.

**8. What are the pathways on which the pest is likely to move and how likely is the pest to enter<sup>1</sup> the UK? (By pathway):**

Yes - interceptions of live larvae have occurred on produce and on a growing plant (see 2 above).

Pathway 1. Growing plants (on bonsai)  
It has only been intercepted on one occasion.

Very unlikely	<input checked="" type="checkbox"/>	Unlikely	<input type="checkbox"/>	Moderately likely	<input type="checkbox"/>	Likely	<input type="checkbox"/>	Very likely	<input type="checkbox"/>
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Pathway 2. On produce (foliage).  
Frequently intercepted in the past but it is unlikely that adult whiteflies emerging from puparia on infested leaves surrounding guava fruit will find their way to suitable host plants.

Very unlikely	<input type="checkbox"/>	Unlikely	<input checked="" type="checkbox"/>	Moderately likely	<input type="checkbox"/>	Likely	<input type="checkbox"/>	Very likely	<input type="checkbox"/>
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**9. How likely is the pest to establish outdoors or under protection in the UK?**

*Aleuroclava psidii* occurs widely in tropical and subtropical areas of Asia. The bonsai harbouring the *A. psidii* puparium detected in England was imported from Hangzhou in Zhejiang Province, eastern China. The climate in Hangzhou is humid subtropical with four distinctive seasons, characterised by long, very hot, humid summers and short, cool, cloudy and dry winters (with occasional snow). The average annual maximum and minimum temperatures in Hangzhou between 1971 and 2000 were 20.8°C and 13.2°C. This compares with the average annual maximum and minimum temperatures in Wye, Kent (one of the warmest parts of the UK) for the same period of 13.8°C and 10.1°C (Met Office). If it is assumed that that the climate in Hangzhou is typical of the requirements for *A. psidii*, it would appear that the climate in the UK is too cold and therefore unsuitable for the establishment of the whitefly.

*Aleuroclava psidii* may survive on protected ornamental plantings in the UK.

Outdoors	Very unlikely	<input checked="" type="checkbox"/>	Unlikely	<input type="checkbox"/>	Moderately likely	<input type="checkbox"/>	Likely	<input type="checkbox"/>	Very likely	<input type="checkbox"/>
Under protection		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input checked="" type="checkbox"/>		<input type="checkbox"/>

**10. How quickly could the pest spread in the UK?**

Generally adult whiteflies are poor fliers and have a low natural dispersal potential. Spread is likely to be in trade.

Natural dispersal	Very slowly	<input checked="" type="checkbox"/>	Slowly	<input type="checkbox"/>	Moderate pace	<input type="checkbox"/>	Quickly	<input type="checkbox"/>	Very Quickly	<input type="checkbox"/>
Trade	Very slowly	<input type="checkbox"/>	Slowly	<input checked="" type="checkbox"/>	Moderate pace	<input type="checkbox"/>	Quickly	<input type="checkbox"/>	Very Quickly	<input type="checkbox"/>

**11. What is the area endangered by the pest?**

The endangered area is protected ornamentals, for example, bonsai.

<sup>1</sup> Entry includes transfer to a suitable host

**12. What is the pest's economic, environmental or social impact within its existing distribution?**

No experimental data exists for the direct impact of *Aleuroclava psidii*. It is however, listed as a common and important pest in India, presumably on guava (Nayar *et al.*, 1985).

Very small  Small  Medium  Large  Very large

**13. What is the pest's potential to cause economic, environmental or social impacts in the UK?**

Potential yield losses (for example by sooty mould growing on the excreted honeydew) are very small.

Very small  Small  Medium  Large  Very large

**14. What is the pest's potential as a vector of plant pathogens?**

*Aleuroclava psidii* is not known to be a vector.

**STAGE 3: PEST RISK MANAGEMENT**

**15. What are the risk management options for the UK? (Consider exclusion, eradication, containment, and non-statutory controls; under protection and/or outdoors).**

From the paucity of literature that exists on this organism, no specific management options are available.

*Aleuroclava psidii* is likely to be restricted to protected ornamental plants and may be controlled by using the same products used against the regulated whitefly pest *Bemisia tabaci*.

The immature stages of *A. psidii* are difficult to detect as they are small and cryptic. The puparium on the bonsai was not detected during a plant health inspection at the nursery but was only spotted in the laboratory when the plant was examined under a low power microscope. It could therefore be spread in trade and be undetected until the population grew to damaging levels. This could make it difficult to contain, if it were to establish in the UK.

**16. Summary and conclusion of rapid assessment.**

This rapid assessment shows:

*Risk of entry – unlikely (on produce), unlikely (on growing plants)*

The pest is regularly brought into the country from India and Pakistan on guava foliage. It has only been found on one occasion on an imported growing plant. It is however, difficult to detect at low densities and may be difficult to distinguish in the field from the regulated pest *Bemisia tabaci*.

*Risk of establishment – in protected ornamentals is likely*

It is very unlikely to naturalise and overwinter outdoors in Britain but could establish on indoor plantings.

*Rate of spread - slow*

Spread is most likely to be with infested plants in trade.

*Economic impact – may have a small impact to indoor ornamentals*

There is little data available on the economic impact of the whitefly.

*Endangered area – protected ornamentals*

*Risk management - may be controlled by using the same products used for Bemisia tabaci.*  
 No specific management options are available from the paucity of literature that exists on this organism.

**17. Is there a need for a detailed PRA? If yes, select the PRA area (UK or EU) and the PRA scheme (UK or EPPO) to be used.**

With the information that we currently have available on the whitefly it is not of sufficient concern to the UK to justify a more detailed assessment. The EU and EPPO should be notified as it may be more of a concern to southern member states and its hosts include *Citrus*. A recommendation for no statutory action is proposed.

No	<input checked="" type="checkbox"/>				
Yes	<input type="checkbox"/>	PRA area: UK or EU		PRA scheme: UK or EPPO	

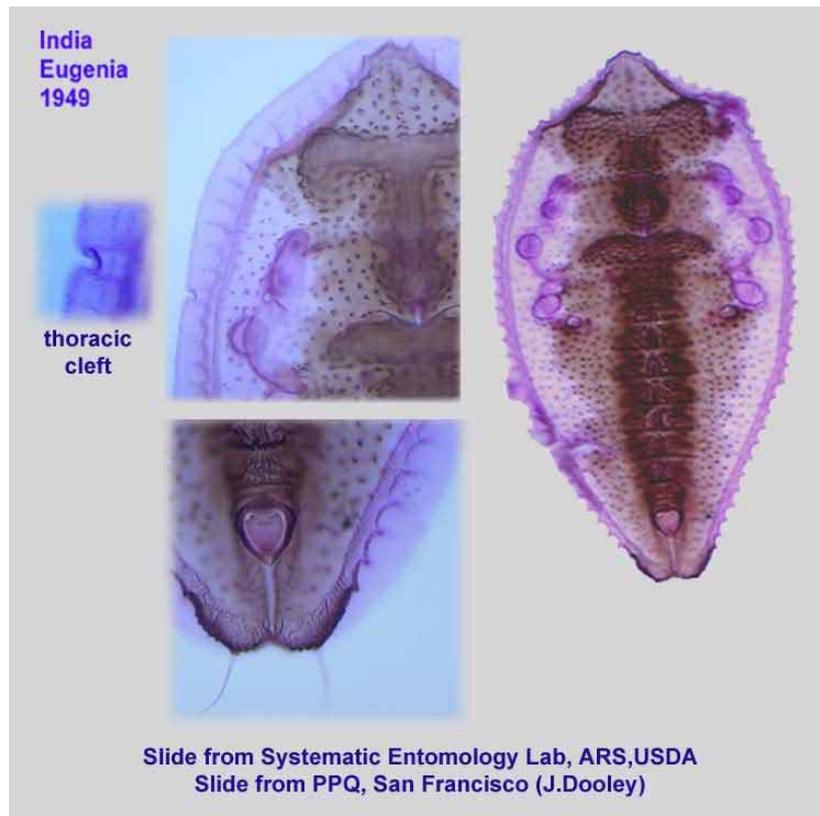
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**IMAGES OF PEST AND SYMPTOMS**



*Aleuroclava psidii* puparia.



## References

- David, B. V. & Dubey, A. K.** 2006. Whitefly (Hemiptera: Aleyrodidae) fauna of Andaman and Nicobar Islands, India with description of a new species. *Entomon.* **31**: 191-205.
- Dubey, A.K. & Sundararaj, R.** 2005. A review of the genus *Aleuroclava* Singh (Hemiptera: Aleyrodidae) with descriptions of eight new species from India. *Zoological Record Oriental Insects.* **39**: 241-272.
- Malumphy, C.** 2007. Arthropods intercepted on imported fresh kaffir lime (*Citrus hystrix*) leaves imported into England and Wales. *Entomologist's Gazette* **58**: 39-50.
- Malumphy, C.** 2009. Whitefly (Hemiptera: Aleyrodidae) developing on plant stems, vegetables and fruit. *Entomologist's Monthly Magazine* **145**: 156.
- Martin, J.H.** 1999. *The whitefly fauna of Australia (Sternorrhyncha: Aleyrodidae). A taxonomic account and identification guide.* Division of Entomology, Commonwealth Scientific and Industrial Research Organization, Canberra. Technical Paper No. 38 197 pp.
- Mound, L.A. & Halsey, S.H.** 1978. *Whitefly of the world. A systematic catalogue of the Aleyrodidae (Homoptera) with host plant and natural enemy data.* John Wiley and Sons. Chichester, UK:
- Nayar, K. K, Ananthkrishnan, T. N and B. V. David.** 1985. *General and Applied Entomology.* Tata McGraw Hill Publ., New Delhi. 599 pp.
- Singh, K.** 1931. "Contribution towards our knowledge of the Aleyrodidae (Whiteflies) of India." *Mem. Dept. Agric. India* **12**: 1-100.
- Takahashi, R.** 1932. "Aleyrodidae of Formosa , Part I." *Rep. Dep. Agric. Govt. res. Inst. Formosa* **59**: 1-57.
- Takahashi, R.** 1933. "Aleyrodidae of Formosa, Part II." *Rep. Dep. Agric. Govt. res. Inst. Formosa* **60**: 1-24.
- Takahashi, R.** 1935. "Notes on the Aleyrodidae of Japan (Homoptera) III." *Kontyu* **9**: 279-283.
- Takahashi, R.** 1941. "Some foreign Aleyrodidae (Hemiptera) III. Species from Hong Kong & Mauritius." *Hist. Soc. Formosa* **31**: 351-357.
- Takahashi, R.** 1942. "Some foreign Aleyrodidae (Homoptera) IX. Species from Thailand and French Indo-China." *Trans. nat. Hist. Soc. Formosa* **32**: 327-335.