



## New record of a genus and two species of whiteflies (Hemiptera: Aleyrodidae) from India

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**ABSTRACT:** The whitefly genus *Aleuroputeus* Corbett so far known from Malaysia is reported for the first time from India by reporting occurrence of *A. baccaureae* Corbett on *Tabebuia rosea* in Bengaluru, India. Further *Aleuroclava stereospermi* (Corbett) so far known from Malaysia has been reported for the first time from India on *Stereospermum colais*. The generic features of *Aleuroputeus* have been redefined. Both the species have been redescribed with illustrations.

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**KEYWORDS:** Aleyrodidae, *Aleuroputeus baccaureae*, *Aleuroclava stereospermi*

### INTRODUCTION

Corbett (1935) erected the whitefly genus *Aleuroputeus* for *A. baccaureae* Corbett and *A. perseae* Corbett from Malaysia with the latter being the type species. This genus is so far known by these two species from Malaysia. In our survey on whitefly fauna of India *A. baccaureae* was found breeding on *Tabebuia rosea* in Bengaluru. Further *Aleuroclava stereospermi* (Corbett) so far reported from Malaysia was found breeding on *Stereospermum colais* in Bengaluru. Both the species have been redescribed with illustrations.

### MATERIALS AND METHODS

The present study was based on the whitefly materials collected from various localities of south India during the period 2005-15 as well as the type specimens and other specimens of whiteflies available at the collections of Institute of Wood Science and Technology (IWST). The whitefly

infested leaves were collected from the host plants and permanent mounts of the puparia were prepared by adopting the method suggested by David and Subramaniam (1976). The best mounts were obtained from puparia from which adults have emerged. Observations and illustrations were made using Nikon Optiphot T-2 EFD microscope and the identities of the whiteflies were confirmed.

### RESULTS AND DISCUSSION

*Aleuroclava stereospermi* (Corbett) (Fig.1 – 3)  
*Aleurotuberculatus stereospermi* Corbett 1935, *J. fed. Malay. St. Mus.* **17**: 832.

*Aleuroclava stereospermi* (Corbett) Jesudasan and David, 1990:4.

This species is reported for the first time from India.

**Puparium:** White, with no secretion of wax; elliptical, slightly constricted at thoracic tracheal pores and at the caudal end of abdomen; 0.64 -

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0.84 mm long, 0.46 - 0.64 mm wide; found singly on the under surface of leaves.

**Margin:** Finely crenulate, 23 crenulations in 0.1 mm; thoracic and caudal tracheal pores ending in a slight invagination. Anterior marginal setae 14  $\mu$ m and posterior marginal setae 20  $\mu$ m long.

**Dorsum:** Submargin with a row of papillae. Arrow-shaped microtubercles of varying sizes present on the subdorsum. Longitudinal moulting suture reaching margin and transverse moulting suture reaching submargin. Cephalothorax with four pairs of tubercles, on submedian area – one pair each on pro and mesothorax and two pairs on metathorax; base of cephalic setae granulated. Median tubercles on abdominal segments I - VI distinct, a submedian row of microtubercles extending from VIII abdominal segment to I abdominal segment, ending with transverse moulting suture distinct. Base of I abdominal setae with distinct tubercle. Pores and pores discernible. Thoracic tracheal furrow not indicated, caudal tracheal furrow funnel shaped with irregular markings, 50 - 76  $\mu$ m long and 18 - 22  $\mu$ m wide at the widest end.

**Chaetotaxy:** Four pairs of dorsal setae- cephalic setae 60 – 70  $\mu$ m long, first abdominal setae 50  $\mu$ m long, eighth abdominal setae 6 - 8  $\mu$ m and caudal setae 60 - 80  $\mu$ m.

**Vasiform orifice:** Subcordate, wider than long, notched at caudal end, 38 - 44  $\mu$ m long, 38 - 46  $\mu$ m wide; operculum similarly shaped, 18 - 34  $\mu$ m long, 18 - 36  $\mu$ m wide, lingula not discernible.

**Venter:** A pair of ventral abdominal setae 10  $\mu$ m long, 38  $\mu$ m apart; thoracic and caudal tracheal folds not indicated. Antennae reaching base of prothoracic legs. Spiracles visible at the base of legs.

**Material examined:** India: Karnataka: Bengaluru, 5 puparia on *Stereospermum colais*,

24. xi. 2011, T.G. Revathi (IWST).

**Host:** *Stereospermum chelonoides* (Corbett, 1935); *S. colais* (new host record).

**Distribution.** Malaysia (Corbett, 1935); India: Bengaluru, Karnataka (new distribution record).

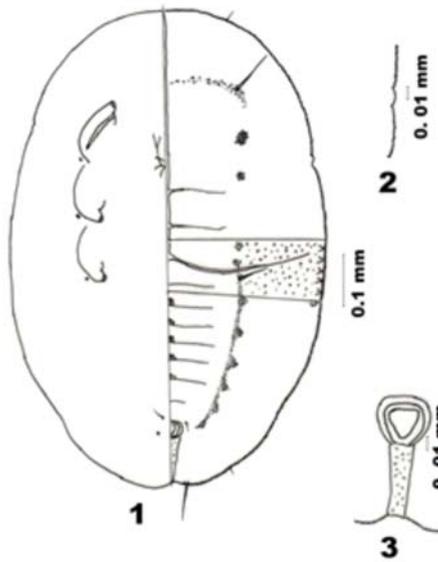
### *Aleuroputeus* Corbett

*Aleuroputeus* Corbett, 1935:846. Type species: *Aleuroputeus perseae* Corbett, 1935: 846-847, by original designation.

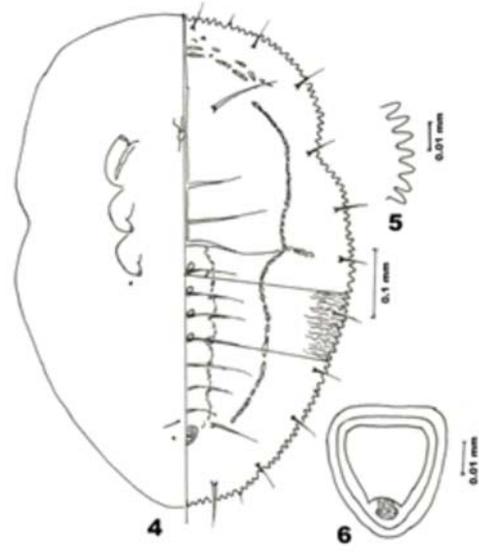
The genus is redefined here.

**Diagnosis:** Puparia white to yellowish, without any wax secretion; margin toothed without any indication of thoracic and caudal tracheal openings. A pair of conspicuous thin longitudinal interrupted lateral fold extending from anterior margin to laterad of vasiform orifice, demarcating submedian area from subdorsum; submargin with a row of ten pairs of long setae extending beyond margin. Median moulting suture reaching margin and transverse moulting suture reaching the lateral longitudinal fold. Abdomen with elevated submedian ridge and rachis, and with median tubercles. Cephalic, eighth abdominal and caudal setae present, first abdominal setae absent. Vasiform orifice cordate to subcordate, situated on elevated posterior end of submedian ridge, longer than wide; operculum recessed posteriorly, filling half to two-thirds of the vasiform orifice; lingula tip exposed but included.

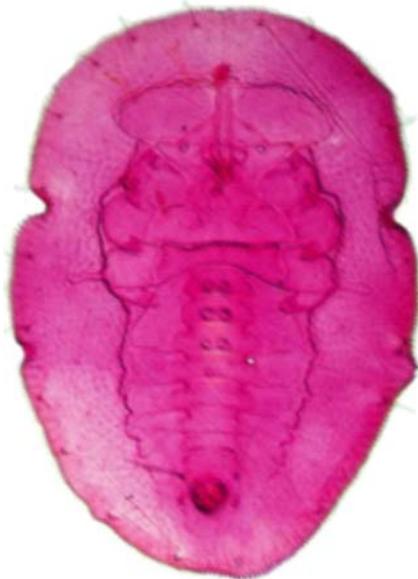
**Comments:** Corbett (1935) differentiated *Aleuroputeus* from *Aleurocybotus* Quaintance & Baker in the possession of submarginal spines (setae) and in the presence of a chitinised fold (longitudinal lateral fold) differentiating the dorsal disc. It also essentially differs from *Aleurocybotus* by the absence of first abdominal setae and by the presence of elevated vasiform orifice. *Aleuroputeus* is also close to *Aleurotrachelus* Quaintance and Baker and *Cohicaleyrodes* Bink-Moenen in having pair of lateral longitudinal folds, elevated vasiform orifice and in the absence of first abdominal setae and not having any indication of thoracic tracheal openings but differs from them by the presence of ten pairs of long submarginal setae extending beyond margin and operculum filling only half to two-thirds of the vasiform orifice with posterior recession. The genus *Aleuroputeus* is so



**Figs. 1-3. *Aleuroclava stereospermi* (Corbett):** 1. Puparium; 2. Margin at thoracic tracheal pore region; 3. Vasiform orifice



**Figs. 4-6. *Aleuroputeus baccaureae* Corbett:** 4. Puparium; 5. Margin; 6. Vasiform orifice



**Fig.7: Mounted puparium of *Aleuroputeus baccaureae* Corbett**

far known by only two species both the species described by Corbett (1935) and in his description he indicated the presence of 11 pairs of submarginal spines (setae), the posterior pair slightly longer. The posterior pair is caudal setae and the puparia are characterized by the presence of ten pairs of submarginal setae.

**Key to puparia of the species of *Aleuroputeus***

- 1. Puparium yellowish and subovate; abdominal segments I – II with median tubercles. . . . .  
 . . . . . *perseae* Corbett
- . Puparium white and elliptical; abdominal segments I – IV with median tubercles. . . . .  
 . . . . . *baccaureae* Corbett

***Aleuroputeus baccaureae* Corbett** (Fig.4 – 7)

The genus *Aleuroputeus* and the species *baccaureae* Corbett are reported for the first time from India and the species is redescribed here.

**Puparium:** White, without wax secretion; elliptical, 0.65 - 0.76 mm long, 0.43 – 0.56 mm wide; found singly on the lower surface of leaves.

**Margin:** Smoothly crenulate, 13-15 crenulations in 0.1 mm; thoracic and caudal tracheal pores not indicated. Anterior marginal setae 14 - 20 µm long and posterior marginal setae 18 - 22 µm long.

**Dorsum:** Subdorsum with papillae-like irregular markings, submargin with faint striations. A pair of conspicuous thin interrupted longitudinal lateral folds

extending from anterior margin to laterad of vasiform orifice, demarcating submedian area from subdorsum. Median tubercles on abdominal segments I – IV distinct. Longitudinal moulting suture reaching margin and transverse moulting sutures reaching to the chitinised fold. Thoracic tracheal furrow and caudal tracheal furrow not indicated. Rows of pores and porettes distinct.

**Chaetotaxy:** Three pairs of dorsal setae- cephalic setae 84 µm long, eighth abdominal setae 62 – 74 µm long and caudal setae 40 µm long. First abdominal setae absent. Ten pairs of submarginal pointed setae, 20 µm long- 5 pairs on cephalothorax and 5 pairs on abdomen distinct.

**Vasiform orifice:** Subcordate situated on elevated posterior end of submedian ridge, 42 - 52 µm long, 40 - 48 µm wide, operculum similarly shaped, almost filling the vasiform orifice, recessed posteriorly, 32 - 40 µm long, 32 - 34 µm wide. Lingula tip knobbed, exposed and included.

**Venter:** A pair of ventral abdominal setae 18 - 20 µm long, 36 - 40 µm apart; thoracic and caudal tracheal folds not discernible. Antennae reaching the base of prothoracic legs. Spiracles visible at the base of legs.

**Specimens examined:** India: Karnataka: IWST campus (Bengaluru), 7 puparia on *Tabebuia rosea*, 7.ii.2011, T.G. Revathi (IWST).

**Hosts:** *Beccaurea motleyana* (Corbett, 1935); *Tabebuia rosea* (new host record).

**Distribution.** India: Karnataka, Bengaluru.

The family Aleyrodidae comprises of 438 species under 60 genera in India. Among the genera the genus *Aleuroclava* Singh is represented by 62 species (Sundararaj and Pushpa, 2010). Sundararaj and Pushpa (2011) described two new species of *Aleuroclava* viz., *A. sindhuia* and *A. nigrus* and Chhakchhuak and Sundararaj described *A. mizoramensis*, *A. schimea* and *A. serchhipensis*

as new species (Chhakchhuak and William, 2011) thus the number of species known under the genus *Aleuroclava* from India is 67. The new record of *A. sterospermi* brings the number of Indian species of *Aleuroclava* to 68. The genus *Aleuroputeus* Corbett is so far known only from Malaysia and its representation by the record of *A. baccaureae* brings the total number Indian whitefly genera to 61. Thus a total of 440 species of Aleyrodidae under 61 genera are now known from India.

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## REFERENCES

- Chhakchhuak L. and William S.J. (2011) Taxonomic studies on the whitefly (Aleyrodidae: Hemiptera: Insecta) fauna of Mizoram. Memoirs of the Entomological Society of India. No. 16, 111 pp.
- Corbett G.H. (1935) Malayan Aleyrodidae. Journal of the Federated Malay States Museums, 17: 722-852.
- David B.V. and Subramaniam, T.R. (1976) Studies on some Indian Aleyrodidae. Record of the Zoological Survey of India, 70: 133-233.
- Jesudasan R.W.A. and David B.V. (1990) Revision of two whitefly genera, *Aleuroclava* Singh and *Aleurotuberculatus* Takahashi (Homoptera: Aleyrodidae). Frederick Institute of Plant Protection and Toxicology, Entomology Series, 2: 1-13.
- Sundararaj R. and Pushpa R. (2010) The genus *Aleuroclava* Singh (Hemiptera: Aleyrodidae) from India. Oriental Insects, 44: 95-146.
- Sundararaj R. and Pushpa R. (2011). Aleyrodids (Aleyrodidae: Hemiptera) of India with description of some new species and new host records. pp. 407-534. In: Advancements in Invertebrate Taxonomy and Biodiversity. (Editors; Gupta and Rajiv K.) Agro Bios (International), viii+534 pp.