



A review of the legged mealybugs on bamboo (Hemiptera: Coccoidea: Pseudococcidae) occurring in China

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Abstract

Twenty-two species of legged mealybugs occur on bamboo (Poaceae: Bambusoideae) in China. These species are reviewed and two of them are described for the first time: *Dysmicoccus luoyangensis* Li & Wu, **sp. nov.** and *Trionymus indocalamus* Li & Wu, **sp. nov.** Two new combinations are established: *Pseudococcus bambusicola* Takahashi and *Kaicoccus bambusus* Wu are transferred to genus *Formicococcus* Takahashi as *F. bambusicola* (Takahashi) comb. nov. and *F. bambusus* (Wu) comb. nov., respectively. *Formicococcus bambusicola*, *Heliococcus bambusae* (Takahashi), *Neoripersia miscanthicola* Takahashi and *Trionymus formosanus* Takahashi are redescribed and reillustrated based on type specimens. Brief notes are provided for *Balanococcus kwoni* Pellizari & Danzig, *B. zhejiangensis* Li & Wu, *Dysmicoccus dengwuensis* Ferris, *D. indocalamus* Wu, *Eumyrmococcus smithii* Silvestri, *Ferrisicoccus angustus* Ezzat & Mc-Connell, *Heliococcus lingnaniae* Wang, *H. takae* (Kuwana), *Heterococcus abludens* Borchsenius, *Miscanthicoccus miscanthi* (Takahashi), *Palmicultor lumpurensis* (Takahashi), *Paraporisaccus guizhouensis* Lu & Wu, *Paraserrolecanium fargesii* Wu, *Pseudantonina magnotubulata* Borchsenius and *Trionymus bambusae* (Green). A key to the species of legged mealybugs on bamboo occurring in China is given. A list of bamboo mealybugs worldwide is also provided.

Key words: Mealybugs, bamboo, new species, new combinations, China

Introduction

Bamboo is a group of perennial evergreen plants that constitute the subfamily Bambusoideae, family Poaceae (formerly Gramineae). There are over 1200 species in at least 80 genera in this subfamily in the world, naturally distributed in the tropical, subtropical and warmer regions such as Asia, North and South America, Africa, and throughout the islands of the Pacific and Indian Oceans (Wang & Shen, 1987; Yi *et al.*, 2008). However, bamboos are of uneven geographical distribution, with the regions including Southeast Asia, India, China, Japan and the Islands of the Pacific and Indian Oceans having the greatest diversity and abundance. Some species that can tolerate cold have been introduced as garden plants into regions such as Europe.

Bamboos have been utilized by human societies, especially in the Oriental and Far East regions, for thousands of years. To date, their uses are many and varied, from housebuilding, farm tools and furniture making, fishing and ship construction to papermaking, handicrafts, food, medicine, landscape gardening and soil conservation, as well as in arts and culture (Wang & Shen, 1987; Yi *et al.*, 2008).

There is a comparatively rich fauna of scale insects, especially mealybugs (Pseudococcidae), living on bamboos. Based on our incomplete statistics, a total of 237 species in 71 genera in six families have been recorded worldwide from bamboos, i.e. 81 species from 34 genera in Pseudococcidae (see appendix I), 71 species from seven genera in Asterolecaniidae (ScaleNet, Ben-Dov *et al.*, 2014), 58 species from 19 genera in Diaspididae (Ben-Dov, 1990), 10 species from seven genera in Coccidae (Carnegie, 1997), eight species from two genera in Aclerdidae, and nine species from two genera in Eriococcidae (ScaleNet, Ben-Dov, 2014). Among the mealybug species, there are 32 species in eight genera in which the adult females lack legs, and 49 species in 25 genera in which the adult females have legs; 61 species feed only on bamboos, whereas 20 species live on bamboos and other

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APPENDIX 1. The checklist of bamboo mealybugs of the world (statistics from ScaleNet (Ben-Dov, 2013) and this publication)

The species with an asterisk (*) indicate that the species lives on both bamboo and other plants.

Bamboo mealybugs without legs.

1 *Antonina* Signoret

- 1.1 *Antonina bambusae* Khalid & Shafee
- 1.2 *Antonina crawi* Cockerell
- 1.3 *Antonina evelynae* Gavrillov
- 1.4 **Antonina graminis* (Maskell)
- 1.5 *Antonina hubeiana* Wu
- 1.6 *Antonina maai* Williams & Miller
- 1.7 *Antonina meghalayaensis* Khalid & Shafee
- 1.8 *Antonina milleri* Williams
- 1.9 *Antonina nakaharai* Williams & Miller
- 1.10 *Antonina parazonata* Williams
- 1.11 *Antonina pretiosa* Ferris
- 1.12 **Antonina purpurea* Signoret
- 1.13 *Antonina sandakanae* Williams
- 1.14 *Antonina socialis* Newstead
- 1.15 **Antonina thaiensis* Takahashi
- 1.16 *Antonina zonata* Green
- 1.17 *Antonina nanlingensis* Wu & Lu

2 *Chaetococcus* Maskell

- 2.1 *Chaetococcus bambusae* (Maskell)
- 2.2 *Chaetococcus dendrocalami* Williams

3 *Idiococcus* Takahashi & Kanda

- 3.1 *Idiococcus bambusae* Takahashi & Kanda
- 3.2 *Idiococcus maanshaensis* Tang & Wu

4 *Kermicus* Newstead

- 4.1 *Kermicus wroughtoni* Newstead

5 *Nesticoccus* Tang

- 5.1 *Nesticoccus sinensis* Tang
- 5.2 *Nesticoccus fanjingensis* Wu

6 *Porisaccus* Hendrick & Kosztarab

- 6.1 *Porisaccus jiuhuaensis* (Wu)
- 6.2 *Porisaccus sasae* (Siraiwa)

7 *Serrolecanium* Shinji

- 7.1 *Serrolecanium indocalamus* Wu
- 7.2 *Serrolecanium kawaii* Hendricks & Kosztarab
- 7.3 *Serrolecanium takagii* Hendricks & Kosztarab
- 7.4 *Serrolecanium tobai* (Kuwana)
- 7.5 *Serrolecanium ferrisi* Wu & Lu

8 *Tangicoccus* Kozar & Walter

- 8.1 *Tangicoccus elongatus* (Tang)