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On Some Whiteflies (Homoptera: Aleyrodidae) from China **【Research report】**

中國產粉蝨之新記錄種 (同翅目：粉蝨科) **【研究報告】**

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Abstract

One new species of whiteflies (Homoptera: Aleyrodidae), *Parabemisia lushanensis* Ko and Luo n. sp., and 4 species which are new records for China, *Aleuroplatus ficifolii* Takahashi, *Aleurotrachelus multipapillus* Singh, *Bulgarialeurodes cotesii* (Maskell), and *Pealius bengalensis* (Peal) are herein reported for the first time. The new species is described based upon the pupal cases with illustrations and SEM photographs.

摘要

本文描述中國產粉蝨1新種：廬山類伯粉蝨 *Parabemisia lushanensis* Ko and Luo n. sp.; 及4新記錄種：榕葉扁粉蝨 *Aleuroplatus ficifolii* Takahashi、多瘤摺粉蝨 *Aleurotrachelus multipapillus* Singh、野玫瑰粉蝨 *Bulgarialeurodes cotesii* (Maskell) 以及孟加拉皮粉蝨 *Pealius bengalensis* (Peal)。

Key words: Taxonomy, Aleyrodidae, new species, new records, China.

關鍵詞: 分類、粉蝨科、新種、新記錄、中國

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On Some Whiteflies (Homoptera: Aleyrodidae) from China

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ABSTRACT

One new species of whiteflies (Homoptera: Aleyrodidae), *Parabemisia lushanensis* Ko and Luo n. sp., and 4 species which are new records for China, *Aleuroplatus ficifolii* Takahashi, *Aleurotrachelus multipapillus* Singh, *Bulgarialeurodes cotesii* (Maskell), and *Pealius bengalensis* (Peal) are herein reported for the first time. The new species is described based upon the pupal cases with illustrations and SEM photographs.

Key words: Taxonomy, Aleyrodidae, new species, new records, China.

Introduction

The known Chinese fauna of whiteflies comprises approximately 159 species in 30 genera, having been recorded chiefly as a result of studies by Takahashi (1934, 1936, 1938, 1941), Young (1942, 1944), Takahashi and Mamet (1955), Chou and Yan (1988), and Yan (1988). From that time on, very few published works exist. Collection of Chinese whiteflies have been made by the second author since 1996. Although a number of species are awaiting identification and description, we recently recognized 1 new species and 4 species that are new to China which we report in this paper. In the text, the following abbreviations are used for the depositories of material in this study: (ANIC) Australian National Insect Collection, Canberra (M. Carver); (CDFA) California Department of Food and Agriculture, Sacramento (R. J. Gill);

(NHM) Natural History Museum, London (J. H. Martin); (NMNS) National Museum of Natural Science, Taichung (Cheng-Shing Lin); (NTU) National Taiwan University, Taipei (Chiun-Cheng Ko); (SIE) Shanghai Institute of Entomology, Shanghai (Zhi-Yi Luo); and (TARI) Taiwan Agricultural Research Institute, Taichung (Liang-Yih Chou).

***Parabemisia lushanensis* Ko and Luo n. sp.**
(Figs. 1-7)

Pupal case: Usually entirely pale, occasionally with slight duskiness, oval, broadest at abdominal segment II. Sexually dimorphic: female 1.51 mm long, 1.32 mm wide; male 1.20 mm long, 0.94 mm wide. Pupal cases of both sexes 1.14-1.28 times as long as wide. Posterior margin flattened but barely indented, without marginal indentation towards thoracic tracheal areas. Margin bluntly and rather unevenly crenulate, with about 10 teeth

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occupying 0.1 mm of margin. Thoracic and caudal tracheal openings with comb, rather crenulate, slightly differentiated from remainder of marginal teeth, with about 15 teeth occupying 0.1 mm of margin. Anterior and posterior marginal setae present, very short, each at 0.024 and 0.018 mm, respectively.

Dorsum: Nine pairs of submarginal setae present, very short, much shorter than vasiform orifice, 0.012 mm long,

sometimes barely recognizable, 4 on cephalothorax and 5 on abdomen (excluding anterior and posterior marginal pairs and caudal pair). Submarginal area not separated from dorsal disc. A pair of cephalic setae present, tiny, 0.018 mm long. A pair of tiny setae present on each of abdominal segments VIII, 0.024 mm long, but abdominal segment pair absent. Dorsum punctuated by evenly distributed, large, circular-tubercular combined pores,

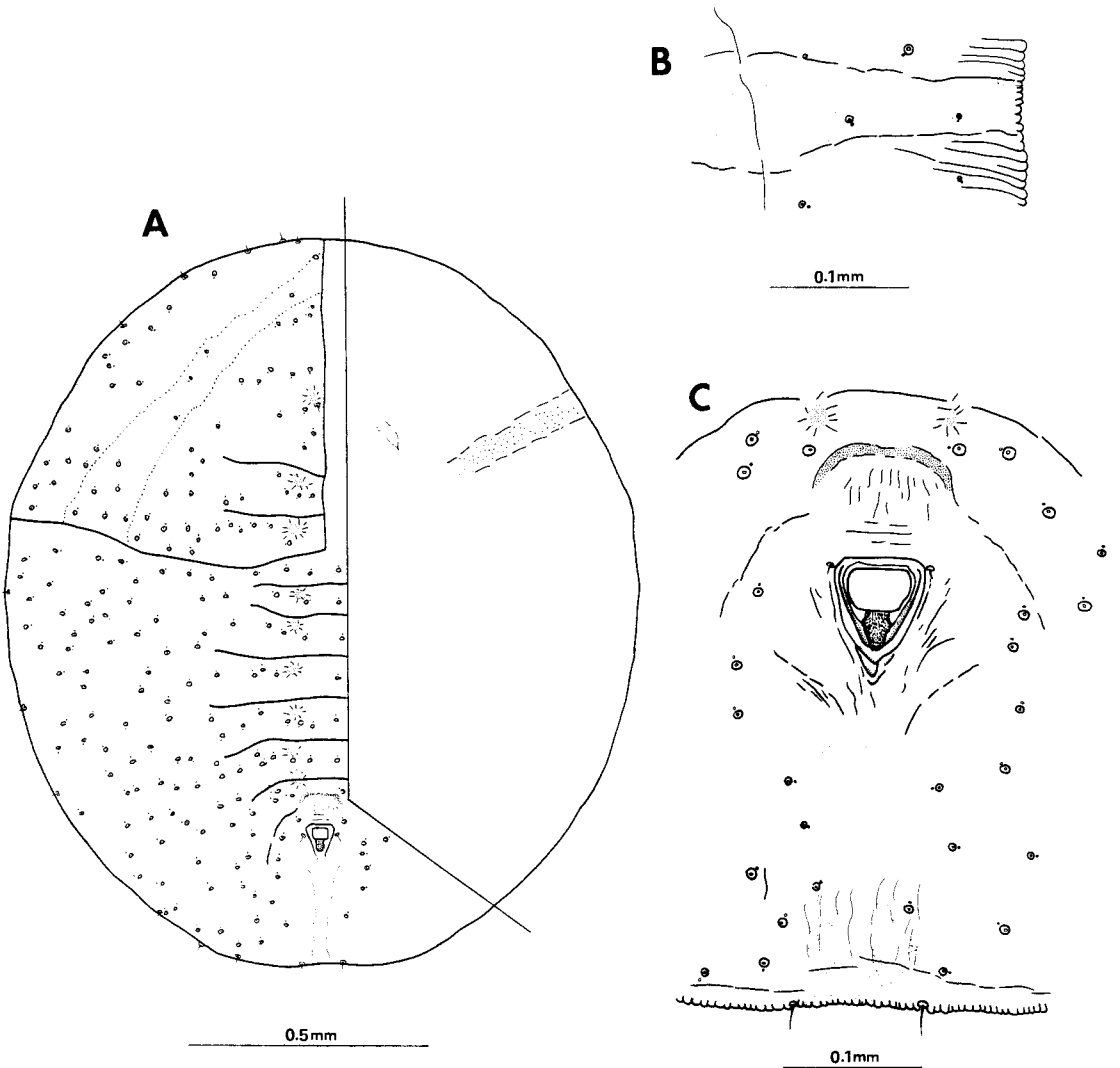
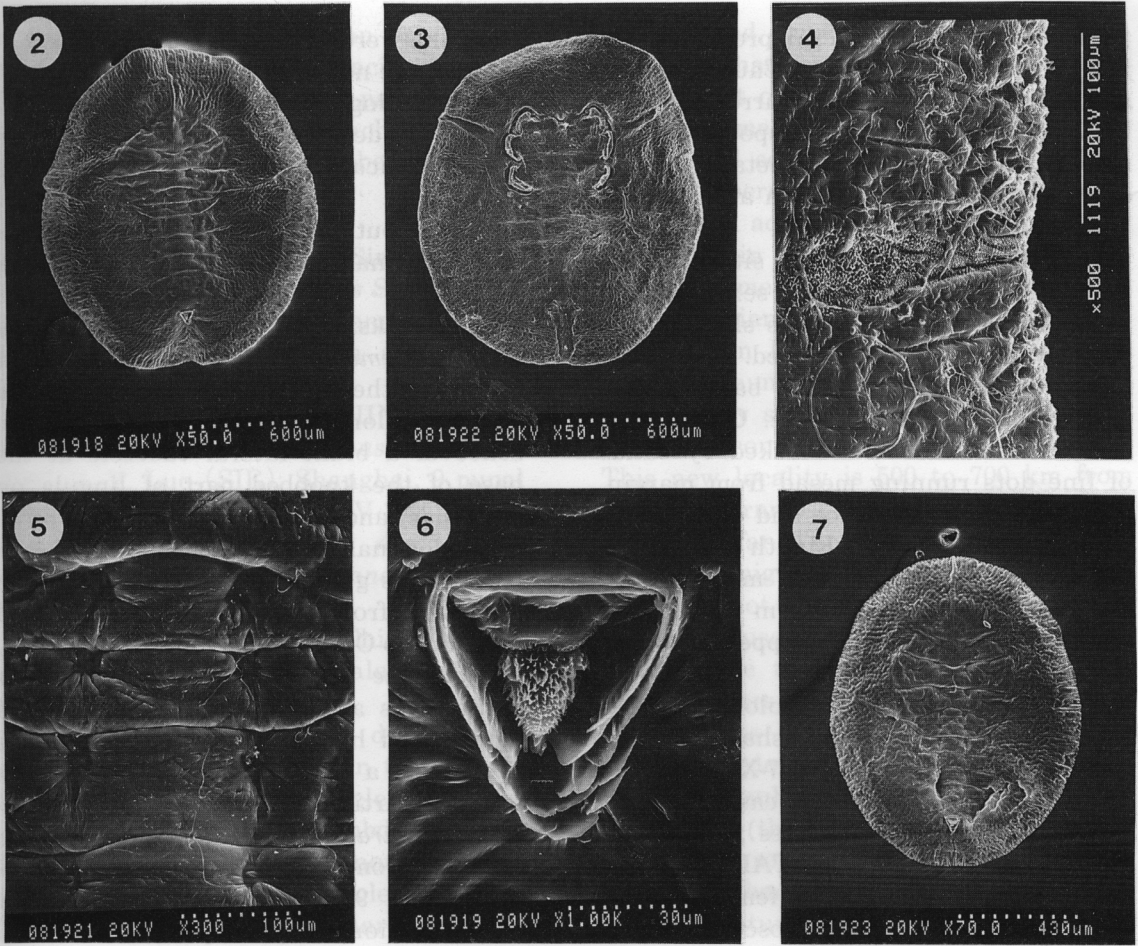


Fig. 1. *Parabemisia lushanensis* Ko and Luo n. sp. (female) - A, fourth instar; B, thoracic tracheal area; C, posterior area.



Figs. 2-7. *Parabemisia lushanensis* Ko and Luo n. sp. - 2, Fourth instar, dorsal view (female); 3, do., ventral view (female); 4, do., throacic tracheal fold (female); 5, do., submedian depressions (female); 6, do., vasi-form orifice (female); 7, do., dorsal view (male).

a combination of two connected pores: a larger disk pores 0.008 mm in diameter, and a smaller porette with a paler central opening often on well-developed base. Combined pores distributed over irregular rows on the submargin and submedian area, mostly at random over subdorsum. Both transverse and longitudinal moulting sutures reaching margin, dorsal halves of cephalothorax easily becoming detached. Abdominal sutures I-II short, other abdominal sutures ending on subdorsum. Median lengths of abdominal segments I-VI subequal, but that of segment VII much reduced. Pockets small or abs-

ent. Submedian depressions present on cephalothorax and abdominal segments II-VII, large but often faint. Vasi-form orifice rounded-triangular to trapezoidal, with lateral margins concave, posterior margin abruptly truncated although not marked by a sharp line; orifice inset from posterior margin by about 3 times its own length; internal walls of orifice smooth, not notched. Operculum laterally-rounded trapezoidal, much wider than long, truncate at hind margin, occupying about half of vasi-form orifice. Lingula exposed, only just included in orifice; head slightly tapering, dark, finely spinulose, with a

pronounced pair of lateral processes; apical setae not apparent. Caudal ridges and furrow faint. Caudal furrow marked by a line of darkly stained spots, not prominent. Eight abdominal setae situated closely to vasiform orifice in antero-lateral position.

Venter: Antennae short, situated mesal to legs. Antennae of both sexes subequal in length. Outside of legs slightly curved, prothoracic legs reduced. Meso- and metathoracic legs without basal microsetae. Adhesive sacs visible. Caudal and thoracic tracheal folds marked by bands of fine dots running mesad from margin, reaching vasiform orifice and outer edges of legs, respectively. Eighth abdominal segment setae present, 0.127 mm long, about half as long as vasiform orifice. All spiracles well developed, appearing claw like.

Material examined: Holotype pupal case (female), CHINA: Lushan, on *Acer serrulatum* (Aceraceae), 27-X-1996, Z.Y. Luo (SIE). Paratype pupal cases, 2 pupal cases (on 2 microscope slides), same data as holotype (NTU; SIE); TAIWAN: NANTOU HSIEN: Meifeng, 15 females, 9 males pupal cases (on 13 microscope slides), on *Alnus formosana* (Betulaceae), 15-X-1994, K. C. Chou (NTU); Nengkao, 20 females, 10 males pupal cases (on 12 microscope slides), on undetermined host, 24-X-1989, C. C. Ko (ANIC, CDFA, MNH, NMNS, NTU, TARI); Tunpala, 9 females, 3 males pupal cases (on 4 microscope slides), on undetermined host, 27-X-1989, C. C. Ko (NTU); KAOHSIUNG HSIEN: Chinanshan, 3 females, 3 males pupal cases (on 3 microscope slides), on undetermined host, 31-X-1989, C. C. Ko (NTU).

Host plants: *Acer serrulatum* (Aceraceae), *Alnus formosana* (Betulaceae).

Biology: This species was found scattered on undersides of leaves in mountainous areas (over 1000 m). They were very easy to detect. No evident signs of damage have been noted up to now. Wax secretions were not prominent. No parasitoids

or adults were obtained from cultures. Colonies were not attended by ants.

Etymology: The specific name *lushanensis* is derived from the geographic name, indicating the type locality Lushan.

Distribution: China (Lushan), Taiwan (Chinanshan, Meifeng, Nengkao, Tunpala).

Remarks: This genus is closely related to *Bemisia* Quaintance & Baker but differs in the presence of setae arranged in a row along the body margin, the presence of a blunt lateral tubercle at the base of the knobbed part of lingula on each side, and the absence of dorsal setae on abdominal segment I. All named species of this genus *Parabemisia* have been described from Japan and the Oriental and Austro-Oriental Regions. One species, *P. myricae* (Kuwana), the bayberry whitefly, is a serious pest of subtropical plants, and has since extended its range to become a pest in several parts of the world (Martin, 1988). This species is related to *Parabemisia maculata* Takahashi, differing from it in the submarginal setae numbering 9 pairs (excluding anterior and posterior marginal pairs and caudal pair), dorsum bearing many large combined pores, and tracheal folds with fine dots. This species is distinctly different from *P. jawani* Martin, and can be separated by the shorter submarginal setae, and smaller combined pores.

Aleuroplatus ficifolii Takahashi, 1942

Aleuroplatus ficifolii Takahashi, 1942: 174-175.

Material examined: CHINA: Fuzhou, 3 pupal cases on *Ficus* sp., 23-I-1983, B. L. Young (NTU; SIE).

Host plants: *Ficus retusa*, *Ficus* sp. (Moraceae).

Distribution: China (Fuzhou), Thailand.

Remarks: This species is characterized by many irregular linear markings present on the median area of the cepha-

lothorax and on the median segmented area of the abdomen; thoracic tracheal folds with a wide sclerotized part at bases of combs, and teeth of tracheal combs truncate at tip; lingula knobbed, knobbed part nearly globular.

***Aleurotrachelus multipapillus* Singh, 1932**

Aleurotrachelus multipapillus Singh, 1932: 86-87; David and Subramaniam, 1976: 170; Martin, 1988: 69; Jesudasan and David, 1991: 289.

Material examined: CHINA: Hangzhou, 4 pupal cases on *Bambusa* sp., 15-IV-1997, Z. Y. Luo (SIE); Shanghai, 9 pupal cases on *Bambusa* sp., 23-IV-1997, Z. Y. Luo (NTU; SIE).

Host plants: *Bambusa nana*, *Bambusa* sp. (Gramineae).

Distribution: Burma, China (Hangzhou, Shanghai), India, Malaysia, Sulawesi, Thailand.

Remarks: This species differs from other species of the genus in the characteristic pattern of small sclerotized papillae distributed on the subdorsum; abdominal ridges eminent, not reaching margin, with many small sclerotized papillae on each margin; submarginal pores arranged in a row.

***Bulgarialeurodes cotesii* (Maskell, 1895)**

Aleurodes cotesii Maskell, 1895: 427-428.

Bulgarialeurodes rosae Corbett, 1936: 18.

Aleurodes rosae Kiriukhin, 1947: 10.

Trialeurodes cotesi (Maskell) Rao, 1958: 334.

Bulgarialeurodes cotesii (Maskell) Russell, 1960: 30-32; Kozar and David, 1986: 90-94.

Material examined: CHINA: Xinjian, 8 pupal cases on *Rosa* sp., 2-VII-1995, Z. Y. Luo (NTU; SIE).

Host plants: *Rosa damascena*, *Rosa* sp. (Rosaceae).

Distribution: Afghanistan, Bulgaria, China (Xinjian), Hungary, Iran, Pakistan, Rumania, Russia, Yugoslavia.

Remarks: This species lives on roses

in Asia and Europe. Available evidence indicates that *cotesii* is usually abundant wherever it occurs. Infested leaves sometimes become weakened and drop prematurely, and so it is considered injurious. Insects hibernate in the pupal stage on leaves, and adults emerge in late April or early May in Europe (Russell, 1960). There were numerous adults found from *Rosa* sp. in Xinjian in this study. This species appeared in Budapest, Hungary in 1983, then its numbers rapidly increased, it successfully survived the winter of 1983/1984, and continued to propagate in 1984. This new locality is 500 to 700 km from its northernmost station of Budapest known so far. The means of introduction (natural migration or introduction by man) are not known. One of the most important causes of this phenomenon appears to be that winters were mild for several years (Kozar and David, 1986). This species is peculiar in the arrangement of its dorsal disk pores, and porettes as follows: submarginal disk pores and porettes with the one single row, and another single row roughly between subdorsal and submedian areas, on pro-mesothoracic suture, and on thoraco-abdominal suture, extending to a point on median line of cephalic segment and curved posterior to vasiform orifice.

***Pealius bengalensis* (Peal, 1903)**

Aleurodes bengalensis Peal, 1903: 71-74.

Pealius bengalensis (Peal) Quaintance and Baker, 1914: 99; Jesudasan and David, 1991: 319.

Material examined: CHINA: Xianyou, 1 pupal case on *Ficus* sp., 18-VIII-1990, B. L. Young (SIE).

Host plants: *Ficus* sp. (Moraceae).

Distribution: China (Xianyou), India, Thailand.

Remarks: Subdorsum with 28 pores in outer and 26 pores in inner series and the peculiar vasiform orifice situated in a large depressed pit are extremely characteristic of this species.

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References

- Chou, I., and F. M. Yan.** 1988. New species and new records of Aleyrodidae (Homoptera) from China. *Entomotaxonomia* 10(3-4): 243-246 (in Chinese).
- Corbett, G. H.** 1936. New Aleurodidae (Hem.). *Proc. R. Entomol. Soc. Lond.* (B) 5: 18-22.
- David, B. V., and T. R. Subramaniam.** 1976. Studies on some Indian Aleyrodidae. *Rec. Zool. Surv. India* 70: 133-233.
- Jesudasan, R. W. A., and B. V. David.** 1991. Taxonomic studies on Indian Aleyrodidae (Insecta: Homoptera). *Oriental Insects* 25: 231-434.
- Kiriukhin, G.** 1947. Quelques Aleurodoidea de l'Iran. *Entomol. Phytopath. Appl.* 5: 8-10.
- Kozar, F., and A. N. David.** 1986. The unexpected northward migration of some species of insects in Central Europe and the climatic changes. *Anz. F. Schadlingsk* 59: 90-94.
- Martin, J. H.** 1988. Whitefly of northern Sulawesi, including new species from clove and avocado (Homoptera: Aleyrodidae). *Indo-Malayan Zool.* 5: 57-85.
- Maskell, W. M.** 1895. Contribution towards a monograph of the Aleurodidae, a family of Hemiptera-Homoptera. *Trans. Proc. N. Z. Inst.* 28: 411-449.
- Peal, H. W.** 1903. Contribution towards a monograph of the oriental Aleurodidae. *J. Asiat. Soc. Beng.* 72: 61-98.
- Quaintance, A. L., and A. C. Baker.** 1914. Classification of the Aleyrodidae. Part II. *Tech. Ser. Bur. Entomol. U.S.* 27: 95-109.
- Rao, A. S.** 1958. Notes on Indian Aleurodidae (Whiteflies), with special reference to Hyderabad. *Proc. 10th Int. Cong. Entomol.* 1: 331-336.
- Russell, L. M.** 1960. A whitefly living on roses. *Proc. R. Entomol. Soc. Lond.* (B) 29: 29-32.
- Singh, K.** 1932. On some new Rhynchota of the family Aleyrodidae from Burma. *Rec. Indian Mus.* 34: 81-88.
- Takahashi, R.** 1934. A new whitefly from China (Aleyrodidae: Homoptera). *Lingnan Sci. J.* 13: 137-141.
- Takahashi, R.** 1936. Three species of Aleyrodidae from China (Homoptera). *Lingnan Sci. J.* 15: 453-455.
- Takahashi, R.** 1938. A few Aleyrodidae from Mauritius and China (Hemiptera). *Trans. Nat. Hist. Soc. Formosa* 28: 269-271.
- Takahashi, R.** 1941. Some foreign Aleyrodidae (Hemiptera) III. Species from Hongkong and Mauritius. *Trans. Nat. 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: 168-175.
- Takahashi, R., and R. Mamet.** 1955. Descriptions of some new and little known species of Aleyrodidae from China and Malaya (Homoptera). *Acta. Entomol. Sin.* 5: 221-235.
- Yan, F. M.** 1988. New records of Aleyrodidae from China. *Experientia* 10(1-2): 50.
- Young, B. L.** 1942. Whiteflies attacking citrus in Szechwan. *Sinensia, Shanghai* 13: 95-101.
- Young, B. L.** 1944. Aleurodidae from Szechwan, I. *Sinensia, Shanghai* 15: 129-139.

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中國產粉蝨之新記錄種（同翅目：粉蝨科）

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摘要

本文描述中國產粉蝨1新種：廬山類伯粉蝨 *Parabemisia lushanensis* Ko and Luo n. sp.；及4新記錄種：榕葉扁粉蝨 *Aleuroplatus ficifolii* Takahashi，多瘤摺粉蝨 *Aleurotrachelus multipapillus* Singh，野玫瑰粉蝨 *Bulgarialeurodes cotesii* (Maskell) 以及孟加拉皮粉蝨 *Pealius bengalensis* (Peal)。

關鍵詞：分類、粉蝨科、新種、新記錄、中國。