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Dolichocyboidea, Pygmephoroidea, Scutacaroidea and Trochometridioidea of China: a review of progress, with a checklist*

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Abstract

This paper presents a historical review of taxonomic research on the superfamilies Dolichocyboidea, Pygmephoroidea, Scutacaroidea and Trochometridioidea in China, with a discussion of the valid status of *Luciaphorus auriculariae*, and a checklist of 49 species belonging to 6 families and 17 genera, including 16 species of new records for China. The second part of this paper briefly reviews the studies on the biology and control of the pygmephoroid and scutacaroid mites in China, which include *Brennandania lambi*, *Luciaphorus auriculariae*, *Pseudopygmephorus quadratus*, *Siteroptes avenae*, *S. flechtmanni*, *S. huangshuiensis*, *S. qinghaiensis*, *S. reniformis*, *S. triticola* and *S. xizangensis*.

Key words: Dolichocybidae, Microdispidae, Pygmephoridae, Siteroptidae, Scutacaridae, Trochometridiidae, *Luciaphorus auriculariae*, mushrooms, biology, control

Introduction

The superfamilies Dolichocyboidea, Pygmephoroidea and Trochometridioidea were split from Pyemotidae *sensu* Cross (1965) and promoted to superfamilies while superfamily Scutacaroidea was promoted from Scutacaridae. Dolichocyboidea has Dolichocybidae family, Pygmephoroidea has Pygmephoridae and Siteroptidae families, Scutacaroidea has Microdispidae and Scutacaridae families and Trochometridioidea has Athyreacaridae, Caraboacaridae and Trochometridiidae families (Walter *et al.*, 2009). The 4 superfamilies currently include 670 species and 79 genera according to the database of Texas A & M University (http://insects.tamu.edu/research/collection/hallan/Acari/Family/Actinedida1.htm). They are very interesting and diverse groups of mites in both morphology and biology. The economic importance of these groups of mites was realized seven decades ago (Cooper, 1940). Since then it was well documented that several siteroptid species in the genus *Siteroptes* carry and disseminate plant pathogens such as *Nigrospora* spp., *Fusarium* spp. or *Botrytis* spp. which cause important crop diseases known as lint rot of cotton, bud rot of carnation and ear rot or silver top of wheat and grasses (Cooper, 1940; Laemmlen & Hall, 1973; Su *et al.*, 1981; Buczacki & Harris, 2000). Some microdispid and pygmephorid mites such as *Brennandania lambi*, *Luciaphorus auriculariae* directly feed on mushrooms and cause great economic loss of the crops (Gao *et al.*, 1986; Wu & Zhang, 1993; Clift & Toffolon, 1981; Zou *et al.*, 1993). *Brennandania lambi* was listed in Zhejiang provincial quarantine pests associated with agricultural plants by Zhejiang Agricultural Department in 2007. Although most are important agricultural pests, some

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