



Three new species of *Anatkina* Young (Hemiptera: Cicadellidae: Cicadellini) from China, with a key and checklist of known Chinese species of the genus

MAO-FA YANG^{1,3}, ZE-HONG MENG^{1,2} & XIAO-FEI YU¹

¹Institute of Entomology, Guizhou University; Guizhou Provincial Key Laboratory for Agricultural Pest Management of the Mountainous Region, Guizhou University; the Provincial Special Key Laboratory for Development and Utilization of Insect Resources, Guizhou University, Guiyang, 550025 P. R. China

²Guizhou Tea Research Institute, Guiyang, Guizhou, 550006, P. R. China

³Corresponding author. E-mail: ggdly@126.com

Abstract

Three new species of the genus *Anatkina* Young, 1986 from China are described and illustrated: *A. leishanensis* sp. nov., *A. alata* sp. nov. and *A. zhangii* sp. nov. The type specimens of the new species are deposited in the Institute of Entomology, Guizhou University, Guiyang, China. In this paper, *A. reticulosa* Kuoh, 1993 and *A. basimacula* Kuoh, 1993 are placed as junior synonyms of *A. infecta* (Distant, 1908) and *A. vespertinula* (Breddin, 1903), respectively; *A. inflammata* (Distant, 1908) is recorded as new for China. A key and checklist of all Chinese species of the genus are provided.

Key words: Auchenorrhyncha, leafhopper, Cicadellinae, new synonym, new record

Introduction

The sharpshooter genus *Anatkina* was established by Young (1986) for 36 species (15 new), with *A. vespertinula* (Breddin, 1903) as its type species. Later, many species have been described, especially from China (Kuoh 1991, 1993; Kuoh & Zhang 1992; Li 1992; Yang & Li 1998, 1999, 2001, 2005; Yang & Song 2005; Yang & Zhang 2000; Yang *et al.* 2001). So far, 55 valid species of *Anatkina* are known and of these 30 are recorded from China. The current study revealed three new species from China based on external and genitalia characters: *A. leishanensis* sp. nov., *A. alata* sp. nov. and *A. zhangii* sp. nov. *Anatkina* is recorded from India, Thailand, Vietnam, Malaysia, Indonesia, Sri Lanka, Burma, Singapore, Philippines, Pakistan and China. In this paper, *A. inflammata* (Distant, 1908) is recorded as new for China. *Anatkina reticulosa* Kuoh, 1993 and *A. basimacula* Kuoh, 1993 are regarded as junior synonyms of *A. infecta* (Distant, 1908) and *A. vespertinula* (Breddin, 1903), respectively. The current study also provides a key and checklist of *Anatkina* leafhoppers from China.

Material and methods

The male genital structures were prepared according to the techniques described by Oman (1949). Morphological terminology follows Young (1986) and Dietrich (2005). Male specimens were dissected under an OLYMPUS SZ61 microscope, the dissected parts are stored in microvials with glycerin and attached below the specimens to which they belong. Figures were made using OLYMPUS CX41 and enhanced using Adobe Illustrator CS4. Photographs were taken with a Canon EOS 500D (with Canon MP-E 65mm F2.8 lens) digital camera, then overlapped with Helicon Focus, and edited with Adobe Photoshop CS3. The type specimens of the new species are housed in the Institute of Entomology, Guizhou University, Guiyang, China (GUGC).

***A. zhangi* Yang, Meng & Yu, sp. nov.** (Figs 19–27)

Distribution. China (Yunnan).

***A. zhoui* Yang & Li, 2001**

Anatkina zhoui Yang & Li in Yang, Du & Li, 2001: 142

Distribution. China (Guangxi).

***A. zuoi* Yang & Zhang, 2000**

Anatkina zuoi Yang & Zhang, 2000: 185

Distribution. China (Fujian, Guangdong).

Acknowledgements

We are very grateful to Zi-zhong Li, Zai-hua Yang, Bin Li, Xin-feng Zhang and Wei-cheng Yang (Institute of Entomology, Guizhou University, China) for collecting material used in this study. We would like to express our sincere thanks to Chris Dietrich, Illinois Natural History Survey, University of Illinois, USA, and an anonymous referee for reviewing the manuscript and suggesting improvements. This project was supported by the National Natural Science Foundation of China (30770253; 31301912), the Science and Technology Foundation of Guizhou Province (J-[2013]-2157), the National Specialized Research Fund for Basic Science of the Ministry of Science and Technology of China (2006FY120100), Program for New Century Excellent Talents in University (NCET-07-0221), the Program of Science and Technology Innovation Talents Team, Guizhou Province (20144001), the Provincial Outstanding Graduate Program for Agricultural Entomology and Pest Control (ZYRC-[2013]-010), and the Provincial Foundation for Excellent Youth in Science and Technology Field of Guizhou (20050517).

References

- Dietrich, C.H. (2005) Keys to the families of Cicadomorpha and subfamilies and tribes of Cicadellidae (Hemiptera: Auchenorrhyncha). *Florida Entomologist*, 88, 502–517.
[http://dx.doi.org/10.1653/0015-4040\(2005\)88\[502:KTTFOC\]2.0.CO;2](http://dx.doi.org/10.1653/0015-4040(2005)88[502:KTTFOC]2.0.CO;2)
- Distant, W.L. (1908) *The Fauna of British India including Ceylon and Burma. Rhynchota IV Homoptera and Appendix (Pt.)*. Taylor & Francis, London, 501 pp.
- Distant, W.L. (1918) *The Fauna of British India including Ceylon and Burma. Rhynchota VII Homoptera: Appendix, Heteroptera: Addenda*. Taylor & Francis, London, 210 pp.
- Jacobi, A. (1944) Die Zikadenfauna der Provinz Fukien in Südchina und ihre tiergeographischen Beziehungen. *Mitteilungen der Münchner Entomologischen Gesellschaft*, 34, 5–66.
- Kuoh, C.L. & Zhang, Z.M. (1992) Three new species of the Genus *Anatkina* (Homoptera: Cicadelloidea). *Entomotaxonomia*, 14, 111–115.
- Kuoh, C.L. (1966) *Economic Insect Fauna of China, Fasc. 10, Homoptera: Cicadellidae*. Science Press, Beijing, 170 pp.
- Kuoh, C.L. (1991) Five new species of Cicadellidae from Fujian (Homoptera: Cicadelloidea). *Wuyi Science Journal*, 8, 15–22.
- Kuoh, C.L. (1993) Four new species of the Genus *Anatkina* (Homoptera: Cicadellidae). *Journal of Anhui Agricultural University*, 20, 1–6.
- Li, Z.Z. & Wang, L.M. (1992) *Agriculture and Forestry Insect Fauna of Guizhou. Vol. 4. Homoptera: Cicadellidae*. Guizhou Science and Technology Publishing House, Guiyang, 304 pp.
- Li, Z.Z. (1992) A new species of *Anatkina* from Guizhou Province, China (Homoptera: Tettigellidae). *Acta Entomologica Sinica*, 35, 215–217.
- Matsumura, S. (1912) Die Cicadinen Japans II. *Annotationes Zoologicae Japonenses*, 8, 15–51.
- McKamey, S.H. (2007) Taxonomic catalogue of the leafhoppers (Membracoidea). Part 1. Cicadellinae. *Memoirs of the American Entomological Institute*, 78, 1–394.
- Metcalf, Z.P. (1965) *General Catalogue of the Homoptera. Fasc. 6, part 1, Tettigellidae*. Agricultural Research Service, United States Department of Agriculture, Washington, D.C., 731 pp.
- Oman, P.W. (1949) The Nearctic leafhoppers (Homoptera: Cicadellidae). A generic classification and check list. *Memoirs of the Entomological Society of Washington*, 3, 1–253.
- Walker, F. (1851) *List of the specimens of Homopterous insects in the collection of the British Museum*. British Museum, London, 3, 637–907.

- Walker, F. (1857) Catalogue of the Homopterous Insects collected at Singapore and Malacca by Mr A. R. Wallace, with description of new species. *Journal of Proceedings of the Linnean Society of London*, 1, 82–100.
<http://dx.doi.org/10.1111/j.1096-3642.1856.tb00958.x>
- Wilson, M.R., Turner, J.A. & McKamey, S.H. (2009) Sharpshooter Leafhoppers (Hemiptera: Cicadellinae). An Illustrated Checklist. Part 1: Old World Cicadellini. *Studies in Terrestrial and Freshwater Biodiversity and Systematics from the National Museum of Wales. BIOTIR Reports*, 4, 1–229.
- Yang, M.F. & Li, Z.Z. (1998) Three new species of Cicadellidae from China's Hainan Province (Homoptera: Cicadellidea). *Zoological Research*, 19, 318–322.
- Yang, M.F. & Li, Z.Z. (1999) A new species of *Anatkina* from Yunnan Province, China (Homoptera: Cicadellidae). *Journal of Mountain Agriculture and Biology*, 18, 15–16, 20.
- Yang, M.F. & Li, Z.Z. (2001) Three New Species of the Genus *Anatkina* from Guizhou Province, China (Homoptera: Cicadellidae). *Acta Zootaxonomica Sinica*, 26, 46–50.
- Yang, M.F. & Li, Z.Z. (2005) A New Species of *Anatkina* (Hemiptera: Cicadellidae: Cicadellinae) from China. *Entomotaxonomia*, 27, 14–16.
- Yang, M.F. & Song, D.M. (2005) Two new species of Cicadellinae (Hemiptera, Cicadellidae) from Xizang, China. *Entomotaxonomia*, 27, 97–102.
- Yang, M.F. & Zhang, Y.L. (2000) Three New Species of Cicadellinae (Homoptera: Cicadellidae) from China. *Entomotaxonomia*, 22, 185–190.
- Yang, M.F., Du, Y.L. & Li, Z.Z. (2001) Three New Species and a New Record of the Genus *Anatkina* from China (Homoptera: Cicadellidae: Cicadellinae). *Zoological Research*, 22, 142–145.
- Young, D.A. (1986) Taxonomic Study of the Cicadellinae (Homoptera: Cicadellidae), Part3, Old World Cicadellini. *North Carolina Agricultural Experiment Station Technical Bulletin*, 281, 1–639.
- Zhang, Y.L. (1990) *A taxonomic study of Chinese Cicadellidae (Homoptera)*. Tianze Eldonejo, Yangling, 218 pp.