

<http://dx.doi.org/10.11646/zootaxa.3779.1.4>
<http://zoobank.org/urn:lsid:zoobank.org:pub:90BE22AF-B587-45F5-BE0-63C5B57592C5>

***Alafrasca sticta*, a new genus and species of the tribe Emoascini (Hemiptera: Cicadellidae: Typhlocybinae) with a checklist of the tribe from China**

SI-HAN LU & DAO-ZHENG QIN¹

Key Laboratory of Plant Protection Resources and Pest Management of the Ministry of Education; Entomological Museum, Northwest A&F University, Yangling, Shaanxi 712100, China

¹Corresponding author. E-mail: qindaozh@nwsuaf.edu.cn

Abstract

A new monotypic genus of emoascine leafhopper, *Alafrasca* gen. nov. is described and illustrated for *A. sticta* sp. nov. from Sichuan, China as its type species. Habitus photos and illustrations of male genitalia of the new species are given. A checklist of the tribe in China is also provided.

Key words: Auchenorrhyncha, leafhopper, taxonomy, distribution

Introduction

Emoascini is a large group among the 6 tribes within the subfamily Typhlocybinae of Cicadellidae. Over the past 100 years, the tribal classification has undergone a great deal of addition and revision and it is currently characterized as follows: forewing without appendix, hindwing with submarginal vein present at wing apex and veins RP and MP' confluent distally (Dietrich, 2005). To date, the tribe contains more than 1,000 described species in nearly 70 genera distributed worldwide.

The Chinese Emoascini were studied by Matsumura (1931), Wu (1935), Dworakowska (1971, 1972, 1973, 1976, 1982, 1994, 1995, 1997), Kuoh (1966), Chou & Ma (1981), Cai & Shen (1981), Chou & Zhang (1987), Zhang & Chou (1988), Zhang (1990), Zhang & Xiao (2000), Zhang & Qin (2004, 2005), Zhang et al (2008, 2010), Qin & Zhang (2003, 2004, 2007a, 2007b, 2008a, 2008b, 2011), Qin et al (2010, 2011a, 2011b, 2013), Liu et al (2011a, 2011b, 2011c, 2011d), Lu et al. (2013), Yu & Yang (2012, 2013a, 2013b). More than 180 species in 31 genera are known from China today. However, the emoascine fauna of China remains inadequately surveyed.

In this paper, a new genus and species, *Alafrasca sticta*, discovered during recent examination of holdings in the Entomological Museum, Northwest A&F University, Yangling, Shaanxi, China (NWAFU), is described as a member of the tribe Emoascini of the subfamily Typhlocybinae. A checklist of the tribe in China is also provided.

Material and methods

The specimens examined in this study are deposited in the Entomological Museum, Northwest A&F University, Yangling, Shaanxi, China (NWAFU). The entire male abdomens of the examined specimens were removed and cleared in 10% NaOH and drawn from preparations preserved in glycerin. Figures of the male genitalia were made using an OLYMPUS PM-10AD microscope. Habitus photos were taken by using a Scientific Digital micrography system equipped with an Auto-montage imaging system and a QIMAGING Retiga 4000R digital camera (CCD). Multiple photographs were compressed into final images. The body measurements are from apex of vertex to tip of forewing. The morphological terminology follows Zhang (1990) except for the nomenclature of the wing, where we follow Dworakowska (1993).

Membranacea Qin & Zhang, 2011

M. spinata Qin & Zhang, 2011—China (Hunan)

M. unijugata Qin & Zhang, 2011—China (Sichuan, Shaanxi)

M. plana Qin & Zhang, 2011—China (Hunan)

M. hubeiensis Yu & Yang, 2013—China (Hubei)

M. stenoprocessa Yu & Yang, 2013—China (Hubei, Guizhou)

Nikkotettix Matsumura, 1931

N. cuspidata Qin & Zhang, 2003—China (Hunan, Sichuan, Guizhou, Yunnan)

N. taibaiensis Qin & Zhang, 2003—China (Shaanxi)

N. erythrinae Dworakowska, 1995—China (Yunnan); Indonesia; Nepal

N. galloisi Matsumura, 1931—China (Zhejiang, Shaanxi); Japan

Radicafurcus Qin & Zhang, 2010

R. breviprocessus Qin & Zhang, 2010—China (Sichuan)

Schizandrasca Anufriev, 1972

S. ussurica (Vilbaste, 1968)—China (Hubei, Shaanxi); Far East of Russia; Korea

Sikkimasca Dworakowska, 1994

S. annulata Dworakowska, 1994—China (Hainan); India

Treufalka Qin & Zhang, 2008

T. lamellata Qin & Zhang, 2008—China (Guangdong, Hainan)

Usharia Dworakowska, 1977

U. ancora Zhang & Qin, 2005—China (Yunnan)

U. cassiae Dworakowska, 1984—China (Hainan); Singapore

U. constricta Zhang & Qin, 2005—China (Guangdong, Yunnan)

U. denticulata Zhang & Qin, 2005—China (Yunnan)

U. excurrens Zhang & Qin, 2005—China (Hainan)

U. marginata Zhang & Qin, 2005—China (Yunnan)

U. mata Dworakowska, 1977—China (Hunan); Vietnam

U. obtusa Thapa, 1985—China (Hainan, Yunnan); Nepal

U. spinosa Zhang & Qin, 2005—China (Yunnan)

Velu Ghauri, 1963

V. furcatum Zhang & Qin, 2004—China (Yunnan)

V. longiprojectum Zhang & Qin, 2004—China (Yunnan)

V. pleuroprominens Zhang & Qin, 2004—China (Henan)

Acknowledgements

We would like to express our sincere thanks to Dr Chris Dietrich (Center for Biodiversity, Illinois Natural History Survey, USA) for reviewing the manuscript and suggesting improvements. This work was supported by the National Natural Science Foundation of China (No. 31270689).

References

- Cai, P. & Shen, X.C. (1999) Two new species of Cicadellidae from Mt. Jigong (Homoptera: Cicadellidae). In: Shen, X.C. (Ed.), *The fauna and taxonomy of insects in Henan, Vol. 3. Insects of the Jigong Mountains Region*. China Agricultural Scientechn Press, Beijing, pp. 11–13.
- Chou, I. & Ma, N. (1981) On some new species and new records of Typhlocybinae from China (Homoptera: Cicadellidae). *Entomotaxonomia*, 3, 191–210.
- Chou, I. & Zhang, Y.L. (1987) A taxonomic study of the genus *Alebrooides* Mats. from China (Homoptera, Cicadellidae, Typhlocybinae). *Entomotaxonomia*, 9, 289–302.
- 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)

- Dworakowska, I. (1971) *Dayus takagii* sp. n. and some other Empoascini (Auchenorrhyncha: Cicadellidae: Typhlocybinae). *Bulletin de l'Academie Polonaise des Science. Serie des Sciences Biologiques*, 19, 501–509.
- Dworakowska, I. (1972) On some East Asiatic species of the genus *Empoasca* Walsh (Auchenorrhyncha: Cicadellidae: Typhlocybinae). *Bulletin de l'Academie Polonaise des Science. Serie des Sciences Biologiques*, 20, 17–24.
- Dworakowska, I. (1973) On some Palaearctic species of the genus *Kybos* Fieb. (Auchenorrhyncha: Cicadellidae: Typhlocybinae). *Bulletin de l'Academie Polonaise des Science. Serie des Sciences Biologiques*, 21, 235–244.
- Dworakowska, I. (1976) *Kybos* Fieb., subgenus of *Empoasca* Walsh (Auchenorrhyncha: Cicadellidae: Typhlocybinae). *Acta Zoologica Cracoviensis*, 21, 387–463.
- Dworakowska, I. (1982) Empoascini of Japan, Korea and north-east part of China (Homoptera: Auchenorrhyncha: Cicadellidae: Typhlocybinae). *Reichenbachia*, 20, 33–57.
- Dworakowska, I. (1993) Remarks on *Alebra* Fieb. and Eastern Hemisphere Alebrini (Auchenorrhyncha: Cicadellidae: Typhlocybinae). *Entomotaxonomia*, 15, 91–121.
- Dworakowska, I. (1994) A review of the genera *Apheliona* Kirk. and *Znana* gen. nov. (Auchenorrhyncha: Cicadellidae: Typhlocybinae). *Oriental Insects*, 28, 243–308.
<http://dx.doi.org/10.1080/00305316.1994.10432308>
- Dworakowska, I. (1995) *Szara* gen. nov. and some other Empoascini (Insecta: Auchenorrhyncha: Cicadellidae: Typhlocybinae). *Entomologische Abhandlungen des Staatlichen Museums für Tierkunde Dresden*, 56, 129–160.
- Dworakowska, I. (1997) A review of the genus *Alebroides* Matsumura, with description of *Shumka* gen. nov. (Homoptera: Auchenorrhyncha: Cicadellidae). *Oriental Insects*, 31, 241–407.
<http://dx.doi.org/10.1080/00305316.1997.10433759>
- Kuoh, C.L. (1966) *Economic Insect Fauna of China. Fasc. 10. Homoptera Cicadellidae*. Fauna Editorial Committee, Academia Sinica. Beijing, China. Science Press, 1–170.
- Liu, Y., Qin, D.Z., Fletcher, M.J. & Zhang, Y.L. (2011a) Review of *Empoasca* (*Matsumurasca*) Anufriev (Hemiptera: Cicadellidae: Typhlocybinae: Empoascini), with description of three new species from China. *Zootaxa*, 3003, 22–42.
- Liu, Y., Qin, D.Z., Fletcher, M.J. & Zhang, Y.L. (2011b) Review of Chinese *Empoasca* Walsh (Hemiptera: Cicadellidae), with description of seven new species and some new Chinese records. *Zootaxa*, 3055, 1–21.
- Liu, Y., Qin, D.Z., Fletcher, M.J. & Zhang, Y.L. (2011c) Four new species of *Empoasca* (Hemiptera: Cicadellidae: Typhlocybinae: Empoascini) and one new record from China. *Zootaxa*, 3070, 29–39.
- Liu, Y., Qin, D.Z., Fletcher, M.J. & Zhang, Y.L. (2011d) Review of *Empoasca* (*Okubasca*) Dworakowska (Hemiptera: Cicadellidae: Typhlocybinae: Empoascini), first record from China and description of two new species. *Zootaxa*, 3101, 59–64.
- Lu S.H., Zhang, L., Qiao, L. & Qin, D.Z. (2013) *Lumicella*, a new genus of the tribe Empoascini (Hemiptera, Cicadellidae, Typhlocybinae) from China. *ZooKeys*, 364, 11–17.
<http://dx.doi.org/10.3897/zookeys.364.6618>
- Matsumura, S. (1931) A revision of the Palaearctic and Oriental Typhlocybidae with description of new species and new genera. *Insect Matsumurana*, 6, 55–92.
- Qin, D.Z. & Zhang, Y.L. (2003) Taxonomic study of *Nikkotettix* (Homoptera: Cicadellidae: Typhlocybinae: Empoascini)—new record from China. *Entomotaxonomia*, 25, 25–30.
- Qin, D.Z. & Zhang, Y.L. (2004) Taxonomic study on *Ishiharella* (Homoptera: Cicadellidae: Typhlocybinae) with descriptions of three new species from China. *Entomotaxonomia*, 26, 114–120.
- Qin, D.Z. & Zhang, Y.L. (2007a) Revision of the Chinese species of the leafhopper genus *Dayus* Mahmood (Hemiptera: Cicadellidae: Typhlocybinae: Empoascini), with description of three new species. *Zootaxa*, 1624, 43–51.
- Qin, D.Z. & Zhang, Y.L. (2007b) A taxonomic study on the subgenus *Empoasca* (*Distantasca*) Dworakowska (Hemiptera: Cicadellidae: Typhlocybinae: Empoascini) from China. *The Pan-Pacific Entomologist*, 83, 185–192.
<http://dx.doi.org/10.3956/0031-0603-83.3.185>
- Qin, D.Z. & Zhang, Y.L. (2008a) The leafhopper subgenus *Empoasca* (*Matsumurasca*) from China (Hemiptera: Cicadellidae: Typhlocybinae: Empoascini), with descriptions of three new species. *Zootaxa*, 1817, 18–26.
- Qin, D.Z. & Zhang, Y.L. (2008b) Two new empoascine leafhopper genera and species (Hemiptera: Cicadellidae: Typhlocybinae) from southern China, with a key to Chinese genera of Empoascini. *Zootaxa*, 1966, 62–68.
- Qin, D.Z., Liu, Y. & Zhang, Y.L. (2010) A taxonomic study of Chinese Empoascini (Hemiptera: Cicadellidae: Typhlocybinae) (I). *Zootaxa*, 2481, 52–60.
- Qin, D.Z., Liu, Y. & Zhang, Y.L. (2011a) A taxonomic study of Chinese Empoascini (Hemiptera: Cicadellidae: Typhlocybinae) (II). *Zootaxa*, 2923, 48–58.
- Qin, D.Z., Liu, Y. & Zhang, Y.L. (2011b) A taxonomic study of Chinese Empoascini (Hemiptera: Cicadellidae: Typhlocybinae) (III). *Zootaxa*, 3094, 30–42.
- Qin, D.Z. & Zhang, Y.L. (2011) Taxonomic study of the typhlocybine leafhopper genus *Alebroides* Matsumura (Hemiptera: Cicadellidae) in China. *Zootaxa*, 2987, 31–44.
- Qin, D.Z., Lu, S.H., Zheng, L.F. & Huang, Y.X. (2013) Nomenclatural changes in the tribe Empoascini of the subfamily Typhlocybinae (Hemiptera: Cicadellidae). *ZooKeys*, 346, 85–87.
- Wu, C.F. (1935) Order XV. Homoptera. *Catalogus Insectorum Sinensium*, 2, 1–634.

- Yu, X.F., Yang, M.F. & Meng, Z.H. (2012) A new species of leafhopper (Hemiptera: Cicadellidae: Typhlocybinae) injurious to *Fructus Evodiae*. *Journal of Mountain Agriculture and Biology*, 31 (2), 95–98.
- Yu, X.F. & Yang, M.F. (2013a) Two new species of *Membranacea* Qin & Zhang from China (Hemiptera, Cicadellidae, Typhlocybinae, Empoascini). *ZooKeys*, 260, 77–83.
<http://dx.doi.org/10.3897/zookeys.260.4560>
- Yu, X.F. & Yang, M.F. (2013b) Three new species of the leafhopper genus *Dayus* Mahmood from China (Hemiptera, Cicadellidae, Typhlocybinae, Empoascini). *ZooKeys*, 355, 1–8.
<http://dx.doi.org/10.3897/zookeys.355.6277>
- Zhang, Y.L. (1990) *A taxonomic study of Chinese Ciadellidae (Homoptera)*. Tianze Eldonejo. Yangling, Shaanxi, China, 218 pp.
- Zhang, Y.L. & Chou, I. (1988) Some new species and new records of Typhlocybinae from Guangdong (Homoptera: Cicadellidae: Typhlocybinae). *Entomotaxonomia*, 10, 43–49.
- Zhang, Y.L. & Xiao, N.N. (2000) Typhlocybinae (Auchenorrhyncha: Cicadellidae) collected by a light trap in Yuxi, Yunnan. *Entomotaxonomia*, 22, 107–115.
- Zhang, Y.L. & Qin, D.Z. (2004) *Velu*—New record with description of three new species from China (Homoptera: Cicadellidae: Typhlocybinae: Empoascini). *Acta Zootaxonomica Sinica*, 29, 276–280.
- Zhang, Y.L. & Qin, D.Z. (2005) Taxonomic study on new-record genus *Usharia* of Empoascini (Homoptera: Cicadellidae: Typhlocybinae) from China. *Acta Zootaxonomica Sinica*, 30, 114–120.
- Zhang, Y.L., Liu, Y. & Qin, D.Z. (2008) *Empoasca (Empoasca) paraparvipenis* n. sp. and some new records of the subgenus from China (Hemiptera: Cicadellidae: Typhlocybinae: Empoascini). *Zootaxa*, 1949, 63–68.
- Zhang, Y.L., Liu, Y. & Qin, D.Z. (2010) Review of *Empoasca (Distantasca)* Dworakowska (Hemiptera: Cicadellidae: Typhlocybinae: Empoascini), with description of two new species from China. *Zootaxa*, 2497, 37–61.