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New species and records of *Asymmetrasca* (Hemiptera: Cicadellidae: Typhlocybinae: Empoascini) from China and name changes in *Empoasca* (*Matsumurasca*)

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Abstract

Six new species of *Asymmetrasca* Dlabola are described from China: *A. dahaituoensis*, *A. helica*, *A. hypercurvata*, *A. liaoensis*, *A. reflexilis*, *A. uncus* **sp. nov.** In addition, *A. cienka* Dworakowska, 1982, n. comb.; *A. decedens* Paoli, 1932 and *A. sakaii* Dworakowska 1971, n. comb., are recorded from China for the first time. The following additional new combinations from *Empoasca* are also proposed: *A. cisiana* (Dworakowska, 1971); *A. kaicola* (Dworakowska, 1982), *A. lutowa* (Dworakowska, 1971), *A. mona* (Dworakowska, 1994), *A. nipponica* (Dworakowska 1982), *A. rybiogon* (Dworakowska, 1971), and *A. uniprossicae* (Sohi, 1977). *Empoasca* (*Empoasca*) *kishtwarensis* Sharma, 1984 is proposed as a new synonym of *Asymmetrasca kaicola* (Dworakowska, 1982). Habitus photos and illustrations of the male genitalia of the new species and a key to Chinese species are provided. New names are proposed to replace two junior homonyms in *Empoasca* (*Matsumurasca*).

Key words: Homoptera, Auchenorrhyncha, leafhopper, morphology, taxonomy, identification

Introduction

The typhlocybinae tribe Empoascini comprises 88 described genera and ca. 1300 described species and is well represented in temperate and tropical regions worldwide. The largest genus, *Empoasca* Walsh, is currently poorly defined and includes many species that are superficially similar due to their small size and pale green coloration. Several previous authors have recognized distinctive groups of species within the genus, but there has been disagreement in the literature over whether such groups should be recognized formally as separate genera or subgenera, or informally as species groups (cf., Dlabola 1958, Ghauri 1974, Dworakowska 1968, 1972, Dworakowska & Viraktamath 1975). One such group, based on the widespread Palaearctic species *E. decedens* Paoli, has most recently been treated as the “*decedens* group” of *Empoasca* by Dworakowska (1968), but was previously treated as a separate genus, *Asymmetrasca* by Dlabola (1958) based on unique features of the male genitalia. Treatment of this group as a separate genus is well justified, given its substantial morphological differences from typical *Empoasca* (i.e., the New World type species, *E. fabae* (Harris), and its close relatives; Ross 1959). Species of *Asymmetrasca* differ from *Empoasca*, *sensu stricto*, in having the male subgenital plate narrow at the base and lacking an angulate dorsolateral projection, setal group A arising far from the base of the plate, the anal hook usually with small apical denticuli and the aedeagus with a well developed dorsal apodeme, the shaft usually much longer than the preatrium and a single long asymmetrical process arising at the apex and extended basolaterad. Typical *Empoasca* (i.e., species most closely related to the type, *E. fabae* Harris) have the male subgenital plate with an angulate basolateral process and setal group A near the base, the anal hook simple and the aedeagus with the shaft much shorter than the preatrium and lacking an apical process.



FIGURES 131–134. *Asymmetrasca uniprossicae*, 131, head and thorax, dorsal view; 132, face; 133, whole body, lateral view; 134, whole body, dorsal view.

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References

- Chou, I. & Ma, N. (1981) On some new species and new records of Typhlocybae from China (Homoptera: Cicadellidae). *Entomotaxonomia*, 3, 191–210.
- Dlabola, J. (1958) A reclassification of Palearctic Typhlocybae (Homopt., Auchenorrh.). *Casopsis Ceskoslovenske Spolecnosti Entomologicke*, 55, 44–57.
- Dmitriev, D.A. (2003) Onward Web site: 3I interactive keys and taxonomic database. Available from: <http://ctap.inhs.uiuc.edu/dmitriev/> (accessed 14 November 2011)
- Dworakowska, I. (1968) Some Typhlocybae (Homoptera, Cicadellidae) from Korea, with descriptions of six new species from Korea and one from Vietnam. *Bulletin de l'Academie Polonaise des Sciences CI II Serie des Sciences biologiques*, 16, 565–572.
- Dworakowska, I. (1970) On some genera of Empoascini (Cicadellidae:Typhlocybae). *Bulletin de l'Academie Polonaise des Sciences CI II Serie des Sciences biologiques*, 18, 269–275.
- Dworakowska, I. (1971) *Dayus takagii* sp. n. and some Empoascini (Auchenorrhyncha, Cicadellidae, Typhlocybae). *Bulletin de l'Academie Polonaise des Sciences CI II Serie des Sciences biologiques*, 19, 501–509.
- Dworakowska, I. (1973) *Bagoidea rufa* (Mel.) and some other Empoascini (Auchenorrhyncha, Cicadellidae). *Bulletin de l'Academie Polonaise des Sciences CI II Serie des Sciences biologiques*, 21, 49–58.
- Dworakowska, I. (1972) On some Oriental and Ethiopian genera of Empoascini [sic] (Auchenorrhyncha, Cicadellidae, Typhlocybae). *Bulletin de l'Academie Polonaise des Sciences CI II Serie des Sciences biologiques*, 20, 25–34.
- Dworakowska, I. (1982) Empoascini of Japan, Korea and north-east part of China (Homoptera: Auchenorrhyncha: Cicadellidae: Typhlocybae). *Reichenbachia*, 20, 33–57.
- Dworakowska, I. (1993) Remarks on *Alebra* Fieb. and Eastern Hemisphere Alebrini (Auchenorrhyncha: Cicadellidae: Typhlocybae). *Entomotaxonomia*, 15, 91–121.
- Dworakowska, I. (1994) Typhlocybae (Auchenorrhyncha: Cicadellidae) of Sikkim, a preliminary survey. *Folia Entomologica Hungarica*, 55, 93–215.
- Dworakowska, I. & Viraktamath, C.A. (1975) On some Typhlocybae from India (Auchenorrhyncha, Cicadellidae). *Bulletin de l'Academie Polonaise des Sciences CI II Serie des Sciences biologiques*, 23, 521–530.

- Ghauri, M.S.K. (1974) The *solana*-group of *Empoasca* Walsh (Homoptera, Cicadelloidea): its generic status and a new species from pawpaw. *Bulletin of Entomological Research*, 63, 425–429.
- Grassi, A. & Dal, R.M. (2005) *Empoasca* (*Asymmetrasca*) *decedens* Paoli (Homoptera, Cicadomorpha: Typhlocybinae): a new pest of cultivated red raspberry in Trentino, Italy. In workshop on integrated soft fruit production: 5th meeting, 30 pp.
- Jacas, J.A., Mendoza, A.H. De, Cambra, M. & Balduque, R. (1997) *Asymmetrasca decedens* a new pest of almond in Spain. *OEPP/EPPO Bulletin*, 27, 523–524.
- Liu, Y., Qin, D.Z., Fletcher, M.J. & Zhang, Y.L. (2011a) Review of Chinese *Empoasca* Walsh (Hemiptera: Cicadellidae: Typhlocybinae: Empoascini), with description of seven new species of *Empoasca* (*Empoasca*) and the first Chinese records for the subgenus *Livasca* Dworakowska & Viraktamath and fifteen species of *Empoasca*. *Zootaxa*, 3055, 1–21.
- Liu, Y., Qin, D.Z., Fletcher, M.J. & Zhang, Y.L. (2011b) Four new species of *Empoasca* (Hemiptera: Cicadellidae: Typhlocybinae: Empoascini) and one new record from China. *Zootaxa*, 3070, 29–39.
- Metcalf, Z.P. (1968) *General Catalogue of the Homoptera Fascicle VI Cicadelloidea, Part 17: Cicadellidae*. Washington, D C, United States Department of Agriculture, 1513 pp.
- Nast, J. (1972) *Palaearctic Auchenorrhyncha (Homoptera): an annotated check list*. Institute of Zoology, Polish Academy of Sciences, Warsaw, 550 pp.
- Paoli, G. (1932) Specie nuove di *Empoasca* (Hemiptera: Omoptera) e appunti di corologia. *Memorie della Società Entomologica Italiana*, 11, 109–122.
- Qin, D.-Z. & Zhang, Y.-L. (2008) The leafhopper subgenus *Empoasca* (*Matsumurasca*) from China (Hemiptera: Cicadellidae: Typhlocybinae: Empoascini), with descriptions of three new species. *Zootaxa*, 1817, 18–26.
- Ribaut, H. (1936) Homoptères Auchénorhynques. I. (Typhlocybidae). *Faune de France. Paris: Lechevalier*, 31, III+231 pp.
- Ross, H.H. (1959) A survey of the *Empoasca fabae* complex. *Annals of the Entomological Society of America*, 52, 304–316.
- Sohi, A.S. (1977) New genera and species of Typhlocybinae (Homoptera: Cicadellidae) from north-western India. *Oriental Insects*, 11, 347–362.
- Southern, P.S. (1982) A taxonomic study of the genus *Empoasca* (Homoptera: Cicadellidae) in eastern Peru. *North Carolina Agricultural Research Service Technical Bulletin*, 272, 1–194.
- Zhang, Y.L. (1990) *A taxonomic study of Chinese Cicadellidae (Homoptera)*. Tianze Eldonejo. Yangling, Shaanxi, China, 218 pp.
- 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.