Zootaxa 3936 (3): 387–407
www.mapress.com/zootaxa/

Article

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)

http://dx.doi.org/10.11646/zootaxa.3936.3.5
http://zoobank.org/urn:lsid:zoobank.org:pub:EE3C6346-4A91-48ED-862C-3CBC8558BAA0

A revision of the Chinese species of *Cyamophiliopsis* (Hemiptera: Psylloidea: Psyllidae) associated with *Spiraea* (Rosaceae)

XINYU LUO[1], FASHENG LI[1] & WANZHI CAI[1, 2]

[1]*Department of Entomology, China Agricultural University, No. 2 Yuanmingyuan West Road, Beijing 100193, China*
[2]*Corresponding author. E-mail: caiwz@cau.edu.cn*

Abstract

Cyamophiliopsis is a small genus restricted to the Palaearctic Region and associated with *Spiraea* spp. (Rosaceae). In the present work, following five species are recognized in China: *C. pseudofasciata* **sp. nov.**, *C. sarmatica*, *C. spinosa* **sp. nov.**, *C. xinjiangana* **sp. nov.** and *C. zaisani*. *Cyamophiliopsis* is diagnosed, redescribed in detail, and its phylogenetic relationships are discussed. All the species are described or redescribed, and the fifth instar immature of *C. zaisani* is described for the first time. Nomenclatorial problems are discussed concerning the Far East Russian *Psylla spiraee* which is transferred to *Cyamophiliopsis* as *C. spiraee* comb. nov.

Key words: psyllid, jumping plant-lice, Palaearctic, taxonomy

Introduction

Psyllids are small phloem-sucking insects constituting the superfamily Psylloidea of the Sternorrhyncha. A minority of psyllid species causes damage to crop plants, directly by feeding or indirectly by transmitting pathogens (Halbert & Manjunath 2004; Hanson et al. 2008), but most psyllids feed on plants without economical importance. In the perspective of taxonomists, these taxa are as important as the pests with respect to their systematic significance. *Cyamophiliopsis* Li, 2011, for instance, a small, recently erected genus of Psyllinae, contains members which are associated on mostly uncultivated *Spiraea* spp. (Rosaceae).

Li (2011) erected *Cyamophiliopsis* for *Psylla zaisani* Klimaszewski, 1963 (as type species), *P. sarmatica* Löw, 1882, and *P. fasciata* Löw, 1881, in the Cyamophilinae (Psyllidae), a subfamily which Li (2011) established to include *Cyamophila*, *Cyamophiliopsis*, and *Auchmerina* sensu Li (nec Enderlein). The Cyamophilinae was synonymized with the Psyllinae by Burckhardt & Ouvrard (2012). The generic name of *Cyamophiliopsis* was given to imply its close relationship with *Cyamophila*, which was based on the backwards curved vein Cu_{1b}, and the apex of the paramere which is "expanded as rectangular" (Li 2011). However, our research suggests that these constitute superficial resemblances rather than genuine synapomorphies. Geographically, the genus is recorded from the northern Palaearctic Region, north of 38° N, and from Volgograd, Transcaucasia and northeastern Turkey in the west, to the Russian Far East in the east.

Recent field work carried out by Luo Xinyu yielded more materials of *Cyamophiliopsis* including undescribed species and previously unknown immature of a described species. Nevertheless, we ran into troubles when identifying these materials and revising the old specimens—the descriptions and illustrations from all the currently available literatures are not specific enough to accurately identify these species. The present article seeks to retrospect the taxonomic history of the genus, give an exhaustive redescription of each species, and discuss about the relationship between the genus and its putative closely related taxa. The nomenclatorial history will be presented in each species' own chapter.

As far as known, *Cyamophiliopsis* spp. are associated with the host plant genus *Spiraea*, the type genus of Rosaceae, Spiraeoideae, and the most primitive genus of the subfamily's deciduous members (Lu, 1996). *Spiraea* contains 80–100 species worldwide, and 70 species in China, with 47 of them endemic (Lu & Alexander 2003).

Accepted by D. Ouvrard: 17 Dec. 2014; published: 20 Mar. 2015

References

Aulmann, G. (1913) *Psyllidarum Catalogus*. W. Junk, Berlin, 92 pp.

Baeva, V.G. (1985) *Fauna of the Tadjik Soviet Socialist Republic, Volume III: Jumping Plant Lice (Homoptera, Psylloidea)*. Donish Publishing House, Dushanbe, 327 pp.

Burckhardt, D. (1988) Angaben zur Psyllidenfauna der Nordosttürkei (Homoptera: Psylloidea). *Mitteilungen der Entomologischen Gesellschaft Basel*, 38, 31–44.

Burckhardt, D. & Önuçar, A. (1993) A review of Turkish jumping plant-lice (Homoptera: Psylloidea). *Revue Suisse de Zoologie*, 100, 547–574.

Burckhardt, D. & Ouvrard, D. (2012) A revised classification of the jumping plant-lice (Hemiptera: Psylloidea). *Zootaxa*, 3509, 1–34.

Gegechkori, A.M. & Loginova, M.M. (1990) *Psyllids (Homoptera, Psylloidea) of the USSR: An Annotated List*. Metsniereba, Tbilisi, 161 pp.

Halbert, S.E. & Manjunath, K.L. (2004) Asian citrus psyllids (Sternorrhyncha: Psyllidae) and greening disease of citrus: a literature review and assessment of risk in Florida. *Florida Entomologist*, 87, 330–353. http://dx.doi.org/10.1653/0015-4040(2004)087[0330:ACPSPA]2.0.CO;2

Hanson, A.K., Trumble, J.T., Stouthamer, R. & Paine, T.D. (2008) A new huanglongbing species, "*Candidatus* Liberibacter psyllaurous," found to infect tomato and potato, is vectored by the psyllid *Bactericera cockerelli* (Sulc). *Applied and Environmental Microbiology*, 74, 5862–5965. http://dx.doi.org/10.1128/AEM.01268-08

Klimaszewski, S.M. (1962) Psyllidologische Notizen VI–VII (Homoptera). *Annales Zoologici*, 20, 215–220.

Klimaszewski, S.M. (1963) Blattflöhe (Homoptera, Psyllidae) aus der Mongolei. *Annales Zoologici*, 21, 61–79.

Klimaszewski, S.M. (1973) The jumping plant lice or psyllids (Homoptera, Psyllodea) of the Palaearctic: An annotated check-list. *Annales Zoologici*, 30, 155–286.

Konovalova, Z.A. (1979) New species of Psylloidea (Homoptera) from Kamchatka Peninsula. *In*: Ler, P.A. (Ed.), *Terrestrial Arthropods of the Far East*. Akademiya Nauk SSR, Vladivostok, pp. 3–9.

Konovalova, Z.A. (1987) Renaming and describing new species of *Psylla* Geoffr. (Homoptera, Psyllinea, Psyllidae) from the Far East. *In*: Kapustina, O.G. (Ed.), *Taxonomy of the Insects of Siberia and Soviet Far East*. Dal'nevostochnyi nauchnyi tsentr AN SSSR, Vladivostok, pp. 31–33.

Konovalova, Z.A. (1988) Suborder Psyllinea-psyllids or jumping plant lice and suckers. *In:* Ler, P. A. (Ed.), *Keys to the Identification of Insects of the Soviet Far East. Vol 2 Homoptera and Heteroptera*. Naurka, Leningrad, pp. 495–540.

Li, F. (2011) *Psyllidomorpha of China (Insecta: Hemiptera)*. Science Press, Beijing, 1976 pp.

Loginova, M.M. (1964) Podotryad Psyllinea. *In:* Bei-Bienko, G.Y. (Ed.), *Opredelitel' Nasekomykh Evropeiskoi Chasti SSSR*. Izdatel'stvo "Nauka", Moscow, pp. 437–482.

Loginova, M.M. (1969) New species of the psyllids (Homoptera, Psylloidea) from Mongolia. I. *Entomologicheskoe Obozrenie*, 48, 162–170.

Loginova, M.M. (1972) The psyllids (Psylloidea, Homoptera) of the Mongolian People's Republic. *Nasekomye Mongolii*, 1, 261–324.

Löw, F. (1881) Turkestanische Psylloden. *Verhandlungen der zoologisch-botanischen Gesellschaft in Wien*, 30, 251–266.

Löw, F. (1882) Eine neue Psylla-Art. *Wiener Entomologische Zeitung*, 1, 92–94.

Lu, L. (1996) The evolution and distribution of the subfam. Spiraeoideae (Rosaceae) of China, with special reference to distribution of the subfamily in the world. *Acta Phytotaxonomica Sinica*, 34, 361–375.

Lu, L. & Alexander, C. (2003) *Spiraea* L. *In*: Wu, Z., Ravens, P.H. & Hong, D.Y. (Eds.), *Flora of China, Vol. 9 (Connaraceae through Rosaceae)*. Science Press & Missouri Botanical Garden Press, Beijing & St. Louis, pp. 47–73.

Luo, X., Li, Q., Li, F. & Cai, W. (2013) A revision of the endemic Chinese genus *Cornopsylla* (Hemiptera: Psyllidae), with potential pests on *Zanthoxylum* (Rutaceae). *Zootaxa*, 3646 (2), 127–148. http://dx.doi.org/10.11646/zootaxa.3646.2.2

Missouri Botanical Garden. (2013) Tropicos.org. Available from: http://www.tropicos.org/ (accessed 15 December 2013)

Puton, A. (1871) Description de deux nouvelles espèces de psyllides. *Annales de la Société entomologique de France*, 1, 435–438.

Šulc, K. (1909) Úvod do studia, synoptická tabulka a synonymický katalog druhů *Psylla* palaearktické oblasti. *Sitzungsberichte der Königlichen Böhmischen Gesellschaft der Wissenschaften*, 22, 1–49.

Xie, H., Yang, L. & Bao, Z. (2006) Resources of the spiraeas and their application to landscaping. *Scientia Silvae Sinicae*, 42, 104–112.

Yang, C. & Li, F. (1981) New genus and new species of Homotomini (Homoptera: Psyllidae). *Acta Agrculturae Universitatis Pekinensis*, 7, 77–86.

Yü, T. (1974) *Flora Reipublicae Popularis Sinicae, Tomus 36, Angiospermae: Dicotyledonae: Rosaceae (1): Spiraeoideae – Moideae*. Science Press, Beijing, 443 pp.