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## **The Eurasian species of *Xyela* (Hymenoptera, Xyelidae): taxonomy, host plants and distribution**

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## Abstract

The 28 Eurasian species of *Xyela* Dalman, 1819 are revised based on material of ca 7,500 imagines including about 10 % reared specimens. Larvae of Eurasian *Xyela* usually are monophagous and feed inside the staminate cones of pines (*Pinus* spp., Pinaceae). Based on the reared material, on identification by barcoding and on additional collection observations, the larval host associations for the *Xyela* species are summarized and additional biological observations are noted. An illustrated key to the species and distribution maps are presented. Eight species are described as new: *X. altenhoferi* Blank, **sp. nov.** (Croatia), *X. heldreichii* Blank, **sp. nov.** (Albania, Greece), *X. koraiensis* Blank & Shinohara, **sp. nov.** (Russia, South Korea), *X. peuce* Blank, **sp. nov.** (Bulgaria), *X. pumilae* Blank & Shinohara, **sp. nov.** (Japan), *X. rasnitsyni* Blank & Shinohara, **sp. nov.** (China, Russia, South Korea), *X. sibiricae* Blank, **sp. nov.** (Mongolia, Russia), and *X. uncinatae* Blank, **sp. nov.** (Andorra, France, Spain, Switzerland). For the other species redescriptions are given. A lectotype is designated for *X. longula* Dalman, 1819, and neotypes are designated for *X. graeca* J.P.E.F. Stein, 1876 and *Pinicola julii* Brébisson, 1818. The following new synonymies are proposed: *X. lii* Xiao, 1988, **syn. nov.** of *X. sinicola* Maa, 1947; *X. nigroabscondita* Haris & Gyurkovics, 2011, **syn. nov.** of *X. lugdunensis* (Berland, 1943); and *X. suwona* Ryu & Lee, 1992, **syn. nov.** of *X. ussuriensis* Rasnitsyn, 1965.

**Key words:** Palearctic, Oriental, new species, Pinaceae, *Pinus*, barcoding

## Introduction

*Xyela* is the most diverse group of extant Xyelidae comprising 48 species worldwide including eight described here from Eurasia (Smith 1978, Taeger et al. 2010, present data). *Xyela* primarily occurs in the Holarctic, and like its host plants, pine species (*Pinus* spec., Pinaceae), it extends southwards into the northern parts of the Neotropical and of the Oriental regions (Fig. 1). Seven exclusively fossil *Xyela* species, and also *X. graeca* and *X. julii*, were reported from Oligocene deposits of Germany and the USA (Rasnitsyn 1995). A number of additional species still remain undescribed, particularly from the Nearctic where the largest radiation of pines has occurred (Mirov 1961, Richardson 1998).

The first *Xyela* species were described from Europe and from eastern North America: *X. julii*, *X. longula*, *X. graeca*, *X. minor*, *X. alpigena*, *X. obscura* and *X. bakeri* (Brébisson 1818, Dalman, 1819, Stein, 1876, Norton 1869, Strobl, 1895, Konow 1898). Smallness of the specimens, similarity of the species, and paucity of suitable identification characters caused early students of the European species like Konow (1897) and Enslin (1918) to concede only *X. longula* and *X. julii* the status of valid species and to treat the remaining species as synonyms of *X. julii*. Other researchers have been convinced that the European nominal taxa are to be applied to East Palearctic material, too, e.g., to specimens of allegedly East Palearctic '*X. alpigena*' in Benson (1961), '*X. julii*' in Takeuchi (1938) and '*X. obscura*' in Kondo & Miyake (1974). Following Benson's (1961, 1962) view '*X. alpigena*' and '*X. obscura*' should even be Holarctic. Except for Rasnitsyn's (1965) treatise, keys for the identification of Palearctic *Xyela* always concerned a limited geographical area (Gussakovskij 1935, Takeuchi 1938, Berland 1943, Togashi 1964, Rasnitsyn 1965, Schedl 1978, Blank 2002). Previously described taxa have often been assessed only from their more or less inadequate original