



## Second supplement for the genus *Phlugiolopsis* Zeuner, 1940 (Orthoptera: Tettigoniidae: Meconematinae) from China, with eight new species

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### Abstract

This paper deals with 8 new species of *Phlugiolopsis* from Yunnan and Guizhou, China, supplements the images of *P. ventralis* Wang, Li & Liu, 2012 and details the morphology of male stridulatory files and mandibles for 9 *Phlugiolopsis* known species. Distribution of poorly known species and new species are presented. A key to all known species is provided. Based on the known distribution of *Phlugiolopsis* and bioclimatic variables in WorldClim, we used the ecological niche models, maximum entropy (Maxent), to predict the potential geographic distribution of the genus. All specimens are deposited in the Museum of Hebei University.

**Key words:** *Phlugiolopsis*, Meconematinae, Orthoptera, China, Potential geographic distribution, maximum entropy (Maxent)

### Introduction

This paper is supplementary for Bian *et al.* (2012a, 2012b). So far, *Phlugiolopsis* includes 22 species, 18 of which are distributed in China. This study deals with 8 new species, namely *P. circolobosis* Bian, Shi & Chang, **sp. nov.**, *P. complanispinis* Bian, Shi & Chang **sp. nov.**, *P. elongata* Bian, Shi & Chang **sp. nov.**, *P. emarginata* Bian, Shi & Chang **sp. nov.**, *P. longiangulis* Bian, Shi & Chang **sp. nov.**, *P. pentagonis* Bian, Shi & Chang **sp. nov.**, *P. uncicercis* Bian, Shi & Chang **sp. nov.** and *P. xinanensis* Bian, Shi & Chang **sp. nov.**. The mandibles, left tegmen and scanning electron micrographs (SEM) of stridulatory files of males for 9 described species are examined, i. e. *P. adentis* Bian, Shi & Chang, 2012, *P. brevis* Xia & Liu, 1993, *P. grahami* (Tinkham, 1944), *P. minuta* (Tinkham, 1943), *P. pectinis* Bian, Shi & Chang, 2012, *P. tribranchis* Bian, Shi & Chang, 2012, *P. trullis* Bian, Shi & Chang, 2012 and *P. yunnanensis* Shi & Ou, 2005. A key to all known species, the distribution of partly known species from China and the potential geographic distribution for *Phlugiolopsis* in China are provided.

### Methods

All materials studied including holotype and paratypes of new species are deposited in the Museum of Hebei University, China.

Morphological structures were examined and measured using Leica M205A stereomicroscope. Leica DFC 450 digital imaging system was used to obtain morphological images.

In the descriptions below the following conventions were adopted for specimen measurements:

Body—the distance from apex of fastigium verticis to posterior margin of tenth abdominal tergite; tegmen—the distance from base of tegmen to the apex; length of file—the straight-line distance between first and last tooth on the file; postfemur—the distance from base of postfemur to the apex of genicular lobe; ovipositor—the distance from the base of subgenital plate to the apex of ovipositor.