Four new species of the *Stegana ornatipes* species group (Diptera: Drosophilidae) from Yunnan, China, with DNA barcoding information

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Abstract

Four new species of *Stegana* (*Steganina*) *ornatipes* species group are found from Yunnan, China: *S.* (*S.* *angustifoliacea* sp. nov., *S.* (*S.*) *crinata* sp. nov., *S.* (*S.*) *nigripes* sp. nov. and *S.* (*S.*) *polysphyra* sp. nov. The DNA sequences of the mitochondrial *COI* gene with BOLD Process ID and GenBank accession numbers are provided for the Chinese species.

Key words: Barcoding, drosophilid fauna, East Asia, *ornatipes* group, taxonomy

Introduction

Up to the present, a total of 153 species of the subgenus *Stegana* (*Steganina*) has been reported from the World (Bächli 2014; Lu et al. 2011a; Wang et al. 2013; Zhang et al. 2014), 76 of them from Chinese part of the Oriental region, which shows that southern China might be an important area in the origin and early radiations of the subgenus *Steganina*. The *Stegana ornatipes* species group is as it were endemic to the Oriental region, and including 11 species described (Cheng et al. 2009; Lu et al. 2011b), only one species, *Stegana ornatipes* Wheeler & Takada, 1964 is distributed in Micronesia. Recently, based on DNA sequence data of two mitochondrial genes, cytochrome oxidase subunit 1 (*COI*) and NADH dehydrogenase subunit 2 (*ND2*), phylogenetic relationships among eight species of the *ornatipes* group were analyzed (Lu et al. 2011); in addition. Zhang et al. (2014) reported 28 DNA barcoding fragments of the mitochondrial *COI* gene for 17 species of the genus *Stegana* from Taiwan, including five samples of two *ornatipes* species: *S. chitouensis* Sidorenko, 1998 and *S. ornatipes* Wheeler & Takada, 1964.

In this paper, four new species of the *ornatipes* group are described from Yunnan, southwestern China. In addition, a total of 12 DNA sequences of the mitochondrial *COI* gene for eight Chinese species of the *ornatipes* group are provided with BOLD Process ID and GenBank accession numbers (Table 1). Up to the present, a total 26 mtDNA *COI* sequences of 14 species of the *ornatipes* group have been reported from China plus in Lu et al. (2011) and Zhang et al. (2014).

Material and methods

Materials and morphological terminology. All specimens examined were collected by sweeping on tree trunks or tussocks nearby streams in the forest, preserved in 75% ethanol, and then dried and pinned after morphological examination and identification. The specimens are deposited in Department of Entomology, South China Agricultural University, Guangzhou, China (SCAU). We followed Zhang & Toda (1992) and Chen & Toda (2001) for the definitions of measurements, indices and abbreviations.

DNA extraction, sequencing and sequence alignment. A total of 12 representative individuals belonging eight species were employed for DNA sequencing of the mitochondrial *COI* gene (Table 1). For this purpose, total DNA was extracted from each fly using the TIANGEN™ DNA extraction kit following manufacturer’s
Specimens examined. Holotype ♂ (SCAU, No. 124148), CHINA: Yixiang, Pu’er, Yunnan, altitude 1400 m, 2.x.2011, on tree trunk, HW Chen. Paratype: CHINA: 1 ♂ (SCAU, No. 124149), Hesong, Menghai, Yunnan, 21°49' N, 100°06' E, altitude 1800 m, 7.v.2012, on tree trunk, HW Chen.

Etymology. A combination of the Greek words: poly + sphyra, referring to the shape paramere.

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References


