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First description on the female of *Crambus duospineus* Li, 2020 (Lepidoptera: Crambidae)

Jiaxin Wang, Hao Sun & Yunli Xiao

Abstract

The female of *Crambus duospineus* Li, 2020, collected from the Dabie Mountains National Nature Reserve in Hubei, China, is reported for the first time. Detailed description of its morphological characteristics is provided, along with the COI barcodes.
Keywords: Lepidoptera, Crambidae, *Crambus duospineus*, female, China.

Primera descripción de la hembra de *Crambus duospineus* Li, 2020 (Lepidoptera: Crambidae)

Resumen

Se presenta por primera vez la hembra de *Crambus duospineus* Li, 2020, recolectada en la Reserva Natural Nacional de las Montañas Dabie en Hubei, China. Se proporciona una descripción detallada de sus características morfológicas, junto con los códigos de barras COI.
Palabras clave: Lepidoptera, Crambidae, *Crambus duospineus*, hembra, China.

Introduction

Crambus is the type genus of Crambidae, with Curtis (1826) designating *Phalaena pascuella* Linnaeus, 1758 as the type species. Until now, 169 species have been known in *Crambus*, distributed worldwide (Nuss et al. 2003-2024), with 22 species recorded in China (Błeszyński & Collins, 1962; Błeszyński, 1965; Chen et al. 2005; Li, 2020). Among them, *Crambus duospineus* Li, 2020 was established based on two male specimens collected from Jiangxi Province, China. In this study, we reported the first record of the female specimen collected from the Dabie Mountains National Nature Reserve in Hubei, China, and provided DNA barcodes for both male and female specimens and reconstructed the phylogeny.

Material and Methods

The specimens in this study were collected by light traps in the Dabie Mountains National Nature Reserve in Hubei, China. Morphological terminology follows Nuss (2005). Genitalia were dissected and mounted according to the methods introduced by Li & Zheng (1996). Images of adults and genitalia were taken with a Canon EOS70D camera using an EF 180 mm F/3.5L USM lens and Nexcope NE930 microscope respectively. DNA was extracted from the legs of dry adult specimens using TINAamp Genomic DNA Kit (DP304). The 658 bp barcode region of COI was amplified with the LepF1 and LepR1 primers (Hajibabaei et al. 2006). PCR products were sent to Tianyi Huayu Gene (Wuhan, China, https://www.tyhygene.com/) for sequencing by using the aforementioned primers. Genetic distance estimation and neighbor-joining analysis were both conducted in MEGA 11 using the Kimura 2-Parameter model, with 5000 replications

of bootstrap (Tamura et al. 2021). Two COI sequences of *Crambus duospineus* Li, 2020 were sequenced from female and male specimens respectively in this time. The 13 sequences from 7 species of *Crambus* species were selected as ingroups, one sequence of *Chilo infuscatellus* Snellen, 1890 as outgroup, were downloaded from Bold Systems (https://www.boldsystems.org/), and the last few number of the name is Sample ID or Genbank Accession Number.

Specimens are deposited in the Biological Specimen Museum of Huanggang Normal University (HNU), Hubei, China.

Crambus duospineus Li, 2020 (Figures 1-5)
Crambus duospineus Li, 2020, *SHILAP Revta. lepid., 48*(192), 603-604, figs 1-4
Type locality: CHINA, Jiangxi Province, Wugong Mountain, 27º27'N 114º11'E, 1800 m.

Material examined: China, Hubei Province, Yingshan County, Dabie Mountains National Nature Reserve, Wujiashan, Shigusi [31º6'45"N 115º47'59"], 793 m, 2 ♂, 4-IX-2022, Jiaxin Wang & Peng Yu, genitalia slide no. Lep3061♂, Lep3594♂, genBank accession no. PP726883♂. Hubei Province, Yingshan County, Dabie Mountains National Nature Reserve, Wujiashan, Main Peak of Tiantangzhai, [31º6'11"N 115º46'21"E], 1549 m, 1 ♂, 3 ♀ 6-IX-2022, Jiaxin Wang & Peng Yu, genitalia slide no. Lep2311♀, Lep3595♀, Lep3596♀, genBank accession no. PP726884♀.

Redescription. Adult (Figure 1): Forewing length 10.5-11.0 mm. Frons and vertex ochre yellow. Labial palpus twice as long as diameter of compound eye, ocherous mixed with pale brown except white basally; first and second segments porrect, third segment slightly downward. Maxillary palpus slightly upright, white at base, ochre yellow mixed with pale yellow ventrally. Antenna with scape dorsally white; flagellum dorsally white, ventrally ochre yellow. Thorax blackish brown. Forewing mixed with pale brown and ochre yellow scales; longitudinal stripe white and lined with brown, extending from base to apical part of distal cell, with basal two-thirds gradually broadened and distal third narrowed to triangular apex; cilia pale brown. Hindwing greyish brown; cilia white. Abdomen pale brown. Legs ochre yellow.

Male genitalia (Figures 2-3): Description of the male genitalia was provided by Li (2020).

Female genitalia (Figures 4-5): Antrum strongly ossified, sharply bent downwards at middle; extending upwards posteriorly, forming a clasp-like large, ossified plate; ostium bursae small, slanting downwards. Ductus bursae thin and short; anterior half membranous; posterior half ossified, with distinct ossified longitudinal ridges; ductus seminalis emerged at base of longitudinal ridge. Corpus bursae large, nearly circular, with diameter as long as ductus bursae; signum in pair near posterior one-fourth of corpus bursae.

Remarks: The morphological characteristics of the male specimens in this study were basically consistent with holotype in Li (2020), with only slight individual variations, such as the uncus being slightly longer than the gnathos. Additionally, the genetic distance of the COI sequences between male and female was 0 in this study (figure 6), which confirmed that the female specimen belonged to this species.

Distribution: China (Jiangxi, Hubei).

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Conflict of interest

The authors declare that there is no known financial interest or personal relationships that could have influenced the work presented in this article.

Figures 1-5. *Crambus duospineus* Li, 2020: **1**. Female adult. **2**. Male genitalia. **3**. Female genitalia. **4**. Apex of sacculus. **5**. Signum.

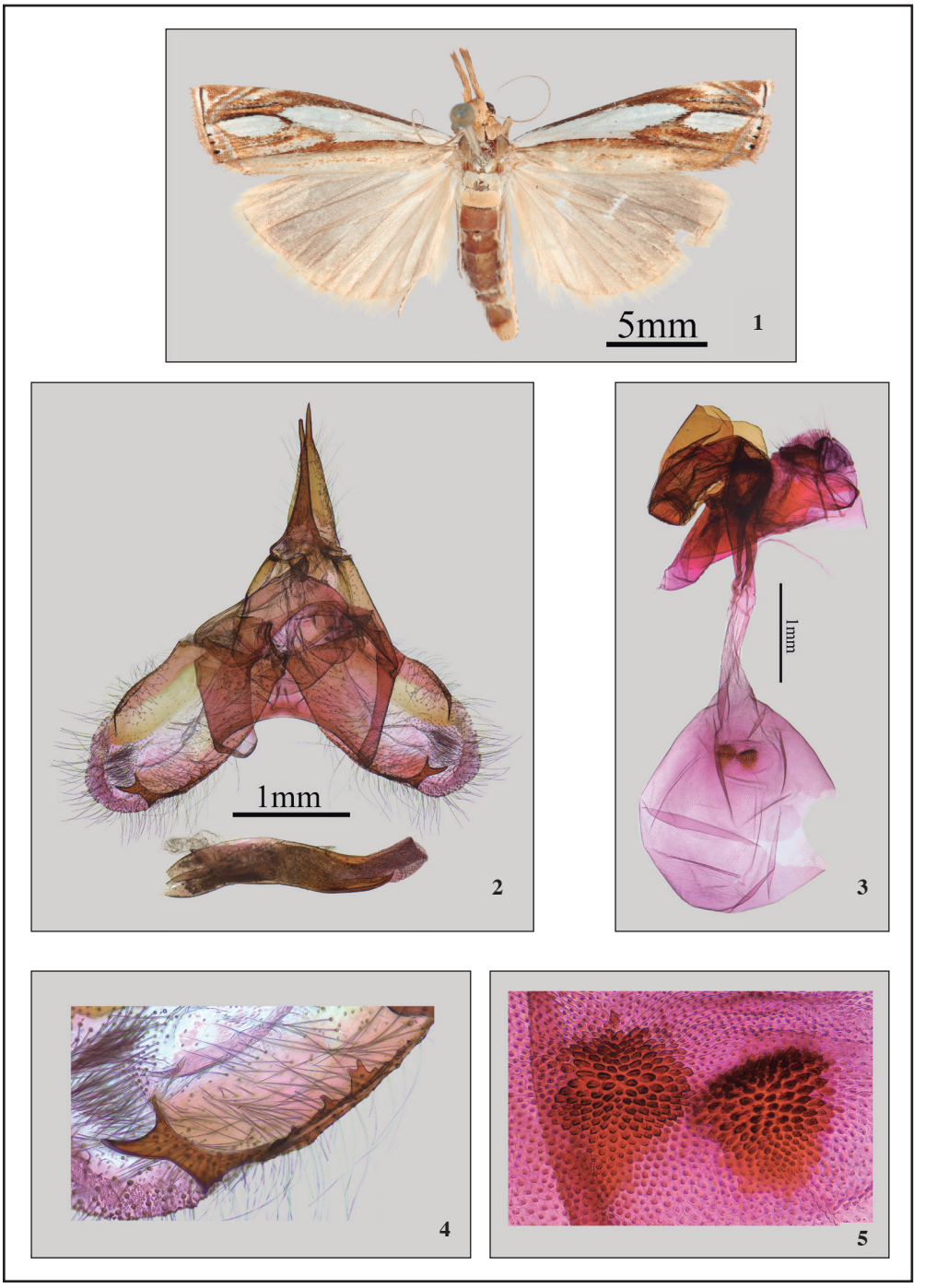
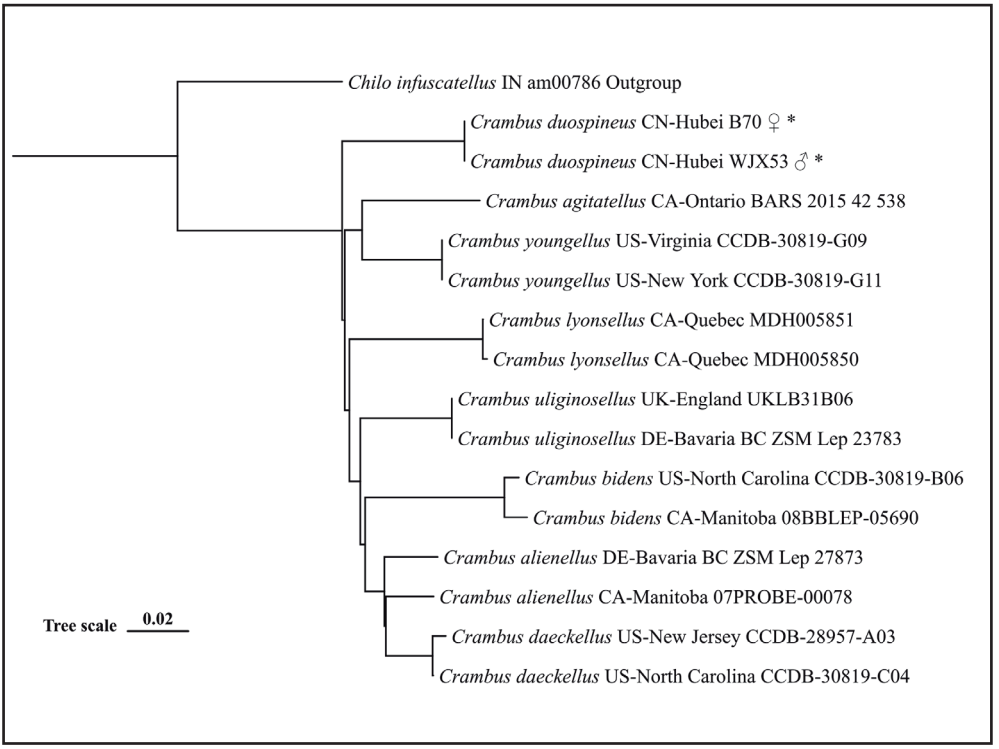


Figura 6. Phylogenetic tree (NJ tree) of some *Crambus* species based on COI sequences, with the genus *Chilo* as outgroup, the specimens marked with * are collected in this time, and the last few numbers is Sample ID or Genbank Accession Number.



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