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Three new species of *Aethes* Billberg, 1820 (Lepidoptera: Tortricidae: Cochylini), with a list of the species from China

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Abstract

The Chinese species of *Aethes* Billberg, 1820 are reviewed. Three species, *A. acerba*, **sp. nov.**, *A. semicircularis*, **sp. nov.**, and *A. subcitreoflava*, **sp. nov.**, are described, and *A. fennicana* (Hering, 1924) is newly recorded from China. Images of adults and genitalia of the new species and the newly recorded species are provided, along with a list, a key, and a distribution map to all the known Chinese species.

Key words: Lepidoptera, Tortricidae, Cochylini, *Aethes*, new species, list, China

Introduction

The genus *Aethes* Billberg, 1820, assigned to the tribe Cochylini (Tortricidae: Tortricinae), is distributed mainly in the Holarctic Region. It was proposed by Billberg (1820) for the type species *Pyralis smeathmanniana* Fabricius, 1781. *Aethes* consists of 127 species worldwide (Gilligan *et al.* 2012), about 70 of which were described from the Palaearctic Region, 30 from the Nearctic Region, 20 from the Neotropical Region, two from the Oriental Region, and one from the African Region.

Liu & Li (2002) recorded 13 species of *Aethes* in Fauna Sinica, Lepidoptera, Tortricidae, in which *A. delotypa* Razowski, 1970 and *A. furvescens* Bai, Guo & Guo 1996 were omitted. Subsequently, Byun & Li (2006) described a new species, *A. bistigmatus*, based on Korean and Chinese material. Prior to this study, 16 species were recorded in China. The aim of the present paper is to review *Aethes* in China, to describe three new species, and to provide a list of all the recorded Chinese species.

Material and methods

This study is based on specimens collected using light traps in China. Morphological terminology follows Razowski (1987). Genitalia were prepared and mounted following the methods described by Li (2002). Images of the adults were taken with a Nikon D300 digital camera plus macro lens, and images of genitalia were captured using an Olympus C-7070 digital camera. The distribution map was made using DIVA-GIS 7.5.0 (Hijmans *et al.* 2011) based on longitude and latitude and was subsequently modified in Photoshop CS5. All specimens examined, including the types of the new species, are deposited in the Insect Collection, College of Life Sciences, Nankai University, Tianjin, China.

Institutional abbreviations

BMNH The Natural History Museum, London, England = formerly British Museum (Natural History)
ISEZ Institute of Systematics and Evolution of Animals, Zoological Institute, Polish Academy of Sciences, Krakow, Poland