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A revision of the genus *Morphogoides* Petersen (Lepidoptera, Tineidae) from Japan

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Abstract

Taxonomy of the Japanese species of the genus *Morphogoides* Petersen, 1957 is revised. Previously four species, namely *Morphogoides ussuriensis* (Caradja, 1920), *M. moriutii* Robinson, 1986, *M. occidentalis* Osada, Yoshimatsu, Sakai and Hirowatari, 2014 and *M. meridianus* Osada, Yoshimatsu, Sakai and Hirowatari, 2014 were recognized for the Japanese fauna. In the present study, four new species, *M. breviculus* **sp. nov.**, *M. robinsoni* **sp. nov.**, *M. aquilonis* **sp. nov.** and *M. yakuensis* **sp. nov.**, from Japan are described based on adult characters. The potential synapomorphy of this widely distributed genus is proposed. In addition, the distribution pattern of the genus in Japan is discussed.

Key words: taxonomy, genital morphology, Scardiinae, shiitake mushroom, new species, distribution

Introduction

The genus *Morphogoides* Petersen, 1957, belonging to the Scardiinae, is distributed almost globally from the Palaearctic, Oriental (Taiwan) to Nearctic and Neotropical regions. It involves eleven species, and some species are well known pests of the shiitake mushroom, *Lentinula edodes* (Inoue 1969; Moriuti 1976; Moriuti 1982; Ohya 2003; Osada *et al.* 2013; Osada *et al.* 2014). The larvae feed on the mushroom, and its bed log, and overwinter in the logs (Inoue, 1988).

Moriuti (1976) recorded *M. ussuriensis* (Caradja, 1920) from Japan with a Japanese name of “Shiitake-ohirozokoga” as a shiitake mushroom pest. Robinson (1986) noticed that the Japanese representative of the genus recorded by Moriuti (1976) is different from true *M. ussuriensis*, and described it as a new species *M. moriutii*.

Osada *et al.* (2013) indicated that the male genitalia of the holotype of *M. moriutii* are different from the illustration of the paratype given by Robinson (1986). They described true *M. moriutii* based on the holotype, with remarks on its distinguishing characteristics and distribution compared with those of *M. moriutii* sensu Robinson (1986) and *M. ussuriensis*. For this reason, the taxonomy of the genus was complicated and controversial.

Subsequently, Osada *et al.* (2014) described two new species *M. occidentalis* and *M. meridianus*, which are serious pests of cultivated shiitake mushrooms in Kyushu and the Kanto regions (Gunma and Tokyo) of Honshu, Japan, based on the differences of the male and female genitalia and the DNA barcodes.

Thus in Japan, four *Morphogoides* species, *M. moriutii*, *M. ussuriensis*, *M. occidentalis* and *M. meridianus*, were recognized and all of them are important pests of the shiitake mushroom. However, taxonomic study of the genus is insufficient, because some additional species have been found from wild mushrooms in Japan.

In the present study, we taxonomically revise Japanese species of the genus *Morphogoides*, with remarks on their characters and distribution. Furthermore, we briefly discuss the potential synapomorphy of the genus and the distribution pattern of the genus in Japan.