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Original article

Two newly recorded species of the genus *Herpetogramma* (Lepidoptera: Crambidae: Spilomelinae) in KoreaBo-Sun Park^a, Mu-Jie Qi^b, Sol-Moon Na^a, Dong-Jun Lee^a, Jae-Won Kim^a, Yang-Seop Bae^{a,c,*}^a Division of Life Science, Incheon National University, Incheon, South Korea^b College of Life Sciences, Nankai University, Tianjin, China^c Bio-Resource and Environmental Center, College of Life Sciences and Bioengineering, Incheon National University, Incheon, South Korea

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ABSTRACT

Two species of the genus *Herpetogramma* Lederer are reported for the first time in Korea: *Herpetogramma licarsisalis* (Walker) and *Herpetogramma stultalis* (Walker). The description, host plants, adult photographs, and pictures of the male and female genitalia are provided.

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Introduction

The genus *Herpetogramma* (Spilomelinae) was established by Lederer in 1863, with the type species: *Herpetogramma servalis* Lederer, 1863 from Brazil. To date, 100 species have been recorded in the world (Nuss et al 2003–2015). The larvae of *Herpetogramma stultalis* are a pest of *Achyranthes aspera* (Akhilesh and Sebastian 2014). In addition, *Herpetogramma licarsisalis* is an important pest of turf and other grass crops in Hawaii, Australasia, and Southeast Asia (Tofangsazi et al 2014), and it is widely distributed in India, Ceylon, Malacca, China, Japan, Java, Borneo, the Marshall Islands, Fiji, Samoa, the Society Islands, the Austral Islands, and Australia (Davis 1969).

To date, 6 species have been reported in Korea: *Herpetogramma fuscescens* (Warren, 1892); *Herpetogramma luctuosalis* Leech, 1889; *Herpetogramma magna* (Butler, 1897); *Herpetogramma moderatalis* (Christoph, 1881); *Herpetogramma phaeopteralis* (Guenée, 1854); and *Herpetogramma rudis* (Warren, 1892) by Bae et al (2008).

Herpetogramma cynaralis Walker was recently recorded by Kim et al (2012) and *Herpetogramma ochrimaculale* (South) was newly recorded by Roh et al (2014). To date, eight species have been reported in Korea. In the present study, we report an additional two species in the genus *Herpetogramma*: *H. licarsisalis* (Walker, 1859) and *H. stultalis* (Walker, 1859).

Materials and methods

Materials examined in the present study are preserved in the Biodiversity Laboratory of the Incheon National University (INU) in Incheon, Korea. The genitalia were dissected and examined under a Leica EZ4 stereomicroscope (Leica S8APO, Taiwan). Pictures of the adults were obtained by a digital camera (Cannon EOS 50D, Japan) and genitalia pictures were obtained by a stereomicroscope (Leica S8APO, Taiwan).

Systematic accounts

Order Lepidoptera Linnaeus, 1758.

Family Crambidae Latreille, 1810.

Subfamily Spilomelinae Guenée, 1854.

Genus *Herpetogramma* Lederer, 1863.Type species: *Herpetogramma servalis* Lederer, 1863.

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Herpetogramma Lederer, 1863: 430. TS: *Herpetogramma servalis* Lederer.

Pachyzancla Meyrick, 1884: 315. TS: *Botys mutualis* Zeller.

Acharana Moore, [1885]: 285. TS: *Botys otreusalis* Walker.

Stenomeles Warren, 1892: 437. TS: *Botys agavealis* Walker.

Piloptila Swinhoe, 1894: 142. TS: *Piloptila nigricornalis* Swinhoe.

Pantoeocome Warren, 1896: 173. TS: *Pantoeocome deformis* Warren.

Macrobotys Munroe, 1950: 228. TS: *Botys aeglealis* Walker.

Coremataria Amsel, 1956: 207. TS: *Botys infuscalis* Guenée.

***Herpetogramma licarsisalis* (Walker, 1859)**

(Figures 1, 2 and 3)

Botys licarsisalis Walker, 1859: 686. TL: Borneo.

Botys pharaxalis Walker, 1859: 727. TL: Australia.

Botys immundalis Walker, [1866]: 1448. TL: Java.

Entephria fumidalis Walker, [1866]: 1486. TL: Australia.

Botys serotinalis Joannis, 1888: 272. TL: Syrie.

Adult (Figure 1). Wingspan 19–21 mm. Head ochreous; frons ochreous mixed with dark brown on dorsal area; vertex with erect brownish scales; antenna reaching about 1/2 of forewing, ciliate, with scape and pedicel dark brown; ocellus well-developed, fuscous. Labial palpus with basal 1st segment whitish gray, 2nd and 3rd segments large with fuscous scales. Proboscis long, yellowish white scales at base. Patagium ochreous. Tegula whitish ochreous. Thorax whitish ochreous. Legs long, yellowish white; tibial spur 0-2-4; hindlegs with mid inner spur 3 times as long as outer one; hind inner spur 3 times same length as outer one. Abdomen fuscous, whitish brown at edge of posterior portion of each segment. Forewing with ground color fuscous yellow, terminal area dark, markings indistinct, postmedial line dentated with dark brown; discal area with blackish pattern, antemedial line dark brown and dentated; fringe whitish-brown. Hindwing weakly patterned with dark brownish postmedial line, terminal area darker, basal and medial area pale; fringe whitish brown.

Male genitalia (Figures 2A and 2B). Tegumen well-developed. Saccus triangular, slender at apex. Uncus long and slender, pointed at apex with numerous hairs. Valva rounded at apex, costa sclerotized about 1/2 length of valva; harp long and straight, paralleled with sacculus. Sacculus sclerotized, extended to half of outer margin; aedeagus long and slender, straight with 2 cornuti consisting of several spines; one rod-shaped with bundle of spinula at basal part, the other one bush-shaped at apex of aedeagus.

Female genitalia (Figures 3A and 3B). Papilla analis well-developed, slightly sclerotized, elliptical with numerous hairs. Apophysis anterioris about 2 times as long as posterioris. Ostium bursae



Figure 1. Adult specimen. 1, *Herpetogramma licarsisalis* (Walker, 1859), female.



Figure 2. A, The male genitalia of *Herpetogramma licarsisalis* (Walker, 1859); B, The aedeagus.

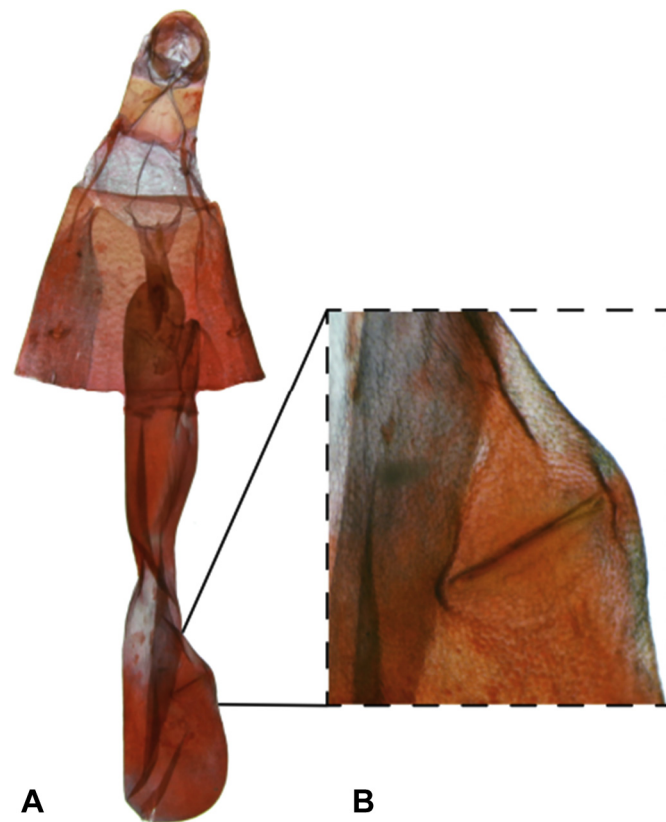


Figure 3. A, The female genitalia of *Herpetogramma licarsisalis* (Walker, 1859); B, The signum.

moderate, membranous. Ductus bursae membranous, long and enlarged. Ductus seminalis originating from posterior part of ductus bursae. Corpus bursae membranous, bulb-shaped with one elongated signum; corpus bursae about 2/3 length of ductus bursae.

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