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Original article

First record of the family Prodoxidae (Lepidoptera: Adeloidea), *Lampronia flavimitrella* (Hübner), reported from KoreaMinyoung Kim^a, Young-Mi Park^{b,*}^aIncheon International Airport Regional Office, Animal and Plant Quarantine Agency, Incheon, Republic of Korea^bDepartment of Plant Quarantine, Animal and Plant Quarantine Agency, Gimcheon-si, Gyeongsangbuk-do, Republic of Korea

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ABSTRACT

The family Prodoxidae is recorded for the first time from Korea, reporting *Lampronia flavimitrella* (Hübner) which was collected at Jeju-do Island. Redescription of the adult is given, with images of adult and male genitalia.

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Introduction

The family Prodoxidae (Lepidoptera) is commonly known as “yucca moth”, because the moth is well known as an obligate pollinator, as well as an herbivore (Peilmyr et al 1996). They are one of a primitive monotrystian Lepidoptera, comprising 98 species belonging to nine genera in the world. The family is divided into two subfamilies: Prodoxinae and Lamproniinae (van Nieukerken et al 2011). Prodoxidae is characterized by a pair of stellate signa in the corpus bursae, a rounded sternum posteriorly, and a triangular tergum VII in the female genitalia. The family is almost entirely distributed in the Holarctic Region, and is mostly diversified in the Nearctic Region (Davis 1999a,b). They are known as endophagous in herbs and shrubs, boring inside plant shoots, leaves, buds, flower receptacles, fruits, or seeds (Nielsen and Davis 1985; Davis 1999a,b). *Lampronia capitella* (Clerck) is especially well known to European gardeners as “currant shoot borer”.

The genus *Lampronia* Stephens comprises 28 described species in Holarctic regions belonging to the subfamily Lamproniinae (Davis 1999a,b). The species type is *Incurvaria aenescens* Walshingham, which was described from Rogue River (OR, North

America), and has mainly been distributed. The genus is distinguished from other groups by having small compound eyes and a proboscis shorter than the labial palpi. Most of the small-to-medium sized members have a golden or dark ground color, with some species being unicolored and many of having forewings with a few-to-numerous whitish or yellowish spots across the forewing.

This species was reported in a faunal survey of subtropical moths from the Jeju-do Islands by Kim et al (2014). In this study, a first record of the family Prodoxidae is described from Korea. Its morphology is described with illustrations, and a description based on male genitalia is provided to aid in identification.

Materials and methods

Materials examined in this study were collected in the Jeju-do Islands, located at the southern part of the Korean Peninsula, in 2015, using bucket traps with ultraviolet lamps (12 V/8 W). Morphological structures and genital characteristics were examined under a stereo microscope (Leica S8APO; Leica, Wetzlar, Germany), and a Nikon D90 (Nikon, Tokyo, Japan) and Carl Zeiss Axio Imager A1 (Carl Zeiss, Oberkochen, Germany) were used for the digital photography. Color standards for the description of adults follows Kornerup and Wanscher (1978). The specimens are deposited in the Jeju Regional Office (Jeju-si), Animal and Plant Quarantine Agency, Korea.

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Figure 1. *Lampronia flavimitrella* (Hübner). A, adult; B, dorsal view of the wing pattern.

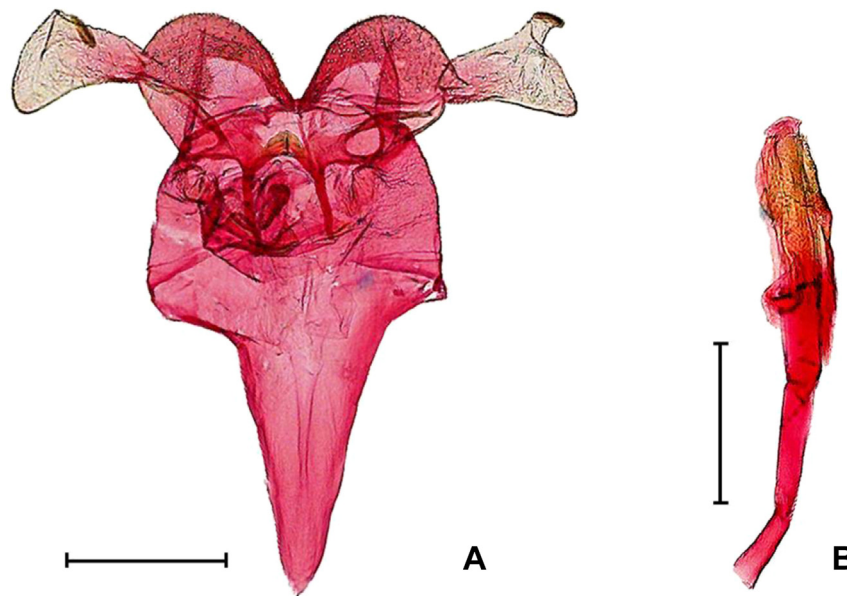


Figure 2. *Lampronia flavimitrella* (Hübner). A, diagram of male genitalia; B, aedeagus <scale bar: 0.5 mm>

Systematic accounts

Family Prodoxidae (Riley, 1881)

Genus *Lampronia* Stephens (1829)

Type species: *Incurvaria aenescens* Walshingham (1888)

Lampronia flavimitrella (Hübner, 1817)

Tinea flavimitrella Hübner (1817)

Lampronia flavimitrella Hübner (1817); Lempke (1976); Kuchlein and Donner (1993); Kuchlein and De Vos (1999); Kuchlein and Bot (2010)

Diagnosis. This species is distinguished from its congeners by the two elongated yellowish white antemedial and postmedial bands on the forewing.

Adult (Figures 1A and 1B). The wingspan is 13.0–15.0 mm. The head involves yellowish-white setae and is tufted. The ocelli and Chaetosemata are absent. The antennae are brownish yellow, filiform, and less than half as long as the forewing. The second segment of the labial palpus is whitish yellow, and the third segment is shorter than second segment. The forewing ground color is brownish gray, with well-developed yellowish-white antemedial and postmedial bands, suffused with dark-brown scales along the costal margin. The fringe is tipped with yellowish brown.

The hindwing is grayish brown, and is paler at the base. The Sc at the base not connected with the truck of R. In the forewing, the common trunk of A_{2+3} is >2.5-times longer than the basal fork. The legs are gray, and the hind tibia is grayish white with a pair of spurs. The tarsus is gray tinged with white and is longer than the tibia. The female is unknown.

Male genitalia (Figures 2A and 2B). The uncus is reduced, and the valva is short and rounded. The apex of cucullus has lateral falcate processes, and the costal margin has a curved process near the base. The saccus is extremely long, slender, and at least half as long as the that of the genitalia. The juxta is well defined, with a horizontal sub-semicircular ridge on the posterior half. The anterior margin is convex medially, and the caudal lobe is short and falcate. The vinculum was sclerotized, well-developed, and Y-shaped. The anellus was membranous, and the aedeagus was extremely slender, as long as the valva, straight distally, and without cornuti.

Material examined. 2♂, U-do Island, Jeju-do, 14 iv 2015 (SM Oh & RN Sohn), genitalia slide no. QIA-131, 136, same locality, 1♂, 22 iv 2015 (SM Oh & RN Sohn).

Host plant. *Rubus idaeus* L. and *R. caesius* L. (Razowski 1978).

Biology. Moths appear from June to July in Japan (Jinbo 2004–2008). Most species fly during the day, with some being active into dusk (Razowski 1978).

Distribution. Korea (new record), Europe (Central, Northern), the Balkan Peninsula, Russia (West, Southwestern), Japan (Hokkaido, Honshu).

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