

Three Species of Gelechiidae New to Korea (Lepidoptera, Gelechioidea)

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한국산 뽕나방과(나비목: 뽕나방상과)의 3 미기록종

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ABSTRACT: Three species of Gelechiidae, *Gnorimoschema streliciellum* (Herrich-Schäffer, 1854), *Syncopacma wormiella* (Wolff, 1958), and *Mesophleps acutunca* Li and Sattler, 2012 are reported for the first time from Korea. Specific diagnoses and re-descriptions are provided as necessary, with adult and male genitalia images.

Key words: New record, *Gnorimoschema streliciellum*, *Syncopacma wormiella*, *Mesophleps acutunca*

조 록: 본 연구를 통해 뽕나방과의 3종, *Gnorimoschema streliciellum* (Herrich-Schäffer, 1854), *Syncopacma wormiella* (Wolff, 1958), *Mesophleps acutunca* Li and Sattler, 2012 이 우리나라에서는 처음으로 보고된다. 이들의 종별 외부형태적 특징을 제기재하여 성충 및 수컷 생식기 이미지와 함께 제시한다.

검색어: 나비목, 뽕나방과, 미기록종, 애꼬마뽕나방, 흰띠꼬마뽕나방, 애갈색테두리뽕나방

The family Gelechiidae is known as one of the largest families of micromoths, comprising more than 4,700 known species belonging to about 500 genera in the world (van Nieukerken et al., 2011). The family can be distinguished from other gelechioid families mainly by the strongly recurved labial palpus, the angular hindwing with sharply acuted apex, and absence of the postcubital vein in the forewing. Adults are rather small, with wingspan of 7~32 mm. Larvae have a wide variety of feeding habits, including many serious agricultural pests, e.g., *Phthorimaea operculella* (Zeller), *Pectinophora gossypiella* (Saunders), and *Sitotroga cerearella* (Oliver). Many of them are leaf-miners at early instars, and often followed by

leaf-folding or leaf-tying in the late instars, and some species tunnel in fruits, seed capsules, galls, stems, roots, or tubers. The species of Gelechiidae in the Korean Peninsula has been enumerated at a total of 172 species (Park and Ponomarenko, 2007). Among them, more than 15 species are known to be endemic to the Korean Peninsula so far. Here we add three unrecorded species based on the material collected in Gangwon Province.

Systematic account

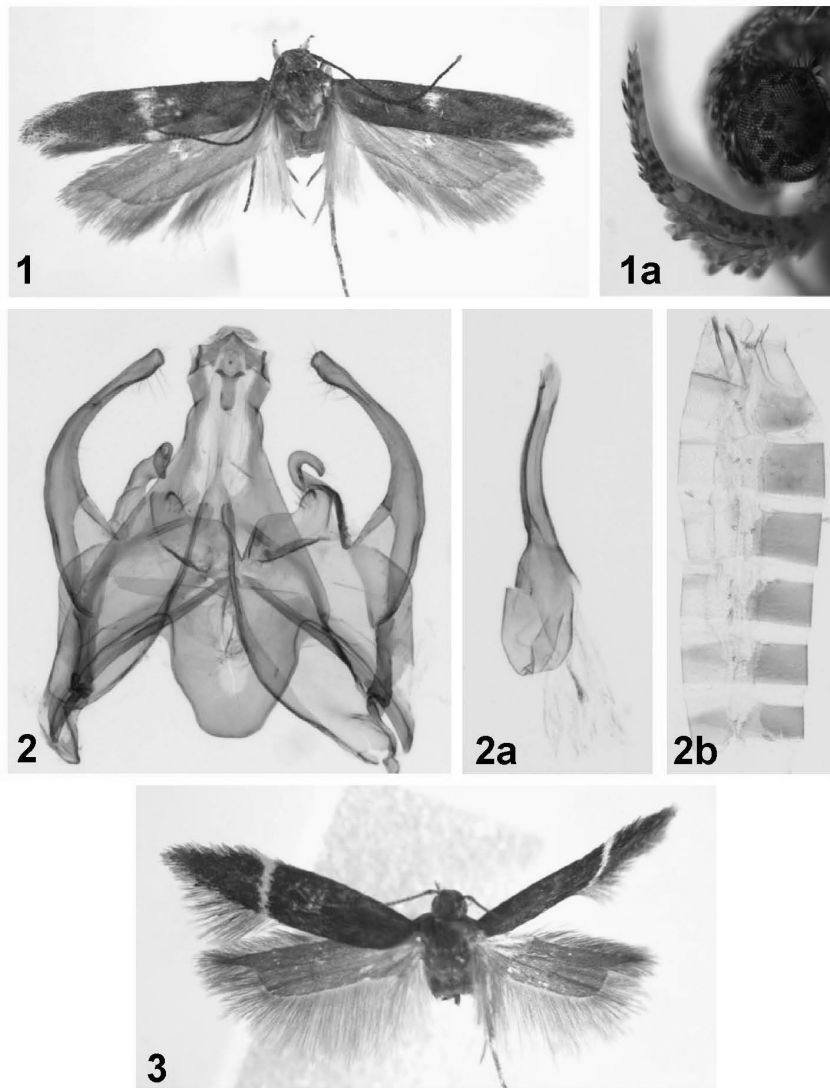
Gnorimoschema streliciellum (Herrich-Schäffer, 1854) 애꼬마뽕나방 (Figs. 1, 1a, 2, 2a-b)

Gelechia streliciellum Herrich-Schäffer, 1854, Schmett. Europe 5: 171.

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Received May 7 2013; Revised August 21 2013

Accepted September 7 2013



Figs. 1-3. 1. Adult of *Gnorimoschema streliciellum* (Herrich-Schäffer, 1854): 1a. Ditto, labial palpus; 2. Ditto, male genitalia; 2a. Ditto, aedeagus; 2b. Ditto, abdomen; 3. Adult of *Syncopacma wormiella* (Wolff, 1958).

Phthorimaea streliciella: Meyrick, 1925: 94.

Gnorimoschema streliciella: Karsholt & Razowski, 1996: 113; Elsner *et al.*, 1999: 41.

Gnorimoschema streliciellum: Povolný, 2002: 21.

Diagnosis. Wingspan 13 mm. The species is similar to *G. valesiella* (Staudinger) which is distributed in Europe, from Central to Northern, and Alaska, in external and male genital characters. The latter has darker wing with only a few red-brown scales (Karsholt, personal communication).

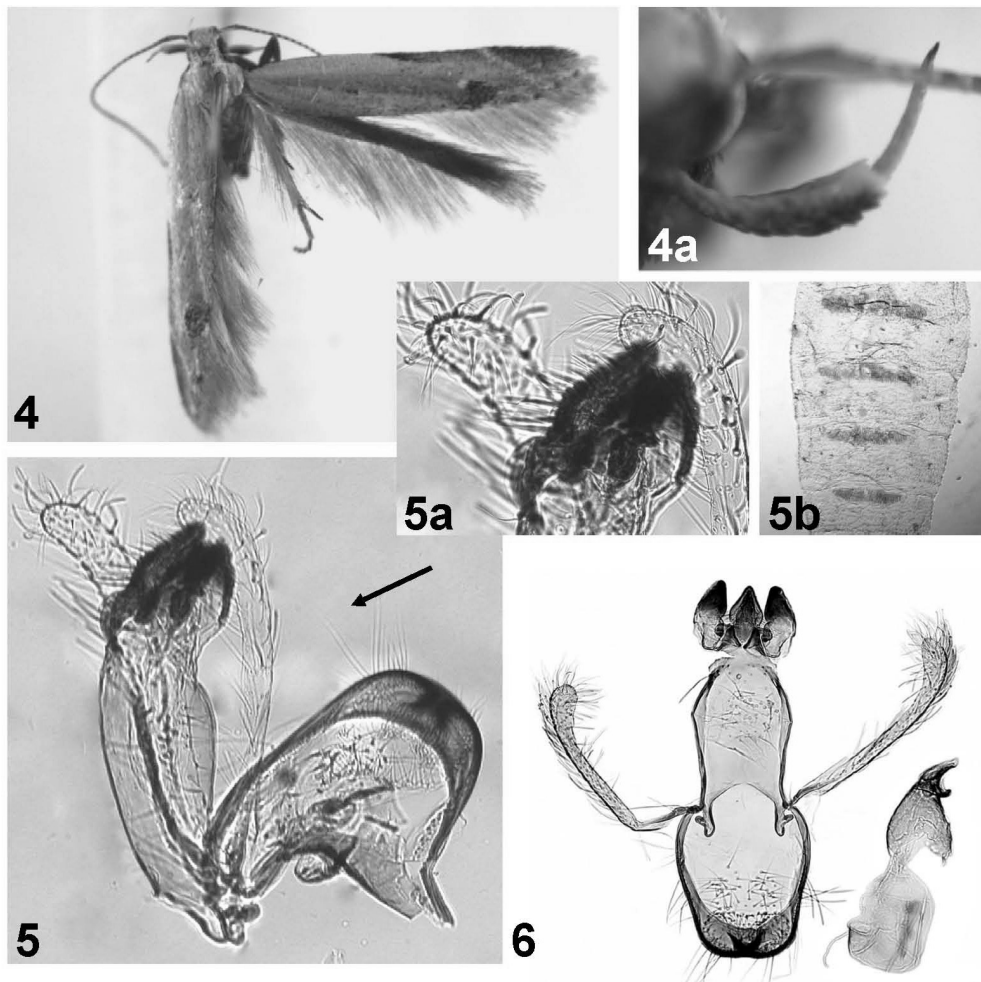
Male genitalia (Figs. 2, 2a). Uncus shortly developed, with triangularly acuted apex. Tegumen narrowed towards apex,

weakly sclerotized. Valva broad basally, then narrow, elongate, gently curved inwardly; apex blunted; basal process strongly curved at apex. Vinculum extremely broad. Saccus well-developed, as long as tegumen. Aedeagus globular at basal 1/3, then elongate, as long as valve.

Material examined. 1 ♂, Jeongseon, Gangwon Prov., 14 ix 2001 (KT Park), gen. slide no. 3127/Park.

Distribution. Korea (Central), Amur, Mongolia, and Europe.

Remarks. Genus *Gnorimoschema* Busk, 1900 is a Holarctic



Figs. 4-6. *Mesophleps acutunca* Li and Sattler, 2012: 4. Adult; 4a. Labial palpus; 5. Male genitalia; 5a. Aedeagus; 5b. Abdomen; 6. Male genitalia of a Chinese specimen (after Li & Sattler, 2012).

genus, and more than 20 species are known in the Palearctic region. In Korea, a single species, *G. radkovitchi* Piskunov has been known to date, and this is the second species known from Korea. *Gnorimoschema strelicium* is distributed in Europe and extended to Mongolia, Transbaikal, and Amur territories. Four subspecies have been known: the nominated subspecies in Northern Europe; subsp. *hoefneri* (Rebell, 1909) in Northern Italy; subsp. *mongolorum* Povolny, 1969 in Mongolia; and subsp. *cinctipunctellum* (Erschoff, 1877) in Amur. Povolný (2002) did not assign Korea into any subspecies, but it is considered to be treated as subsp. *cinctipunctellum* (Erschoff, 1877) in the zoogeographical view. The subspecific status will be further discussed in a future study when additional material is available. Some differences in the male genitalia were observed between Korean material and the subsp. *cinctipunctellum* as

follows: Korean material with apical part of valva less dilated; saccus broadly rounded anteriorly; and aedeagus without preapical spine. Abdominal tergites have spinous zones (Fig. 2b).

***Syncopacma wormiella* (Wolff, 1958) 원뿔꼬마뿔나방**(Fig. 3)

Stomopteryx wormiella Wolff, 1958, Entomol. Med., 26: 244.

Syncopacma wormiella: Piskunov, 1981: 738; Karsholt & Riedl, 1996: 119; Elsner *et al.*, 1999: 51; Omelko, 1999: 165; Ponomarenko *et al.*, 2006: 112; Park & Ponomarenko, 2007: 149.

Diagnosis. Wingspan 13 mm. This species is superficially similar to *S. ochrofasciella* (Toll) which also occurs in the same area with this species, but can be distinguished by the narrower postmedian band of the forewing and the male genitalia by the following: cucullus dilated distally; saccus

shorter than the length of tegumen+uncus, whereas it is heavily sclerotized, long, curved medially, and vinculum with a large median process in *ochrofasciella*. The specimen is missing its abdomen and could not be compared for the genitalia, but there is no doubt it is conspecific by the superficial characters.

Material examined. 1 ♂, Mt. Taewha-san, Youngwol, GW, 27 v 1998 (SH Won), abdomen missing.

Distribution. Korea (Central), China (Jilin), Russia (European part & Russian Far East), Europe.

Remarks. This species was reported from Mt. Changbai-shan which is located in border between the NE of China and N. Korea (Ponomarenko *et al.*, 2006).

***Mesophleps acutunca* Li and Sattler, 2012 애갈색테두리꼴나방**(Figs. 4, 4a, 5, 5a-b, 6.)

Mesophleps acutunca Li and Sattler, 2012, Zootaxa 3373: 1-82.

Diagnosis and re-description. Adult (Figs. 4, 4a). Wingspan 10–11 mm. This species is similar to *Mesophleps sublutiana* Park, but can be distinguished by the smaller size, the forewing with small brownish costal patch instead of a long brownish streak along costa. Head light yellow. Second segment of labial palpus relatively thin, dark brown, and white dorsally and apically; 3rd segment slightly shorter than 2nd segment, white. Antenna with alternating white and dark brown rings. Forewing grayish orange, scattered with brownish scales, with a small brownish costal patch medially; costal streak in distal 3/5 indistinct, interrupted by oblique white line running from near distal quarter to near middle of termen; several black scales along termen; blackish discal spot sometimes indistinct and a blackish plical spot distinct.

This species differs from all other members of the genus in male genitalia, with the unusual uncus and gnathos as shown in Figs. 5, 5a and 6. The abdominal tergites have well-developed anterior spinous zones (Fig. 5b). Female is unknown in Korea.

Male genitalia (Figs. 5, 5a). Uncus small, bud-shaped. Gnathos with conical, sclerotized lateral processes; as long as uncus. Valva narrow, dilated apically. Tegumen moderate.

Vinculum narrow; saccal region broad, about 1/4 the length of vinculum, medially notched. Aedeagus globular, with short distal portion. The male genitalia of the Chinese specimen is given in Fig. 6, which was illustrated by Li and Sattler (2012).

Material examined. 1 ♂, Mt. Taewha-san, Youngwol, GW, 24 vi 2006 (Park, Kim, Chae), gen. slide no. 3127/Park.

Distribution. Korea (Central), China (Hunan, Henan).

Remarks. Genus *Mesophleps* Hübner, [1825] is a widely distributed Old World genus, except for one New World species, and comprises 40 species. It is known that larvae feed on Cupressaceae, Cistaceae, Cruciferae (Brassicaceae), Leguminosae (Fabaceae), Rubiaceae and doubtfully Dipterocarpaceae (Li and Sattler, 1912). In China, six species are known, including *M. sublutiana* (Park, 1990) and *M. albilinella* (Park, 1990) which were described from Korea.

Acknowledgments

This work was supported by a grant from the National Institute of Biological Resources (NIBR), funded by the Ministry of Environment (MOE) of the Republic of Korea (NIBR No. 2013-02-001). We thank Dr. Houhun Li, Nankai University, Tianjin, China for his comments on identification of the species.

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