

## *Scopula plumbearia* (Lepidoptera: Geometridae), New to Korea

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### ABSTRACT

The sterrhine species *Scopula plumbearia* (Leech) is reported for the first time in Korea, based on four male specimens from an island in Dadohaehaesang National Park, Jeonnam Province. Diagnosis of the species is provided with a brief description of the adult, including male genitalia.

**Keywords:** *Scopula*, Geometridae, Sterrhinae, Korea, new record

### INTRODUCTION

The geometrid genus *Scopula* Schrank, 1802 comprises mostly nocturnal, cryptically colored, small or medium-sized moths compared with other Geometridae, and the monophyly is supported by a single synapomorphy, which is absence of posterolateral appendices on the male 8th sternite (Sihvonen, 2005a). However, the characteristics of the abdomen and genitalia, such as separated sacculus and valvula of the valva, urceolate juxta in the male genitalia, and the spinous signum in the female genitalia, are diagnostics of the genus (Sihvonen, 2005a). About 800 species of *Scopula* are known, and they are found both in forested and open habitats (Holloway, 1997; Hausmann, 2004; Sihvonen, 2005a).

In Korea, Leech (1898) first recorded 11 species of *Scopula*. Since then, 24 species have been added to the Korean fauna, making the total 35 (Shin, 1996). The primary purpose of the present study was to report a species of *Scopula* for the first time in Korea. Terminology for adult morphology and genitalia followed Hausmann (2004). The material examined is preserved in Mokpo National University Insect Collection, Jeonnam, Korea. Abbreviations used in the text are as follows: TL. Type locality; and [JN] Jeollanam-do (=Jeonnam).

### SYSTEMATIC ACCOUNTS

Order Lepidoptera Linnaeus, 1758  
Family Geometridae Stephens, 1829  
Subfamily Sterrhinae Meyrick, 1892  
Genus *Scopula* Schrank, 1802

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*Scopula* Schrank, 1802. Type species: *Phalaena paludata* Linnaeus, 1767.

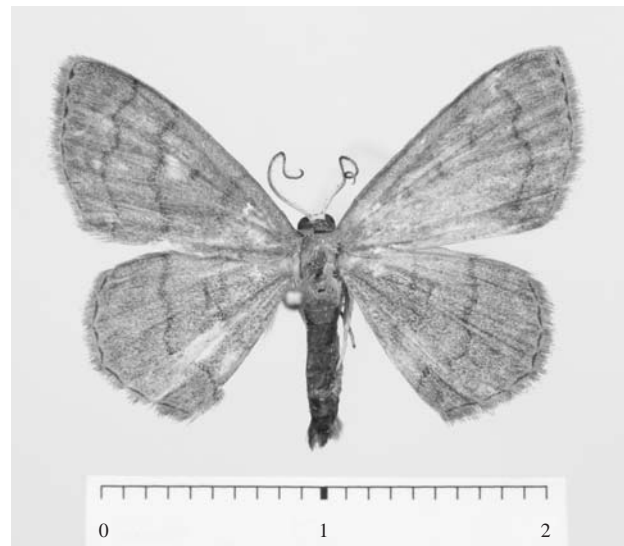
#### <sup>1</sup>\**Scopula plumbearia* (Leech) (Figs. 1-2)

*Acidalia plumbearia* Leech, 1891. Entomol., 24 (Suppl.): 55.  
TL: [JAPAN] Satsuma, Nagasaki.

*Scopula plumbearia*: Inoue, 1977. Bull. Fac. Domestic Sci.,  
Otsuma Woman's Univ., 13: 246.

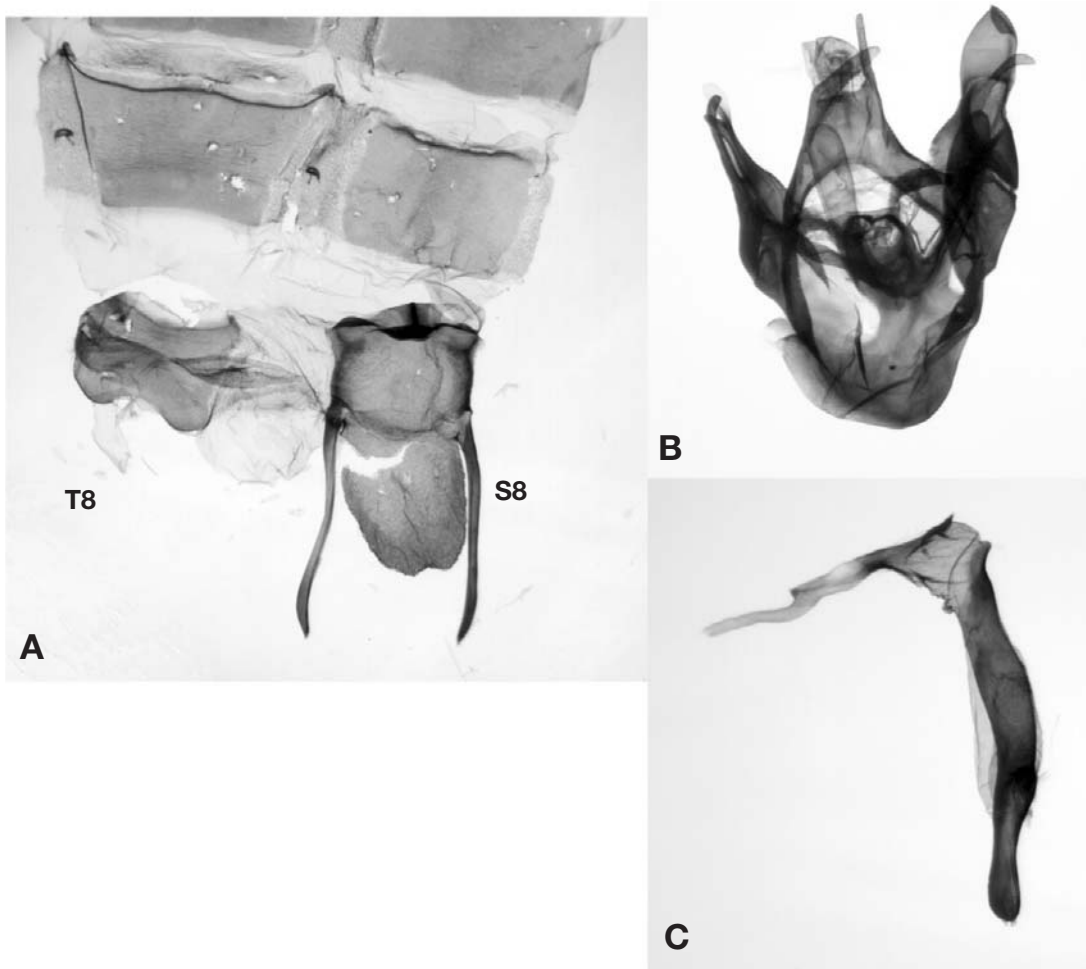
*Material examined.* [JN] 4♂ Is. Geomun-do, JN: Yeosu, N 34° 1'7"E 127° 18'12", 14 m a.s.l., 26 May. 2009 (S.W. Choi and J.-S. An).

*Diagnosis.* This species is distinguished by the serrate male



**Fig. 1.** Adult of *Scopula plumbearia* (Leech).

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**Fig. 2.** Male abdomen and genitalia of *Scopula plumberaia* (Leech). A, Abdomen; B, Male genital capsule; C, aedeagus with everted vesica.

antennae, broad and dark brownish frons, ochreous vertex and dark brownish wing ground color with light brownish transverse lines on both wings. The male abdomen and genitalia can be distinguished by the long cerata on the 8th sternite and the digitate socii, the large digitate lateral process of anellus and the asymmetrical valva with large spatulate valvula on the right valva.

*Description* (Fig. 1). Wingspan 21-23 mm in male. Male antennae serrate with short pectination; frons broad, not projected, covered with dark brownish scales; vertex covered with light ochreous scales; labial palpi about 1.5 times of eye diameter, 2<sup>nd</sup> segment thick, curved, 3<sup>rd</sup> segment thick, apically tapering. Legs dark brownish, hind tibia with a bundle of long hair pencils. Forewing ground color dark brown; basal line light blackish, slanted; discal spot blackish; postmedial line blackish, weakly dentate; subtermen with a light blackish dentate line along postmedian; single large areole.

Hindwing ground color dark brown, termen slightly convex medially; basal line light blackish, undulate; discal spot large blackish; postmedial line blackish, undulated, convex outwardly.

*Male abdomen and genitalia* (Fig. 2). Abdominal 8<sup>th</sup> sternite with long cerata with sclerotized mappa; 8<sup>th</sup> tergite with broad, undulated posteriorly. Socii long, digitate; tegumen triangular as long as vinculum; saccus broad, rounded; lateral process of anellus relatively thick, digitate; transtilla sclerotized, rounded; juxta simple, weakly sclerotized. Valva asymmetrical; right valva with strongly sclerotized spatulate valvula with digitate fibula; left valva with a minute membranous valvula, fibula long, sclerotized; sacculus ample, sclerotized. Aedeagus slender; vesica membranous, tubular with a minute spinular cornutus. *Female genitalia* (Inoue, 1982). Lamella antevaginalis large, broad; ductus bursae short; corpus bursae ovate, with a long patch of signa.

*Biology.* The species is bivoltine in Japan (Jinbo, 2010).

*Distribution.* Korea, Japan, China (?).

Note. Sihvonen (2005b) noted that Inoue (1977) recorded this species from west China, but the occurrence of this species in China is still uncertain.

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