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Two New Records of Ennominae Species (Lepidoptera: Geometridae) from Korea

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ABSTRACT

Two ennomine species, *Amblychia angeronaria* Guenée and *Peratostega deletaria* (Moore), are reported for the first time from Korea. *Amblychia angeronaria* was collected from Isl. Gageo-do, in the south west of Korea. The species is distinguished by the large wingspan, the ochreous forewing with a row of large white dots on the postmedian and a grayish apical dot, and the grayish or dark ochreous hindwing with undulating postmedial line and dark grayish subterminal line. *Peratostega deleraia* was collected from Isl. Jeju-do, and can be distinguished by the dark brown forewing with a blackish dentate postmedian and a light brown apical dot, and the dark brown hindwing with the light brown subterminal and angulate terminal lines. Diagnosis and description of the species are given along with figures of the male and female genitalia.

Keywords: Lepidoptera, Geometridae, Ennominae, *Peratostega deletaria*, *Amblychia angeronaria*, taxonomy, Korea

INTRODUCTION

Genus *Amblychia* Guenée was established, based on *Amblychia angeronaria* Guenée as the type species, and comprises about 20 species mostly from the Indo-Australian region (Holloway, 1993; Scoble, 1999). The species of *Amblychia* show gray-brown wing ground color with a mixture of straight and crenulate fasciae, strongly angular and excavated margin to the hindwing (Holloway, 1993). The male genitalia of *Amblychia* have a bifid uncus, strong and apically rugose gnathos, rhomboidal valva with short and

long hair-setae on the costa and the aedeagus with a small lateral thorn subapically. The female genitalia of *Amblychia* have the strongly sclerotized, curved ovipositor lobe, densely scaled membranous pair of lobes on the lamella postvaginalis, the short and sclerotized ductus bursae and the large corpus bursae with a dentate signum (Holloway, 1993).

Genus *Peratostega* Warren was designated, based on *Peratostega coctata* Warren as the type species, and comprises four species from northern India, Borneo and Japan (Scoble, 1999). *Peratostega* species show filiform male antennae and dull reddish brown wings (Holloway, 1993). The male genitalia of *Peratostega* have a single coremata on valva, the short and triangular valva with double spurs from sclerotized ventral angle, the short saccus, the small aedeagus with a broad scobinate band on the vesica. The female genitalia have the crescent-shaped lamella antevaginalis, the narrow ductus bursae, the pyriform corpus bursae with a straight bifid or bilobed flange (Holloway, 1993).

In the present study, two ennomine species, *Amblychia angeronaria* Guenée and *Peratostega deletaria* are reported for the first time in Korea. More than 10 specimens of *Amblychia angeronaria* were collected at the most southwestern island of Korea, Gageo-do, and two specimens of *Peratostega deletaria* were collected at the southern slope of Mt. Halla-san, Jeju-do. Morphological terminology, including the male and female genitalia refers to Scoble (1992). Abbreviations are as follows: TL, type locality; MNU, Mokpo National University; JN, Jeonnam, Province Jeollanam-do; JJ, Province Jeju-do.

SYSTEMATIC ACCOUNTS

Order Lepidoptera Linnaeus, 1758

Family Geometridae Stephens, 1829

Subfamily Ennominae Duponchel, 1845

Genus *Amblychia* Guenée, [1858]

Type species: *Amblychia angeronaria* Guenée

¹* *Amblychia angeronaria* Guenée, [1858] (Figs. 1, 2)

Amblychia angeronaria Guenée, [1858]: 215. TL: India (central).

Amblychia sinibia Wehrli, 1938: 88. TL: China, Sichuan, Tachien-lu (Kangding).

Amblychia torrida Moore, 1877: 621. TL: Andaman Island, South Andaman (Port Blair).

Material examined. Korea: [JN]: 1♂ 6♀, Isl. Gageo-do, N34°03'50", E125°07'18", 348 m, 5 Jun 2012; 1♀, Isl. Gageo-do, N34°04'24", E125°06'00", 185 m, 5 Jun 2012; 1♂ 5♀, Isl. Gageo-do, N34°04'16", E125°06'26", 228 m, 5 Jun 2012; 1♀, Isl. Gageo-do, N34°04'24", E125°06'00", 185 m, 10 Sep 2012.

Diagnosis. This species is characterized by the long pectinations of the male antennae, the larger wingspan, a row of white triangular dots on the postmedian fascia of forewing, a dark brown medial line and a blackish discal dot on fore and hindwings and undulating postmedian line of hindwing. The male genitalia can be distinguished by the strongly tapered and apically bifid uncus, the large spatulate gnathos, the large and rounded juxta, and the membranous and apically projected valva, with large setae-like hairs on the

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costa and cucullus. The female genitalia can be distinguished by the long and medially curved ovipositor, the long and sclerotized apophyses, the broad antrum, the short ductus bursae, and the long membranous corpus bursae with a rounded signum with dentate margin.

Description. Wingspan 67–75 mm. **Head:** antennae in male bipectinate with long pectinations (Fig. 1A), in female filiform (Fig. 1B); frons broad, ventrally projected, covered with dark ochreous scales; labial palpi long, almost twice to eye diameter, well projected beyond frons covered with dark ochreous hairs. **Thorax:** body and legs covered with yellowish white hairs. Forewing: ground color ochreous; basal line dark ochreous, suffused with white dots; medial line dark ochreous, slightly rounded; one dark brown discal dot; postmedial line with a row of large whitish triangular dots; termen with dark brown or blackish, undulating subterminal line; apex with one large, light ochreous dot. **Hindwing:** ground color brownish in male and dark ochreous in female; medial line dark ochreous; discal dot blackish; postmedial line blackish, undulating; termen with dark ochreous rounded subterminal line; margin medially sharply pointed outward.

Male genitalia (Fig. 2A, B). Uncus long, strongly tapered, apex weakly bifid; gnathos spatulate; tegumen triangular, almost equal to length of vinculum; transtilla ring-shaped; juxta large, heart-shaped; saccus short, broad. Valva long, strongly tapered, apex projected; costa slender, sclerotized, distally with long setae-like hairs; sacculus long, sclerotized; cucullus basally with setae-like hairs. Aedeagus long, rod-shaped; vesica tubular with small patch of cornuti.

Female genitalia (Fig. 2E). Ovipositor lobe long, medially curved, distally sharply pointed; apophyses posteriores strongly sclerotized, long, almost equal to length

of apophyses anteriores; antrum broad; ductus bursae short, tapered, sclerotized; corpus bursae long, pear-shaped, signum rounded sclerotized plate-shaped with dentate margin.

Host plant. Lauraceae (Sugi, 1987).

Distribution. Korea, Japan, Taiwan, Borneo, Sumatra, North East Himalaya.

Remarks. The species is bivoltine in Korea, flying June and September.

Genus *Peratostega* Warren, 1897

Peratostega Warren, 1897: 80.

Type species: *Peratostega coctata* Warren, 1897.

²Peratostega deletaria* (Moore), 1888 (Figs. 1, 2)**

Macaria deletaria Moore, 1888: 261, Pl. 8, fig. 14. TL: India, Darjeeling.

Lomographa (ingena) deletaria hypotaenia Prout, 1930: 315. TL: Japan, Takao-san.

Material examined. Korea: JJ: 1♂ Seonheul, Jocheon, N33°16'5.6", E126°27'22.8", 16 Jul 2010, Kim SS; 1♂ Hareri, Seogwipo-si, N33°19'56.7", E126°36'25.7", 499 m, 2 Oct 2010, Choi SW.

Diagnosis. This species can be distinguished by the brownish wings, dark ochreous dentate postmedial line of fore and hindwings and light yellowish apical dot of the forewing. The male genitalia can be distinguished by the bifid uncus, long digitate gnathos, membranous costa and long and sclerotized sacculus of valva, and a pair of long coremata pouch on valva.

Description. Wingspan 26 mm. **Head:** antennae in male filiform (Fig. 1C); frons

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narrow, covered with ochreous and dark ochreous scales; labial palpi strongly upturned, projected beyond frons covered with ochreous hairs. **Thorax:** body and legs covered with yellowish white hairs. **Forewing:** ground color light brownish; postmedial line dark brown, thick, rounded; apex with large light yellowish dot. Hindwing: ground color brownish; basally dark brownish; postmedial line dark brownish, dentate; termen medially projected.

Male genitalia (Fig. 2C, D). Uncus expanded, bifid; gnathos long digitate; tegumen triangular, almost equal to length of vinculum; saccus short, broad. Valva long, slender; costa slender, membranous; sacculus long, strongly sclerotized; a pair of coremata pouch present. Aedeagus long, rod-shaped; vesica tubular with linear patch of cornuti.

Female genitalia. Not examined.

Host plant. *Quercus* spp. (Sugi, 1987).

Distribution. Korea, Japan, Taiwan, North India.

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Fig. 1. Adult of *Amblychia angeronaria* and *Peratostege deletaria* in Korea. A, *Amblychia angeronaria* (male); B, *Amblychia angeronaria* (female); C, *Peratostege deletaria*.

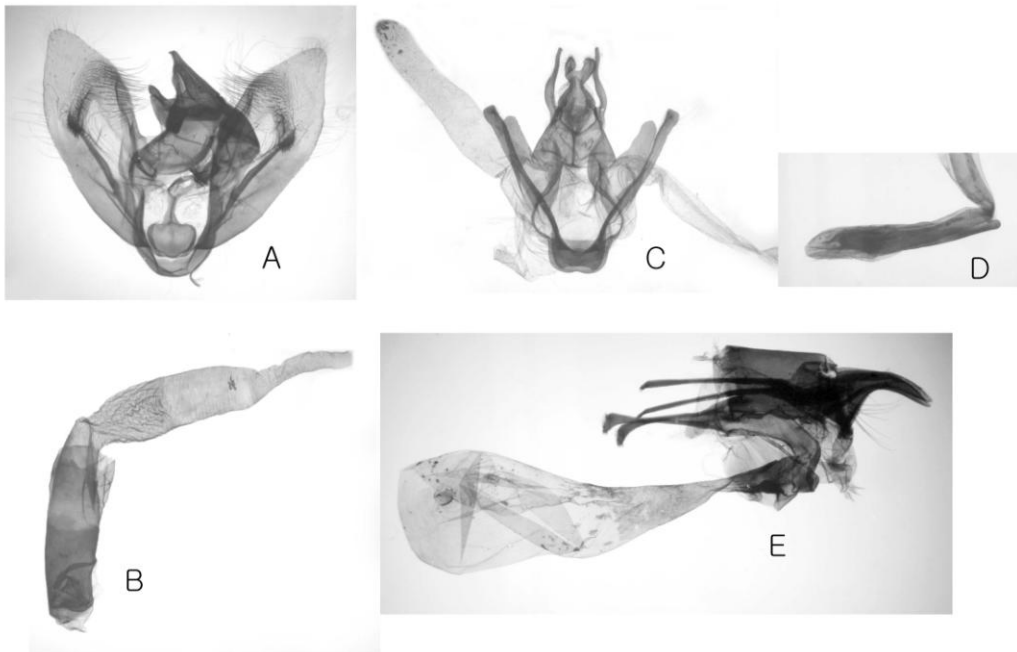


Fig. 2. Male and female genitalia of *Amblychia angeronaria* and *Peratostege deletaria* from Korea. A, B, E, *Amblychia angeronaria*; C, D, *Peratostege deletaria*; A, C, Male genital capsule; B, D, Aedeagus; E, Female genitalia.