

Three Species of *Acrolepiopsis* (Lepidoptera, Glyphipterigidae, Acrolepiinae) New to Korea

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ABSTRACT

Three species of *Acrolepiopsis*: *A. issikiella* (Moriuti, 1961), *A. japonica* Gaedike, 1982, and *A. postomacula* (Matsumura, 1931), are recorded from Korea for the first time. *Acrolepiopsis issikiella* is characterized by having the white costal strigulae and a large dorsal patch on the forewing. *Acrolepiopsis japonica* is the smallest congener in Korea. *Acrolepiopsis postomacula* is the only Korean species of Acrolepiinae associated with *Hosta*. Distributions and larval biology of the three species are summarized. Two species, *A. issikiella* and *A. japonica*, are potential pest species of yam-cultivating farms in Korea. Superficial and genital features of the species, if available, are illustrated.

Keywords: *Acrolepiopsis*, fauna, Glyphipterigidae, Korea, taxonomy, Yponomeutoidea

INTRODUCTION

Acrolepiopsis was one of the two genera separated from *Acrolepia* Curtis, 1838, that once included all known members of the Acrolepiidae (Gaedike, 1970). *Acrolepiopsis* is distinguished from two other genera in Acrolepiinae, *Digitivalva* Gaedike, 1970, and *Acrolepia*, particularly based on the presence of the simple blade-like valvae without spiniform setae on the distal half in the male genitalia. However, the generic boundary of *Acrolepiopsis* remains unsatisfactory (Landry, 2007).

Acrolepiopsis currently includes 39 species that occur in most region except Australasia (updated from Gaedike, 1997). In Korea, two species of *Acrolepiopsis*: *A. sapporensis* (Matsumura, 1931) and *A. nagaimo* (Yasuda, 2000), have been known (Park, 1983; Kim et al., 2013). The species of *Acrolepiopsis* whose host-plants are known feed on a few related monocot groups: Amaryllidaceae and Asparagaceae in Asparagales; Colchicaceae, Liliaceae, and Smilacaceae in Liliales; and Dioscoreaceae in Dioscoreales. There are a few important pest species of *Acrolepiopsis* on leek cultivation, notably

A. assectella (Zeller, 1839) and *A. sapporensis*. Kim et al. (2013) reported the infestation of *A. nagaimo* on Chinese yam (*Dioscorea opposita*) cultivated in the experimental farms in Korea.

We report three species of *Acrolepiopsis* new to Korea and provide photos of their adults and genitalia, if available. Our records bring attention to the multiple potential pest species of *Acrolepiopsis* on yam industry. Voucher specimens are deposited in the Mokpo National University, Muan, South Korea (MPNU) and in the National Institute of Biological Resources, Incheon (NIBR).

SYSTEMATIC ACCOUNTS

Order Lepidoptera Linnaeus, 1758
Superfamily Yponomeutoidea Stephens, 1829
Family Glyphipterigidae Stainton, 1854
Subfamily Acrolepiinae Heinemann, 1870
Genus *Acrolepiopsis* Gaedike, 1970

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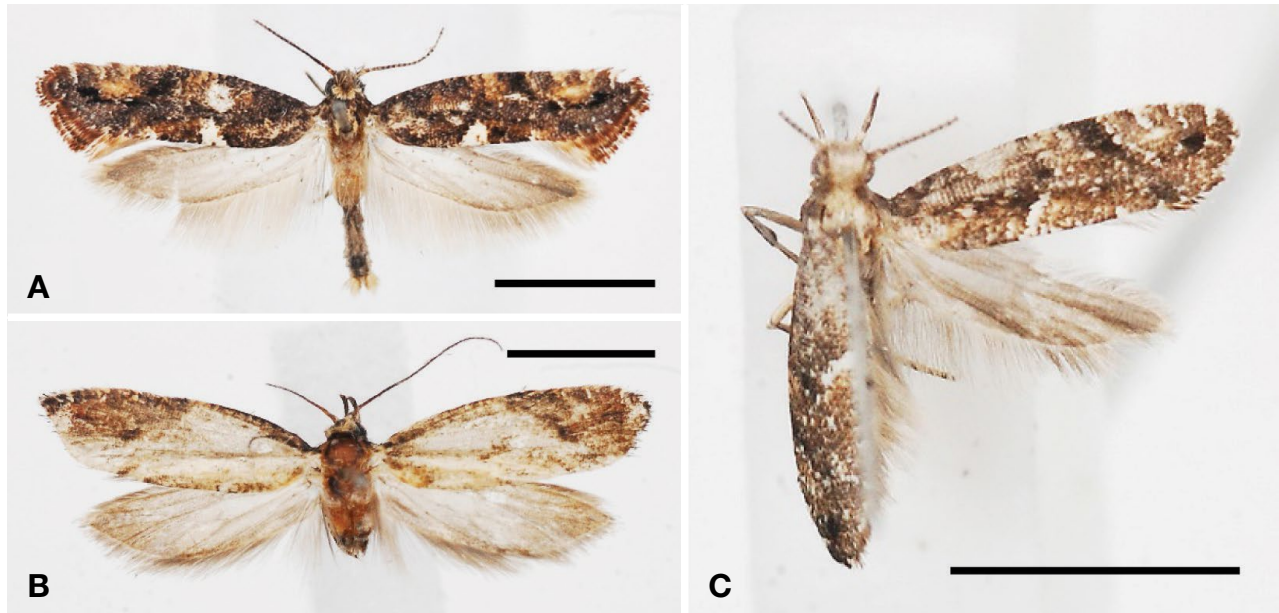


Fig. 1. Adults of *Acrolepiopsis*: A, *A. issikiella* (Moriuti), male; B, *A. postomacula* (Matsumura), female; C, *A. japonica* Gaedike, male. Scale bars = 3 mm.

^{1*}*Acrolepiopsis issikiella* (Moriuti, 1961)
(Figs. 1A, 2A, 2D)

Acrolepia issikiella Moriuti, 1961: 25. Type locality: Japan, Honshu, Kawati, Kuragaritoge.
Acrolepiopsis issikiella; Gaedike, 1970: 46.

Material examined. Korea: 3♂, 2♀, Jeonnam Prov.: Wando-gun, Gunoe-myeon, near Wando Arboretum, 10 Apr 2015, SS Kim SS, [GSN] SJC-1017 (♂), MPNU & NIBR; 1♀, Jeju Prov.: Isl. Woodo, 16 Apr 2014, [GSN] SJC-1028, MPNU.

Description. *Head.* Vertex and frons pale grayish orange, intermixed with dark brownish gray scales. Antenna 2/3 as long as forewing; scape dark yellowish gray; flagellomere brownish gray, with dark brown band distally. Labial palpus dark brown on exterior surface, pale brownish gray on interior surface. *Thorax.* Patagium purplish brown; tegula dark brown, sparsely intermixed with pale orange scales; mesonotum pale orange, with dark brown, transverse band anteriorly and medially; mesoscutellum purplish brown. Forewing (Fig. 1A) length 4.8–5.3 mm (n = 5), dark grayish brown, speckled with white; costa with orange strigulae at middle and three pale orange strigulae distally; orange, elliptical patch and black bar present at distal end of discal cell; white, narrow strigulae on subterminal and terminal area; dorsal patch dentiform, white, black-edged, with black dot at middle; fringe

dark brown. Hindwing brownish gray, paler to base; fringe brownish gray. *Abdomen.* Tergite dark grayish brown; sternite brownish gray. *Male genitalia* (Fig. 2A). Uncus elongate, conical, truncate apically, 3/4 as long as valva. Valva elongate, digitate, broadened at distal 1/3, narrowly round apically, setose dorsally, as long as saccus, with a socket of hair bundles basally. Saccus elongate, 1.7 × longer than uncus. Phallus elongate, broadened in basal 2/5. *Female genitalia* (Fig. 2D). Papillae anales oblique apically. Apophyses posteriores 1.3 × longer than apophyses anteriores. Posterior lobes on sternite IX large, broadly round, setose. Ductus bursae narrow, sclerotized in caudal half, 1/2 as long as corpus bursae. Corpus bursae elliptical, with two dash-like scobinate signa at caudal 1/3.

Distribution. South Korea, Japan (Honshu, Shikoku, Kyushu), Russia (Far East), Mongolia.

Host plants. Dioscoreaceae - *Dioscorea tokoro* Makino, *D. japonica* Thunb., *D. gracillima* Miq. (Moriuti, 1961; Budashkin, 2002).

Remarks. This species can be distinguished from other congeners in Korea having the white costal strigulae and a large dorsal patch on the forewing. The autumnal larvae bore into the fruits of *Dioscorea* and feed on the seeds, but the larvae occurring in spring and summer often feed into the stems and new shoots or occasionally on the leaves of the host-plants (Yasuda, 2005, 2013).

Korean name: ^{1*}흰무늬마좁나방

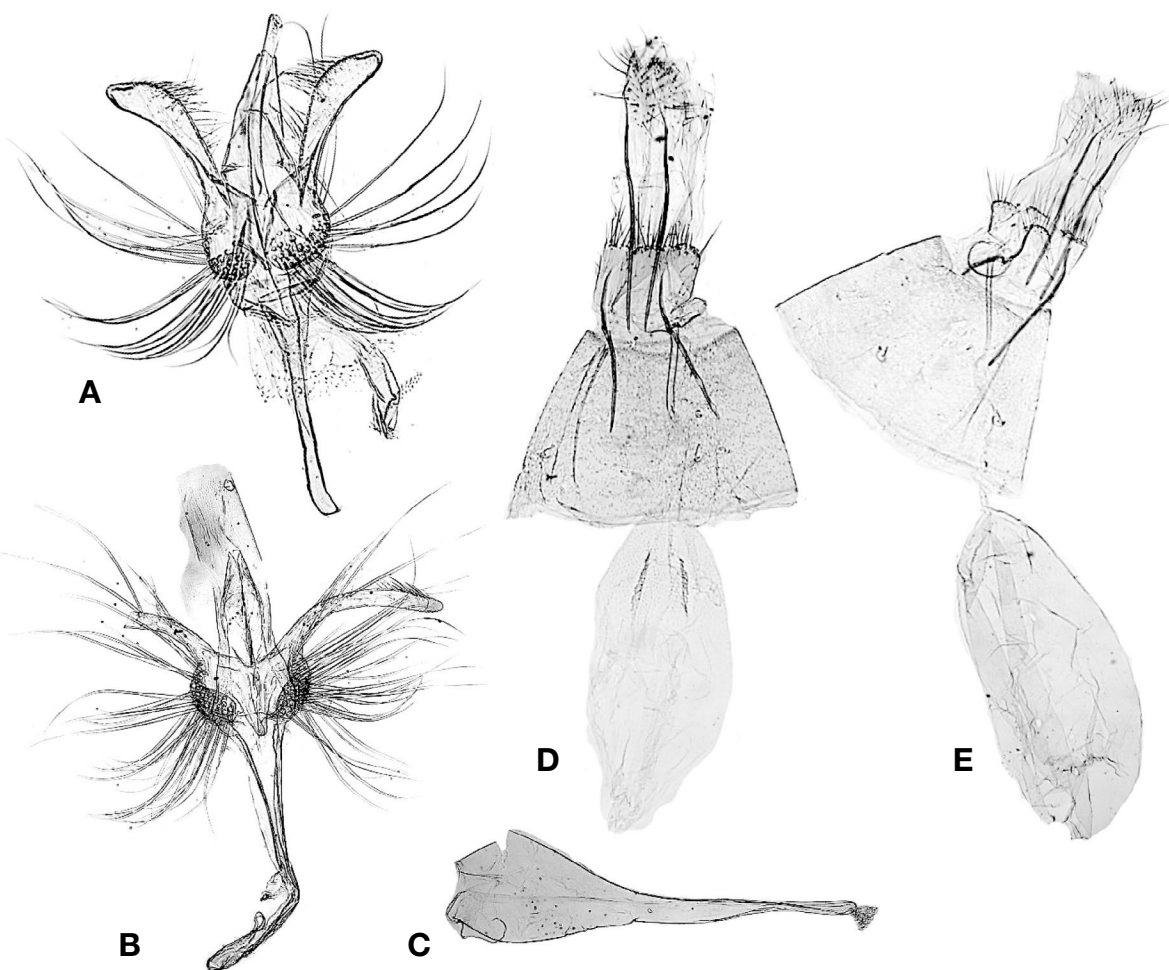


Fig. 2. Genitalia of *Acrolepiopsis*. A, Male genitalia of *A. issikiella* (Moriuti) with phallus attached; B, Male genitalia of *A. japonica* Gaedike with phallus removed; C, Phallus of *A. japonica* Gaedike; D, Female genitalia of *A. issikiella* (Moriuti); E, Female genitalia of *A. postomacula* (Matsumura).

¹**Acrolepiopsis japonica* Gaedike, 1982 (Figs. 1C, 2B, 2C)
Acrolepiopsis japonica Gaedike, 1982: 27. Type locality:
 Japan, Honshu, Shizuoka Pref., Ito.

Material examined. Korea: 2♂, Jeonnam Prov.: Wando-gun, Gunoe-myeon, near Wando Arboretum, 34°21'32.4"N, 126°39'57.9"E, 16 Sep 2015, Sohn JC, [GSN] SJC-1070, MPNU & NIBR; 1♂, Gyongnam Prov.: Geoje-si, Isl. Geojedo, Dongbu-myeon, Mt. Nojasan, 34°47'47.3"N, 128°36'50.8"E, 18 Aug 2017, Sohn JC.

Description. *Head.* Vertex yellowish gray, intermixed with brownish gray scales laterally; frons lustrous, yellowish gray. Antenna 3/5 as long as forewing; scape dark brownish gray; flagellomere brownish gray, with dark brownish gray band distally. Labial palpus dark brown; 2nd segment with yellowish

gray band distally. *Thorax.* Patagium and tegula dark brownish gray; mesonotum pale brownish gray, tinged with dark brownish gray laterally. Forewing (Fig. 1C) length 3.5–3.9 mm (n = 2), dark brownish gray, irrorated with dark brown, speckled with white; costa with dark reddish brown and white strigulae; terminal area with white strigulae; dorsal patch oblique, dash-shaped, white; fringe dark brownish gray. Hindwing and fringe brownish gray. *Abdomen.* Tergite dark brownish gray; sternite pale brownish gray. *Male genitalia* (Fig. 2B). Uncus short, conical, 1/3 as long as valva. Valva elongate, digitate, slightly curved at basal 1/3, setose dorsally, with a large socket of hair bundle. Saccus divergent in basal half, narrowly round apically, 3.5 × longer than uncus. Phallus (Fig. 2C) vase-like in basal half, slender in distal half, 1.5 × longer than saccus.

Korean name: ¹*참마좁나방

Distribution. South Korea, Japan (Honshu).

Host plants. Dioscoreaceae - *Dioscorea tokoro* Makino, *D. japonica* Thunb. (Yasuda, 2000, 2013).

Remarks. *Acrolepiopsis japonica* is the smallest species of the genus in Korea. The young larvae mine the leaves of *Dioscorea* but in later instars, they become surface-feeders on the same plants. The larvae occurring in autumn sometimes feed into the propagules of *Dioscorea* (Yasuda, 2013).

¹* *Acrolepiopsis postomacula* (Matsumura, 1931)
(Figs. 1B, 2E)

Eidophasia postomacula Matsumura, 1931: no. 2266. Type locality: Japan, Hokkaido, Sapporo.

Acrolepia argolitha Meyrick, 1932: 227. Type localith: Japan, Hokkaido, Sapporo.

Acrolepiopsis postomacula; Gaedike, 1970: 48.

Material examined. Korea: 1♀, Jeonnam Prov.: Wandogun, Is. Wando, Gunoe-myeon, near Wando Arboretum, 16 Jul 2015, Kim SS, [GSN] SJC-1018, MPNU.

Description. *Head.* Vertex yellowish gray; frons dark brown. Antenna 3/4 as long as forewing; scape dark brown; flagellomere dark grayish brown, intermixed with gray scales. Labial palpus dark purplish brown; 2nd segment with pale grayish brown patch distally. *Thorax.* Patagium, tegula and mesonotum dark brown. Forewing (Fig. 1B) length 6.6 mm (n = 1), dark brown, tinged with dark reddish brown on distal area, sparsely speckled with white; costa with slender white strigulae; terminal area with a row of small white spots; dorsal patch white, oblique bar-like; fringe dark brown. Hindwing and fringe pale grayish brown. *Female genitalia* (Fig. 2E). Papillae anales oblique apically, setose. Posterior lobes on sternite IX small, setose. Apophyse posteriores 1.2 × longer than apophyses anteriores. Area around ostium bursae round, sclerotized. Ductus bursae narrow, sclerotized in caudal 1/3, 3/4 as long as corpus bursae. Corpus bursae elongate, ovobate; signum absent.

Distribution. South Korea, Japan (Hokkaido, Honshu), Russia (Far East), Mongolia.

Host plants. Asparagaceae - *Hosta lancifolia* Engler (Moriuti, 1964).

Remarks. This species is the only Korean species of *Acrolepiopsis* that is associated with *Hosta*. The larvae bore into the fruits of the host plants (Yasuda, 2013).

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