

Descriptions of two new species of Gelechiidae and one new species of Depressariidae from Korea (Lepidoptera: Gelechioidea)

K.-T. Park, K. W. Lee & M. Kim

Abstract

Two species of Gelechiidae, *Teleiodes cylindriata* Park, sp. n. and *Helcystogramma haryensis* Park, sp. n., are described, based on specimens collected by light trap in Jeju Island which is the largest island located in the South-west of the Korean Peninsula. At the same time, a species of Depressariidae, *Agonopterix holoceana* Park, sp. n., which was reared from *Eleutherococcus senticosus* (Rupr. & Maxim.), is described.

KEY WORDS: Lepidoptera, Gelechioidea, new species, *Teleiodes*, *Helcystogramma*, *Agonopterix*, Korea.

Descripción de dos nuevas especies de Gelechiidae y una nueva especie de Depressariidae de Corea (Lepidoptera: Gelechioidea)

Resumen

Se describen dos especies de Gelechiidae, *Teleiodes cylindriata* Park, sp. n. and *Helcystogramma haryensis* Park, sp. n., basado sobre especímenes colectados con trampa de luz en la Isla de Jeju la cual es la isla más grande localizada en el Suroeste de la Península de Corea. Al mismo tiempo se describe una especie de Depressariidae, *Agonopterix holoceana* Park, sp. n., la cual fue criada sobre *Eleutherococcus senticosus* (Rupr. & Maxim.).

PALABRAS CLAVE: Lepidoptera, Gelechioidea, nuevas especies, *Teleiodes*, *Helcystogramma*, *Agonopterix*, Corea.

Introduction

Gelechiidae is the largest family of Gelechioidea, with about 4,700 known species worldwide (NIEUKERKEN *et al.*, 2011). In the Korean Peninsula, 180 species of Gelechiidae are known. Since PARK & PONOMARENKO (2007) enumerated 172 known species of the family Gelechiidae for the fauna of the Korean Peninsula, additional eight species were reported; *Gnorimoschema streliciella* (Herrich-Schäffer, 1854), *Syncopacma wormiella* (Wolff, 1958), and *Mesophleps acutunca* Li & Sattler, 2012 by PARK *et al.* (2013); *Anarsia asymmetroides* Park, 2014, *Aristotelia nesiotatos* Park, 2014 and *Stenolechia kodamai* Okada, 1962 by BAE *et al.* (2014); *Bagdadia gnomia* Ponomarenko, 1995 and *Sitotroga zheng* Li & Wang, 2002 by PARK *et al.* (2014) and KIM *et al.* (2014). In this paper, two new species are described belonging to the genus *Teleiodes* Sattler, 1960 and *Helcystogramma* Zeller, 1877 of the family Gelechiidae.

Depressariidae is also one of the families of the Gelechioidea, but the status of the family level has still not been well clarified. It has often been treated as a subfamily of Oecophoridae. In Korea, 10 species of the genus *Agonopterix* Hübner, [1825] and three species of *Depressaria* Haworth, 1811 have been known (BYUN *et al.*, 2009). The new species of *Agonopterix* is very close to the Japanese species, *A. sumizome* Fujisawa.

Material and methods

The two new species of Gelechiidae were collected in Jeju Island, South-western part of the Korean Peninsula in 2014; and the *Agonopterix* species was collected in Hoengsung, Gangwon Province, at larval stage on its host plant and reared in semi-natural condition until its emergence during 2014. Color standard for the description of adults follows KORNERUP & WANSCHER (1978).

Description

GELECHIIDAE

Teleiodes cylindrata Park, sp. n. (Figs. 1, 2, 3 4, 4a-b)

Holotype: ♀, Jeju, Jeju Prov., 24-VII-2014, gen. slide no. CIS-6572/Park. Paratypes: 3 ♀♀; same data as the holotype; 1 ♀, Andeok, Seoguipo, Jeju Prov., 11-VI-2014; 1 ♀, same locality, 24-VI-2014; 1 ♀, same locality, 30-VI-2014, gen. slide no. CIS-6576/Park. Types are preserved in the Korea National Arboretum, Pocheon, Korea.

Diagnosis: The forewing color pattern is similar to that of the European species, *T. luculella* (Hübner, [1813]) or *T. flavimaculella* (Herrich-Schäffer, 1854). The female genitalia are also similar to those of both species, but they can be distinguished by the different shape of the ostium bursae and antrum: the presence of the dorsal plate of ostium bursae and narrow, long, slender antrum, with parallel lateral sides.

Description: Female (Fig. 1). Wingspan, 10.5-11.0 mm. Head pale orange gray, mixed with black-tipped scales. Basal segment of antenna dark brown to black, flagellum dark brown to black with light gray rings. Second segment of labial palpus (Fig. 2) thickened; furrowed ventrally, densely covered with blackish scales on outer surface, with white scales apically, 3rd segment as long as 2nd segment, white with broad blackish bands medially and preapically; apex white. Tegula and thorax densely covered with blackish scales. Hind tibia with hairs above; blackish at base, before mid spurs, and between mid spurs and post spurs on outer surface, shiny white on inner surface. Forewing ground color light gray, mottled with black-tipped scales throughout; basal fascia back; subbasal fascia broadly developed, obliquely edged from basal 1/6 length of costa to 1/4 of hind margin, often with a small, round, yellowish spot on margin below costa; triangular blackish costal patch at 2/5 costa, often extended to middle of costa; rounded or elliptical yellowish patch developed medially; post median blackish fascia broadly developed, often with black spot on outer margin near the end of cell, followed by large yellowish white costa patch at 3/4 of costa; apex sharply produced; fringe fuscous; venation (Fig. 3) with R_1 arising from middle; distance between R_1 and R_2 at base about 3 times longer than that of R_2 and R_3 ; R_3 arising from near upper corner of cell; R_4 and R_5 stalked at basal 1/4; M_1 very close to R_{4+5} at base; M_2 and M_3 nearly connate; CuA_1 free, arising from lower corner of cell; CuA_2 well developed. Hindwing gray, apex sharply produced; termen oblique, slightly sinuate; venation with R_s and M_1 shortly stalked; M_2 present; M_3 and CuA_1 close at base.

Female genitalia (Figs. 4, 4a-b): Abdominal segment VIII sclerotized, with nearly straight caudal margin; sternite VII with heavily sclerotized broad band posteriorly, with semi-oval lateral lobes. Apophyses anteriores thick, about 3/4 length of segment VII. Ostium bursae heavily sclerotized; ventral plate deeply concave medially on caudal margin; dorsal plate slightly emarginated medially on caudal margin. Antrum narrow, longer than apophyses anteriores. Ductus bursae broad in anterior half, narrowed posteriorly; signum rhomboid, finely serrate along margin, with transverse groove centrally; width about 1/3 of corpus bursae.

Distribution: Korea (Jeju).

Etymology: The species name is derived from the Latin, *cylind* (= cylinder), referring to the cylindrical antrum of the female genitalia.

Remarks: The genus *Teleiodes* Sattler, 1960 is a Palaearctic genus: 12 species are known in Europe and ten species are in Korea. Only a single species was introduced to North America. The genus is characterized by having the abdominal segment VIII with tongue-shaped tergite bearing a pair of long coremata laterobasally and broad sternite in the male. It is close to *Carpatolechia* Capuse, 1964.

***Helcystogramma haryensis* Park, sp. n.** (Figs. 5, 6, 7, 8, 8a-c)

Holotype: ♂, Seoguipo, Jeju Prov., 10-VII-2014, gen. slide no. CIS-6636/Park. Paratypes: 6 ♂♂, same data as the holotype, gen. slide no. CIS-6661/Park; 1 ♂, Sinrye, Seoguipo, Jeju Prov., 11-IX-2014, gen. slide no. CIS-6577/Park; 2 ♂♂, Hannam, Seoguipo, Jeju Prov., 25-VIII-2014, wing venation, CIS-6635/Park; 1 ♂, Hannam, 25-IX-2014; Jeju, Jeju Prov., 25-IX-2014. Types are preserved in the Korea National Arboretum, Pocheon, Korea.

Diagnosis: The species is more or less similar to *H. compositaepictum* (Omelko & Omelko, 1993) or *H. perelegans* (Omelko & Omelko, 1993) in the forewing pattern, but differs from them by having two narrow, nearly paralleled whitish, oblique lines, arising before middle and 3/5 of the costa, a silvery white, shiny subterminal band-like fascia followed by 4-5 different length of short, blackish streaks in distal area of the forewing.

Description: Male (Figs. 5, 6, 7). Wingspan, 10.5-11.0 mm. Head grayish to yellowish brown dorsally. Basal segment of antenna grayish to dark brown, flagellum grayish to dark brown, yellowish white annulations more distinct beyond middle. Second segment of labial palpus (Figure 6) thickened, grayish brown on outer surface, paler on inner surface with whitish scales along dorsal margin; 3rd segment as long as 2nd segment, grayish, blackish on ventral margin, recurved; apex acute, white. Tegula and thorax yellowish brown dorsally. Hind tibia dark fuscous on outer surface, with white scales around mid-spurs. Forewing ground color mustard brown, with two narrow, nearly parallel, obliquely positioned lines, arising before middle and 3/5 length of costa and extended to lower margin of cell; grayish orange antemedian streak weakly developed, not reaching upper margin of cell above and hind margin below; median streak grayish orange, narrow, arched, below cell; a large, whitish elliptically elongate mark with gray spot internally below cell at about 3/5 of wing; a silvery white subterminal band-like fascia, followed by 4-5 different length of short, blackish streaks in distal area of the forewing; costa nearly straight to 5/6, then arched; apex sharply produced; termen falcate beyond apex; dark brown line from 5/6 of costa to tornus along margin; fringe dark brown with yellowish white basal line to 2/3 of termen, then grayish orange to tornus; venation (Figure 7) with R_1 arising from beyond middle; R_2 arising from middle between R_1 and R_3 ; R_3 free; R_4 and R_5 stalked, separated from beyond 2/3; R_5 reach before apex; M_1 nearly parallel to R_4+R_5 ; M_2 arising from lower corner of cell; M_3 arising from before lower corner of cell; CuA_1 shortly stalked with CuA_2-CuA_1 ; Hindwing grayish, narrowed in basal half; costa slightly expanded to about middle, then nearly straight and arched to apex; apex sharply produced; venation with Sc strongly developed; Rs reach apex; Rs and M_1 stalked at near 3/5; M_2 close to M_3+CuA_1 at base; M_3 and CuA_1 stalked at basal 1/5 of M_3 ; CuA_2 arising near lower corner of cell. Female is unknown.

Male genitalia (Figs. 8, 8a-c): Eighth abdominal tergite VIII with anterior margin that is strongly concave and posterior margin conically produced. Uncus broadly developed, slightly convex medially on caudal margin, broader toward apex, length about 1.5 times of width, bearing sparsely short setae. Gnathos hook-shaped, strongly bent before middle. Tegumen broad, relatively short, deep emargination on anterior margin medially; a pair of large processes between base of both valvae. Valva narrow, heavily sclerotized in basal half, then broadened, densely setose in distal half, with rounded apex, reaching to apex of uncus; a long hair-pencil at base of tegumen dorsally. Transtilla with large, spindle-like laterocaudal process, as long as 1/3 of valva. Juxta

separated from base, internal margins expanded medially, more or less crescent, with S-shaped weakly sclerotized, large latero-caudal process. Vinculum weakly sclerotized, band-shaped; apex expanded outwardly. Base of aedeagus global; median part slender, with sclerotized wing preapically; apical part produced with round apex.

Distribution: Korea (Jeju).

Etymology: The specific name is derived from the type locality.

Remarks: The genus *Helcystogramma* Zeller, 1877, assigned to the subfamily Dichomeridinae, comprises 117 species (Ponomarenko, 2009): five species known in Korea, seven species in the Russian Far East, two species in China and six species in Japan. The genus is characterized by having a well-sclerotized abdominal sternite VIII with the anterior margin being strongly concave and posterior margin in conical shape with round apex.

DEPRESSARIIDAE

Agonopterix holoceana Park, sp. n. (Figs. 9, 10, 11, 12, 12a, 13, 13a)

Holotype: 1 ♀, Hoengsung, Gangwon Prov., 5-VII-2014, coll. KW Lee, gen. slide no. HL-6/Park. The holotype is preserved in the Holoce Ecosystem Conservation Research Institution (HECRI), Heongsung, Korea.

Diagnosis: The new species is superficially similar to *Agonopterix sumizome* Fujisawa, 1985 (Fig. 11), which was described by FUJISAWA (1985), based on females from Nagano Prefecture, Japan, but it can be distinguished from *A. sumizome* by the forewing pattern with no distinct dark-brown transverse lines along veins; no distinct black dots along costa before half; termen less oblique; and with more distinct crescent subbasal streak followed by two small, black stigmata on lower margin of the discal cell medially and below it. The species is easily distinguished by the female genitalia: signum of this new species (Figs. 12, 12a) is transversally elongate, median 1/3 nearly straight with symmetrical lateral parts curved downward, with conical spines, whereas the signum of *A. sumizome* is triangular (Figs. 13, 13a).

Description: Female (Fig. 9). Wingspan, 22.0 mm. Head clothed with roughly erected dark brown scales, which are brownish in basal half, then blackish beyond, with whitish apices. Scape of antenna black on dorsal surface, orange white on latero-ventral surface; flagellum with the first segment blackish, orange white in basal half, then dark brown beyond dorsally, with whitish apex. Second segment of labial palpus thickened, orange white speckled with dark brown scale on outer surface, orange white on inner surface, furrowed ventrally with dark brown scales; 3rd segment orange white, with blackish bands at base and 3/4 dorsally, the blackish bands broadly expanded ventrally. Tegumen light yellow clothed with blackish scales. Thorax clothed with black scales. Forewing with pale yellow patches: subbasal one large, rounded, with small blackish spot at middle; median one ovate, with black spot on lower margin; an elongated elliptical one below the median one, and broadly occupying, irregularly shaped posterior one; a large black ring well developed at near end of discal cell, grayish white internally; a pair of small black dots located vertically below lower margin of cell before middle; a narrow, arched, brownish subbasal streak with blackish scales in basal 1/3, arising from near base on inner margin extended to the black dots; a brownish, S-shaped streak running from between the two dots to near tornus well presented; costal margin with short, blackish basal streak and small blackish costal patches beyond half; apex obtuse; termen concave before middle, with four blackish marginal spots; fringe blackish. Hindwing grayish white. Larva as shown in the figure 10. Male unknown.

Female genitalia (Figs. 12, 12a): Apophyses anteriores about 2/3 length of apophyses posteriors. Ostium bursae U-shaped, sclerotized. Ductus bursae as long as corpus bursae; ductus seminalis arising from near distal end of ductus bursae. Corpus bursae ovate; signum elongated, width about 1/4 of corpus bursae, median 1/3 nearly straight, with symmetrical lateral parts with

7-9 conical spines respectively in both sides (Fig. 12a), whereas the signum of *A. sumizome* is triangular, serrate on lateral margins (Fig. 13a).

Host plants: *Eleutherococcus senticosus* (Rupr. & Maxim.) Maxim. (Araliaceae).

Distribution: Korea (Gangwon Prov.).

Remarks: A larva found on *Eleutherococcus senticosus* (Rupr. & Maxim.) was collected on 20-V-2014 in Hoengsung, Gangwon Prov. and the adult was emerged on 5-VII-2014. SAKAMAKI (2013) noted that *A. sumizome* Fujisawa is distributed in the southern part of the Korean Peninsula, without detailed records for the collecting information. However, it is doubtful that *A. sumizome* is distributed in Korea and there is some possibility that the species is perhaps identical to this new species. According to the original description, the wingspan of *A. sumizome* is about 25 mm, and is larger than this new species.

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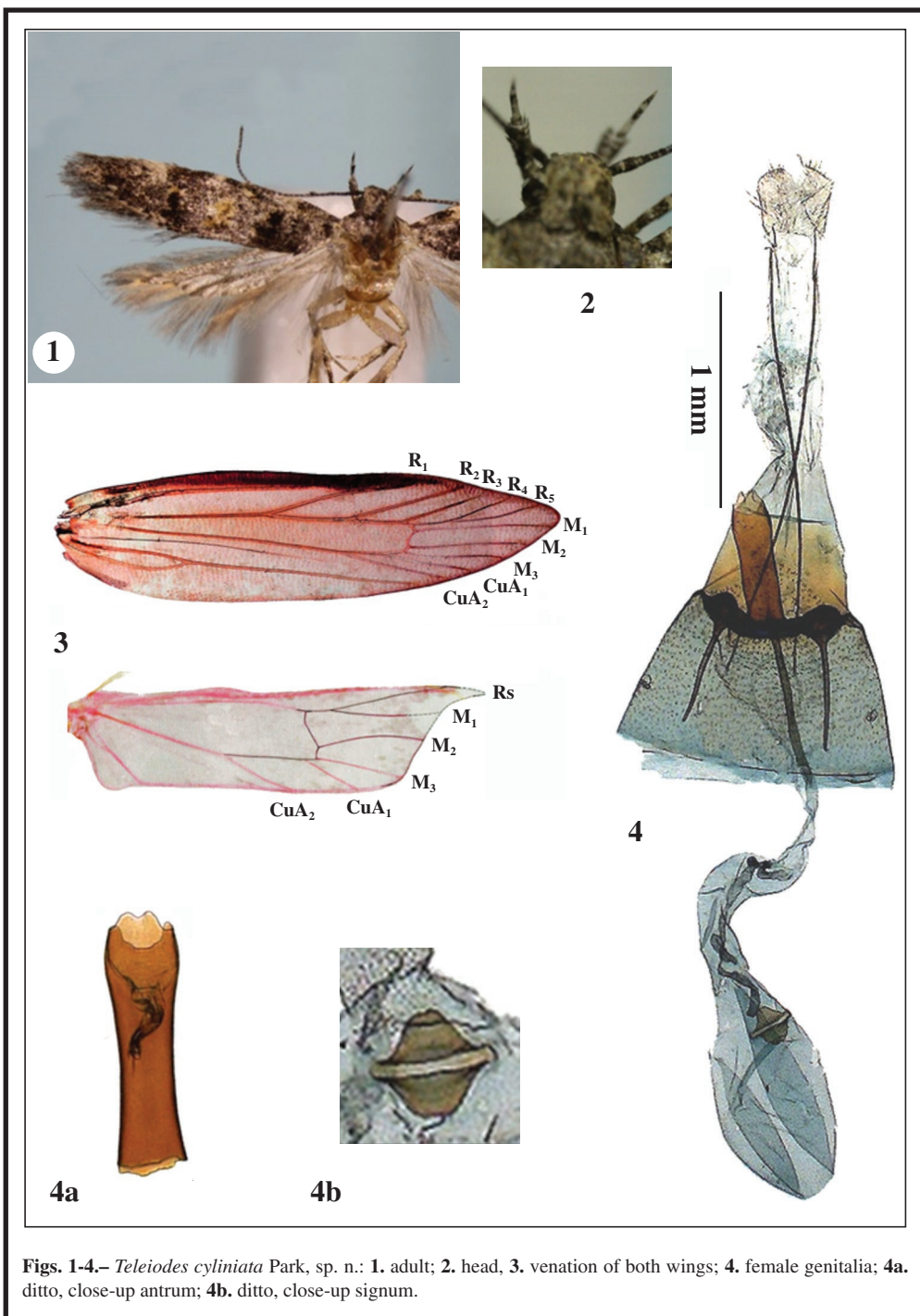
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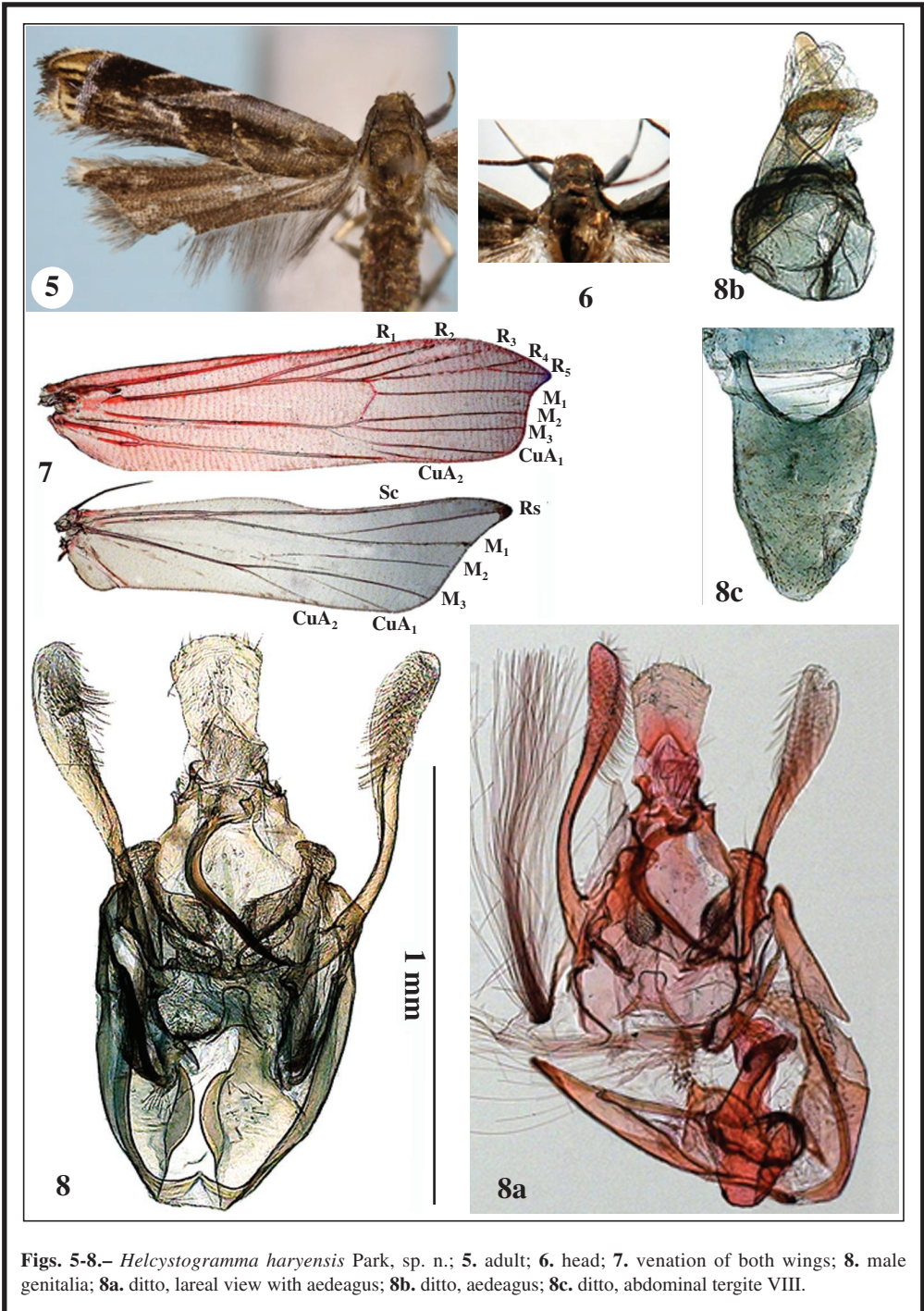
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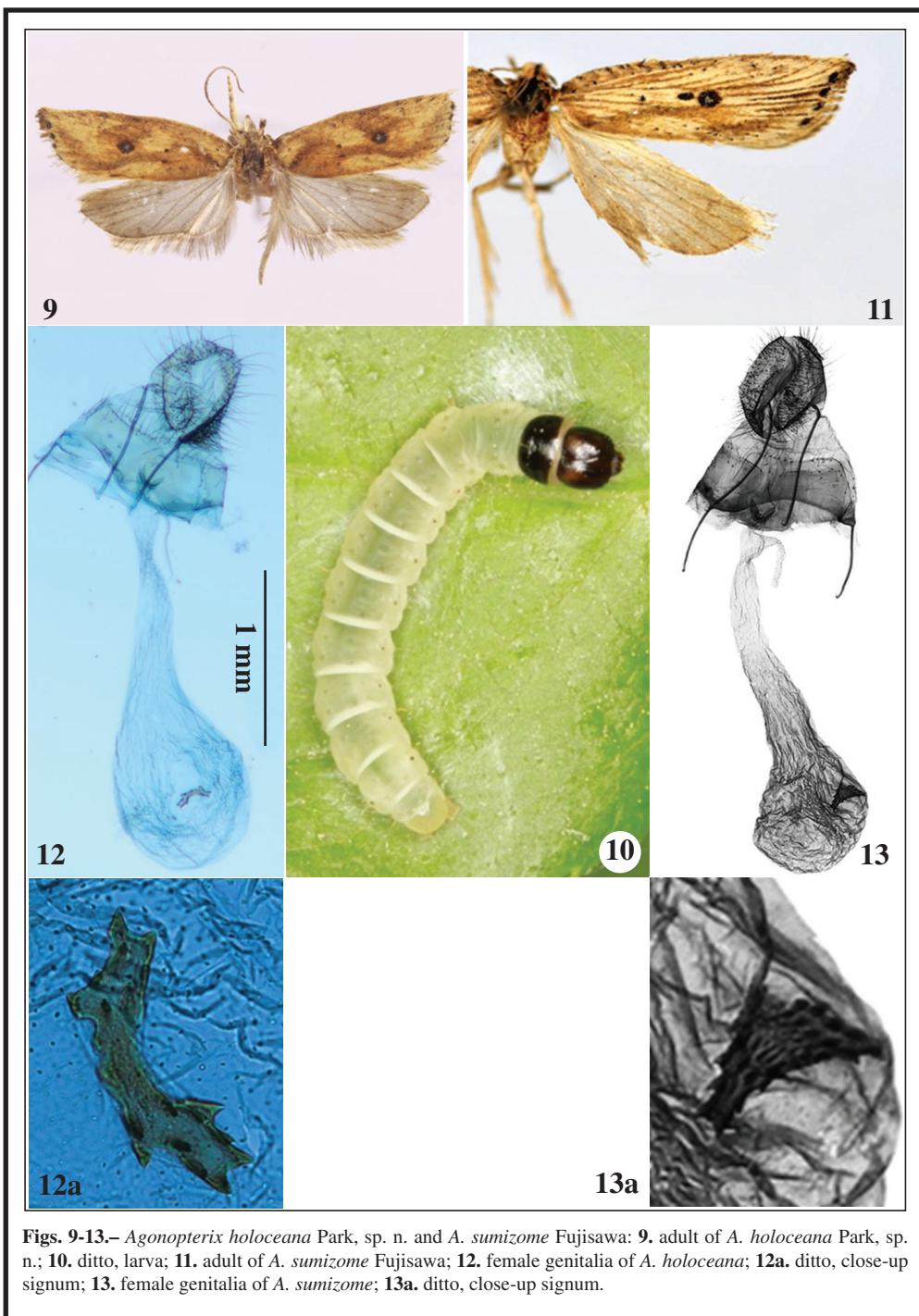
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Figs. 1-4.—*Teleiodes cyliniata* Park, sp. n.: **1.** adult; **2.** head, **3.** venation of both wings; **4.** female genitalia; **4a.** ditto, close-up antrum; **4b.** ditto, close-up signum.



Figs. 5-8.— *Helcystogramma haryensis* Park, sp. n.; **5.** adult; **6.** head; **7.** venation of both wings; **8.** male genitalia; **8a.** ditto, lateral view with aedeagus; **8b.** ditto, aedeagus; **8c.** ditto, abdominal tergite VIII.



Figs. 9-13.— *Agonopterix holoceana* Park, sp. n. and *A. sumizome* Fujisawa: **9.** adult of *A. holoceana* Park, sp. n.; **10.** ditto, larva; **11.** adult of *A. sumizome* Fujisawa; **12.** female genitalia of *A. holoceana*; **12a.** ditto, close-up signum; **13.** female genitalia of *A. sumizome*; **13a.** ditto, close-up signum.