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A new species of *Saridoscelis* Meyrick, 1894 (Lepidoptera: Yponomeutidae) from Taiwan

Yi-Yang LU¹, Yu-Ming HSU¹, Jia-Yuan LIANG², Yu-Feng HSU^{1,*}

1. Department of Life Science, National Taiwan Normal University, Taipei, Taiwan 116, R.O.C. 2. College of Life Science, Ningde Normal University, No. 98-1 Jiaocheng South Rd., Ningde 352100, Fujian, China. *Corresponding author's email: t43018@ntnu.edu.tw

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ABSTRACT: *Saridoscelis* Meyrick, 1894 belongs to Yponomeutidae, with 9 described species. A new species, *Saridoscelis diffusolinearum* Lu & Hsu, sp. nov., is described from Taiwan, with diagnostic characters provided for both sexes herein. We also proposed that *S. diffusolinearum* sp. nov. is close related to *S. kodamai* Moriuti, 1961. The new species feeds on a subalpine bush *Gaultheria cumingiana* Vidal (Ericaceae) further indicating that the host plant of the subfamily Saridoscelinae may restricted to Ericaceae.

KEY WORDS: Dasyueshan-area, Ericaceae, *Gaultheria cumingiana*, new species, *Saridoscelis diffusolinearum*, Yponomeutidae.

INTRODUCTION

The genus *Saridoscelis* Meyrick, 1894 is a small genus in Yponomeutidae, used to comprise 4 species distributed in East Asia (Japan, Korea, China and Taiwan) and India (Lewis and Sohn, 2015; Sohn and Choi, 2016; Sohn, 2020). However, Sohn (2023) recently described 5 new species of *Saridoscelis* and erected a new genus *Amphizostera* with 2 new species from Southeast Asia (Malaysia, Thailand and Indonesia). Currently, *Saridoscelis* is placed in the subfamily Saridoscelinae Moriuti, 1977 with *Amphizostera* Sohn, 2023 and the New World genus *Eucalantica* Busck, 1904 (Sohn *et al.*, 2013; Sohn, 2023). The monophyly of the subfamily is only supported by genetic data, but the morphological synapomorphy of the subfamily is still not found (Sohn *et al.*, 2013). The known host records of the subfamily are restricted to Ericaceae (Lewis and Sohn, 2015; Sohn and Choi, 2016; Sohn and Nishida, 2011). For *Eucalantica*, it has been reported that the larvae feed on *Vaccinium ovatum* Pursh in the USA (Sohn and Nishida, 2011). For *Saridoscelis*, the moths have been reared from *Vaccinium bracteatum* Thunb, *Pieris japonica* (Thunb.) D. Don ex G. Don and *Leucothoe grayana* Maxim. in Japan (Moriuti, 1961, 1977; Sohn and Choi, 2016).

A total of 17 species in 9 genera of Yponomeutidae have been documented in the moth fauna of Taiwan (Heppner, 1992, 2012; Fan *et al.*, 2008; Sohn, 2018; Chung and Shao, 2022). Moriuti (1963) had recorded *S. issikii* Moriuti, 1961 from Taiwan, but Heppner (1992) considered it is a synonym of *S. sphenias* Meyrick, 1894. During a 2-year survey for insect diversity of Dasyueshan area of the Shei-Pa National Park in northern Taiwan, adult specimens of a *Saridoscelis* species were collected, with larvae discovered and reared out from a subalpine bush *Gaultheria cumingiana* Vidal, a plant genus

previously unknown to be used by Saridoscelinae. After comparing the samples of the moth with all other known species, prominent diagnostic features in wing patterns and genitalia of both sexes were recognized, and we concluded that the moth represents an undescribed species. In the present article, we describe it as a new species and report its host association herein.

MATERIAL AND METHODS

The adults were collected by light traps, sweeping nets and reared from the host plant. The dissection of the genitalia is modified from Common (1990) by using pen ink (Pilot) as a staining agent. The photographs of the adults were taken by Canon EOS RP attached with EF100mm f/2.8 Macro USM. The illustrations of genitalia were taken by Nikon D7200 attached to a Leica DM500 microscope. Both images of the adults and genitalia were stacked using Helicon Focus software and processed by Adobe Photoshop software. Terminology of the genitalia follows Klots (1970). Terminology of the wing pattern follows Moriuti (1961).

The following abbreviations refer to the depository institutions of the vouchers: **NHM**: Department of Entomology, The Natural History Museum, London. **NTNU**: Department of Life Science, National Taiwan Normal University, Taipei, Taiwan. **NMNH**: National Museum of Natural Science, Taichung, Taiwan.

TAXONOMIC TREATMENT

Subfamily Saridoscelinae Moriuti, 1977

Genus *Saridoscelis* Meyrick, 1894

Saridoscelis Meyrick, 1894: 28. Type species: *Saridoscelis sphenias* Meyrick, 1894.

The forewing is narrow and elongate, and the ground



color is usually white. The hindwing is usually grey. The eighth sternum of male is modified as a sclerotized structure of various shapes. Socius in male genitalia possesses one to several fringed plates. Saccus is long and thin. Antrum in female genitalia is usually sclerotized. Sac of lamella postvaginalis is hairy and variable in shape.

***Saridoscelis diffusolinearum* Lu & Hsu, sp. nov.**

臺灣散紋燕白巢蛾 Figs. 1–2

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Type: **Holotype**, 1 ♂, MIAOLI: Taian, Xishi Mountain forest road 2.7k, 2700m, 30 Jun 2022, Y.Y. Lu, C.W. Huang, Y.M. Hsu Coll. (Gen. Prep. YYLU-614) (NHM). **Paratypes**, 1 ♀, same locality as holotype, 28 Jul 2022, Y.C. Lin, R.J. Lin, Y.M. Hsu Coll. (Gen. Prep. YYLU-666) (NHM); 1 ♂, HUALIEN: Xiulin, Bilu Divine Tree, 2150m, 12 Jul 2022, Y.Y. Lu, C.W. Huang, Z.L. Chen Coll. (Gen. Prep. YYLU-667) (NTNU); 1 ♂, MIAOLI: Taian, Xishi Mountain forest road 2.7k, 2700m, 27 Sep 2022, reared from *Gaultheria cumingiana*, emgd. 18 Oct 2022, HSUM 22J47 (Y.M. Hsu & Y.Y. Lu) (NMNH); 1 ♀, NANTOU: Xinyi, Lulin Xiaowu, 2720m, 7 Jun 2020, Z.B. Xie Leg. (A78-20200607-020) (NMNH).

Diagnosis: This new species is similar to *Saridoscelis kodamai* Moriuti, 1961, both in external features and genitalia. The forewing upperside of *S. diffusolinearum* sp. nov. is dusted with gray scalings, decorated with a dark gray streak. By contrast, that of *S. kodamai* is without gray, with streaks paler in coloration. In male genitalia, the valva of *S. diffusolinearum* sp. nov. does not possess a medial hump found in *S. kodamai*, with the gnathos of the former longer than the latter. In female genitalia, the corpus bursae of the former is lageniform and that of the latter is oblong without contraction. The sac of lamella postvaginalis is narrower in *S. diffusolinearum* sp. nov. This new species is also superficially similar to *S. synodias* Meyrick, 1932, but the forewing markings of the latter is much paler than those of the former. In male genitalia, the uncus of *S. synodias* is shorter than that of *S. diffusolinearum* sp. nov. and the aedeagus of *S. synodias* does not bend like that of the new species. In female genitalia, the sac of lamella postvaginalis in *S. synodias* is longer than that of the new species and the signum appears only in *S. synodias*.

Description: **Male (Fig. 1A):** Antenna length 4.61–4.74 mm (n = 2), forewing length 6.66–7.40 mm (n = 2). Head: antenna white, dark distally; labial palpus white on outer surface, grey on inner surface, second segment slightly longer than third segment; vertex white, hair upright. Thorax: surface white. Legs: foreleg brown, densely covered with white hair at tibia and tarsi; mid tibia with a pair of apical spurs, with inner longer than outer; hindleg white, hind tibia with two pairs of spurs, with inner medial spur longer than outer, inner apical spur subequal to outer, each tarsomere with a ring of grey

scales at distal end. Abdomen: pale in anterior half, greyish posterior half, with two white tufts at caudal end. Forewing: ground color white; one fine, greyish brown, straight line from wing base to approximately 2/3 of costa; a fine, short, greyish brown, curved streak present near apex; one dark greyish brown band present from 1/3 dorsum, extending to apex, tapering distally; one dark greyish brown streak from 2/3 dorsum to apex; apex with brown edge; fringes white, brown mesally, with inner cilia brown. Hindwing: ground color pale grey; fringes white, grey proximally.

Female (Fig. 1B): Antenna length 4.32–5.21 mm (n = 2), forewing length 6.12–8.64 mm (n = 2). Abdomen without two white tufts at caudal end, other characters are the same as the males.

Male genitalia (Fig. 1C–F): Uncus bifurcate, long, with sparse hairs, near half-length of socii; socii with a downward sinuate ventrally, with six fringed plates at distal dorsal part; tegumen with a pair of long gnathos with rounded end; valva oblong, dramatically sinuate downward at base, straight ventrally, slightly curved upward at 1/3 dorsally; saccus thin, as long as valva; aedeagus elongate, with a shoe-like base, bent at 1/4 proximally. 8th sternite narrow mesally, slightly broaden anteriorly, prominently broaden toward posteriorly, with posterior margin concave.

Female genitalia (Fig. 1G): Anterior apophysis slightly longer than posterior apophysis; sac of lamella postvaginalis wide and short; antrum narrow, sclerotized; ductus bursae slightly broaden towards corpus bursae; corpus bursae lageniform, with no sclerotized structures.

Biology (Fig. 2): The larvae constructed silk web among the young leaves of *Gaultheria cumingiana* Vidal (Ericaceae). A small group of larvae was observed living together inside the web, feeding on young leaves. The adults were attracted to the light at night or collected by sweeping methods during the day.

Distribution: Taiwan (Miaoli, Hualien and Nantou).

Etymology: The name is a combination of two Latin words *diffusa* and *linea*, meaning spread out and line respectively, because of the diffused, inconspicuous grey and ochreous scales overlaid on forewing uppersides, with presence of prominent dark streaks.

Parasitism: A species of parasitoid wasp, *Pseudovenanides* sp. (Fig. 2D), belonging to Costesiini (Braconidae) was reared from the larvae of this species.

DISCUSSION

The host plant of the new species is *Gaultheria cumingiana* Vidal (Ericaceae), which is distributed in Southern China, Taiwan and the Philippines (Li *et al.*, 1998). In Taiwan, *G. cumingiana* is mainly distributed in subalpine habitats, from 2,500 to 3,300 m in central regions (Li *et al.*, 1998). The new species is thus far only collected in areas above 2,000 m within three National

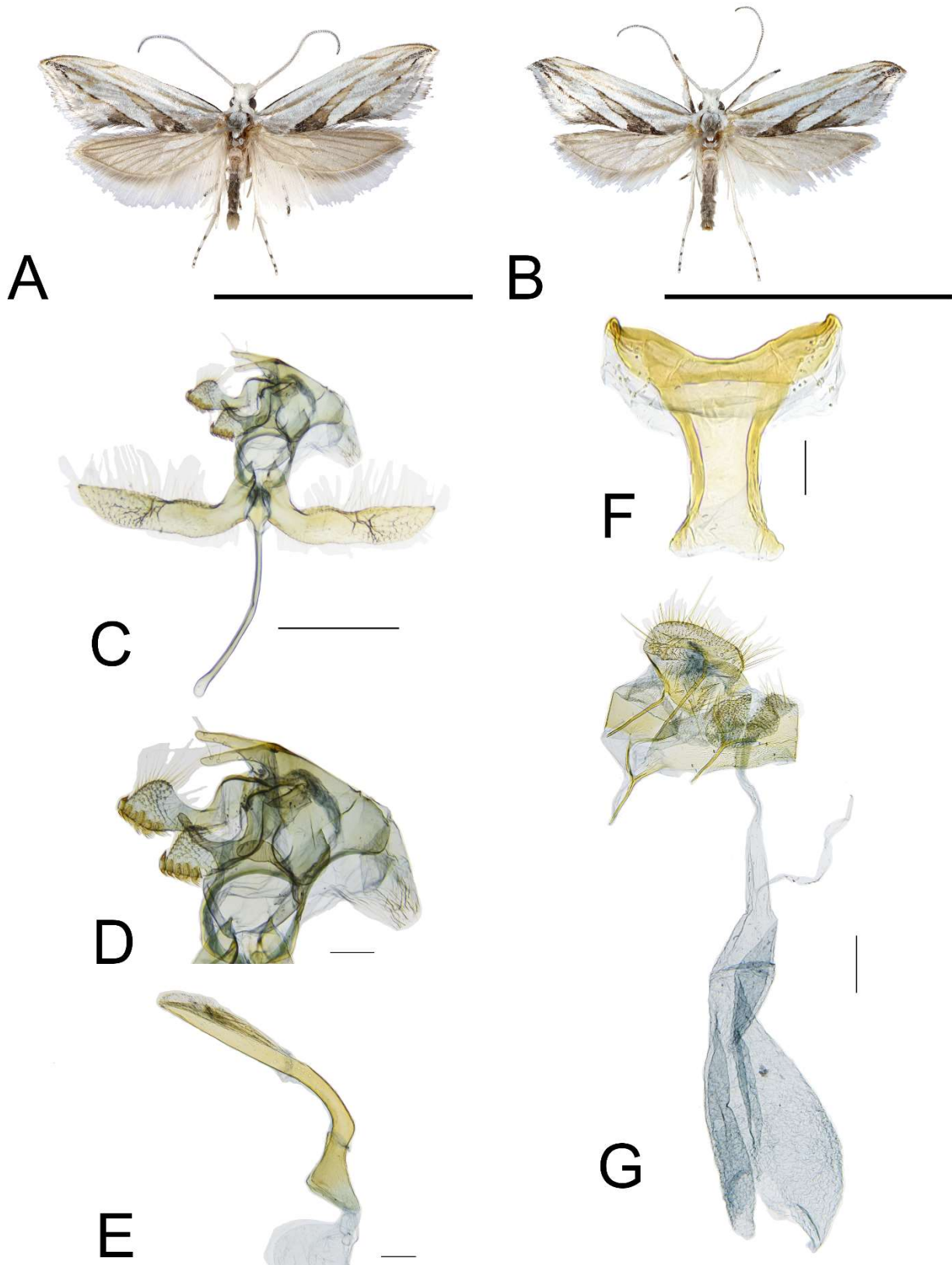


Fig. 1. Adults and genitalic structures of *Saridoscelis diffusolinearum* sp. nov. **A:** Male, holotype. **B:** Female, paratype. **C:** Male genitalia, holotype. **D:** Socii and uncus, holotype. **E:** Aedeagus, holotype. **F:** Eighth sternite, paratype. **G:** Female genitalia, paratype. Scale bar: A, B = 1 cm; C, G = 0.5 mm; D, E, F = 100 μm.

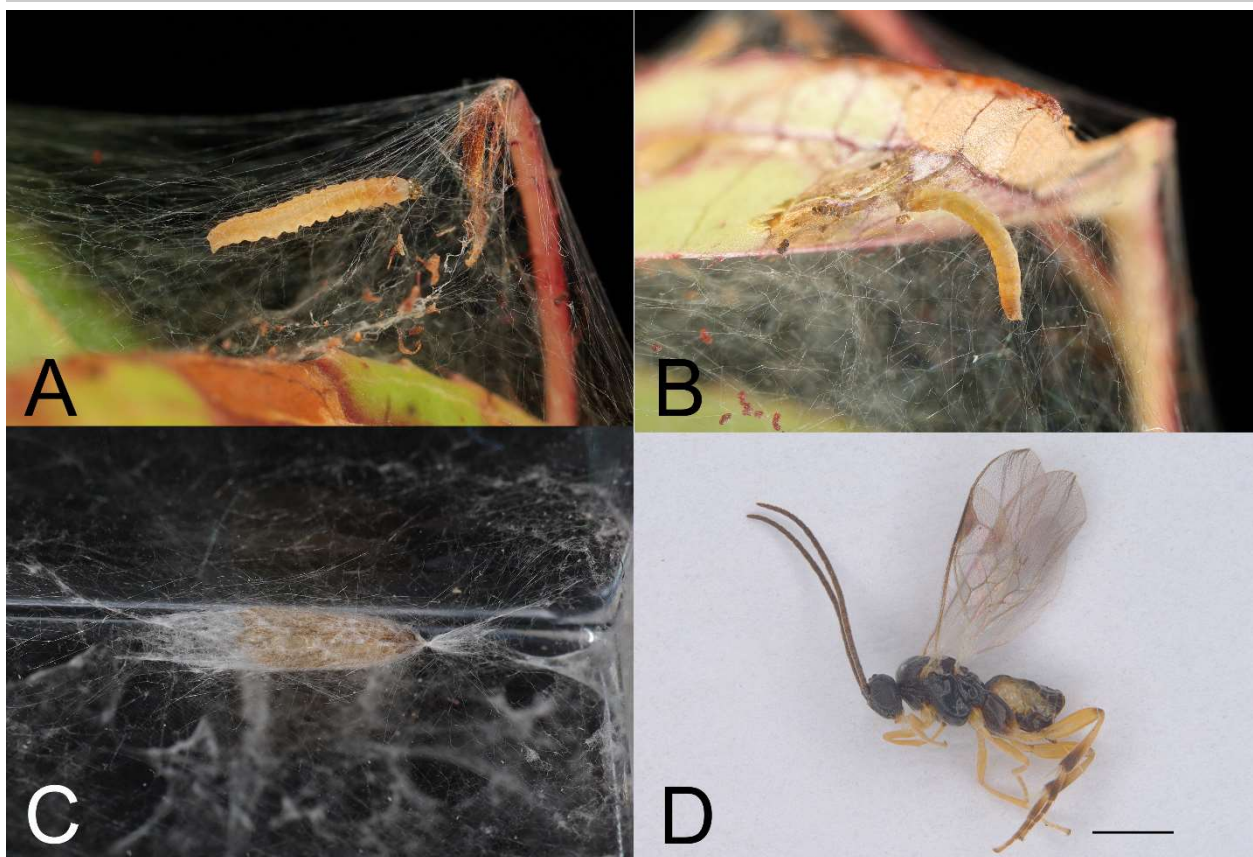


Fig. 2. Immature stages of *Saridoscelis diffusolinearum* sp. nov. and the parasitoid wasp, *Pseudovenanides* sp. **A:** Larva resting on the webs. **B:** Larva feeding on *Gaultheria cumingiana* Vidal (Ericaceae). **C:** Pupal exuvia after emergence. **D:** Adult of *Pseudovenanides* sp. Scale bar: D = 1 mm.

Parks, Shei-Pa, Yushan and Taroko, around Central Taiwan. Due to the similarity in both genitalia and wing pattern, we assumed that *S. diffusolinearum* sp. nov. is close related to *S. kodamai* Moriuti, 1961. The report of this new species with its host plant record, combined with previous records, suggests that *Saridoscelis* species may only utilize plants in the family Ericaceae.

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